PRODUCTION SCIENTIFIQUE ANNEE 2001
A new approach of the decomposition method (Adomian) in which the Adomian scheme is obtained in a more natural way than in the classical presentation, is given. A new condition for obtaining convergence of the decomposition series is also included.
The results obtained by a rule-based proportional, integral, derivative (PID) precompensator controller applied to a two-joint manipulator are discussed. The end effector is made to follow a specified trajectory obtained from the inverse kinematics by an appropriate design of a fuzzy control law. The desired trajectory is determined by the values of the joint variables and the structural kinematics parameters of the manipulator. The performance of the PID controller is exploited here to build a fuzzy precompensator that will enhance the conventional PID and to obtain better performances and results. The fuzzy rule base of the precompensator designed is found by associating two evolutionary algorithms that search for the optimal solution.
Unsaturated triglyceride oil (sunflower) was obtained from commercial sources. It was epoxidized and characterized by chemical and spectroscopic methods. The thermo-oxidative degradation of poly(vinyl chloride) at 180 degreesC was investigated. The effects of different metal carboxylate combinations (Ba/Cd and Ca/Zn stearates) in the presence of epoxidized sunflower oil on static heat treatment of PVC have been studied. In order to compare the efficiency of the epoxidized sunflower oil with these metal soap stabilizers, thermal stabilities were evaluated on the basis of evolved hydrogen chloride determined by potentiometric titration and the degree of discoloration are discussed. The development of color and the dehydrochlorination rates were compared for PVC sheets containing epoxidized sunflower oil (ESO) or epoxidized soya bean oil (ESBO). It was found that ESO exerted a stabilizing effect on the degradation of PVC. Further-more, the thermal degradation of PVC with metal soaps and ESO was investigated by thermogravimetric analysis (TG) and differential thermogravimetric analysis (DTG). (C) 2001 Elsevier Science Ltd. All rights reserved.
Abstract: The overall stability of the two acids: 4-mono(dihydroxy-phosphonyl) methyl phenol (L1) and 2,6-bis(dihydroxyphosphonyl)methyl 4-methyl phenol (L2) complexes with five divalent metal cations Co-II, Ni-II Cu-II, Zn-II and Cd-II were determined potentiometrically at constant ionic strength of 0.1 mol.L^-1 and at 25.0 +/- 0.1 degreesC (298.0 +/- 0.1 K) in water. The values are as follows. For L1: Ni-II, 5.27; Co-II, 5.65; Cu-II, 7.69; Zn-II, 7.39 and Cd-II, 5.75. For L2: Ni-II, 7.24; Co-II, 7.47; Cu-II, 12.76; Zn-II, 11.39 and Cd-II, 7.94.
Reference Type: Journal Article
Record Number: 5
Author: Benkerri, M. Halimi, R. Bouabellou, A. Mosser, A. Sens, J. P.
Year: 2001
Title: Antimony dopant redistribution during copper silicide formation
Journal: International Journal of Inorganic Materials
Volume: 3
Issue: 8
Pages: 1299-1301
Date: Dec
Short Title: Antimony dopant redistribution during copper silicide formation
ISSN: 1466-6049
DOI: 10.1016/s1466-6049(01)00141-6
Accession Number: WOS:000172877700047
Abstract: In the present work, copper silicide formation and the redistribution of implanted Sb+ ions were studied by means of Rutherford backscattering spectrometry (RBS) and X-ray diffraction (XRD). Copper thin films, of 500 A thickness, were evaporated, at room temperature, onto Sb implanted Si(111) wafers. Two doses, 5 x 10(14) and 5 x 10(15) Sb+ cm(-2), were used at 130 keV. The samples were heat treated in vacuum by conventional thermal annealing in the temperatures range 500-700 degreesC for various times. It was observed that, independent of Sb implant dose, two silicides (Cu3Si and Cu4Si) were formed in the considered temperature range. Antimony ions implanted initially in the Si substrates were found to redistribute towards the sample free surface. (C) 2001 Elsevier Science Ltd. All rights reserved.
URL: <Go to ISI>://WOS:000172877700047
Effect of implanted phosphorus on silicide formation in the Cr/Si(111) system

Chromium layers 800 Angstrom thick are deposited by electron gun evaporation on: respectively, non-implanted, 5 x 10^{14} and 5 x 10^{15} at./cm^2 P+ implanted Si(111) substrates. The redistribution of phosphorus and the influence on chromium silicide growth are analyzed by secondary ion mass spectroscopy (SIMS) and Rutherford backscattering spectroscopy (RBS) after annealing between 450 degrees and 550 degreesC. It is shown that chromium silicide formation is retarded or inhibited by the presence of phosphorus. The implant diffuses out of the CrSi2 surface layer in both implantation cases, but also accumulates at the CrSi2/Si interface in the case of the higher dose. (C) 2001 Elsevier Science B.V. All rights reserved.

Benouattas, N Halimi, R Bouabellou, A Mosser, A

URL: <Go to ISI>://WOS:000167666600010
Reference Type: Journal Article
Record Number: 7
Author: Benterki, D. Merikhi, B.
Year: 2001
Title: A modified algorithm for the strict feasibility problem
Journal: Rairo-Recherche Operationnelle-Operations Research
Volume: 35
Issue: 4
Pages: 395-399
Date: Oct-Dec
Short Title: A modified algorithm for the strict feasibility problem
ISSN: 0399-0559
DOI: 10.1051/ro:2001121
Accession Number: WOS:000175135900002
Abstract: In this note, we present a slight modification of an algorithm for the strict feasibility problem. This modification reduces the number of iterations.
Notes: Benterki, D Merikhi, B
URL: <Go to ISI>://WOS:000175135900002
Reference Type: Journal Article
Record Number: 8
Author: Bouarissa, N. Kassali, K.
Year: 2001
Title: Mechanical properties and elastic constants of zinc-blende Ga1-xInxN
Journal: Physica Status Solidi B-Basic Research
Volume: 228
Issue: 3
Pages: 663-670
Date: Dec
Short Title: Mechanical properties and elastic constants of zinc-blende Ga1-xInxN
ISSN: 0370-1972
DOI: 10.1002/1521-3951(200112)228:3<663::aid-pssb663>3.0.co;2-8
Accession Number: WOS:000173140500007
Abstract: We have investigated the mechanical properties and elastic constants of zinc-blende Ga1-xInxN alloys, using the pseudopotential method within the virtual crystal approximation combined with the Harrison bond-orbital model. The agreement between our results and the available experimental and other theoretical data was generally satisfactory. Special attention has been given to the effect of alloy disorder on the studied quantities. For this purpose, the compositional disorder is added to the virtual crystal approximation as an effective potential. It is found that except for the anisotropy factor, the compositional disorder should not be ignored in the calculations of the remaining studied quantities of alloys of interest.
Notes: Bouarissa, N Kassali, K
URL: <Go to ISI>://WOS:000173140500007
Optical glass polishing using cerium oxide abrasive bonding with resin permitted its
to achieve high quality surfaces in a short time. The glass surface roughness is influenced by, the
surface state of the cerium oxide pellet. We found that the pellet's surface and the glass surface
are abraded during the polishing process and that there is a proportionality between the removal
rates of the optical glass and of the cerium oxide pellets characterised by the relative volumetric
wear.

Notes: Bouzid, D Zegadi, R Jungstand, U Herold, V

URL: <Go to ISI>://WOS:000170791500004
Reference Type: Journal Article  
Record Number: 10  
Author: Bouzid, S. Nyoungue, A. Azari, Z. Bouaouadja, N. Pluvinage, G.  
Year: 2001  
Title: Fracture criterion for glass under impact loading  
Journal: International Journal of Impact Engineering  
Volume: 25  
Issue: 9  
Pages: 831-845  
Date: Oct  
Short Title: Fracture criterion for glass under impact loading  
ISSN: 0734-743X  
DOI: 10.1016/s0734-743x(01)00023-9  
Accession Number: WOS:000170803700002  
Abstract: Resistance to impact of brittle materials has been the subject of many recent studies. Glass material with its various applications is very sensitive to impact loading. Under impact conditions where stress waves and their interactions are dominant, failure may be initiated simultaneously at some sites. The stress distribution varies rapidly with time and position. This study, based on previous works on cumulative damage models, concerns a glass plate subjected to impact at different loading rates using two methods: a compression split Hopkinson pressure bar and the normalized drop ball test. In order to evaluate the damage development and the fragmentation, we propose a damage model characterized by the damage volume affected by impact. This volume is a function of impact duration and critical stress. Damage rate is therefore predicted by the severity of a dynamic contact between the projectile and the target. Indeed, the multi-activation of micro-defects depends on this volume. Perforation of the glass plate occurs at a level of stress close to ten times the tensile strength. (C) 2001 Elsevier Science Ltd. All rights reserved.  
Notes: Bouzid, S Nyoungue, A Azari, Z Bouaouadja, N Pluvinage, G  
URL: <Go to ISI>://WOS:000170803700002
In this paper, two models for estimating monthly average daily global radiation on a horizontal surface have been applied to four different locations. The first one is an empirical model, originally formulated by Barbaro et al. (Solar Energy 20 (1978) 431). Some modifications have been suggested. The second one is a regression equation of the Angstrom type. The agreement between the measured and the computed values is remarkable, and the models are both recommended for use in Algeria and in any location with similar climatic parameters. (C) 2001 Elsevier Science Ltd. All rights reserved.
A new method to evaluate the five illuminated solar cell parameters (series resistance $R_s$, the ideality factor $n$, the photocurrent $I_{ph}$, the shunt conductance $G_{sh}$ and the diode saturation current $I_s$) is described. The method uses the measured current voltage data and the resulting calculated conductance of the device. By using the conductance, the number of parameters which has to be calculated is reduced and then only four parameters have to be extracted. A nonlinear least squares optimization algorithm based on the Newton model is hence used to evaluate these parameters. To overcome the difficulty in initializing the cell parameters, the simple conductance technique is used. When incorporated into microcomputer-based data acquisition software, the program allows theoretical modeling of solar cells. Results obtained for a commercial solar cell and a module are given. Comparison with other commonly used methods is also discussed. (C) 2001 published by Elsevier Science Ltd.
An accelerated hydrothermic ageing (according to N.F.T. 54043 method) was performed on samples of rigid poly(vinyl chloride). The test consisted of sample immersion in boiling water at 100 degreesC for different exposure periods up to 480 h. The samples were removed from the boiling water every two hours for mechanical and dielectric characterization and color test. The dielectric measurements carried out on aged samples, up to 40 h, showed that the permittivity remained almost constant and its value was found to be 2.3 in the range -100 to +62.8 degreesC. However, as the temperature approaches the glass transition (T-g = 88.3 degreesC), the permittivity was observed to increase rapidly. It was also found that the permittivity of aged samples was lower than that of the non-aged samples. The dielectric loss factor (tan delta) measurements with respect to temperature have confirmed the presence of two relaxations: beta at low temperature (around -35 degreesC) and a near the T-g. The combined action of water and temperature reduced the intensity of the corresponding relaxation peaks. The sample color index was evaluated up to 480 h using the SYNERO scale in order to estimate the degradation extent. Unexpectedly, elongation at break under uniaxial traction remained unaffected by the hydrothermic ageing, meaning that two competing processes were involved simultaneously (sample degradation via chain scission and sample plastification via water absorption).
Abstract: Osmolality changes evoked with intragastric administration of natural honey or mannitol, significantly decreased the gastric ulceration of rats induced by indomethacin. Together with this effect, a parallel increase was detectable in the mucosal level of endogenous prostacyclin. Although many processes may be involved in this phenomenon, the authors explain their data with a stimulating effect on gastric mucosal microcirculation due to osmolality changes.

Notes: Gharzouli, K Balint, GA Galfi, M Rimanoczy, A Juhasz, A
Reference Type: Journal Article
Record Number: 15
Author: Gharzouli, K. Gharzouli, A. Amira, S. Khennouf, S.
Year: 2001
Title: Protective effect of mannitol, glucose-fructose-sucrose-maltose mixture, and natural honey hyperosmolar solutions against ethanol-induced gastric mucosal damage in rats
Journal: Experimental and Toxicologic Pathology
Volume: 53
Issue: 2-3
Pages: 175-180
Date: Jun
Short Title: Protective effect of mannitol, glucose-fructose-sucrose-maltose mixture, and natural honey hyperosmolar solutions against ethanol-induced gastric mucosal damage in rats
ISSN: 0940-2993
DOI: 10.1078/0940-2993-00175
Accession Number: WOS:000170039000011
Abstract: Background: We have previously shown that natural honey is able to protect the rat stomach against acute ethanol- and indomethacin-induced lesions. The present investigations were undertaken to examine the role of intraluminal osmolality in this protective effect.
Methods: Mannitol, glucose-fructose-sucrose-maltose mixture (GFSM) and natural honey (300, 600, 1800 mOsmol/kg water) were given orally to rats 30 min before administration of 70% ethanol for a further 15-min period. Lesions area of the excised stomachs were evaluated. Pylorus-ligated stomachs were filled with mannitol, GFSM mixture and honey (1800 mOsmol/kg water) to test the effect of the hyperosmolar solutions on gastric fluid content and acid secretion. The rate of gastric emptying of the three rest solutions (1800 mOsmol/kg) was measured by the phenol red method. Results: Intragastric administration of mannitol. GFSM mixture or honey prevented the formation of mucosal lesions in an osmolality-dependent manner. Using the pylorus-ligated stomach model, the test solutions led to a net increase of luminal fluid volume without affecting acid content. Hyperosmolar solutions presented a delayed gastric emptying if compared to a nonnutrient solution made of carboxymethyl cellulose. Conclusions: The observed results suggest that hyperosmolar solutions can prevent the formation of hemorrhagic lesions by luminal dilution of the necrotising agent and acid, an effect which may be potentiated by a lowered gastric emptying rate.
Notes: Gharzouli, K Gharzouli, A Amira, S Khennouf, S
URL: <Go to ISI>://WOS:000170039000011
Abstract: Substoichiometric titanium nitrides have been synthesized by multiple energy ion implantation at the surface of pure titanium. Elastic properties have been studied by nanoindentation. Self consistent Full Potential Linear Muffin Tin Orbital (FP-LMTO) calculation with empty spheres in place of the missing nitrogen atoms gives the corresponding bulk modulus and lattice parameter values. The results, both experimentally and theoretically, show the same evolution of the lattice parameter and the bulk modulus, as a function of vacancy concentration. The agreement between experimental and theoretical values is discussed in relation with the vacancy effect. (C) 2001 Elsevier Science Ltd. All rights reserved.

In this investigation, Bi$_2$Ru$_2$O$_7$ pyrochlore-type oxide was prepared using the Pechini process. We employed a sol-gel route, in which a solution of Ru(III) and Bi(III) in a mixture of citric acid and ethylene glycol was heated to form a polymeric precursor, followed by annealing at higher temperatures during various periods. The oxide obtained was identified by X-ray diffraction analysis. The results revealed that the formation of homogeneous oxide with a single pyrochlore structure phase occurred at or above 650 degreesC. Sample powders consisted of fine grains with homogeneous morphology and an average size of about 0.5 mum. This new preparation procedure yielded an electrode material with improved electrochemical activity compared to those elaborated through conventional methods. (C) 2001 Academic Press.
For electrons in the inversion layer on bulk p-type InAs, the Rashba spin-orbit parameter is computed self-consistently as a function of areal electron density Ns. The spin splitting increases with Ns but is not a linear function of in-plane wave vector k and the corresponding Rashba parameter increases with increasing electric field but decreases very strongly with k. For the ground subband, and at the fermi level, this decrease with k combined with subband occupation yields a decreasing Rashba parameter alpha for Ns < 1.97 x 10(12) cm(-2) and a nearly constant average value of 1.46 x 10(-11) eV m above. At the doping level considered here (1.8 x 10(17) cm(-3)) the highest achievable value of alpha congruent to 1.92 x 10(-11) eV m. Moreover alpha is a nonlinear function of Ns. Our results are compared to recent experimental work by Matsuyama et al. [Phys. Rev. B 61, 15 588 (2000)] and previous theoretical treatments.
Abstract: Background: The aim of our work was to identify risk factors specific to populations in our region for primary prevention of risk behaviors, particularly eating habits. Methods: We conducted a case-control study on dietary factors of nasopharyngeal carcinoma in the Setif area in Algeria. The study included 72 cases and 72 controls matched for age, sex and area of residence. The variables analyzed were identified by an anthropological study. Results: Increased risk of disease was associated with consumption of traditionally preserved foods such as "harissa", pickled fruit and vegetables and dried and salted meat. These factors were commonly found in other endemic areas. Certain products appeared to be specific to the Setif area including dried and salted far, especially after prolonged exposure. Rancid butter was related to a 4 to 7-fold increase in risk and use of pickling increased the risk of nasopharyngeal carcinoma 4 to 12-fold depending on the type of food. Conclusions: These data point to the need for biochemical analysis of food specimens to search for the carcinogenic agents and to the importance of an immediate information and education program on food habits for the populations living in this area.
Off-aligned exchange coupling in bilayer thin film is investigated by torque curve and ferromagnetic resonance (FMR). In off-aligned exchange coupling, the unidirectional anisotropy axis makes an angle beta with the anisotropy axis of the ferromagnetic layer. The torque curves of the off-aligned exchange are shifted with respect to the ones of the aligned case (beta =0).

From the experimental measure of the shift angle alpha (0) and of the torque curve slope at alpha (0), one can determine independently the exchange anisotropy field H-E and beta values. A description of the FMR modes in such an off-aligned exchange coupling is given. The FMR mode position and linewidth are studied as a function of the anisotropy fields, of the off-aligned angle values, and of the applied field direction. The resonance frequency and frequency linewidth present particular features which will help to do the right interpretation of FMR spectra of these systems. (C) 2001 American Institute of Physics.

Notes: Layadi, A
URL: <Go to ISI>://WOS:000171594800049
Ferromagnetic resonance modes in single and coupled layers with oblique anisotropy axis are investigated. In such films, the anisotropy axis is tilted from the normal with a tilt angle $\delta$. The equivalent magnetic field of such an anisotropy is derived. The mode position (resonant field) $H_R$, the linewidth $\Delta H$, and the peak intensity have been calculated. The effect of the tilt angle on these parameters is discussed. The FMR modes of two coupled ferromagnetic thin films with oblique anisotropy axes have also been studied. Analytical expressions for the resonance condition have been found for strong ferromagnetic and antiferromagnetic coupling.
It is now well established that the kinetics of impurity segregation is greatly increased by the defect annihilation process occurring during the return to equilibrium of a material initially in a metastable state (quenched, irradiated, cold worked). During the return to equilibrium of a cold worked material, i.e. during a recrystallisation anneal, both the recovery and recrystallisation stages contribute to the acceleration of the segregation kinetics. In this work, an attempt is made to study the contribution of each stage separately, with particular emphasis on the recovery mechanisms of cold worked pure nickel and the way these mechanisms affect sulphur segregation taking place in this material. For this purpose, recrystallisation and segregation anneals at 455 degreesC were carried out on lightly (0.25 true strain) and heavily (0.8 true strain) cold rolled nickel. It was found that sulphur segregation in the lightly deformed material took place entirely during the incubation time preceding recrystallisation, i.e. during the recovery stage. The process is thought to involve dislocation pipe diffusion for which a diffusion coefficient of 6.4 x 10(-9) m(2) s(-1) was estimated. In the heavily deformed material, segregation was concomitant with recrystallisation and the mechanism thought to be most probable is that involving impurity drag.
Abstract: In this paper, we present the behavior of magnetocrystalline anisotropy constants of the Co/Pt multilayer as a function of temperature and external magnetic field, observed by means of a torque magnetometer in an in-plane configuration. The [Co32 APt10 A](6) multilayer is prepared by molecular beam epitaxy. We have determined the magnetocrystalline anisotropy constants K-ul, K-2, and K-3 for different temperatures and in magnetic fields ranging from 2 to 10 kOe, taking into account the angle difference between the directions of the external magnetic field and the magnetization. The most prominent result in this work consists of the need to introduce the anisotropy constant of third order in the analysis. (C) 2001 Elsevier Science B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 25
Author: Maamache, M. Choutri, H.
Year: 2001
Title: Analysis of quantum time-dependent evolution by the averaged variational principle
Journal: Journal of Physics a-Mathematical and General
Volume: 34
Issue: 45
Pages: 9663-9668
Date: Nov
Short Title: Analysis of quantum time-dependent evolution by the averaged variational principle
ISSN: 0305-4470
DOI: 10.1088/0305-4470/34/45/306
Accession Number: WOS:000172616600006
Abstract: In this paper we give a general method to solve a time-dependent Schrodinger equation. The formalism developed is based on the quantum variational principle conveniently 'averaged'. In addition, we apply our method to study the time-dependent systems in which the Hamiltonians are linear functions of SU(1, 1) and SU(2) Lie algebras.
Notes: Maamache, M Choutri, H
URL: <Go to ISI>://WOS:000172616600006
Objective: Diabetes mellitus stands as a major public health issue in Algeria and has an important socioeconomical impact. Our study involved a representative sample of 1457 subjects and aimed at assessing the prevalence of type 2 diabetes and glucose intolerance in the population of Setif Wilaya, aged between 30 and 64 years old. Material and Methods: Diagnosis was based on oral glucose tolerance test, according to World Health Organisation criteria. Results: Diabetes prevalence was 8.2% (CI: 95%; 6.8% to 9.6%). It increased with age, while 50% of cases were undiagnosed, without any difference according to sex nor urban (7.3%)/rural (9.7%) distribution. Glucose intolerance prevalence was 7.1 (CI 95%; 5.8% to 8.4%). Age-standardized prevalence, according to world population data provided by WHO, was 9.08% for diabetes and 7.5% for glucose intolerance. When the new American Diabetes Association Criteria were used, prevalence of type 2 diabetes was 8.8 (CI: 95%; 7.3% to 10.2%) and that of fasting hyperglycemia was 6.9% (CI: 95%; 5.6 to 8.2). According to these new criteria, among the 66 cases with undiagnosed diabetes, 79% presented with a fasting blood glucose greater than or equal to 126 mg/dl. Conclusion: This relatively high diabetes prevalence calls for an appropriate management and health education, particularly focused on high risk subjects. These results bring the the first detailed prevalence data in an Algerian population.
A new theoretical model is presented to characterise a superconducting microstrip line on a lossy substrate, and the effects of strip thickness and losses on circuit performance studied. Although the high-T_c superconductor is considered anisotropic; the effect of this anisotropy may be neglected in the characterisation of the microstrip transmission line. New integral equations for the electric field components are formulated in the spectral domain using the exact dyadic Green's function of Mao et al., applied to the superconducting microstrip structures. A suitable procedure is developed for a CAD tool to analyse the lines of lossy substrates. Results for attenuation constant and effective permittivity as a function of frequency and normalised temperature are obtained.

Mayouf, A Djahli, F Lakhlef, F Omeir, Y

URL: <Go to ISI>://WOS:000169356300005
In this paper, a Selective Inference Engine (SIE) is first proposed. SIE predicts the rules that will be fired, based on an anticipated location procedure, and then performs the inference calculations only on the latter. This anticipated location is based on the projection of the input data on the conditional space of the fuzzy system and the delimitation of the excited region. Then, the fired rules can be aggregated using the appropriate scheme. In the second part of this work, we propose new defuzzification methods which take into account the consequent membership function shapes.
Poly (3-pyrrol-1-ylpropyl)malonic acid: synthesis, ion-exchange properties and complexation of copper cations

Electrochimica Acta
Volume: 46
Issue: 26-27
Pages: 4035-4041
Date: Aug

Abstract: Poly(pyrrrole-malonate) films have been synthesised by oxidative electropolymerisation of the new pyrrrole-malonic acid monomer 1. Poly1 films partition strongly the hexaaamine ruthenium cations from aqueous electrolytes, allowing an estimation of the acidity constant values of poly1 from cyclic voltammetry data. The complexation of copper(II) cations in this chelating polymer was evidenced by FT-IR and electrochemical experiments. Electoreduction of the complexed poly1-Cu(II) leads to the precipitation of copper metal in the polymer film. (C) 2001 Elsevier Science Ltd. All rights reserved.


URL: <Go to ISI>://WOS:000172355600012
Production of lactic acid from date juice by fermentation has been studied using Lactobacillus casei subsp. rhamnosus as the producer organism. The optimum substrate concentration, expressed in its glucose content, was 60 g l(-1). Various nitrogen sources were compared with yeast extract in terms of their efficiency for lactic acid production. None of these nitrogen sources gave lactic acid concentrations as high as that obtained with yeast extract. As yeast extract supplementation was not economically attractive, different proportions of (NH4)(2)SO4 and yeast extract were used. When the elemental nitrogen ratio of (NH4)(2)SO4 to yeast extract was 4:1, the substrate use and efficiency of lactic acid production were the same as in date juice supplemented with 20 g l(-1) yeast extract (0:5). (C) 2001 Elsevier Science Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 31
Year: 2001
Title: Continuing investigations in the Early Pleistocene locality of Ain Hanech, northeastern Algeria
Journal: Journal of Human Evolution
Volume: 40
Issue: 3
Pages: A18-A19
Date: Mar
Short Title: Continuing investigations in the Early Pleistocene locality of Ain Hanech, northeastern Algeria
ISSN: 0047-2484
Accession Number: WOS:000167254300032
Notes: Sahnouni, M Denadji, A Hadjouis, D Canals, A Medig, M Belahrech, H Abdesselam, S Harichane, Z Rabhi, M
URL: <Go to ISI>://WOS:000167254300032
The effects of three aglycon flavonols (myricetin, quercetin, and kaempferol) and the natural glycoside rutin on superoxide anion radical generating systems were investigated. Quercetin, myricetin, and kaempferol inhibited the formation of uric acid from xanthine by xanthine oxidase, while rutin was ineffective. The generation of superoxide anion radicals by this system was determined by either reduction of cytochrome c or Pholasin luminescence. A scavenging of superoxide was only observed for myricetin and to a small extent for rutin. All flavonols tested inhibited the Pholasin luminescence of fMet-Leu-Phe-stimulated neutrophils. Rutin influenced the oxidative burst of neutrophils in the same way as wortmannin and LY294002, two inhibitors of the phosphoinositide 3-kinase gamma. Indeed, rutin inhibited the activity of this enzyme, whereas the three other flavonols showed no effect. Thus, an inhibition of enzymes involved in signaling rather than a scavenging of superoxide anion radicals dominates in fMet-Leu-Phe-stimulated neutrophils exposed to flavonols. (C) 2001 Academic Press.
Some investigations in holographic microscopic interferometry with respect to the estimation of stress and strain in micro-opto-electromechanical systems (MOEMS).
Reference Type: Book
Record Number: 1
Author: Bekka, R. E.  Mihi, A.  Chikouche, D.
Year: 2001
Title: Analysis of spectral density compression of a surface EMG signal using fast Fourier transform methods
Series Editor: Dunne, S.
Series Title: Canadian Conference on Electrical and Computer Engineering 2001, Vols I and II, Conference Proceedings
Number of Pages: 1403-1408
Short Title: Analysis of spectral density compression of a surface EMG signal using fast Fourier transform methods
ISBN: 0-7803-6715-4
Accession Number: WOS:000171525900237
URL: <Go to ISI>:://WOS:000171525900237
In this paper, a solution to the restoration problem of degraded and noisy image is proposed, using the modified Hopfield network. To improve the network performances, the eliminating highest error EHE is used. In order to keep the image structures unaltered, an adaptive regularization scheme is employed that allows better compromise between inversion degradation process and smoothing. To do this, the statistics analysis is used to assign each pixel one regularization parameter according to its spatial activity.

Abstract: In this work, we have implemented a model of the charge pumping technique in SPICE 3F4, to which we added a generator of current between drain and substrate for the measurement of the charge pumping current. This current, measured versus the different levels of the gate bias, can provide many interesting results concerning the parameters of the considered MOSFET. The simulated results are in a good agreement with recent and different experimental results.
In this paper we develop and compare two different methods, based on the branch-oriented techniques, for the resolution of load flow in radial distribution systems. The former is the current summation method and the later is the modified Newton method. The extension of these methods is that the load shall be represented with its variation with respect to the voltage magnitude (Constant power load, Constant current load, Constant admittance load). Our comparative study gives some tables and graphical plots of the convergence characteristics of the two methods.
In this paper, single crystals of Chalcopyrite semiconductor CuInTe2 has been grown by a vertical Bridgman technique. Hall effect, mobility, resistively and carrier concentration data have been obtained for several sample as grown using van der pawn technique. The optical properties were studied by Photoacoustic spectroscopy (PAS) in order to determine parameters such as: absorption spectra, bad gap and defect level state. Resultats are compared with the published one.
Reference Type: Book
Record Number: 8
Author: Mohamadi, T. Gharbi, A. H. Mezaache, S. Harrag, A.
Year: 2001
Title: Automated speech recognition by multi-stream dynamic time warping
Series Editor: Dunne, S.
Series Title: Canadian Conference on Electrical and Computer Engineering 2001, Vols I and II, Conference Proceedings
Number of Pages: 527-531
Short Title: Automated speech recognition by multi-stream dynamic time warping
ISBN: 0-7803-6715-4
Accession Number: WOS:000171525900089
URL: <Go to ISI>://WOS:000171525900089
PRODUCTION SCIENTIFIQUE ANNEE 2002
In this paper, we consider some combinatorial conditions on infinite subsets of groups, and we obtain in terms of these conditions some characterizations of nilpotent-by-finite and finite-by-nilpotent groups on the class of finitely generated soluble groups.
Reference Type: Journal Article
Record Number: 2
Author: Ait-Kaki, A. Boulakroune, M. Boukezzata, M. Berrabah, M. Djahli, F. Bellatreche, M. S. Bielle-Daspet, D.
Year: 2002
Title: Characterization of sub-micrometre silicon films (Si-LPCVD) heavily in situ boron-doped and submitted to treatments of dry oxidation
Journal: Semiconductor Science and Technology
Volume: 17
Issue: 9
Pages: 983-992
Date: Sep
Short Title: Characterization of sub-micrometre silicon films (Si-LPCVD) heavily in situ boron-doped and submitted to treatments of dry oxidation
ISSN: 0268-1242
Article Number: Pii s0268-1242(02)24097-3
Accession Number: WOS:000178307600018
Abstract: We present the results of a comprehensive investigation concerning changes in the structural and electrical properties of heavily \( (2 \times 10^{20}) \text{ cm}^{-3} \)) in situ boron-doped polysilicon thin films by the low pressure chemical vapour deposition method before and after thermal oxidation treatments. Secondary ion mass spectrometry and transmission electron microscopy, with their associated diffraction diagrams, and four-point probe resistivity measurements are performed on sub-micrometre layers (approximate to 300 nm) deposited at two interesting temperatures \( \text{T-d1} = 520 \text{ degreesC} \) and \( \text{T-d2} = 605 \text{ degreesC} \). The thermal oxidation experiments are carried out under dry oxygen (O-2) at three oxidation temperatures, \( \text{T-ox} \), of 840, 945 and 1050 degreesC for several durations. After these thermal oxidation processes, remarkable changes in the behaviour of the doping profile, grain growth and electrical conductivity have been observed. This behaviour seems to be typically characteristic of the in situ heavily boron-doped films. In addition, to the presence of some saturation thermal dependence phenomena, we find that these results correlate well with, and support the presence of, another phenomena called the 'differential of oxidation rate' which is evidenced as typical of the in situ doped films.
Notes: Ait-Kaki, A Boulakroune, M Boukezzata, M Berrabah, M Djahli, F Bellatreche, MS Bielle-Daspet, D
URL: <Go to ISI>://WOS:000178307600018
In this work, the hydration and protonic conductivity of H-montmorillonite were investigated. The hydration water state, as characterized by DTA, TGA and XRD at different environmental relative humidities (RH). The results, showing good reproducibility and consistency, mark two distinguishable categories of hydration water: molecular H$_2$O and H$_3$O$^+$ species, those coordinated with the proton. The proportion of each was quantitatively analyzed. The electrical conductivity measured by impedance spectroscopy increases with RH from $10^{-7}$ Ω$^{-1}$ cm$^{-1}$ at 0.2 RH up to $0.6 \times 10^{-2}$ Ω$^{-1}$ cm$^{-1}$ at 0.9 RH at 20$^\circ$C. The mechanism of protonic conduction involved in H-montmorillonite is also discussed. (C) 2002 Elsevier Science B.V. All rights reserved.
Semiclassical expansions derived in the framework of the Extended Thomas-Fermi approach for the kinetic energy density $\tau(r)$ and the spin-orbit density $J(r)$ as functions of the local density $\rho(r)$ are used to determine the central nuclear potentials $V_n(r)$ and $V_p(r)$ of the neutron and proton distribution for effective interactions of the Skyrme type. We demonstrate that the convergence of the resulting semiclassical expansions for these potentials is fast and that they reproduce quite accurately the corresponding Hartree-Fock average fields.
The surface detected motor unit action potential (MUAP) morphology depends on many physiological and anatomical characteristics of the contracting muscle that are not directly accessible to measurement. In this paper, a neural network based approach is proposed to estimate the motor unit (MU) parameters from a simulated single surface MUAP. We have developed an estimation system that is composed of the following stages: conduction velocity estimation, signal dimension reduction, MU parameters estimation, and number of MU fibres estimation. The parameter estimation stage employs four multilayer neural networks trained on simulated MUAPs corresponding to various ranges of MU parameters. In the estimation mode, this module produces four MU parameters sets. The selected set of the five muscle characteristics is that which minimises an error criterion on a signal reconstructed from the estimated parameters. The proposed system is tested with several simulated MUAPs signals with additive white noise in order to evaluate its performance. It is shown that the technique performs well when the signal to noise ratio is greater than 20 dB. (C) 2002 Elsevier Science B.V. All rights reserved.
We present the study of multimode glass waveguides fabricated by a silver-ion electromigration process followed by a diffusion process. The study is concerned mainly with the diffusion process, which occurs by variation of the diffusion time. The obtained guides are analyzed by the prism-coupling technique, which determines their effective refractive indices that are treated by the inverse WKB method, assumed to be proportional to the silver ions' concentration profiles, for which a Gaussian model is attributed. Diffusion coefficients then are determined from these Gaussian profiles experimentally by both methods. These diffusion coefficients show a concentration dependence related to the variation of the diffusion time. A mathematical model representing the best fit to this dependence is also presented. Finally, our results are compared with other research results, with which we find good agreement. (C) 2002 Optical Society of America.
Non-stoichiometric zirconium nitride thin films were prepared by reactive dc magnetron sputtering. Structural, optical and electrical properties were investigated with respect to nitrogen gas flow. The film characterization was obtained through various techniques: Rutherford back scattering (RBS), X-ray diffraction (XRD), reflectometry and a four probe method. We found that the deposition rate decreases while the nitrogen flow increases. Also it was shown that a stoichiometric compound (ZrN) is formed at a 4 sccm nitrogen flow. It has a rock-salt structure and presents a minimum of resistivity and a gold-like color. As nitrogen flow increases, films become more and more amorphous, semi-transparent and electrically resistive. Furthermore, at a nitrogen flow of 9 sccm, the nitrogen to zirconium atomic concentration ratio is near 1.33 and the film exhibits properties close to those of a $\text{Zr}_3\text{N}_4$ phase. (C) 2002 Elsevier Science B.V. All rights reserved.
The objective of this paper is to explore the possibility to use composites polyester/titanates (M2+ Ti4+ O3(2-) with M = Ba2+, Sr2+, Ca2+, Mg2+) to get a miniature high-frequency components, and the proposal of signal processing allowing to minimize the different errors particular to the temporal spectroscopy in matched line for two spaces (time, frequency), and the establishment of an expression that determines directly the permittivity without having to make the inverse resolution transcendent equations related to the propagation. Analysis of results obtained by this signal processing, confirms the validity of Bottreau's modeling law, in low frequency according to the volume fraction and the spectral viewpoint, which allows to anticipate the composition of materials to be used to reply to electromagnetic predefined characteristics.
Reference Type: Journal Article
Record Number: 10
Author: Bouderah, B. Mekias, H.
Year: 2002
Title: A cybernetic approach to the problem of cusp free-surface flow caused by a line sink on a sloping bottom
Journal: Kybernetes
Volume: 31
Issue: 2
Pages: 305-316
Short Title: A cybernetic approach to the problem of cusp free-surface flow caused by a line sink on a sloping bottom
ISSN: 0368-492X
DOI: 10.1108/03684920210417337
Accession Number: WOS:000176623800009
Abstract: In the present paper we investigate a two dimensional potential flow produced by a submerged sink of fluid of infinite depth located at the vertex on a sloping bottom. We considered the cusp configuration. Both the effects of the acceleration of gravity g and the surface tension T are included in the free surface condition. We computed numerically the solutions via a series tuncation method for different values of the angle gamma (0 less than or equal to gamma < pi/2). The numerical computation shows that there exist two critical values (\( \mu_{\text{bar}} \) and \( \mu_{\text{min}} \)) of the importance measure of surface tension \( \mu \) for all values of gamma (0 less than or equal to y < pi/2). When \( \mu \rightarrow \infty \), the results of Craya, Hocking, Tuck, Vanden-Broeck and Keller are reproduced and confirmed.
Notes: Bouderah, B Mekias, H
URL: <Go to ISI>:://WOS:000176623800009
Reference Type: Journal Article
Record Number: 11
Author: Boudissa, M., Halimi, R., Frikach, K., Senoussi, S.
Year: 2002
Title: Influence of twins on the vortex pinning in YBa2Cu3O7-delta single crystals in tilted field
Journal: Physica C-Superconductivity and Its Applications
Volume: 366
Issue: 3
Pages: 211-215
Date: Jan
Short Title: Influence of twins on the vortex pinning in YBa2Cu3O7-delta single crystals in tilted field
ISSN: 0921-4534
DOI: 10.1016/s0921-4534(01)00896-6
Accession Number: WOS:000173232300010
Abstract: In this work, we present a systematic study of magnetization hysteresis loops of twinned and detwinned YBa2Cu3O7-delta single crystals at temperatures ranging from 4.2 to 90 K, magnetic fields up to 6 T and various angles between the applied field H and the c-axis. The samples were prepared by a conventional self-flux method and their critical temperatures were determined by using a quantum design SQUID. The magnetization measurements were carried out on a vibrating sample magnetometer. Comparison between data for the twinned and detwinned samples showed clearly the effect of twin pinning in the low and intermediate temperature region and that the pinning properties of the twin planes depend sensibly on the field orientation with respect to the crystalline axis of the sample. An attempt is made to describe the possible mechanisms governing these phenomena and conclusions concerning the twin pinning are drawn. (C) 2002 Elsevier Science B.V. All rights reserved.
Notes: Boudissa, M. Halimi, R. Frikach, K. Senoussi, S
URL: <Go to ISI>://WOS:000173232300010
We present experimental results on longitudinal magneto-optic Kerr effect in composite systems based on thin Fe layers associated with amorphous alumina (Al2O3). [Al2O3Fe](m) samples (m = 1, 2) have been prepared by rf magnetron sputtering onto Si(100) substrate. We have investigated the effect of the Al2O3 and Fe thicknesses on the Kerr rotation. The geometry of the multilayers is predicted theoretically by using deduced experimental magneto-optical constants. It will be shown how large Kerr rotation values can be obtained by adjusting sample parameters. For instance, a Kerr rotation close to 7 has been observed from an Al2O3Fe/Al2O3Fe/Si multilayer. The reflectivity and the figure of merit are discussed as a function of the Al2O3 thickness.

Notes: Bourzami, A Lenoble, O Bobo, JF Layadi, A Piecuch, M

URL: <Go to ISI>:://WOS:000178620800002
A Monte Carlo simulation technique is used to investigate slow electrons penetration in semi-infinite aluminium and gold in the energy range of 500-4000 eV. Elastic scattering is based on a modified Rutherford differential cross section where the numerical coefficient in the atomic screening parameter is taken to be variable. To model inelastic core and valence electron excitation, we have used the Gryzinski's expression. Our simulated results are compared with the experimental backscattering data and good agreement is observed which suggests that both the transport model and the scattering cross sections used in the present work are reliable. (C) 2002 Elsevier Science B.V. All rights reserved.
We studied the magnetic properties of Fe/Ag superlattices grown by molecular beam epitaxy (MBE) on MgO(001) single crystals. The Fe thickness is fixed at 20 Angstrom and the Ag thickness varied from 7 to 20 Angstrom. Epitaxial quality and superlattice structure were verified by reflection high-energy electron diffraction (RHEED) and X-ray diffraction (XRD). The magnetization measurements in the temperature range of 5-300 K revealed the presence of in-plane uniaxial anisotropy. Ferromagnetic resonance (FMR) measurements performed at room temperature (RT) with a magnetic field applied perpendicularly to the film plane confirmed the easy axis in the film plane and showed a spacer thickness-dependent ferromagnetic exchange coupling. (C) 2002 Elsevier Science B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 15
Author: Choutri, H. Maamache, M. Menouar, S.
Year: 2002
Title: Geometric phase for a periodic non-Hermitian Hamiltonian
Journal: Journal of the Korean Physical Society
Volume: 40
Issue: 2
Pages: 358-360
Date: Feb
Short Title: Geometric phase for a periodic non-Hermitian Hamiltonian
ISSN: 0374-4884
Accession Number: WOS:000173900700029
Abstract: Using Floquet decomposition of the evolution operator associated with the periodic Hamiltonian, we extend Berry's formulation of the geometric phase for a non-Hermitian Hamiltonian. A two-level dissipative system is discussed as an illustrative example.
Notes: Choutri, H Maamache, M Menouar, S
URL: <Go to ISI>://WOS:000173900700029
Effect of wood flour content on the thermal, mechanical and dielectric properties of poly(vinyl chloride)

Full Paper: Several composite formulations of poly(vinyl chloride)/olive wood flour (PVC/WF) were manufactured by dry-blending PVC, wood flour, plasticizer and other processing additives in a high-intensity mixer. The dry-blended compounds were calendered into film samples (T = 180°C, calendered time = 8 min). The films obtained are cut into normalized samples for thermal, mechanical, and dielectric characterization. The results obtained show that stress as well as strain at break decrease sharply as the wood flour content increases. On the other hand, this filler content has little influence on the glass transition temperature. It decreases the temperature of decomposition setting and retards the PVC thermal decomposition. It increases permittivity as well as dielectric losses. The thermal stability, as measured by thermogravimetry (TGA) and differential scanning calorimetry (DSC) methods, is good enough to permit processing of these types of PVC compounds using conventional processing techniques and temperatures under 210°C.
An improved method based on a computer-aided curve fitting technique that uses vertical optimization for the simultaneous determination of various Schottky diode parameters (I-S, n, R-S, and G(P)) from the I-V characteristics has been re-examined. In particular, it is shown that the inclusion of the effect of a shunt conductance in the analysis of transport properties allows the determination of more realistic values for the parameters of various quality diodes. The present method appears to be accurate even in the presence of noise and/or random errors during measurements. (C) 2002 Elsevier Science Ltd. All rights reserved.
The gastric cytoprotective properties of natural honey (monofloral and polyfloral specimens) and of a glucose-fructose-sucrose-maltose mixture (GFSM) was evaluated in the rat using absolute ethanol, indomethacin and acidified acetylsalicylic acid (ASA-HCl) as necrotising agents. Prior gastric administration of honey (2.5 g/kg) to animals induced a net reduction of hemorrhagic lesions length of the mucosa. Protection of the stomach elicited by both types of honey and GFSM was almost total against ethanol-induced lesions. Similar results were also observed when using ASA-HCl except that the percent protection was 87%. The percent reduction of indomethacin-induced gastric lesions was variable according to the nature of the test solution: GFSM mixture (41.1%) < polyfloral honey (55.2%) < monofloral honey (64.0%). Perfusion of the stomach with isotonic honey resulted in (1) a 70% reduction of the area of the lesions caused by ethanol, (2) the failure to prevent the transmural potential difference fall induced by ethanol, (3) an increase of basal and histamine-stimulated acid secretion. These results suggest that sugar rich solutions (GFSM and honey) may prevent gastric damage by a mechanism involving the release of some protective agents.
This paper investigates a fuzzy model reference adaptive controller (FMRAC) for continuous-time multiple-input-multiple-output (MIMO) nonlinear systems. The proposed adaptive scheme uses a Takagi-Seguno (TS) fuzzy adaptive system, which allows for the inclusion of a priori information in terms of qualitative knowledge about the plant operating points or analytical regulators (e.g., state feedback) for those operating points. A proportional-integral update law is used to obtain a fast parameters adaptation. Stability and robustness of this adaptive scheme are established using Lyapunov stability tools. The simulation results, for a two-link robot, confirm the performance of the proposed approach.
Reference Type: Journal Article
Record Number: 20
Author: Guenifi, N. Djahli, F.
Year: 2002
Title: A study of the degradation of short-channel TMOSs using SPICE3F4
Journal: Semiconductor Science and Technology
Volume: 17
Issue: 3
Pages: 219-226
Date: Mar
Short Title: A study of the degradation of short-channel TMOSs using SPICE3F4
ISSN: 0268-1242
Accession Number: WOS:000174718400008
Abstract: The VLSI-component industry requires ever increasing financial investment in order to measure the growing sophistication of the manufactured products and for the equipment necessary to their development. So the modelling of electric components constitutes a research field that is currently very important throughout the world. To follow this evolution, the existing models must be improved and new models must be developed. So we regularly see improvements of simulation software. In this work, we develop a model of the charge pumping technique to study the degradation of a MOSFETs. This model, implemented in the simulator SPICE3F4, takes into account the majority of the physical effects describing the real behaviour of the device. The validation of our model provided us with results concerning the charge pumping current I_{cp} (while disregarding the effect of the temperature on parameters of the TMOS), versus high and low levels of the gate impulse (V_{gh} and V_{gl}) and versus the temperature. Our results are compared with experimental results, analysed and discussed in order to be able to extricate some practical convenient conclusions that are of such a nature as to interest all those who have to realize circuits involving VLSI technology.
Notes: Guenifi, N Djahli, F
URL: <Go to ISI>://WOS:000174718400008
Three new hydrolyzable tannins, cocciferins. D-1 (1), D-2 (2), and T-1 (4), were isolated from the leaves of Quercus coccifera. Cocciferin D-2 (2) and two additional new tannins, cocciferins D-3 (3) and T-2 (5), were also obtained from the leaves of Quercus suber. Their oligomeric structures were elucidated on the basis of spectroscopic methods and chemical evidence. Compounds 2, 3, and 5 were rare oligomers possessing glucose cores with both open-chain and pyranose forms.
Using the empirical pseudo-potential method combined with the improved virtual crystal approximation where compositional disorder is included as an effective potential, we report on the results of composition and temperature-dependent optical band gaps, of the ZnSe$_{1-x}$S$_x$ (0 less than or equal to x less than or equal to 1) type alloys. The obtained results compare reasonably well with the available experimental data. The fundamental band gap is found to vary non-linearly with composition, showing a bowing. Similar bowing is also observed from the temperature-dependent fundamental band gap. This bowing decreases with increasing temperature over the range 0-200 K, but it increases gradually on going from 200 to 300 K. The expression $E_g(x, T) = 2.828 + 0.45x + 0.53x(2) + T(-3.45x(2) + 3.22x - 3.88) \times 10^{-4}$ was obtained from the data can be used to obtain the energy gap as a function of x and T over a large range of these variables. (C) 2002 Elsevier Science B.V. All rights reserved.
A novel, intelligent microcontroller-based battery charge controller (BCC for stand-alone photovoltaic (PV) systems) is described. This BCC presents the advantage of allowing maximum-power tracking for battery charging as well as real-time battery state-of-charge (SOC) monitoring. For these purposes, a new control and regulation technique combining coulometric measurement technique and open-circuit voltage (OCV) reading technique has been developed and implemented. A prototype of the BCC has been built and tested. The experimental results confirm good reliability and performance of this new BCC.
Reference Type: Journal Article
Record Number: 24
Author: Lamari, S.
Year: 2002
Title: Zero field spin splitting in inversion layers on p-InSb: A fully numerical study (vol 91, pg 1698, 2002)
Journal: Journal of Applied Physics
Volume: 91
Issue: 9
Pages: 6212-6212
Date: May
Short Title: Zero field spin splitting in inversion layers on p-InSb: A fully numerical study (vol 91, pg 1698, 2002)
ISSN: 0021-8979
DOI: 10.1063/1.1470662
Accession Number: WOS:000175069000110
Notes: Lamari, S
URL: <Go to ISI>://WOS:000175069000110
Within Kane's multiband Hamiltonian, the subband spin splitting of electrons in the inversion layer on bulk p-InSb is investigated self-consistently as a function of the electron sheet density $N(s)$. The splitting $\delta(k)$ is a nonlinear function of wave vector $k$, and depends strongly on density $N(s)$ and subband $\nu$. The concomitant Rashba spin-orbit parameter $\alpha(k)$ decreases substantially with $k$ and $\nu$ and is maximal for $\nu=0$ as $k\rightarrow 0$. At the Fermi level the spin splitting $\delta$, the Rashba parameter $\alpha$ and the product $m^{(*)}\alpha$ computed for each subband in the range $0.14\times10^{12}$ cm$^{-2}$ - $3.07\times10^{12}$ cm$^{-2}$ increase nonlinearly with $N(s)$ except for higher subbands. (C) 2002 American Institute of Physics.
Reference Type: Journal Article
Record Number: 26
Author: Lamari, S.
Year: 2002
Title: Zero field spin-splitting and Rashba parameter in inversion layers on p-InAs mosfets: results of fully numerical multi-band computations
Journal: Physica E-Low-Dimensional Systems & Nanostructures
Volume: 12
Issue: 1-4
Pages: 435-438
Date: Jan
Short Title: Zero field spin-splitting and Rashba parameter in inversion layers on p-InAs mosfets: results of fully numerical multi-band computations
ISSN: 1386-9477
DOI: 10.1016/s1386-9477(01)00334-4
Article Number: Pii s1386-9477(01)00334-4
Accession Number: WOS:000175206300107
Abstract: The sub-band spin splitting of the energy levels due to spin-orbit and the strong surface electric field is computed self-consistently for electrons in InAs mosfets using the envelope function approximation and the 8 x 8 Kane Hamiltonian, The concomitant Rashba parameter is studied as a function of areal electron density where at the Fermi level it shows unexpected and counter-intuitive behaviors due to its k-dependence which cannot be neglected. (C) 2002 Elsevier Science B.V. All rights reserved.
Notes: Lamari, S 14th International Conference on the Electronic Properties of Two-Dimensional Systems Jul 30-aug 03, 2001 Prague, czech republic
URL: <Go to ISI>://WOS:000175206300107
A description of ferromagnetic resonance (FMR) modes is given for an exchanged (F)/(AF) bilayer thin films using the static-(AF) model. Included in the analysis are the exchange anisotropy field $H_E$, the off-aligned exchange coupling angle beta, the in-plane uniaxial, and the cubic magnetocrystalline anisotropies. The resonance field $H_R$ vs applied field angle alpha curves for an off-aligned exchange system are shifted with respect to the aligned (beta=0) curve; from the experimental measure of the angle alpha(min) corresponding to the curve minimum, a beta value can be derived. The dispersion relation is described; depending on the frequency range and beta values, up to three modes are expected in the cubic system while one mode at most will appear for the uniaxial one. The linewidth $\Delta H$ monotonically increases with $H$ for free (F) layer and aligned exchanged F/AF; for beta not equal 0, the $\Delta H$ vs $H$ curves go through a minimum. A general formula for mode intensity, $I$, is derived. Taking the rf field $h$ in plane, as the dc field is rotated in plane, the intensity is expected to vanish for an applied field angle alpha(1). A simple relation between alpha(1) and $H_E$ is found. For aligned exchange and low-beta values, $I$ decreases monotonically with increasing $H$, while for a 90degrees coupling and high-beta values, the $I$ vs $H$ curves go through a maximum; for strong fields all FMR intensities tend to the same asymptotic value. At fixed frequency, the decrease of $I$ with increasing $H_E$ for the 90degrees-coupling could be used as a means to distinguish the 90degrees coupling from the aligned exchange coupling case.
Ferromagnetic resonance modes are investigated for a trilayer system consisting of two ferromagnetic films interacting through a nonmagnetic interlayer. Included in the model are the bilinear $J(1)$ and biquadratic $J(2)$ couplings and in-plane uniaxial magnetocrystalline anisotropies with anisotropy axis directions in the two layers making a dangle. An analytical expression for the mode intensity is derived. The saturation ($H_{\text{sat}}$) and critical ($H_{\text{crit}}$) fields, the resonant frequency, and the mode intensity are discussed as functions of $J(1)$, $J(2)$, and $\delta$.

For a given positive $J(1)$, an additional $J(2)(J(2)<0)$ will lead to an increase (a decrease) of the optical (acoustic) mode intensity. For fixed $J(1)<0$, and if the magnetizations are parallel ($H>H_{\text{sat}}$) only the acoustic mode will appear with constant mode position and intensity for all $J(2)$ values, making it difficult to detect any additional biquadratic coupling. On the other hand, and for the same parameters, if the magnetizations are antiparallel ($H<H_{\text{crit}}$), then two modes are predicted; as $\vert J(2) \vert$ increases the intensity of the acoustic (optical) mode will increase (decrease), while the resonant frequency of both modes decrease.
CoAg granular films are prepared by molecular beam epitaxy at 250 degreesC with Co concentration ranging from 25% to 100%. From the torque experimental curves, we determine the values of the magneto crystalline anisotropy constants as a function of temperature. We follow the magnetization shift of these samples from perpendicular to in-plane direction with increasing Co concentration and we correlate this phenomenon to the analysis based on the minimization of the magnetocrystalline anisotropy energy expression. (C) 2002 Elsevier Science B.V. All rights reserved.
The magnetic anisotropy behavior of a [Co10 AngstromTb10 Angstrom](10) superlattice prepared by molecular beam epitaxy has been studied by means of a torque magnetometer. A complex magnetic behavior has been noticed. The rotational hysteresis loop has been analysed and interpreted as a function of both the temperature and the external magnetic field. (C) 2002 Elsevier Science B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 31
Author: Mayouf, A. Djahlí, F. Mayouf, F.
Year: 2002
Title: Full-wave modelling of microstrip line and its sensitivities on lossy multilayer dielectric substrate and superstrate with laminated ground plane
Journal: International Journal of Numerical Modelling-Electronic Networks Devices and Fields
Volume: 15
Issue: 2
Pages: 221-240
Date: Mar-Apr
Short Title: Full-wave modelling of microstrip line and its sensitivities on lossy multilayer dielectric substrate and superstrate with laminated ground plane
ISSN: 0894-3370
DOI: 10.1002/jnm.454
Accession Number: WOS:000174504300007
Abstract: This paper presents a new formulation useful for modelling multilayered microstrip and its geometrical sensitivities with laminated ground plane. New integral equations are formulated, in the spectral domain, using the exact dyadic Green's function of bianisotropic planar media. We have applied a dynamic two-dimensional least-square algorithm as an optimization procedure. Obtained results agree well with those of other approaches. Copyright (C) 2002 John Wiley Sons, Ltd.
Notes: Mayouf, A Djahlí, F Mayouf, F
URL: <Go to ISI>://WOS:000174504300007
Microelectrochemistry study of metal-hydride battery materials - Cycling behavior of LaNi$_{3.55}$Mn$_{0.4}$Al$_{0.3}$Co$_{0.75}$ compared with LaNi$_5$ and its mono-substituted derivatives

Abstract: LaNi$_5$ intermetallic-hydride forming compound and several metal-substituted derivatives have been compared in terms of cycling behavior observed by means of the cavity microelectrode (CME) at high scan rates (50 mV s$^{-1}$). LaNi$_{3.55}$Mn$_{0.4}$Al$_{0.3}$Co$_{0.75}$ was found to have a stable behavior over 1000 cycles, whereas, the capacity of LaNi$_5$ decreases after only 200 cycles. The performances for the mono-substituted compounds are intermediate. The rechargeability decreases according to the following order: LaNi$_{4.06}$Mn$_{0.4}$ > LaNi$_{4.7}$Al$_{0.3}$ > LaNi$_{4.25}$Co$_{0.75}$ > LaNi$_5$. This study demonstrates the capability of the CME to check numerous battery materials in a very short period of time, which allows to bring out the effect due to the corrosion of the material. (C) 2002 Elsevier Science B.V. All rights reserved.

Notes: Merzouki, A Cachet-Vivier, C Vivier, V Nedelec, J Y Yu, LT Haddaoui, N Joubert, JM Percheron-Guegan, A

URL: <Go to ISI>://WOS:000176753400004
We prove in this paper the convergence of Adomian method applied to linear or nonlinear diffusion equations. The results show that the convergence of this method is not influenced by the choice of the linear inversible operator $L$ in the equation to be solved. Furthermore we give some particular examples about a new canonical form where the initial value $u(0)$ of Adomian senses is chosen in some special form which verifies the initial and boundary conditions. Then Adomian series converges to exact solution or all approximated (truncated series) solutions verify these conditions.
The essential oils obtained from Origanum glandulosum Desf., collected in four different localities of the Setif region (north-eastern Algeria), were analysed by GC-MS and assayed for their antioxidative effectiveness. The antioxidant capacity of the oils was measured by the modified thiobarbituric acid reactive species (TBARS) assay, using egg yolk as oxidizable substrate in presence of the radical inducer 2,2'-azobis(2-amidinopropane) dihydrochloride (ABAP). The activity was compared with those of alpha-tocopherol and 2,6-diterbutyl-4-methyl phenol (BHT, butylated hydroxy toluene). The four oils were also endowed with a high degree of activity at the lowest concentration (100 ppm). This activity is to be ascribed to the high content of phenol components, viz. thymol and carvacrol, which strongly characterize the composition of these oils. Copyright (C) 2002 John Wiley Sons, Ltd.
Reference Type: Journal Article
Record Number: 35
Author: Sahnouni, M. Hadjouis, D. Abdesselam, S. Olle, A. Verges, J. M. Derradji, A. Belahrech, H. Medig, M.
Year: 2002
Title: El-Kherba: a Lower Pleistocene butchery site in northeastern Algeria
Journal: Journal of Human Evolution
Volume: 42
Issue: 3
Pages: A31-A31
Date: Mar
Short Title: El-Kherba: a Lower Pleistocene butchery site in northeastern Algeria
ISSN: 0047-2484
Accession Number: WOS:000175111600051
Notes: Sahnouni, M Hadjouis, D Abdesselam, S Olle, A Verges, JM Derradji, A Belahrech, H Medig, M
URL: <Go to ISI>://WOS:000175111600051
Further investigations were carried out at Ain Hanech, Algeria in 1998 and 1999 to explore its potential for investigating early hominid behavioral patterns and adaptation. Research concentrated on the stratigraphy and dating, identifying new archaeological deposits, and excavating the Ain Hanech and El-Kherba localities. To enhance the chronological control within a biostratigraphic framework, the Ain Boucherit fossil-bearing stratum, yielding a Plio-Pleistocene fauna, is correlated with the regional stratigraphy. In the stratigraphic sequence, the Ain Boucherit stratum, located 13 m below the Ain Hanech Oldowan occurrences, is found in Unit Q of the Ain Hanech Formation. Unit Q shows a paleomagnetically reversed polarity, which may be correlated with an age earlier than the Olduvai normal subchron (1.95-1.77 Ma). Based on test trenches and stratigraphic analyses, additional Oldowan deposits A, B, and C are identified at Ain Hanech. All three deposits and the El-Kherba site contain Mode I technology artefacts associated with an Early Pleistocene fauna. El-Kherba is stratigraphically equivalent to Ain Hanech. These two archaeological sites are estimated to be dated to about 1.8 Ma. (C) 2002 Elsevier Science Ltd. All rights reserved.
We prove that a finitely generated soluble group $G$ is nilpotent-by-finite (respectively, finite-by-nilpotent) if every infinite subset of $G$ contains two elements $x,y$ generating a nilpotent-by-finite (respectively, finite-by-nilpotent) group. Moreover, for a positive integer $k$, if we suppose $(x,y)$ is (nilpotent of class $k$)-by-finite (respectively, finite-by-(nilpotent of class $k$)), then there is an integer $c = c(k)$ such that $G$ is (nilpotent of class $c$)-by-finite (respectively, finite-by-(nilpotent of class $c$)). 2000 Mathematics Subject Classification: 20F16, 20F99.
This paper treats the restoration problem of degraded and noisy image. In order to keep the image structures unaltered, an adaptive regularization scheme is employed that allows better compromise between the inversion degradation process and the smoothing. The inversion process is achieved by the modified Hopfield neural network. Moreover, the smoothing operation is accomplished in the wavelets basis by using the a trous algorithm. A multiresolution support is deduced, and combined with a statistics analysis, for computing the adaptive regularization, in which, each scale (sub-image) is assigned to one regularization parameter according to a spatial activity of the pixels which constitute it.


URL: <Go to ISI>://WOS:000181441900194
Reference Type: Book
Author: Abbas, K. Chouya, F. Madani, T. Inra, Inra,
Year: 2002
Title: Reproduction improvement factors in sheep systems of Algerian semi-arid areas
Series Title: 9th Meeting on Ruminant Research
Number of Pages: 130-130
Short Title: Reproduction improvement factors in sheep systems of Algerian semi-arid areas
ISBN: 2-84148-045-3
Accession Number: WOS:000181658200054
Notes: Abbas, K. Chouya, F. Madani, T. 9th Meeting on Ruminant Research Dec 04-05, 2002 Paris, France Inra
URL: <Go to ISI>://WOS:000181658200054
Abstract: The great advances in power electronic technology and the rapid development of power semiconductor device both in power and switching frequency ranges, have led to an increasing interest in the use of Insulated Gate Bipolar Transistor (IGBT) device in industrial application. At the same time, the importance of simulation in the research and development increases. For cars, this fact could be observed in microelectronics whereas in power electronics simulation has mostly been restricted. This luck of simulation is due to limitation in two key elements., simulation tools and models for power devices like IGBT. The aim of this paper, is to present a new approach which consists in defining our computer program (numerical model) of the IGBT based on the finite element technique (FEM), to offer an easy to use IGBT and other devices for our program, showing short computing lime and reasonable accuracy, to predict and understand the behavior of various topologies of devices, to perform automated layout of the device to overcome some of the difficulties associated will? analytical methods and to identify the failure mechanisms, then we propose some remedies. The validity of our computer program (this approach) is confirmed by comparison between simulation and theory results as well as the manufacturer's data, and a good agreement is recorded for IGBT devices.


URL: <Go to ISI>://WOS:000180302100046
This paper presents in a unified manner the spectral decomposition (SD) of the state matrix of a linear continuous time invariant (LCTI) system. It introduces methods for computing the constituent matrices of a SD of a matrix with distinct and repeated eigenvalues.
This paper presents some of the algorithms used in control theory, but using different frame of work, namely the spectral decomposition (SD) of the state matrix of a linear continuous time invariant (LCTI) system.
Abstract: In this paper, the discrete state space recursive filters are implemented in the form of parallel array processors. The state space description permits the straightforward application of systolic architectures to realize recursive filters of 1D and 2D types. We show that the recursivity inherent to the filtering algorithm introduces a latency proportional to the filter order. Moreover, we show that the use of CTP decomposition technique together with the cylindrical-type structures reduces significantly this latency and improves the computation throughput of these arrays. The processing cells of the systolic array are designed via Switched-Capacitor techniques.


URL: <Go to ISI>://WOS:000180927800146
Reference Type: Book
Record Number: 6
Author: Dekhili, M. Inra, Inra,
Year: 2002
Title: Reproductive performance between single and twin Ouled-Djellal ewes
Series Title: 9th Meeting on Ruminant Research
Number of Pages: 155-155
Short Title: Reproductive performance between single and twin Ouled-Djellal ewes
ISBN: 2-84148-045-3
Accession Number: WOS:000181658200064
Notes: Dekhili, M 9th Meeting on Ruminant Research Dec 04-05, 2002 Paris, france Inra
URL: <Go to ISI>://WOS:000181658200064
Abstract: The fast extension of systems enslaved by the modern algorithm development making call to the practiced, network-fuzzy systems, genetic algorithms... In general manner the controls appropriate of the pH, put the inherent problem to the no linearity. We transplant art GA to the FLC developed previously for a regulation of the pH and tempt to explain in our work grounds of our choice and improvements gotten.
PRODUCTION SCIENTIFIQUE ANNÉE 2003
Gene silencing nucleic acids designed by scanning arrays: Anti-EGFR activity of siRNA, ribozyme and DNA enzymes targeting a single hybridization-accessible region using the same delivery system

Gene silencing nucleic acids such as ribozymes, DNA enzymes (DNAzymes), antisense oligonucleotides (ODNs), and small interfering (si)RNA rely on hybridization to accessible sites within target mRNA for activity. However, the accurate prediction of hybridization accessible sites within mRNAs for design of effective gene silencing reagents has been problematic. Here we have evaluated the use of scanning arrays for the effective design of ribozymes, DNAzymes and siRNA sequences targeting the epidermal growth factor receptor (EGFR) mRNA. All three gene silencing nucleic acids designed to be complementary to the same array-defined hybridization accessible-site within EGFR mRNA were effective in inhibiting the growth of EGFR over-expressing A431 cancer cells in a dose dependent manner when delivered using the cationic lipid (Lipofectin) delivery system. Effects on cell growth were correlated in all cases with concomitant dose-dependent reduction in EGFR protein expression. The control sequences did not markedly alter cell growth or EGFR expression. The ribozyme and DNAzyme exhibited similar potency in inhibiting cell growth with IC50 values of around 750 nM. In contrast, siRNA was significantly more potent with an IC50 of about 100 nM when delivered with Lipofectin. The potency of siRNA was further enhanced when Oligofectamine was used to further improve both the cellular uptake and subcellular distribution of fluorescently labelled siRNA. Our studies show that active siRNAs can be designed using hybridization accessibility profiles on scanning arrays and that siRNAs targeting the same array-designed hybridization accessible site in EGFR mRNA and delivered using the same delivery system are more potent than ribozymes and DNAzymes in inhibiting EGFR expression in A431 cells.
We present the correct way to obtain the general solution of the Schrödinger equation for a particle in a time-dependent linear potential following the approach used in the paper of Guedes [Phys. Rev. A 63, 034102 (2001)]. In addition, we show that, in this case, the solutions (wave packets) are described by the Airy functions.
Sunflower oil was epoxidized and characterized. Epoxidized sunflower oil (ESO) was used as an organic thermal co-stabilizer for plasticized polyvinyl chloride (PVC) in the presence of Zn and Ca stearates. The thermo-oxidative degradation of PVC was studied in the presence of this ternary stabilizer system at 170 degreesC. The rates of dehydrochlorination were measured by potentiometric titration and the extents of discoloration were evaluated. The formation of polyene sequences was investigated by UV-visible spectroscopy. The influence of the ratio of Zn and Ca stearates (1/2, 1/1 and 2/1) and of the amount of oxirane oxygen in the HTE were considered. Synergistic effects were found. (C) 2003 Elsevier Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 4
Author: Benbahouche, S. Roumili, F. Zegadi, R.
Year: 2003
Title: Effect of water on the impact strength of glass plates with eroded surfaces
Journal: Materials Science
Volume: 39
Issue: 1
Pages: 148-152
Date: Jan-Feb
Short Title: Effect of water on the impact strength of glass plates with eroded surfaces
ISSN: 1068-820X
DOI: 10.1023/a:1026103202424
Accession Number: WOS:000187846900022
Notes: Benbahouche, S Roumili, F Zegadi, R
URL: <Go to ISI>://WOS:000187846900022
Starting from the spin-current-density-functional theory for electronic systems, we extend the formulation to include spin-orbit coupling. Particular attention is devoted to the symmetry of the problem. Here we show that the exchange-correlation energy functional is invariant by the U(1)(em) x SU(2)(spin) gauge transformations. We give the transformation laws of the paramagnetic current and also the paramagnetic spin current density by the U(1)(em) x SU(2)(spin) pin gauge transformations. For the case where the spin-orbit coupling is taken into account, we generalize the equations of continuity satisfied by the current density and the spin current density, derived by Vignale and Rasolt.
Non-stoichiometric do magnetron-sputtered ZrN films on silicon have been optically and electrically characterized through spectral reflectance measurements and a four-probe method, respectively. The deposition of the films was monitored by the nitrogen gas flow which has been increased from 1 to 11 sccm. Experimental results show that the reflectivity as well as the electrical resistivity strongly depends on the nitrogen concentration. In order to determine the optical constants of the various ZrN layers, Drude's model was used to fit the reflectance spectra of the films with a metallic behavior, and an extended model for the films with a more insulating behavior. The optical resistivity for the frequency omega = 0 was derived from the optical constants and compared to the electrical resistivity obtained by the four-probe method. A good agreement between electrical and optical resistivities was obtained. (C) 2003 Elsevier Science B.V. All rights reserved.
Microhardness tests, Fourier transform infrared spectroscopy (FTIR), and differential scanning calorimetry (DSC) measurements were performed on melt-pressed films of multicomponent blends based on low-density polyethylene (LDPE), linear LDPE (LLDPE), high-density polyethylene (HDPE), and polypropylene (PP), and their recycled homologues. Some of the PE blends also contained ethylene-propylene-diene monomer (EPDM) as compatibilizer. In all cases, the variation of microhardness as a function of content of the recycled component follows the additivity law of components. Thus, the range of hardness values of polyolefin blends can be controlled by choice of both components and their relative content in the blend. The hardness of the components increases from LDPE, to LLDPE, to HDPE, to PP and increases from 20 to 84 MPa. For recycled components, the hardness values are reduced by similar to 15%. According to DSC results, all the blends are immiscible. Results are discussed in terms of the levels of crystallinity reached for the different blends. (C) 2003 Wiley Periodicals, Inc.
Let $G$ be an infinite group and $m$ is an element of $\{2^k \mid k \in \mathbb{N}^*\}$. In this paper, we prove that $G$ satisfies the law $[x(m), y(m)] = 1$ if and only if in any two infinite subsets $X$ and $Y$ of $G$, there exist $a \in X$ and $b \in Y$ such that $[a(m), b(m)] = 1$. We also prove that $G$ satisfies the law $(x(1)(m)x(2)(m) \ldots x(n)(m))(2) = 1$ if and only if in any $n$ infinite subsets $X_1$, $X_2$, $\ldots$, $X_n$, there exist $a(i) \in X_i$ ($i = 1, \ldots, n$) such that $(a(1)(m)a(2)(m) \ldots a(n)(m))(2) = 1$. 

Notes: Boukaroura, A
The anti-inflammatory activity of Cleome arabica leaf extract was studied in vivo and in vitro. Firstly, the extract was examined for its anti-inflammatory activity using carrageenan-induced rat paw edema as a model of acute inflammation. A subplantar injection of 0.1 ml of carrageenan 1% induced a progressive swelling of the rat paw in all time points, that reached a maximal volume in placebo group within 5 h. Results showed that pre-treatment of rats by Cleome arabica leaf extract, 1 h prior the injection of the phlogogenic agent, prevented the increase of the edema in a dose-dependent manner with an ED50 of 231 mg/kg, body weight. The extract doses 100, 200 and 300 mg/kg, reduced edema to 65.54 +/- 5.2%, 57.86 +/- 8%, and 41.54 +/- 3.6%, respectively, 5 h after the carrageenan injection. Secondly, we have examined the effect of Cleome arabica leaf extract on human neutrophil migration induced by fMLP (10^-7 M), using 48-well chemotaxis chamber. Results showed that the extract inhibited neutrophil chemotaxis significantly (p < 0.01) and in a dose-dependent manner. Neutrophil migration was reduced to 16.71 +/- 4.6% in presence of 50 μg/ml of Cleome arabica leaf extract. It appears that the antiinflammatory activity of Cleome arabica leaf extract, observed in vivo as well as in vitro, could be due to its high flavonoid content (19%). These results may contribute to explain the use of this plant in folk medicine.
The purpose of this work is to study the effect of ion exchange strengthening on the erosion wear resistance of a soda lime glass exposed to sand blasting and to examine the influence of the residual stresses introduced during sand blasting. All sand blasting erosion tests were carried out in laboratory at normal incidence with a sand flux velocity of 12 m/s using incremental eroding masses up to a cumulative mass of erodent of 210 g. Three sets of glass samples were used for this study. The first set of glass samples was strengthened by ion exchange in a salt bath containing a mass of 98% KNO3 and 2% Al2O3. Glass samples of the second set were exposed to sand blasting in their as received state whereas those of the third set were submitted to an annealing treatment after each incremental erosion test in order to eliminate any residual stresses introduced during sand blasting. After a detailed characterization of the sand used and the determination of the mechanical properties (microhardness and fracture toughness) of both the treated and untreated glasses, we compared the evolution of the mass loss, the erosion rate, the roughness and the optical transmission as a function of the eroding mass for the three sets of glass samples. The results show that the ion exchange treatment improves slightly the glass erosion resistance mainly for small eroding sand masses. The ion exchange treatment becomes less effective beyond an erodent mass of 120 g where the erosion rate for the different sets tend toward nearly the same steady state. All the mean arithmetic roughness curves show a maximum in the interval (90-120) g and tend after a slight decrease toward the same value (Ra approximate to 2.2 mum). The optical transmission decreased sharply for all glasses independently of the treatment they received after a surface degradation with a mass of 210 g. The difference in the behavior of the as received glass samples and of those annealed after each incremental test reveals the importance of the residual stresses introduced during sand blasting. They seem to effectively enhance the mass loss. (C) 2002 Elsevier Science Ltd. All rights reserved.
In many applications glass surfaces are exposed to a variety of external aggressive conditions such as corrosion, chemical reactions and mechanical damage. One such mechanical damage process is sand erosion where contact between the impacting particle and the glass surface leads to erosion by chipping. This is the result of elastic-plastic fracture and it involves the intersection of cracks with the surface leading to material removal. The similarities between the surface damage caused by sand erosion and Vickers indentation have motivated us to apply the indentation technique in a contact damage mechanism study. Residual stresses can influence the deformation and fracture processes that occur during indentation in brittle materials. This study describes an analysis of Vickers indentation and the interaction between two adjacent indentations in soda-lime-silica glass. The residual state stress at the first indentation has an important influence on the development of the crack system of a second adjacent indentation. Microscopic investigations reveal that the angular deviation of adjacent indentation cracks depends on the separation-distance. The effect of cyclic fatigue loading on crack initiation around small indentations and on the evolution of radial cracks around such indentations are also investigated for specimens indented with one and two indents. Strength tests on indented specimens are used to quantify the degree of damage. When specimens are indented once, the radial cracks grow relatively slowly; in the case of two indentations, the radial cracks develop and interact with the adjacent indentation more rapidly. It is shown that the presence of residual stress caused by the indentation leads to more rapid fatigue.
Reference Type: Journal Article
Record Number: 12
Author: Chefrour, M. T.  Benamira, F.  Guechi, L.  Mameri, S.
Year: 2003
Title: Path integral treatment of a family of super-integrable systems in n-dimensional Euclidean space
Journal: Chinese Journal of Physics
Volume: 41
Issue: 6
Pages: 582-594
Date: Dec
Short Title: Path integral treatment of a family of super-integrable systems in n-dimensional Euclidean space
ISSN: 0577-9073
Accession Number: WOS:000187238800002
Abstract: The exact path integration for a family of maximally super-integrable systems generalizing the hydrogen atom in n-dimensional Euclidean space, is presented. The Green's function is calculated in both the parabolic rotational and spherical coordinate systems. The energy spectrum and the correctly normalized wave functions of the bound states are obtained from the poles of the Green's function and their residues, respectively.
Notes: Chefrour, MT Benamira, F Guechi, L Mameri, S
URL: <Go to ISI>://WOS:000187238800002
An enzymatic hydrolysis in a symmetric membrane, combining reaction and separation, has been studied. PVA hydrogel was chosen because of its hydrophilicity expecting to minimize membrane fouling and concentration polarization. The membrane pores containing covalently bound enzymes serve as catalyst support. The membrane immobilization of the enzyme and the filtration mode of operating the process were chosen in order to avoid product inhibition of the enzyme. The properties of cross-linked PVA hydrogel were investigated. The conversion of the hydrolysis of p-nitrophenyllaurate with two different loadings of Cr lipase was evaluated. The conversion of the reaction decreased with both increasing substrate flux and initial concentration. The kinetic parameters were obtained. Compared to the free lipase, the $K_m$ of the membrane bonded enzyme was lower and its $R_{max}$ approximately the same.
Accelerated hydrolytic aging (according to the NFT 5166 method) was performed on samples of poly(vinyl chloride) (PVC) plasticized with dioctylphthalate (DOP) and dinonyladiplinate (DNA) at different concentration ratios. The aging test consisted of immersing the samples in boiling water at 100 degrees C. The samples were removed from water regularly, that is, every 2 h, for mechanical, thermal, and dielectric characterizations. Thermograms of PVC plasticized with DOP revealed no migration of the plasticizer independent of the concentration used. Moreover, the thermal stability of the samples was not affected by the hydrothermal aging. However, for PVC samples plasticized with DNA, a small amount of the plasticizer migrated from the polymer matrix with a considerable effect on the thermal stability. In fact, the data indicated a decrease in the decomposition temperature from 275 to 225 degrees C, particularly for samples containing 50% (w/w) DNA immersed up to 10 h. The mechanical results showed that for a plasticizer content greater than 30% (w/w), the strain at break obtained for samples plasticized with DNA was lower than that for samples plasticized with DOP because the DNA molecules were more likely to be removed by water on account of their polarity and dimension. Finally, the dielectric measurements showed that the permittivity of all the PVC samples plasticized with DOP and immersed in boiling water was higher than that of the virgin samples. On the contrary, the permittivity of the aged unplasticized PVC was less than that of the nonimmersed samples. (C) 2003 Wiley Periodicals, Inc.
The anodic oxidation of 3,3'-dimethoxybenzidine and its derivatives were studied by cyclic voltammetry, voltammetry at a rotating platinum electrode, chronopotentiometry and constant potential coulometry. The exhaustive oxidation of 3,3'-dimethoxybenzidine led at the potential of the first oxidation peak and second oxidation peak, respectively, to a stable cation radical salt (characterized by ESR spectroscopy) and to a quinone-diiimine. Whereas, 3,3'-dimethoxy-N,N,N',N'-tetramethylbenzidine afforded directly a dication salt owing to potential inversion 3,3'-dimethoxy-N,N,N',N'-tetraethylbenzidine gave the corresponding soluble cation radical salt. (C) 2003 Elsevier Science Ltd. All rights reserved.
Two heterocyclic compounds based on the thieno[3,4-c]thiophene structure with four aryl substituents were prepared and their behavior in electrooxidation studied. These tetraarylthieno[3,4-c]thiophenes were synthesized in three steps starting from 1,3-dibenzoylmethane. in the case of 1,3,4,6-tetraphenyl-2λ(4)δ(2)-thieno[3,4-c]thiophene 1a and from 1,3-bis(4'-methoxyphenyl)propane-1,3-dione in the case of 1,3,4,6-tetrakis(4'-methoxyphenyl)-2λ(4)δ(2)-thieno[3,4-c]thiophene 1b, a new compound. Both cyclic and hydrodynamic voltamperometric analyses indicate two reversible one-electron oxidation stages for compound 1b, while for compound 1a only the first stage is reversible. The preparative electrooxidation of the two compounds results in the opening of one thiophene ring giving rise to gamma-keto-thioketones.
Two-dimensional free surface potential flow issued from an opening of a container is considered. The flow is assumed to be inviscid and incompressible. The mathematical problem, which is characterized by the nonlinear boundary condition on the free surface of an unknown equation, is solved via a series truncation. We computed solutions for all Weber numbers. Our problem is an extension of the work done by Ackerberg and Liu (1987 Phys. Fluids 30 289-96), the results confirm and extend their results.
This paper investigates new fuzzy model-based observer adaptive control for multi-input multi-output continuous-time nonlinear systems. The proposed adaptive scheme uses Takagi-Seguno (TS) fuzzy models to estimate the plant states and dynamics. Using stability arguments, it is shown that the proposed scheme is globally asymptotically stable. The observation and tracking errors are shown to converge asymptotically to zero, despite the presence of external disturbances and approximation errors. The performance of the developed approach is illustrated, by simulation, on two-link robot model. (C) 2002 Elsevier B.V. All rights reserved.
Flag leaf senescence was compared among twenty-one durum wheat genotypes grown under semi-arid conditions in the Algerian High-Plateau using numerical image analysis. A significant correlation was found between senescence at the end of the grain filling period and grain yield. Carbon content of the flag leaf at anthesis (CL) also correlated with grain yield. The association between grain yield and carbon isotope discrimination (Delta) in flag leaves was not significant. A negative correlation between Delta and CL revealed that genotypes with high transpiration efficiency (low Delta) had higher carbon content in the leaves. Results suggest that high flag leaf carbon content at anthesis and low senescence at the end of grain filling are positively associated with grain yield under drought and heat stress.
The aim of this work is to study some aspects of the thermal shock of mullite ceramic. Mullite samples are submitted to mild thermal shock by quenching in a compressed air flow using a Biot number beta = 0.3. The cooling duration is 6 s with a superficial heat exchange coefficient h = 600 W/m(2)degreesC. This duration is sufficient for the transient thermal stress to reach its maximal value. The critical temperature difference DeltaT(c) found equal to 750 degreesC was obtained by measuring the retained mechanical strength and the Young's modulus. For determining the failure time and DeltaT(c), we used the acoustic emission technique. Finally, the thermal shock experiments are modelled by a two dimensional cooling model, allowing a precise determination of the induced stress intensity factor K-1. (C) 2003 Elsevier Ltd and Techna S.r.l. All rights reserved.
In this work new results about the Adomian method are presented. Also we prove a new and general result of convergence of the Adomain method, and give two results of convergence of this method applied to ordinary differential equations. Finally, we generalize the Adomian method and prove two new results of convergence with one of them applied to the modified method.
Horchani, K. Gacon, J. C. Ferid, M. Trabelsi-Ayedi, M. Krachni, O. Liu, G. K.

Title: Energy levels of Pr3+ in CsPrP4O12 and RbPrP4O12 cyclotetraphosphates

Journal: Optical Materials

Volume: 24
Issue: 1-2
Pages: 169-174
Date: Oct-Nov

Abstract: Single crystals of CsPrP4O12 and RbPrP4O12 cyclotetraphosphates were grown using the flux method. CsPrP4O12 crystallizes in the cubic I-43d space group whereas RbPrP4O12 crystallizes either in the cubic I-43d or monoclinic C2/c space group. The Pr3+ ions occupy sites of S-4 and C-2 symmetries in the cubic and monoclinic phases, respectively, with an eightfold coordination in both phases. The present work reports on an analysis of the Pr3+ 4f(2) energy level diagram based on the low temperature fluorescence spectra under laser selective excitation in the P-3(2) states of the cubic CsPrP4O12 and monoclinic RbPrP4O12 compounds. The experimental energy levels are fitted using the SPECTRA program available on the Argonne National Laboratory website. The best fits lead to standard deviations in the order of 28 and 21 cm(-1) for the CsPrP4O12 and RbPrP4O12 materials, respectively. (C) 2003 Elsevier B.V. All rights reserved.

Notes: Horchani, K Gacon, JC Ferid, M Trabelsi-Ayedi, M Krachni, O Liu, GK 5th French-Israeli Workshop on Optical Properties of Inorganic Materials Dec 08-12, 2002 Claude bernard lyon univ 1, villeurbanne, france Min foreign Affairs France, French Embassy Israel, CNRS, Dept Chem, France-Israel Rhone Alpea Chamber Commerce, Reg Rhone Alpes

URL: <Go to ISI>://WOS:000186194600026
The second Born approximation is applied to study the (e, 2e) reaction for H-2 targets. The results of this approximation are compared to a new set of experimental data obtained at about 600 eV impact energy, as well as to previous experiments performed at larger (similar to 4 keV) or smaller (250 eV) energy. Several single-centre wavefunctions are used to describe the initial state and excited states of the molecule. A generally good agreement is obtained with the experiments and with recent calculations.
This study was based on 63 subjects (mean age 50 ± 9) including 41 patients with clinical and objective investigational evidence of vascular disease (age 30 ± 66 years) and 22 control subjects (age 26 ± 54 years). Dietary intake of folate was estimated from a food questionnaire of folate (Q.folate). There was no statistically significant difference between controls and patients for dietary folate. Also the plasma folate level did not only slightly differ between the controls and patients (6.68 ± 2.52 ng/mL versus 5.62 ± 4.16 ng/mL, not significant). Patients had higher average homocysteine concentrations than control subjects (12.93 ± 8.79 vs 9.07 ± 3.08 mmol/l, p<0.05). A significant relationship was observed in controls between plasma folate concentrations and the homocysteine levels (rs = -0.538; p<0.01), and the folate questionnaire (rs = 0.697; p<0.001). We found in controls significant positive correlation between vitamin B12 and vitamin B6 (rs = 0.475, p<0.05). By contrast, no association was found in patients between folate and homocysteine concentrations and the dietary nutrient intake of folate. On the other hand vitamin B12 is inversely associated with homocysteine (rs = -0.333, p<0.05). These data provide further evidence that plasma homocysteine is an independent risk factor for myocardial infarction. Homocysteine is a valuable functional index of micronutrient status and intakes for people, which can assist the development of the public health. In our population, folate was the most important determinant of plasma homocysteine, even in subjects with apparently adequate nutritional status of this vitamin.
The present study evaluates the folate status in a selected group of men and women living in Setif, Algeria. Eighty-three subjects (55 males, 28 females), aged 18 - 63 years, participated as random volunteers in an original study. There appeared to be significant effect of gender on the dietary intake of folate. However, examination of data for individual subjects indicated that, with exception of folate in females, a great percentage of males had intake of folate below the 67(th) percentile of the Reference Nutrient Intake (RNI). Analysis by two methods, the Canadian RNI and the Dietary Reference Values for folate in the U.K., revealed a large proportion of subjects presenting with less than the RNI (84% of males and 57% of females) and (71% of males and 69% of females), respectively. The study clearly indicates that, although mean values for dietary intakes of folate may be adequate, analysis of individual data allows to identify an appreciable proportion of the study population at risk of deficiency.

Notes: Houcher, B De Courcy, GP Candito, M Van Obberghen, E Naimi, D Free Morrocan Congress on Vitamines and Microelements Oct 28-31, 2002 Rabat, morocco

URL: <Go to ISI>:://WOS:000188993400007
A study of the complexation of Pb2+ and Co2+ metallic ions by chemical and electrochemical poly-dibenzo crown ether.

Abstract: A study of the complexation of Pb2+ and Co2+ metallic ions by chemical and electrochemical poly-dibenzo crown ether. The present work deals with the study of the complexation of Pb2+ and Co2+ metallic ions in aqueous medium, by poly-dibenzo crown ether, as a function of three parameters: temperature, time, and concentration. The poly-dibenzo crown ether was synthesized by two methods: chemically and electrochemically. The behaviour of the two polymers was found to be different, and very interesting for the chemical poly-dibenzo crown ether under specific conditions. The chemical and electrochemical poly-dibenzo crown ether exhibit different extraction properties with respect to the complexation of the two cations. This work also showed that doped polymers may have an appropriate electric conductivity that can be improved after complexation of the metallic ions. It was noticed that the best results were obtained with the chemical poly-dibenzo crown ether for all ions, at the temperature of 25 degrees C.
Reference Type: Journal Article
Record Number: 27
Author: Kerouani, N. Chelali, N. Kerouani, D.
Year: 2003
Title: Electrochemical and kinetic behavior of the MnOX/C-beta-PbO2 electrode
Journal: Journal of Solid State Electrochemistry
Volume: 8
Issue: 1
Pages: 34-36
Date: Dec
Short Title: Electrochemical and kinetic behavior of the MnOX/C-beta-PbO2 electrode
ISSN: 1432-8488
DOI: 10.1007/s10008-003-0406-8
Accession Number: WOS:000187186000010
Abstract: The MnOX/C-beta-PbO2 electrode was obtained by admixture of beta-PbO2 to MnOX/C. Slow scan voltammetry shows a double reduction peak which is discussed. Galvanostatic intermittent titration technique curves are also used and the value of the proton diffusion coefficient, D(H+), is determined. All studies are made in 2 M KOH.
Notes: Kerouani, N Chelali, N Kerouani, D 3rd International Meeting on Advanced Batteries and Accumulators Jun 16-20, 2002 Brno, czech republic
URL: <Go to ISI>:://WOS:000187186000010
The gastroprotective effects of 70% acetone extracts of Quercus suber and Quercus coccifera leaves and of tannins (pedunculagin, castalagin, phillyraeoidin A, and acutissimin B) purified from these extracts were examined in the mouse using the ethanol-induced gastric ulcer model. Both extracts (25, 50, and 100 mg/kg), given orally, prevented the formation of ethanol-induced lesions in the stomach. The percent protection varied between 68 and 91%. Purified tannins (50 mg/kg) were also effective in protecting the stomach against ethanol, and the percent protection varied from 66 to 83%. Castalagin was the most potent. Both extracts and all of the tannins tested (10, 25, and 50 mg/mL) strongly inhibited (55-65%) the lipid peroxidation of rabbit brain homogenate. These results suggest that the gastroprotective effects of extracts of Q. suber and Q. coccifera leaves and the purified tannins in this experimental model are related to their anti-lipoperoxidant properties.
Let $f$ be an odd function of a class $C^2$ such that $f(1) = 0$, $f'(0) < 0$, $f'(1) > 0$ and $x \mapsto f(x)/x$ increases on $[0, 1]$. We approximate the positive solution of $-\Delta u + f(u) = 0$, on $\mathbb{R}^+(2)$ with homogeneous Dirichlet boundary conditions by the solution of $-\Delta u(L) + f(u(L)) = 0$, on $[0, L](2)$ with adequate non-homogeneous Dirichlet conditions. We show that the error $u(L) - u$ tends to zero exponentially fast, in the uniform norm.
Using the Hartree approximation, the 8x8 Kane Hamiltonian, and the envelope-function scheme the electronic structure of electrons bound within an inversion layer on p-InAs in a Mosfet geometry is computed self-consistently and studied as a function of the two-dimensional electron density $N(S)$ and the doping concentration $N(A)-N(D)$. The subband spin splitting $\delta(k)(\nu)$ at an in-plane wave vector $k$ varies almost linearly with $N(S)$, and for the same electron density and $k$ it is larger in the lower subbands. Likewise, the $k$-dependent subband Rashba parameter $\alpha(k)(\nu)$ at a given $k$ shows an analogous behavior. Varying the doping concentration in the interval $1.8\times10^{15}-1.8\times10^{17}$ cm$^{-3}$, in subband $\nu$ the spin-splitting $\delta(\nu)$ at the Fermi level is computed for $N(S)$ in the range $10^{11}-4.8\times10^{12}$ cm$^{-2}$, where it is found to be an increasing function of $N(S)$; moreover, it is largest in the ground subband. At the Fermi level, the corresponding Rashba parameter $\alpha(\nu)$ is also computed as a function of $N(S)$ in both the ground and first excited subbands while $N(A)-N(D)$ is varied from 0.433x10(17) to 1.8x10(17) cm$^{-3}$. In this range, whereas $\alpha(1)$ simply shows a decreasing trend as a function of $N(S)$, $\alpha(0)$ exhibits new and counterintuitive $N(S)$ dependencies as $N(A)-N(D)$ is varied. Moreover, $\alpha(1)$ can either be larger or smaller than $\alpha(0)$, even when tunneling into the barrier is completely neglected. In addition, the role of the first excited subband on the overall $N(S)$ dependence of $\alpha(0)$ turns out to be crucial.
The essential oil of the aerial parts of Ammoides pusilla was analyzed using both GC and GC/MS. The results revealing no less than 46 constituents among which thymol (44.5%), gamma-terpinene (32.9%) and p-cymene (13.5%) were the most abundant. The antimicrobial activity of A. pusilla oil was studied using the agar diffusion test on eight strains of bacteria, and against fungus and yeast. The two-fold oil solution showed an important antimicrobial activity against Serratia marcescens, Salmonella enteritidis, Escherichia coli (ATCC 25922), Pseudomonas aeruginosa (ATCC 27853), Staphylococcus aureus (ATCC 25923), Klebsiella pneumoniae, Pseudomonas syringae pv. syringae, Pseudomonas syringae pv. mosprunorum, Aspergillus niger and Candida albicans.
The resonance modes of two coupled ferromagnetic layers are investigated as a function of the relative directions of the in-plane anisotropy easy axes of the layers, measured by the angle delta. It is found that the angle delta affects differently the acoustic and the optical mode positions and intensities. These effects are described. In some cases, the changes induced by delta on the mode position and intensity are similar to those induced by the bilinear J(1) and biquadratic J(2) coupling strengths. This may lead to incorrect interpretation of the FMR data and consequently to erroneous values of J(1) and J(2). For ferromagnetic coupling (J(1) > 0) and for magnetizations which are parallel, the variation of the resonant frequency and mode intensity with delta is qualitatively similar to that corresponding to a decrease in the bilinear coupling strength, J(1). In this case, if delta is omitted, then the J(1) value derived from FMR will be underestimated. When the magnetizations are antiparallel (J(1) < 0), a coupled system with a small delta value will produce the same FMR spectrum (position and intensity) as one with a small J(2) value; and even the critical field will be the same. Hence, a slight deviation of the easy axis direction of one layer with respect to the one of the second layer may be interpreted as the existence of a small biquadratic coupling. A relation establishing the equivalence between J(2) and delta in the small (J(2), delta) region, is derived. (C) 2003 Elsevier B.V. All rights reserved.
Transition metal/rare-earth multilayers show some unusual magnetic properties and are potential candidates as magneto-optical recording media. In this paper, we study by means of a torque magnetometer, the magnetic behavior of \([\text{Co}_{x}\text{Angstrom}/\text{Tb}_{15}\text{Angstrom}]^{(10)}\) multilayers prepared by molecular beam epitaxy. We are interested here in the rotational hysteresis energy as a function of both the temperature and the Co thickness. (C) 2003 Elsevier Science B.V. All rights reserved.
Magnetostriction can be described as the fractional change in length of a sample depending on the state of magnetization and describes the contribution to the magnetic anisotropy energy resulting from the interaction between film strain and magnetization direction. In this paper, both longitudinal ($\lambda(//)$) and transverse ($\lambda(\perp)$) saturation magnetostrictions of a Co-Ag granular system, prepared by molecular beam epitaxy, are studied as a function of Co concentration and temperature. (C) 2003 Elsevier Science B.V. All rights reserved.
Abstract: We investigate the dynamics and geometric phases of a time-dependent singular oscillator. We construct certain Gaussian wave packet solutions of the corresponding Schrödinger equation, relate the latter with the classical equation of motion and explore the relationship between the associated quantum and phase angles. It is shown by a simple geometrical approach that the geometrical phase is connected with the classical nonadiabatic Hannay angle of the generalized harmonic oscillator. Our geometric approach is based on a rule for a 'natural transport' of the complex two-dimensional vector in the phase space and the results obtained are quite suggestive of similarities to the quantum mechanical two-state evolution.

Notes: Maamache, M Bekkar, H

URL: <Go to ISI://WOS:000184057000005>
Reference Type: Journal Article
Record Number: 36

Author: Mansouri, A. Houamer, S. Moulay, M.
Year: 2003
Title: Analytical representation of total cross-sections for electron atom scattering: Application to atomic helium
Journal: Acta Physica Polonica A
Volume: 104
Issue: 1
Pages: 25-34
Date: Jul

Short Title: Analytical representation of total cross-sections for electron atom scattering: Application to atomic helium
ISSN: 0587-4246

Abstract: Based on the series expansion formalism, an analytical approach is proposed to evaluate the total cross-sections induced by electron impact excitation. As an illustration, an analytical expression of the total cross-section of the double excitation of helium atom by electron impact is obtained for the 2p(2) P-3 and 2p3p P-1 transitions within the framework of the distorted wave Born approximation. The available experimental data are well reproduced by the obtained expression of the total cross-section which is function of the only parameter of the incident electron energy. Comparisons are also made with numerical calculations.

Notes: Mansouri, A Houamer, S Moulay, M
URL: <Go to ISI>://WOS:000184972300002
The diffusion of boron and arsenic from polycrystalline silicon into single crystal silicon during rapid thermal annealing (RTA) at temperature between 1000 and 1150 degreesC for 20 s has been investigated. Samples were characterised by secondary ion mass spectrometry (SIMS). The volume and intergranular diffusion coefficient has been deduced from the boron profiles. Depth profiles are analysed using the Suzuoka model. It is established that the grain boundary diffusivities are two to three times larger than the volume diffusivities. (C) 2003 Elsevier B.V. All rights reserved.
Based on the series expansion formalism, a relatively simple approach is proposed to solve the eigenvalues problems with partially screened and screened exponential-cosine Coulomb potentials. This approach is used to derive solutions to the Schrodinger equation with the two forms of potentials. The eigenenergies are explicitly deduced from solving the obtained corresponding polynomial equations. For illustration, high accuracy results have been obtained in the entire range of parameter values of these potential forms, with no constraints or adjustable constants. The present approach compares well, with existing methods, the results of which are precisely recovered as particular cases and does allow solutions to eigenvalues problems with any combination of potential parameters.
Prion infection impairs copper binding of cultured cells

The molecular mechanism of neurodegeneration in transmissible spongiform encephalopathies (TSEs) remains unclear. Using radioactive copper (Cu-64) at physiological concentration, we showed that prion infected cells display a marked reduction in copper binding. The level of full-length prion protein known to bind the metal ion was not modified in infected cells, but a fraction of this protein was not releasable from the membrane by phosphatidylinositol-specific phospholipase C. Our results suggest that prion infection modulates copper content at a cellular level and that modification of copper homeostasis plays a determinant role in the neuropathology of TSE.
Abstract: Background: Rutin, a natural flavone derivative, is known for its pharmacological properties. We have previously reported that this flavonol exerted a potent inhibitory effect on respiratory burst of fMet-Leu-Phe-stimulated neutrophils, as well as on phosphoinositide 3-kinase gamma activity in a cell free system. In the present study, the anti-inflammatory effect of rutin was investigated in vivo and in vitro. Methods: rutin or aspirin (100 mg/kg, body weight) were given orally to rats 1 hour before paw oedema induction, using lambda-carrageenan 1%. The rat paw volume was measured by mean of plethysmometer, initially and during 6 hours. The chemotaxis of neutrophils towards 10(-7) M fMet-Leu-Phe was performed using 48-well chemotaxis chamber. Neutrophils that migrated through 5 pm pore size polycarbonate filter, in presence or in absence of rutin, were counted microscopically. Elastase exocytosis of either phorbol 12-myristate 13-acetate or fMet-Leu-Phe/cytochalasin B-stimulated neutrophils was assessed in absence or in presence of rutin using the synthetic substrate N-Suc-Ala-Ala-Ala-p-nitroanilide. The absorbance of released p-nitroaniline was measured at 405 nm using microplate reader. Results: The maximal swelling in placebo group was observed at 5 hours, after lambda-carrageenan injection. Oral administration of rutin reduced rat paw swelling starting 2 hours after lambda-carrageenan injection. Rutin reduced significantly (p < 0.05) and in a dose-dependant manner the polymorphonuclear neutrophils chemotaxis to fMet-Leu-Phe. Furthermore, elastase exocytosis, induced by both stimuli, was partially inhibited by rutin up to 25 muM. Conclusion: The present study revealed that rutin possesses anti-inflammatory properties.
Non-stoichiometric niobium nitrides: structure and properties

Composition, structure, electrical and optical properties of the films were studied using respectively, energy dispersion spectroscopy, X-ray diffraction, four probes method and optical spectrometry. Thickness was measured by X-ray reflectometry. The structures found were hexagonal for the 2 seem sample and of NaCl type for 4 seem samples and beyond. The film thickness indicates that the deposition rate decreases as the nitrogen gas flow increases. Electrical resistivity increases with the nitrogen content for samples having NaCl structures. Moreover, optical spectrometry shows that samples with NaCl structure have a high reflectivity in infrared region while reflectivity remains low in the ultraviolet region. (C) 2003 Elsevier Science B.V. All rights reserved.

Notes: Torche, M Schmerber, G Guemmaz, M Mosser, A Parlebas, JC

URL: <Go to ISI>://WOS:000183945700010
In this note, we consider some combinatorial conditions on infinite subsets of groups and we obtain in terms of these conditions some characterizations of the classes $L(N-k)F$ and $FL(N-k)$ for the finitely generated centre-by-metabelian groups, where $L(N-k)$ (respectively, $F$) denotes the class of groups in which the normal closure of each element is nilpotent of class at most $k$ (respectively, finite groups).

Notes: Trabelsi, N

URL: <Go to ISI>:://WOS:000185712200008
Reference Type: Journal Article
Record Number: 43
Author: Zitouni, R. Keraghel, A.
Year: 2003
Title: Resolution of a capacitated transportation problem with four subscripts
Journal: Kybernetes
Volume: 32
Issue: 9-10
Pages: 1450-1463
Short Title: Resolution of a capacitated transportation problem with four subscripts
ISSN: 0368-492X
DOI: 10.1108/03684920310493341
Accession Number: WOS:000186599000014
Abstract: The classical transportation problem is actually well known both in theory and numerical resolution. We are interested in the multi-subscripts capacitated transportation problem of axial sum launched by specialists some years ago. Our work deals with the capacitated problem with four subscripts for which we have established an existence criterion, an optimality condition and an algorithm of resolution.
Notes: Zitouni, R Keraghel, A
URL: <Go to ISI>://WOS:000186599000014
This paper presents the application of spectral analysis methods that are based on the FFT algorithm to the study of the surface EMG power spectrum compression. Some preferred characteristic frequencies used to monitor the spectral compression are the mean and median frequencies. In this work, we show that the spectral density estimation by the Blackman-Tukey method associated with the weighting windows permits a better track of the compression with regard to the periodogram. The effect of the type and tire size of windows is examined in order to determine the appropriate window that well describes the spectral compression, and thus the best process descriptor of the muscular fatigue.
The problem of on-line testing does not have a satisfying solution, particularly, for transient faults. In this paper, a new technique which permits real time checking by combining duplication, and comparison at remote system on using standard boundary scan 1149.1 is proposed. A novel boundary scan cell is proposed. Simulation results showed that during system normal operation, faults are detected soon as they occur. In addition, one should note how easily a boundary scan register is scanned. A single shifting operation is required to achieve stuck at fault testing without affecting system normal operation.
In this work, we study the two discontinuities open-end and series gap in the coplanar striplines. New integral equations for the electrical field components are formulated, in the spectral domain, using an exact dyadic Green's function, applied to the coplanar stripline structure. The use of this type of Green's function, we permeate the consideration of the effects of the dielectric losses, surface waves excitation and space waves radiation on the propagation characteristics of the coplanar strip line and its two discontinuities. The resulting integral equation has been solved by the two-dimensional Galerkin's technique. The resulting matrix equation resolution we gives the S-parameters of the two studied discontinuities. Our results are compared to those of other approaches.
Roller compacted concrete is a new proceeding in Algeria. This technique is applied to dam construction. The dam of Beni Haroun constructed in Wilaya of Mila is one of the biggest dams in Africa and one of the first executed with roller compacted concrete. The present paper describes the different steps from the concrete formulation, to the fabrication and control. This new technique is destined to reduce the cost and dams construction time without affecting their security. For Algeria that the need of water is very important, it is well to more developing this proceeding.
PRODUCTION SCIENTIFIQUE ANNEE 2004
This paper presents the theoretical development of a complete navigation problem of an autonomous mobile robot. The situation for which the vehicle tries to reach the endpoint is treated using a fuzzy logic controller. The problem of extracting the optimized IF-THEN rule base is solved using an evolutionary algorithm. A new approach based on fuzzy concepts is presented in this paper to avoid any collision with the surrounding environment when this latter becomes relatively complex. Simulation results show that the designed fuzzy controller achieves effectively any movement control of the vehicle from its current position to its end motion and without any collision. (C) 2004 Elsevier B.V. All rights reserved.
Xanthine oxidoreductase (XOR) was purified from goats' milk. The u.v.-visible absorption spectrum was essentially identical to those of the corresponding bovine and human milk enzymes and showed an A(280)/A(450) ratio of 5.20 +/- 0.12, indicating a high degree of purity. Like bovine and human milk XORs, enzyme purified from goats' milk showed a single band on SDS-PAGE corresponding to a subunit with approximate M_r 150000. On Western blotting, mouse monoclonal anti-human XOR antibody cross-reacted with purified caprine and bovine XORs. The specific xanthine oxidase activity of goats' milk XOR, however, was very much lower than that of bovine XOR, although NADH oxidase activities of XOR from the two sources were similar. In these respects, the caprine milk XOR mirrors the human milk enzyme, in which case the kinetic effects have previously been attributed to relatively low molybdenum content. The molybdenum content of goats' milk XOR also was shown to be relatively low, with 0.09 atoms Mo per subunit, compared with 0.55 atoms Mo per subunit for the bovine enzyme. A parallel purification of human milk XOR showed 0.03 atoms Mo per subunit. The possible physiological significance of the low molybdenum content of the caprine milk enzyme and of its correspondingly low enzymic activity is discussed.
In this paper, the growth, structural and magnetic properties of cobalt (Co) films electrodeposited on a Pt/Si(100) substrate have been investigated. Co films with metallic appearance were obtained from aqueous solution of 0.1 M CoSO₄, 10 mM CoCl₂ as the source of metal ions and 1 M NaSO₄ as a supporting electrolyte with 0.5 M H₃BO₃ at pH 4.2. This electrochemical technique indicated a deposition peak signature of limited diffusion growth with the transition from progressive to instantaneous nucleation mechanism. The atomic force microscopy (AFM) images showed a granular structure of the electrodeposited layers. X-ray measurements (XRD) and nuclear magnetic resonance (NMR) indicate a small grain size with the presence of a mixture of Co hcp and fcc structures. The magnetic properties of the deposited films were investigated with a magnetic field in the parallel and perpendicular direction and showed that the easy magnetization axis is in the plane. (C) 2004 Elsevier B.V. All rights reserved.

Notes: Azizi, A Sahari, A Felloussia, M L Schmerber, G Meny, C Dinia, A
New quinazoline derivatives were prepared by the reaction of 4-hydroxy-quinazoline with alkyl halides under phase transfer-catalysis conditions. The hydroxy group was readily converted into a thiol function by treating with phosphorus pentasulfide in pyridine and the subsequent alkylation of the thiol group was carried out under PTC conditions. Chlorination of 4-hydroxyquinazoline was carried out with phosphorus oxychloride. Branching of alkylamino side chains to the 4-OH, 4-S, and 4-Cl quinazolines has resulted in the synthesis of several compounds identified by H-1 NMR.
Reference Type: Journal Article
Record Number: 5
Author: Bartel, J. Bencheikh, K. Quentin, P.
Year: 2004
Title: Currents, spin densities and mean-field form factors in rotating nuclei: A semi-classical approach
Volume: 13
Issue: 1
Pages: 225-233
Date: Feb
Short Title: Currents, spin densities and mean-field form factors in rotating nuclei: A semi-classical approach
ISSN: 0218-3013
DOI: 10.1142/s0218301304001989
Accession Number: WOS:000220350700034
Abstract: We present self-consistent semi-classical local densities characterising the structure of rotating nuclei. A particular emphasis is put on those densities which are generated by the breaking of time-reversal symmetry through the cranking piece of the Routhian, namely the current density and the spin vector density. Our approach which is based on the Extended-Thomas-Fermi method goes beyond the Inglis cranking approach and contains naturally the Thouless-Valatin self-consistency terms expressing the response of the mean field to the time-odd part of the density matrix.
Notes: Bartel, J Bencheikh, K Quentin, P Workshop on Nuclear Physics Sep, 2003 Kazimierz Dolny, POLAND
URL: <Go to ISI>://WOS:000220350700034
Belattar, N. Mekhalif, T.

**Title:** Adsorption of human serum albumin on to synthesized dye-like polystyrene gel beads

**Journal:** Materials Science & Engineering C-Biomimetic and Supramolecular Systems

**Volume:** 24

**Issue:** 4

**Pages:** 507-511

**Date:** Jun

**Short Title:** Adsorption of human serum albumin on to synthesized dye-like polystyrene gel beads

**ISSN:** 0928-4931

**DOI:** 10.1016/j.msec.2004.01.004

**Accession Number:** WOS:000221992700009

**Abstract:** In bioseparation, adsorption of proteins on to various polymer surfaces plays an important role in different fields, particularly in pseudo-affinity chromatography techniques. In this context, this study aims to synthesize cross-linking polystyrene gel beads as packing material in column chromatography for albumin purification. Suitable chemical groups, such as sulfonate and L-cysteine with high affinity towards human serum albumin were introduced on the aromatic ring of the hydrophobic adsorbing polystyrene support. These functional groups were chosen on the basis of the interactions of albumin with their exogenous and endogenous ligands in such manner to confer this material a highly binding ability and enhance its efficacy. Adsorption of human albumin on to these two synthesized adsorbents was performed at 37 degreesC in physiological pH 7.3 during 20 min of incubation. The adsorbed albumin content at interface allows to establish the adsorption isotherm curves. The adsorption rate on both resins was found to be significantly high and the affinity constants, evaluated by the Langmuir model, were: 7.5 x 10(5) and 1.45 x 10(6) M\(^{-1}\) for poly(styrene sodium sulfonate) and poly(styrene cysteine sulfamide), respectively. Thus, the obtained material gel beads could be used advantageously as a dye-like stationary phase in chromatographic separation of albumin instead of other conventional supports. (C) 2004 Elsevier B.V All rights reserved.

**Notes:** Belattar, N Mekhalif, T

**URL:** <Go to ISI>://WOS:000221992700009
Antifungal properties of Origanum glandulosum Desf. extracts

Hexane extracts, decoctions and the essential oil obtained from Origanum glandulosum Desf., an oregano species grown wild in North Africa and used as a herb tea or a medicine, were checked for their inhibitory effect on various fungi and yeasts isolated at the Central University Hospital of Setif, Algeria. The microorganisms Aspergillus flavus, Aspergillus niger, Aspergillus fumigatus, Penicillium expansum, Fusarium solani, Uloclodium sp., Trichophyton rubrum, Microsporum canis, Pityrosporum orbicular and Candida albicans were tested using the disk diffusion assay and macrodilution test. Additionally, Thin Layer Chromatography and Nuclear Magnetic Resonance spectroscopy were used to detect the presence of important phytochemical antioxidants, such as hydroxycinnamic acids and flavonols. All the extracts and the essential oils showed an inhibitory effect on yeasts and fungi. In the test with saprophytic fungi the highest activity was observed with the essential oil on P. expansum and the hexane extract and chloroform extract of the decoction on P. expansum and F. solani. Polyphenol content of the water and acetone extracts expressed as caffeic acid was 118 and 261 g kg(-1) of extract respectively. TLC chromatography and colour reactions indicated the presence of caffeic acid and rosmarinic acid, bound forms of 3- and 5-hydroxylated flavonoids and free flavonoids. NMR spectroscopy confirmed the presence of quercetin.

Notes: Belhattab, Rachid Larous, Larbi Kalantzakis, Georgios Boskou, Dimitrios Exarchou, Vassiliki

URL: <Go to ISI>:://WOS:000208575000011
Multilayered of pure gold and copper films were evaporated alternatively on (100) monocrystal silicon substrates. Annealing, in a furnace vacuum, were carried out at 200 and 400 degreesC for 30 min. The obtained samples were analyzed by means of Rutherford backscattering spectrometry, X-ray diffraction and scanning electron microscopy techniques. The interdiffusion of the different elements and the thermodynamic transformations at Cu/Au and Au/Si interfaces have been investigated. (C) 2003 Elsevier B.V. All rights reserved.
Physicochemical and kinetic properties of purified sheep's milk xanthine oxidoreductase

Xanthine oxidoreductase (XOR) was purified for the first time from sheep's milk. The ultraviolet-visible absorption spectrum was essentially identical to those of the corresponding bovine, human, and goats' milk enzymes and showed an A(280)/A(450) ratio of 5.35 +/- 0.24, indicating a high degree of purity. Like milk XOR from other species, sheep's milk enzyme showed a single band on SDS-PAGE corresponding to a subunit with approximate M_r 150,000.

Xanthine oxidase activity of purified sheep's milk XOR (0.69 +/- 0.04 mumole urate min(-1) mg(-1)) was low relative to that of the bovine milk enzyme (1.83 +/- 0.02 mumole urate min(-1) mg(-1)), but higher than those of human or goats' milk XOR. As in the latter 2 cases, the low activity of sheep's milk XOR can be attributed to its relatively low molybdenum content (0.18 atoms per subunit), compared with that of the bovine milk enzyme (0.56 atoms Mo per subunit). Consistent with this, NADH oxidase activity of sheep's milk XOR was similar to that of enzymes purified from bovine, human, or goats' milk. The presence of desulpho-enzyme in sheep's milk XOR was demonstrated by resulfuration experiments, whereby xanthine oxidase activity was increased by approximately 75%.

Benboubetra, M Baghiani, A Atmani, D Harrison, R
Reference Type: Journal Article
Record Number: 10
Author: Bencheikh, K. Berkane, K. Bouizane, S.
Year: 2004
Title: The extended Thomas-Fermi kinetic energy density functional with position-dependent effective mass in one dimension
Journal: Journal of Physics a-Mathematical and General
Volume: 37
Issue: 45
Pages: 10719-10725
Date: Nov
Short Title: The extended Thomas-Fermi kinetic energy density functional with position-dependent effective mass in one dimension
ISSN: 0305-4470
DOI: 10.1088/0305-4470/37/45/001
Article Number: Pii s0305-4470(04)80163-x
Accession Number: WOS:000225442000003
Abstract: The point canonical transformations map the Schrodinger equation with constant mass to a wave equation with a position-dependent effective mass. Using such a technique we derive, for a one-dimensional inhomogeneous system of noninteracting fermions with density p(x) and spatially dependent effective mass distribution m(x), the semiclassical kinetic energy density functional tau(p) in the so-called extended Thomas-Fermi model up to order h(2). For a given position-dependent mass, we compare numerically the total semiclassical kinetic energy with its exact quantum mechanical counterpart. The qualitative agreement is excellent.
Notes: Bencheikh, K Berkane, K Bouizane, S
URL: <Go to ISI>://WOS:000225442000003
Reference Type: Journal Article
Record Number: 11
Author: Bencherif-Madani, A. Pardoux, E.
Year: 2004
Title: Locally periodic homogenization
Journal: Asymptotic Analysis
Volume: 39
Issue: 3-4
Pages: 263-279
Date: Sep
Short Title: Locally periodic homogenization
ISSN: 0921-7134
Accession Number: WOS:000226003900003
Abstract: In this paper, two linear second PDEs are homogenized. The coefficients are supposed to be locally periodic, Lipschitz and bounded. Compared to our previous work [1], we provide a new and simpler proof and weaken the hypotheses of the main theorem. We use both probabilistic and analytic arguments.
Notes: Bencherif-Madani, A Pardoux, E
URL: <Go to ISI>://WOS:000226003900003
We studied zirconium nitride layers prepared by reactive direct current (dc) magnetron sputtering and synthesized with nitrogen gas flow ranging from 1 to 9 sccm (standard centimeter cube per minute) N₂. We measured their electrical resistivity and recorded their X-ray diffraction patterns as well as their RBS spectra and optical reflectance curves. Thus we could determine their crystallographic structure, their nitrogen content and their optical properties by simulating the reflectance curves with Drude's model for stoichiometric and sub-stoichiometric samples, and an extended Drude model for over-stoichiometric samples. In this work, we focus on our stoichiometric sample S4, in order to compare the dielectric function as well as the optical indexes n and k, deduced from fit optical parameters, with those given in literature. There is a good agreement between these results. Besides, we determined the "optical resistivity" of our several samples and compared them with the "electrical resistivity" measured by a four-probe method. Also, a good agreement is found between both curves, which confirms that the formalism used to simulate the reflectance curves is well adapted to these compounds.

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In this work, the solid state reaction between a thin film of copper and silicon has been studied using Rutherford backscattering spectroscopy, X-ray diffraction, scanning electron microscopy and microprobe analysis. Cu films of 400 and 900 Å thicknesses are thermally evaporated on Si(1 1 1) substrates, part of them had previously been implanted with antimony ions of $5 \times 10^{14}$ or $5 \times 10^{15}$ at. cm$^{-2}$ doses. The samples are heat-treated in vacuum at temperatures in the range 200-700 degreesC for various times. The results show the growth and formation of Cu$_3$Si and Cu$_4$Si silicides under crystallites shape dispatched on the sample surface, independently of the implantation dose. On the other hand, it is established that the copper layer is less and less consumed as the antimony dose increases, resulting in the accumulation of Sb$^+$ ions at silicide/Si interface and in the silicide layer close to surface. The exposure of samples to air at room temperature shows the stability of Cu$_4$Si phase whereas the Cu$_3$Si silicide disappears to the benefit of the silicon dioxide formation. The observed phenomena are discussed. (C) 2004 Elsevier Ltd. All rights reserved.

**Notes:** Benkerri, M Halimi, R Bouabellou, A Benouattas, N Symposium on New Materials in Future Silicon Technology Held at the E-MAR 2004 Spring Meeting 2004 Strasbourg, FRANCE

**URL:** <Go to ISI>://WOS:000225855200027
Reference Type: Journal Article
Record Number: 14
Author: Berrimi, S. Messaoudi, S. A.
Year: 2004
Title: EXPONENTIAL DECAY OF SOLUTIONS TO A VISCOELASTIC EQUATION WITH NONLINEAR LOCALIZED DAMPING
Journal: Electronic Journal of Differential Equations
Short Title: EXPONENTIAL DECAY OF SOLUTIONS TO A VISCOELASTIC EQUATION WITH NONLINEAR LOCALIZED DAMPING
ISSN: 1072-6691
Article Number: 88
Accession Number: WOS:000208969900088
Abstract: In this paper we consider the nonlinear viscoelastic equation [GRAPHICS] in a bounded domain. Without imposing geometry restrictions on the boundary, we establish an exponential decay result, under weaker conditions than those in [3].
Notes: Berrimi, Said Messaoudi, Salim A.
URL: <Go to ISI>://WOS:000208969900088
Abstract: The high development of numerical image and signal processing techniques, may lead to the replacement of conventional photosensitive media used in holography by CCD sensors: hence, to the field of digital holography. The hologram is saved in the host memory of a computer and can be reconstructed on the same place or elsewhere in a numerical manner. The development of liquid crystal displays (LCD) directly addressed by computer permits to think of opto-digital holography. The observation of the reconstructed image at a limited distance is possible when using adequate optical components, which makes not only the possibility to observe the image at a defined distance but also to control its magnification (opto-digital holographic microscopy). Since it is possible to control all experimental steps by adequate software, it is then possible to make real time opto-digital holographic microscopy. In this work, we show the experimental set-up and the obtained results, showing that this technique can be used to study different kinds of materials, connected to different conventional microscopes and to make holographic interferometry. (C) 2003 Elsevier B.V. All rights reserved.

Elastic constants of lattice matched and mismatched Ga$_{1-x}$In$_x$NyAs$_{1-y}$ alloys with the zincblende structure have been calculated using a pseudopotential formalism combined with the Harrison bond orbital model. The calculations are generally in satisfactory agreement with the experimental results, which are only available for the binary parent compounds. All elastic constants are predicted to significantly increase when further increasing the nitrogen content or the lattice mismatch. (C) 2004 Published by Elsevier Ltd.
We say that a group $G$ has finite lower central depth if the lower central series of $G$ stabilises after a finite number of steps, that is, $G$ has finite lower central depth if and only if $\gamma(k) (G) = \gamma(k + 1) (G)$ for some positive integer $k$. The least integer $k$ such that $\gamma(k) (G) = \gamma(k + 1)(G)$, is called the depth of $G$. We denote by $\Omega$ the class of groups which has finite lower central depth. If $k$ is a positive integer, we denote by $\Omega(k)$ the class of all groups having finite lower central depth at most $k$. Let $G$ be a finitely generated soluble group. In this note we prove, $G$ is finite-by-nilpotent if and only if in every infinite set of elements of $G$ there exist two distinct elements $x, y$ such that $\langle x, y \rangle$ is an element of $\Omega$, and $G$ is finite by a group in which every two generator subgroup is nilpotent of class at most $k$ if and only if in every infinite set of elements of $G$ there exist two distinct elements $x, y$ such that $\langle x, y \rangle$ is an element of $\Omega(k)$.
This work is focused on the catalytic behaviour of alumina supported low loaded Pt-Cu catalysts. Ethylcyclopentane is the probe molecule. In fact this molecule can lead to several primary reactions as: (i) ring opening, (ii) ring enlargement, (iii) aromatisation, and (iv) hydrocracking. Due to these various pathways we can follow the modifications of the catalytic activities as well as selectivity changes when the surface composition of the catalyst is changed. Various techniques were used to characterise these catalysts: (i) by TPR we showed that an interaction between platinum and copper is present and (ii) by hydrogen chemisorption we found that the platinum dispersion decreased from 100 to 20% when the copper content increased. The ring opening reaction is non-selective for platinum catalysts and for Pt-Cu systems with low copper content and is selective for catalysts with a high copper content. We noted that the apparent activation energy values also changed with the amount of copper which confirms the modifications in the catalytic mechanisms when changing copper concentration. We proposed that the ring enlargement reaction is similar to a bond shift reaction, when ring opening corresponds to hydrocracking reactions. Such comparative relation can help to understand the results obtained. (C) 2004 Elsevier B.V. All rights reserved.
Periconceptional folic acid supplementation reduces the frequency of embryological neural tube defects (NTD). This fact led the USA to fortify grain products with folic acid (140 μg/100 g) starting in January 1998, with a resultant decrease in the incidence of NTD. Folate deficiency is thus confirmed to be a risk factor for NTD. However, in a prospective study, we investigated three women who conceived a fetus with NTD; no folate deficiency was found in these women but all three had decreased vitamin B12 levels (cobalamin), which can be an other risk factor. Samples were obtained from two women in Algeria, 2 days after interruption of pregnancy, and from a vegetarian woman, in France, one month after interruption of pregnancy. Red cell folate and plasma folate, vitamin B12, B6 and homocysteine were assayed and the mutations C677T (in methylenetetrahydrofolate reductase gene), A2756G (in methionine synthase gene) and A66G (in methionine synthase reductase gene) were sought. Elevated plasma folate levels were found in both Algerian women. Vitamin B12 levels in all three women were decreased or in the lowest quartile of normal values. One woman presented simultaneously a vitamin B12 deficiency, and heterozygous mutations in the three genes. The second woman presented a A66G homozygous mutation and the third heterozygous C677T and A66G mutations. Acquired and inborn factors are intricated in some cases of pregnancies with NTD and B12 deficiency can be responsible for intracellular folate cycle failure. It would therefore be advisable to consider fortifying grain products with both folic acid and vitamin B12.
Reference Type: Journal Article
Record Number: 20
Author: Chaoui, Z. Bouarissa, N.
Year: 2004
Title: Positron and electron backscattering from elemental solids in the 1-10 keV energy range
Journal: Journal of Physics-Condensed Matter
Volume: 16
Issue: 6
Pages: 799-808
Date: Feb
Short Title: Positron and electron backscattering from elemental solids in the 1-10 keV energy range
ISSN: 0953-8984
DOI: 10.1088/0953-8984/16/6/010
Accession Number: WOS:000220021100015
Abstract: Electron and positron backscattering coefficients are analytically calculated for a number of selected atomic targets in the energy range 1-10 keV and for incident angles between 0 degrees and 80 degrees. The dependence of the backscattering coefficient on the material, on the projectile primary energy and on the incidence angle has been examined and discussed. Our results are found to be in better agreement with experiment than earlier Monte Carlo simulations.
Notes: Chaoui, Z Bouarissa, N
URL: <Go to ISI>://WOS:000220021100015
Implantation profiles for low energy electrons in metals: scaling properties

The scaling of electron implantation profiles with incident energies over the range 0.5-4 keV at normal angle of incidence are presented using the Monte Carlo scheme to generate stopping profiles in semi-infinite Al and An. A simple scaling relationship which reduced the stopping profiles onto a single universal curve for that studied material is proposed with only two fitting parameters instead of four parameters previously reported in the literature. This permits accurate profiles for low energy electrons in metals to be obtained in a simple way that does not require any recourse to Monte Carlo calculations in the generation of electron stopping profiles. (C) 2003 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 22
Author: Chaoui, Z. E. A. Bouarissa, N.
Year: 2004
Title: Slow positrons elastically scattered by solid targets
Journal: Journal of Applied Physics
Volume: 96
Issue: 1
Pages: 807-812
Date: Jul
Short Title: Slow positrons elastically scattered by solid targets
ISSN: 0021-8979
DOI: 10.1063/1.1739289
Accession Number: WOS:000222093300128
Abstract: Total and transport elastic scattering cross sections for positrons impinging on solid targets have been computed for energies in the range 10-10 000 eV. The phase shifts have been calculated by numerically solving the Schrodinger equation. The results have been discussed and compared where possible with other tabulations. Special attention has been given to the effect of the correlation potential. The latter was found to have much effect on the total elastic scattering cross sections while its effect on transport elastic scattering cross sections is more important when the positron energy is lowered. (C) 2004 American Institute of Physics.
Notes: Chaoui, ZEA Bouarissa, N
URL: <Go to ISI>@WOS:000222093300128
This paper presents a comparative study of four methods for extracting solar cell parameters of the single diode lumped circuit model. These parameters are usually the saturation current, the series resistance, the ideality factor, the shunt conductance and the photocurrent. The methods are the vertical optimization method, the modified analytical five-point method, and two methods we have proposed, are based on the current-voltage characteristics and the subsequently calculated conductance. Parameter values were extracted using these different methods from experimental I-V characteristics of a commercial solar cell and a module. (C) 2004 Elsevier Ltd. All rights reserved.
The present work revealed that the chemical polymerization of ortho-ethoxyaniline yields two types of polymers not only with different spectroscopic properties but also with different molecular weights: (1) a green form, which corresponds to the high molecular weight fraction of the polymer with a molecular weight of 800,000 g mol\(^{-1}\) based on the polystyrene calibration. It is mainly composed of quinoid and benzoid structures, which is an indication of a half-oxidized polymer (emeraldine). This form of the polymer is insoluble in water-miscible solvents like ethanol and methanol and thus cannot be tested in terms of corrosion inhibition efficiency; (2) a red form, which corresponds to the low molecular weight fraction of the polymer with a molecular weight of 44,000 g mol\(^{-1}\). It is composed mostly of quinoid structures and exhibits an oxidation state similar to that of the completely oxidized polymer (pernigraniline). In our case, the polymer fraction, which is soluble in alcohol was first tested as a corrosion inhibitor for mild steel in acidic media, not only at conventional molecular weight (44,000 g mol\(^{-1}\)) but also at different molecular weights. These different molecular weights of the polymer were obtained by adding varying amounts of neutral salt to the synthesis environment. Next, the effect of the molecular weight of the red form of the polymer on the corrosion inhibition efficiency of mild steel in hydrochloric acid solutions was investigated. The obtained results showed that the adsorption of the polymer alcoholic form obeys a Temkin adsorption isotherm with no significant change as function of inhibition efficiencies for a series of molecular weights ranging from 13,000 to 124,000 g mol\(^{-1}\). The effect of temperature on the corrosion behavior of mild steel in 1M HCl with addition of 100 ppm of the alcoholic form of poly(ortho-ethoxyaniline) was studied in the temperature range 25-60\(^\circ\)C. The associated activation corrosion energy was determined. (C) 2003 Wiley Periodicals, Inc.
The hydrothermal ageing of wood-flour-filled PVC produced by dry-blending in a high-speed mixer in the presence of a plasticizer and other processing additives was carried out to investigate its thermal behaviour, and the results obtained were compared with those for the unfilled material. The dry-blended compounds were prepared as films by a calendering process. The accelerated hydrothermal ageing was carried out by immersing the samples in boiling water at 100°C for 110 h. The thermal behaviour of the reference and the aged samples in water was characterized by differential scanning calorimetry (DSC) and determination of the weight changes. The study has shown that during hydrothermal ageing, the samples from the whole formulations absorbed water, for instance, for 30 wt% filled PVC (F30), 16 wt% of water absorption was obtained, while this was only 2.2 wt% for unfilled PVC (F0). It was also noticed that the formulations filled with wood flour up to 10 wt% exhibited similar water absorption kinetics, i.e. the water was mostly absorbed during the first 50 h and the amount absorbed was less than 5 wt%. On the other hand, the 30 wt% filled samples regularly absorbed water up to almost 16 wt% after 100 h of immersion. The DSC data showed that hydrothermal ageing significantly affected the onset temperature of decomposition (T-d) of the unfilled samples by decreasing this temperature from 228 to 215°C. For the 30 wt% filled samples, only additive migration was observed, while the T-d remained almost unchanged. Furthermore, from the DSC data, processability of the 30 wt% filled PVC samples at elevated temperatures, i.e. 180 to 200°C was shown. (C) 2004 Society of Chemical Industry.
Reference Type: Journal Article
Record Number: 26
Author: Garin, F. Parlebas, J. C. Minot, C. Guemmaz, M.
Year: 2004
Title: Emerging materials - Preface
Journal: Catalysis Today
Volume: 89
Issue: 3
Pages: 253-254
Date: Mar
Short Title: Emerging materials - Preface
ISSN: 0920-5861
DOI: 10.1016/j.cattod.2003.12.001
Accession Number: WOS:000220602300001
Notes: Garin, F Parlebas, JC Minot, C Guemmaz, M
URL: <Go to ISI>://WOS:000220602300001
Flavonoids are known to relax precontracted intestinal smooth muscle and to delay intestinal transit. We therefore investigated the effects of quercetin, naringenin, apigenin and genistein on intestinal peristalsis in vitro. Peristalsis in fluid-perfused segments of the guinea pig small intestine was recorded through the intraluminal pressure changes associated with the peristaltic waves. Alterations of distension sensitivity were reflected by changes in the peristaltic pressure threshold and alterations of peristaltic performance by changes in the maximal acceleration, amplitude and residual baseline pressure of the peristaltic waves. Quercetin, naringenin, apigenin and genistein (10-300 mumol/l) depressed intestinal peristalsis in a structure- and concentration-dependent manner. The flavonoid-evoked changes in peristalsis parameters made it possible to distinguish between two patterns of peristaltic motor inhibition: a decrease in distension sensitivity and peristaltic performance (apigenin and genistein) and a decrease in distension sensitivity without a major change in peristaltic performance (quercetin and naringenin). The antiperistaltic effect of quercetin was partially prevented by apamin (0.5 mumol/l), N-nitro-L-arginine methylester (100 mumol/l) and naloxone (0.5 mumol/l), whereas the effect of genistein was hardly affected by these drugs. Peristaltic motor activity suppressed by quercetin (300 mumol/l), but not genistein (100 mumol/l), was partially restored by apamin. In contrast, neostigmine (0.3 mumol/l) caused a significant recovery of peristalsis from blockade by genistein but failed to reverse peristaltic motor blockade due to quercetin. These observations suggest that naringenin and quercetin inhibit peristalsis by facilitating inhibitory enteric pathways, whereas apigenin and genistein interfere with muscle excitation or excitation-contraction coupling. Copyright (C) 2004 S. Karger AG, Basel.

Notes: Gharzouli, K Holzer, P
URL: <Go to ISI>://WOS:000186817500002
The dynamics of a set of non-interacting single-domain particles is given by a stochastic phenomenological equation due to Gilbert. The relaxation time of fluctuation is calculated in the case of uniaxial magnetocrystalline anisotropy with and without magnetic field. An approximation formula for relaxation time $\tau$ of the magnetization for superparamagnetic particles, using the theory of Brownian motion, is given. It is found different from the results of previous work, but is in good agreement with the asymptotic formula derived by Brown for low-energy barriers. A mathematical method is used to solve the Fokker-Planck equation derived by Brown. This one describes the evolution of the probability density. The advantage of this method is its ability to provide an analytical formulation of the solution. In addition to numerical results, it allows the computation of relaxation time for various magnitudes of an external magnetic field.

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We have prepared and characterised a new series of metal complexes obtained from 4,4′-bis(salicylideneimino) diphenylethane (saldipH(2)) and cobalt(II), copper(II) and cadmium(II) chlorides. In every case, the coordinating atoms are N and O. However, each compound has its own structure: [Co(saldip)] . 2 H2O is monomeric and a mononuclear species, [Cu-2(saldip)(2)(H2O)] is a binuclear complex and finally the cadmium complex is formulated as: [(CdCl2)(2)(saldipH(2))] . CdCl2. An electrochemical study (cyclic voltammetry) indicates that the reduction, as well as the oxidation, of copper in [Cu-2(saldip)(2)(H2O)] proceeds in two steps. For the reduction of the two other complexes, two steps are indicated out: the first is attributed to the reduction of the metal and the second to the reduction of the coordinated ligands.
A robust adaptive fuzzy controller, based on a state observer, for a nonlinear uncertain and perturbed system is presented. The state observer is introduced to resolve the problem of the unavailability of the state variables. Two control signals are added to a basic state feedback control law, deduced from a nominal model, to guarantee the tracking performance in the presence of structural uncertainties and external disturbances. The first control signal is computed from an adaptive fuzzy system and eliminates the effect of structural uncertainties and estimation errors. Updating the adjustable parameters is ensured by a PID law to obtain a fast convergence. Robustness of the closed-loop system is guaranteed by an H-infinity supervisor computed from a Riccati type equation. Simulation example is presented to show the efficiency of the proposed method.
Purpose. To evaluate low generation, G2 and G3, poly(propylenimine) dendrimers for the potential cellular delivery of antisense oligonucleotides (ODNs) targeting the epidermal growth factor receptor (EGFR) in A431 epidermoid carcinoma cells. Methods. Cell cytotoxicity of the dendrimers was evaluated using trypan blue exclusion assays. Cellular uptake studies of fluorescently labeled ODNs were performed using fluorescence-activated cell sorting analysis. Intracellular fate of dendrimer-delivered ODNs was assessed in both fixed and live cells using fluorescent microscopy. Antisense ODN activity was assessed in terms of cancer cell growth, inhibition of target EGFR protein, and reduction in mRNA levels. Results. G2 dendrimer (DAB-8) was less toxic than G3 (DAB-16) dendrimer in A431 cells, with IC50 of >175 and approximate to 30 μg/ml, respectively. Uptake of fluorescently labeled ODN: dendrimer complexes was increased by up to 100-fold compared to a marker of fluid-phase endocytosis and up to 9-fold over free ODN at the optimal dendrimer: ODN (w/w) ratio of 5:1. Uptake of dendrimer: ODN complexes was significantly reduced at 4°C (p < 0.05). Live cell fluorescent microscopy resulted in an intracellular distribution of dendrimer: ODN complexes that was suggestive of endocytic uptake; in contrast, cell fixation resulted in an artefactual nuclear localization. Treatment of A431 cells with anti-EGFR antisense ODN: dendrimer complexes inhibited cell growth, protein, and mRNA expression to levels comparable to Oligofectamine-mediated delivery. Conclusions. G2 and G3 poly(propylenimine) dendrimers markedly improved the delivery and activity of ODNs and thus may represent general reagents for the delivery of ODNs to cells in culture.
The problem of identifying disturbance lines in printed circuit boards is addressed. Identification is achieved by estimating the disturbance frequency and the separation distance between the coupled lines. Frequency estimation uses a wavelet coefficients thresholding method to reconstruct the interference caused by the disturbance line. The separation distance is computed using two empirical laws based on physical ground and verified by simulation. The performance of the proposed method is illustrated by simulation results.
Abstract: Electrocatalytic activity versus oxygen evolution of perovskite-type cobalt oxide (La1-xCaxCoO3, with x = 0.0, 0.2, 0.4 and 0.6) was evaluated by potentiostatic polarization technique, as a function of the electrode chemical composition. Stability of the electrode material in alkaline medium under stressing galvanostatic conditions was investigated. Highly sensitive differential pulse adsorptive stripping voltammetry (DPAdSV) technique was successfully applied for determination of traces of dissolved cobalt in the electrolyte solution. The results point out the optimum electrode activity and stability of the x = 0.4 composition. (C) 2003 Elsevier B.V. All rights reserved.
Small interfering RNA (siRNA), antisense oligonucleotides (ODNs), ribozymes and DNAzymes have emerged as sequence-specific inhibitors of gene expression that may have therapeutic potential in the treatment of a wide range of diseases. Due to their rapid degradation in vivo, the efficacy of naked gene silencing nucleic acids is relatively short lived. The entrapment of these nucleic acids within biodegradable sustained-release delivery systems may improve their stability and reduce the doses required for efficacy. In this study, we have evaluated the potential in vitro and in vivo use of biodegradable poly (D,L-lactide-co-glycolide) copolymer (PLGA) microspheres as sustained delivery devices for ODNs, ribozyme, siRNA and DNA enzymes. In addition, we investigated the release of ODN conjugates bearing 5’-end lipophilic groups. The in vitro sustained release profiles of microsphere-entrapped nucleic acids were dependent on variables such as the type of nucleic acid used, the nature of the lipophilic group, and whether the nucleic acid used was single or double stranded. For in vivo studies, whole body autoradiography was used to monitor the bio-distribution of either free tritium-labelled ODN or that entrapped within PLGA microspheres following subcutaneous administration in Balb-c mice. The majority of the radioactivity associated with free ODN was eliminated within 24 h whereas polymer-released ODN persisted in organs and at the site of administration even after seven days post-administration. Polymer microsphere released ODN exhibited a similar tissue and cellular tropism to the free ODN. Micro-autoradiography analyses of the liver and kidneys showed similar bio-distribution for polymer-released and free ODNs with the majority of radioactivity being concentrated in the proximal convoluted tubules of the kidney and in the Kupffer cells of the liver. These findings suggest that biodegradable PLGA microspheres offer a method for improving the in vivo sustained delivery of gene silencing nucleic acids, and hence are worthy of further investigation as delivery systems for these macromolecules.
A series of Co thin films have been evaporated onto Si(100) and glass substrates. The Co thickness, t(Co), ranges from 50 to 195 nm. The structural and magnetic properties have been investigated by x-ray diffraction, hysteresis curves, Brillouin light scattering and magnetic force microscopy (MFM) techniques. The Co thin films are found to be polycrystalline with (0001) texture. There is an increase of the grain size with increasing film thickness. The coercive fields range from values as low as 2 Oe in thinner films to the highest values, 2500 Oe, in 195 nm thick Co/Si films. The magnetocrystalline anisotropy field H-a decreases as the thickness increases; surface and stress induced anisotropies seem to contribute to the value of H-a. MFM images reveal a well-defined stripe pattern for thicker Co/Si samples. Such domains are not observed in the case of the thinner films. These so-called weak-stripe domains appear in magnetic films with a low or intermediate perpendicular anisotropy. Similar behaviour was observed in Co/glass samples, in addition, cross-tie walls were seen in thinner ones.
Reference Type: Journal Article
Record Number: 36
Author: Krache, R. Benachour, D. Potschke, P.
Year: 2004
Title: Binary and ternary blends of polyethylene, polypropylene, and polyamide 6,6: The effect of compatibilization on the morphology and rheology
Journal: Journal of Applied Polymer Science
Volume: 94
Issue: 5
Pages: 1976-1985
Date: Dec
Short Title: Binary and ternary blends of polyethylene, polypropylene, and polyamide 6,6: The effect of compatibilization on the morphology and rheology
ISSN: 0021-8995
DOI: 10.1002/app.21098
Accession Number: WOS:000224759700017
Abstract: The effects of two compatibilizing agents, polystyrene-polyethylene butylene)-polystyrene copolymer (SEBS) and SEBS-grafted maleic anhydride (SEBS-g-MAH), on the morphology of binary and ternary blends of polyethylene, polypropylene, and polyamide 6,6 were investigated with scanning electron microscopy and melt rheology measurements. The addition of the compatibilizers led to finer dispersions of the particles of the minor component and a decrease in their size; this induced a significant change in the blend morphology. The rheological measurements confirmed the increased interaction between the blend components, especially with SEBS-g-MAH as the compatibilizer. New covalent bonds could be expected to form through an amine-anhydride reaction. (C) 2004 Wiley Periodicals, Inc.
Notes: Krache, R Benachour, D Potschke, P
URL: <Go to ISI>://WOS:000224759700017
Reference Type: Journal Article
Record Number: 37
Author: Lacheheb, A. Ouyahia, A. Mechakra, S. Nouasria, B. Guenifi, W. Gasmi, A. Tiouri, M. Houari, M. Sahli, F.
Year: 2004
Title: Epidemic of human brucellosis in Ain Tagrourt Algeria
Journal: International Journal of Antimicrobial Agents
Volume: 24
Pages: S158-S158
Date: Dec
Short Title: Epidemic of human brucellosis in Ain Tagrourt Algeria
ISSN: 0924-8579
Accession Number: WOS:000225734000252
URL: <Go to ISI>://WOS:000225734000252
An investigation of the ferromagnetic resonance (FMR) modes is done for a two coupled ferromagnetic film system in the framework of the rigid layer model. In this case, one of the layers (the driver layer) has a strong in-plane anisotropy compared to the coupling strength and to in-plane anisotropy of the other layer (the sensor). The curves of dispersion relation, the resonant frequency $f$, and the mode intensity $I$ vs applied field $H$ are discussed as a function of the bilinear $J(1)$ and biquadratic $J(2)$ coupling terms, and of the angle delta between the in-plane uniaxial anisotropy easy axis directions in the two layers. Depending on the coupling strength and delta values and the anisotropy of the sensor layer, as the applied field is increased, the sensor layer magnetization may smoothly rotate or suddenly switch from the antiparallel configuration to the saturated state. In the latter case, a discontinuity is observed in the mode position as well as in the FMR intensity. The discontinuities are more important for the optical than for the acoustic modes. Moreover, the coupling strengths ($J(1),J(2)$) affect the mode intensity but, practically, not the position of the acoustic mode; while for the optical mode, the effect of these parameters on the $f$ vs $H$ and $I$ vs $H$ curves is more apparent. Also, for all delta angles (other than 0 and 90 degrees), no effect of delta is observed on the position and intensity of the high-frequency mode but delta does affect the lower-frequency mode position.

Notes: Layadi, A

URL: <Go to ISI>://WOS:000221426200081
From first principles, we calculated the elastic constants C_{11}, C_{12}, C_{44}, bulk modulus, and tetragonal shear of 4d transition metals (Nb, Mo, Rh, Pd, and Ag). The calculations are based on the local spin-density functional theory with both the local density approximation (LDA) and the generalized gradient approximation (GGA) corrections. These two methods are found to describe the properties of these materials rather well. In most cases, we obtained good agreement with experimental data. (C) 2004 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 40
Author: Maamache, M. Lakehal, H.
Year: 2004
Title: Solution of the generalized Dirac equation in a time-dependent linear potential: Relativistic geometric amplitude factor
Journal: Europhysics Letters
Volume: 67
Issue: 5
Pages: 695-699
Date: Sep
Short Title: Solution of the generalized Dirac equation in a time-dependent linear potential: Relativistic geometric amplitude factor
ISSN: 0295-5075
DOI: 10.1209/epl/i2004-10109-6
Accession Number: WOS:000224199800001
Abstract: We present exact solutions of the Dirac equation for a particle with time-dependent mass moving in a time-dependent linear potential. In addition, we show that the time evolution can be described in terms of classical concept which leads to solve this problem by standard techniques of Hamiltonian mechanics. Geometric amplitude emerges as an adiabatic limit of the exact dynamics.
Notes: Maamache, M Lakehal, H
URL: <Go to ISI>://WOS:000224199800001
A second Born treatment is applied to study the (e, 3e) and (e, 3 - 1e) reactions for H-2 targets. The results of this approximation are compared to the (e, 3 - 1e) experimental data obtained at about 600 eV impact energy. Several single-centre wavefunctions are used to describe the initial state and excited states of the molecule. Even if the second Born approximation is able to explain part of the experimental results, the agreement is not good, similar to the case of the double ionization of helium.

Notes: Mansouri, A Dal Cappello, C Houamer, S Charpentier, I Lahmam-Bennani, A
In order to understand the growth mechanism of the silicides and the effect of the dopant on the electrical activity, a thin layer of chromium (100 nm) is deposited on the single crystal silicon (1 0 0) substrate implanted (10(15) As+ atoms/cm², 100 keV) and non implanted. Afterwards, we performed a rapid thermal annealing in the interval of temperature (450-600°C) for a fixed duration of 45 s. The samples are analyzed by X ray-diffraction (XRD) and Rutherford backscattering spectrometry (RBS). The electrical activity has been investigated by the method of the four-point probes. The analysis of the samples by XRD and RBS showed that the rapid thermal annealing (RTA) leads to a reaction at the interface Cr/Si inducing the formation and the growth of the unique silicide CrSi2. It is also established that the kinetics growth of CrSi2 presents a linear evolution with temperature. This fact shows that the growth is governed by a chemical reaction of the interface. Sheet resistance measurements have been performed to study the electrical behavior for these structures. It is worth to point out that the presence of the implanted arsenic in the single crystal silicon increased the resistance in a significant manner. (C) 2004 Elsevier B.V. All rights reserved.
Comparative studies of arsenic and boron diffusion as well as segregation in polysilicon on single-crystal silicon systems have been performed by secondary ion mass spectroscopy. Arsenic (10^16 atoms/cm^2; 100 keV) or boron (2 x 10^15 atoms/cm^2; 30 keV), (and both of them with As and followed by B), have been implanted in 380 nm polysilicon laid by low-pressure chemical vapor deposition have been diffused into the underlying silicon substrate in effect of rapid thermal annealing for 20 s at temperatures ranging from 1000 to 1150 degrees C. Before the deposition of polysilicon, the oxide film has been removed. Up to about 11 and 10% of implanted arsenic atoms are segregated at the interface in the case of diffusion and co-diffusion, respectively, while up to 2.6% (diffusion) and 4.45% (co-diffusion) of the implanted boron atoms are segregated at the interface. The As and B doses distributed in the substrate are smaller than the doses segregated at the interface. The continuity of arsenic and boron profiles extrapolated at the interface, shows on absence of the diffusion barrier. Diffused arsenic dose to the single crystalline Si shows a reduction of about 50% in the case of co-diffusion if compared to diffusion. As boron is concerned, the difference is even higher which confirms the stopping of the diffusion of the boron in the presence of the arsenic. (C) 2004 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 44
Author: Omidit, Y. Benboubetra, M. Hollins, A. J. Drayton, R. M. Akhtar, S.
Year: 2004
Title: Dendrimeric delivery systems for siRNA and gene therapy intrinsically alter gene expression in human epithelial cells
Journal: Journal of Pharmacy and Pharmacology
Volume: 56
Pages: S19-S19
Date: Sep
Short Title: Dendrimeric delivery systems for siRNA and gene therapy intrinsically alter gene expression in human epithelial cells
ISSN: 0022-3573
Accession Number: WOS:000203408100053
Notes: Omidit, Y. Benboubetra, M. Hollins, A. J. Drayton, R. M. Akhtar, S. S
URL: <Go to ISI>://WOS:000203408100053
This article presents a novel robust control technique for application to PWM AC choppers with ability of generating high quality sinusoidal waveforms with adjustable amplitudes over a wide range control. For this purpose, a deadbeat based digital controller has been developed to perform tight closed-loop control of the AC chopper. This controller is based on the generalized predictive control approach. The proposed controller presents the advantages of allowing a very fast transient response and compensating effectively load disturbance and nonlinear loads effects. Computer simulations are performed to investigate the proposed controller performances. The simulation analysis of the PWM AC chopper has been carried out in detail. The simulation results show that the designed controller has a good dynamic behavior, a good rejection of impact load disturbance and very robust. Then computer results have been validated experimentally.

Notes: Rahmani, L Krim, F Bouafia, A

URL: <Go to ISI>://WOS:000220845600002
Reference Type: Journal Article
Record Number: 46
Author: Rahmani, L. Krim, F. Khanniche, M. S. Bouafia, A.
Year: 2004
Title: Control for PWM ac chopper feeding nonlinear loads
Journal: International Journal of Electronics
Volume: 91
Issue: 3
Pages: 149-163
Date: Mar
Short Title: Control for PWM ac chopper feeding nonlinear loads
ISSN: 0020-7217
DOI: 10.1080/00207210410001672674
Accession Number: WOS:000220894800002
Abstract: This paper presents a novel robust control technique for PWM ac choppers with the ability to generate high quality sinusoidal waveforms with adjustable amplitudes over a wide range control. For this purpose a deadbeat-based digital controller has been developed to perform tight closed-loop control of the ac chopper. This controller is based on a generalized predictive control (GPC) approach. A dedicated control algorithm has been developed and implemented. The proposed controller presents the advantages of allowing a very fast transient response and compensating effectively for load disturbance and the effects of nonlinear loads. Computer simulations are performed to investigate the proposed controller performance. The simulation results show that the designed controller has a good dynamic behaviour, a good rejection of impact load disturbance, and is very robust. To evaluate the proposed approach an experimental prototype has been constructed. Experimental results under various loading conditions have demonstrated that the system performs well.
Notes: Rahmani, L Krim, F Khanniche, MS Bouafia, A
URL: <Go to ISI>://WOS:000220894800002
The creation of the nucleus of a superheavy element follows an extremely complex reaction path starting with the crossing of an external potential barrier (or distribution of barriers). This is followed by the evolution towards an equilibrated compound nucleus, which takes place in competition with pre-compound-nucleus fission (quasi-fission). Once formed the equilibrated compound nucleus must still survive against true fusion to yield a relatively long-lived evaporation residue. Much of this path is poorly understood, though recently, progress has been made on the role of the entrance-channel in quasi-fission. This will be briefly reported and a method proposed to measure the total capture cross section for such systems directly.
Structural and optical properties of silver bromide aggregates in an ionic matrix. In this work, we investigated the optical properties and the evolution of the AgBr semiconductor aggregates dispersed in an ionic crystalline matrix, KBr. These aggregates were obtained by doping the KBr matrix with silver powder. Microcrystals of AgBr of various sizes were consequently obtained. A thermal annealing, whose principal effect was a variation of crystallite sizes, was then carried out. The study was undertaken in a systematic way by optical absorption measurements, Xray diffraction (XRD) and photoluminescence (PL). A relation between the size of the microcrystals and the displacement of the absorption peaks towards low energies is shown. Optical absorption and photoluminescence showed the presence of the silver bromide aggregates and their photosensitivity revealed by the formation of silver clusters.
In this work, we investigated the optical properties and the evolution of AgCl semiconductor aggregates dispersed in an ionic crystalline matrix, NaCl. These aggregates were obtained by doping the NaCl matrix with a silver powder (Ag). Microcrystals of AgCl of various sizes were consequently obtained with a mean size of 30 Angstrom. A thermal annealing, whose principal effect is the variation of crystallite sizes, was then carried out. The study was undertaken in a systematic way by PL, CL measurements and X-ray diffraction (XRD). PL spectrum exhibits a response leading to the formation of AgCl aggregates within NaCl host confirmed by DRX patterns. Also photoluminescence showed the presence of the silver chloride aggregates and their photosensitivity was revealed by the formation of silver clusters. (C) 2004 Elsevier B.V. All rights reserved.
The antioxidative activity of Cleome arabica L. leaf extract was studied toward superoxide anion radical generating systems. The extract at 10 μg/ml has no scavenger effect on superoxide anion radicals generated by the xanthine-xanthine oxidase system, as determined by either the reduction of cytochrome c or pholasin luminescence. Also, this extract, up to 50 μg/ml, did not affect the uric acid production by xanthine oxidase. However, the extract showed a great inhibition activity, in a dose-dependent manner, of neutrophil pholasin luminescence stimulated by formyl-methionyl-leucyl-phenylalanine (fMLP). Indeed, the inhibition of pholasin luminescence was 80.22 +/- 2.9%, 90.22 +/- 4.0%, and 101.0 +/- 1.0% in presence of the extract at concentrations of 1, 2, and 10 μg/ml, respectively. Thereby, it is likely that Cleome arabica leaf extract showed an inhibitory effect on enzyme(s) involved in signaling pathways of fMLP-stimulated neutrophils. Effectively, the extract exerted a significant inhibitory effect (p < 0.05), in a dose-dependent manner, on elastase release by fMLP/cytochalasin B-stimulated neutrophils.
Reference Type: Journal Article
Record Number: 52
Author: Senator, A. Rachidi, W. Lehmann, S. Favier, A. Benboubetra, M.
Year: 2004
Title: Prion protein protects against DNA damage induced by paraquat in cultured cells
Journal: Free Radical Biology and Medicine
Volume: 37
Issue: 8
Pages: 1224-1230
Date: Oct
Short Title: Prion protein protects against DNA damage induced by paraquat in cultured cells
ISSN: 0891-5849
DOI: 10.1016/j.freeradbiomed.2004.07.006
Accession Number: WOS:000224329400013
Abstract: Exposure of cells to paraquat leads to production of superoxide anion (O$_2^-$). This reacts with hydrogen peroxide to give the hydroxyl radical ((OH)-O-), leading to lipid peroxidation and cell death. In this study, we investigated the effects of cellular prion protein (PrPC) overexpression on paraquat-induced toxicity by using an established model system, rabbit kidney epithelial A74 cells, which express a doxycycline-inducible murine PrPC gene. PrPC overexpression was found to significantly reduce paraquat-induced cell toxicity, DNA damage, and malondialdehyde acid levels. Superoxide dismutase (total SOD and CuZn-SOD) and glutathione peroxidase activities were higher in doxycycline-stimulated cells. Our findings clearly show that PrPC overexpression plays a protective role against paraquat toxicity, probably by virtue of its superoxide dismutase-like activity. (C) 2004 Elsevier Inc. All rights reserved.
Notes: Senator, A Rachidi, W Lehmann, S Favier, A Benboubetra, M
URL: <Go to ISI>://WOS:000224329400013
The introduction of 2,9,16,23-tetramide-Fe(III)phthalocyanine [Fe(III)taPc] units into phosphorylated poly(N-vinylcarbazole) yields an amorphous grafted polymer containing free carbazolyl groups, phosphonic acid attached to carbazolyl groups, and grafted Fe(III)taPc units as evidenced by infrared spectroscopy. Several thermal transitions were detected by differential scanning calorimetry (DSC). The thermodegradation of the grafted sample, analyzed by simultaneous thermogravimetry-differential thermal analysis (TG-DTA), showed successive endo- and exothermal reactions resulting from the development of a cross-linked structure. To determine kinetic parameters, both isothermal and dynamic experiments were performed at the different steps of the degradation process and theoretical methods were applied.
The object of these articles is the conception, the realization and the use of a new imaging process based on the study of the polarization in the light-media interaction. In this investigation, a polarization-based imaging system is developed and described that measures the two-dimensional effective backscattering Mueller matrix of a sample. As is well known, a Mueller matrix can provide considerable information on the makeup and optical characteristics of a sample (depolarization, retardance, diattenuation...), but the reliability of measure and the reconstruction of the Mueller matrix require the analysis of the error and the calibration of a Mueller polarimeter. Simulations enabled us, first, to determine the measurement error on each element of the Mueller matrix without a sample and, second, to adopt a method of calibration. Therefore, the precision of experimental results given by the Mueller matrix is drastically improved. The studies presented were performed with cancerous tissues and another non-cancerous. The results demonstrate how these techniques could provide information that may be of diagnostic value in the physical detection of lesion.
One of the most important properties of a laser resonator is the highly collimated or spatially coherent nature of the laser output beam. The spatial beam quality of the output beam, namely beam diameter and propagation factor $M^2$ are critical parameters in a wide range of practical laser applications. This is because the spatial beam quality determines how tightly the beam can be focused or how well the beam propagates over long distances without significant spreading. It was investigated by many authors in previous years how to define and on how to measure the laser beam quality. An ISO working Draft Committee has also been organized to set-up a standard for definitions and test methods of the laser beam quality. In this work, the quality factor is studied with different methods.
Continuous Paul Wavelet is a suitable tool for direct phase distribution evaluation in the case of digital interferograms. The method is based on the correlation in the Fourier domain between the digitized interferogram and the optical Paul wavelet filter spectrums. This correlation can be made directly with a computer or in optical set-up using an addressable liquid crystals display. We present the technique and the obtained results on simulated interferograms.
Reference Type: Book Section
Record Number: 4
Author: Manallah, A. Bouafia, M.
Year: 2004
Title: Characterization of surface qualities of polished optical glass by ellipsometric way
Editor: Osten, W. Takeda, M.
Book Title: Optical Metrology in Production Engineering
Volume: 5457
Pages: 772-780
Series Title: Proceedings of the Society of Photo-Optical Instrumentation Engineers (SPIE)
DOI: 10.1117/12.545711
Accession Number: WOS:000224432300085
Abstract: Ellipsometry is a technique of surfaces analysis, founded on the measure of light polarization state after reflection on a plane surface. Work consists in characterizing the surface quality of polished optical glass by ellipsometry. The measured ellipsometric parameters enabled us to lead to a correlation with roughness while being based on the theory of Maxwell-Garnett to determine the optical properties of the effective milieu.
URL: <Go to ISI>://WOS:000224432300085
Reference Type: Book
Record Number: 1
Author: Bencheikh, L.
Year: 2004
Title: Multiple scattering of water waves by N floating bodies using boundary integral equation methods
Series Editor: Constanda, C., Ahues, M., Largillier, A.
Series Title: Integral Methods in Science and Engineering: Analytic and Numerical Techniques
Number of Pages: 13-18
Short Title: Multiple scattering of water waves by N floating bodies using boundary integral equation methods
Accession Number: WOS:000189399800003
Notes: Bencheikh, L. International Conference on Integral Methods in Science and Engineering (IMSE 2002) 2002 Univ St Etienne, St Etienne, FRANCE
URL: <Go to ISI>://WOS:000189399800003
This paper presents the modelling by bond graph of a system of suspension quarter (1/4) of vehicle, equipped by a generator with effort whose presence confers on the suspension, an active character. The law of order used by this generator is of quadratic form (LQR). A work of simulation on the software Symbols and Matlab/Simulink makes it possible to display satisfactory results compared to the passive suspension.
In order to identify an asynchronous machine by a fuzzy controller while using the method of STREJC, it is necessary to mention that the establishment of a mathematical model of asynchronous machine which the complexity and the non-linearity have been reduced in return for a certain number of simplifying hypotheses and while applying the transformation of PARK of a parametric identification and a simulation of the model then the identification of the transfer function by the method of STREJC and in short the improvement of this one while integrating the fuzzy logic for the correction and the adaptation of the model in view of the identification of the asynchronous machine.
Abstract: In this study, a nonlinear least squares optimization algorithm is used for extracting Silicon carbide Schottky parameters of the single model is presented. Parameters values were extracted using this method from experimental characteristics collected from Tungsten (W), Nickel (Ni) and Molybdenum (Mo) Schottky on 4.H-SiC under forward and reverse bias and at different temperatures. The method is found to be reliable and accurate in situations where the model is a good approximation of Schottky diode performance. The diodes showed a barrier height of \( \phi(b) = 1.013 \text{eV} \) for Mo, \( \phi(b) = 1.15 \text{eV} \) for W, and \( \phi(b) = 1.57 \text{eV} \) for Ni. The diodes showed also a series resistance in the range of 6 to 15 ohms and a shunt conductance in the range of 10\(^{-12}\) S to 10\(^{-11}\) S. The ideality factor is close to unity. Indications are given on the validity of the used technique and its main limitations.


URL: <Go to ISI>://WOS:000228828900064
We give some simple algebraic conditions on the coefficients of a boundary value problem for a differential equations of Ventcel type, depending Oil a, spectral parameter, which guarantee the existence, uniqueness of a solution and coerciveness estimate, for a spectral parameter lying in some sector.
Reference Type: Journal Article
Record Number: 2
Author: Aliouane, T. Bouzid, D. Belkhir, N. Bouzid, S. Herold, V.
Year: 2005
Title: Evaluation of mechanic characteristics of the polyurethane polisher used as an abrasive door during the process of polishing optic glass
Journal: Journal De Physique Iv
Volume: 124
Pages: 123-128
Date: May
Short Title: Evaluation of mechanic characteristics of the polyurethane polisher used as an abrasive door during the process of polishing optic glass
ISSN: 1155-4339
DOI: 10.1051/jp4:2005124019
Accession Number: WOS:000230021800020
URL: <Go to ISI>://WOS:000230021800020
The aim of the present study was to investigate the responses induced by sodium fluoride (NaF) on gastric mechanical activity, using mouse whole-stomach preparations. The mechanical activity was recorded in vitro as changes of intraluminal pressure. In most of the preparations, NaF induced a tetrodotoxin-insensitive biphasic effect characterized by early relaxation followed by slowly developing contractile response. The contraction was dependent on the concentration of NaF, whereas the relaxation was observed at only 10-30 mmol/L NaF. The contractile effect was significantly reduced by nifedipine (an L-type Ca2+ channel blocker), ryanodine or ruthenium red (inhibitors of Ca2+ release from sarcoplasmic reticulum), and GF109203X (a protein kinase C inhibitor). Moreover, it was abolished by neomycin (an inhibitor of phospholipase C) and potentiated by SQ22536 (an inhibitor of adenylyl cyclase). All the drugs significantly increased the relaxation, except SQ22536, which abolished it. The present results suggest that NaF causes a complex mechanical response in the whole-stomach, which might explain gastric discomfort after fluoride ingestion. The relaxation appears owing to production of cAMP, while the contractile effects imply activation of phospholipase C, protein kinase C, influx of Ca2+, and release of Ca2+ from ryanodine-sensitive intracellular store.
Fluoride, a well-recognised harmful substance, is easily absorbed by the gastrointestinal mucosa. It is therefore conceivable that any alteration of the gastrointestinal motility can affect the rate of absorption of fluoride and leads to aggravation of its toxic effects. The effects of fluoride on gastric emptying and intestinal transit were studied in the mouse using a carboxymethyl cellulose (CMC) solution as a non-nutrient meal. The participation of the cholinergic and nitrergic systems in these effects was also evaluated. Oral gavage of 5 mM NaF had no significant effect on gastric emptying and intestinal transit of the CMC meal, whereas a decrease of gastric emptying (-33%, P<0.05) and an increase in intestinal transit (+20.7%, P<0.05) were observed with 20 mM NaF. Atropine injection induced a significant decrease of gastric emptying. Combined treatment of atropine with 20 mM NaF brought about a further, but not significant decrease in gastric emptying. N-G-nitro-L-arginine-methyl ester (L-NAME) treatment with or without oral administration of NaF decreased gastric emptying. Atropine treatment significantly depressed intestinal transit from 56.5% to 37.7% in the absence of NaF and from 70.1% to 42.8% in its presence. in contrast, L-NAME administration either alone or with fluoride increased intestinal transit (P<0.05). The present results suggest that fluoride alter gastrointestinal motility, an effect that may partly involve the cholinergic pathway. (C) 2005 Elsevier GmbH. All rights reserved.
Grain yield, straw yield and economic value of tall and semi-dwarf durum wheat cultivars in Algeria

Author: Annicchiarico, P. Abdellaoui, Z. Kelkouli, M. Zerargui, H.
Year: 2005
Title: Grain yield, straw yield and economic value of tall and semi-dwarf durum wheat cultivars in Algeria
Journal: Journal of Agricultural Science
Volume: 143
Pages: 57-64
Date: Feb
Short Title: Grain yield, straw yield and economic value of tall and semi-dwarf durum wheat cultivars in Algeria
ISSN: 0021-8596
DOI: 10.1017/s0021859605004855
Accession Number: WOS:000230861800008

Abstract: In cereal-livestock farming systems of North Africa and West Asia the straw of durum wheat [Triticum turgidum (L.) Thell. ssp. turgidum conv. durum (Desf.) MacKey] is frequently used for feeding animals during the dry season and may enhance the sustainability and the flexibility of farming in various respects. In Algeria the average sale price per unit weight of the durum straw is around 30% of that of grain. Six tall and 18 semi-dwarf locally well-adapted cultivars were grown in the season 2000/01 at five Algerian locations representing the main durum wheat cropping areas to verify: (i) the impact of straw yield on the economic merit of cultivars for recommendation and (ii) the interest of tall v. semi-dwarf plant types for breeding. The tall material comprised four cultivars derived from local landraces and two old varieties. The semi-dwarf germplasm originated from CIMMYT, ICARDA or various Mediterranean countries. In the economic assessment the straw value was expressed in terms of grain-equivalent, defining an economic yield as: grain yield + (0.30 x straw yield). The merit of individual cultivars was markedly affected by ignoring or taking into account the straw yield. On average, tall germplasm had a moderate (about 3%) but significant (P < 0.02) economic advantage over semi-dwarf material as a result of much higher straw yield (+25%) and aerial biomass (+12%) and somewhat lower grain yield (-7%). However, three semi-dwarf varieties from CIMMYT were top-ranking for economic yield. They possessed outstanding aerial biomass and similar harvest index compared with the mean response of other semi-dwarf germplasm. On average, the tall germplasm showed higher grain yield stability (P < 0.01), lower straw yield stability (P < 0.01) and slightly higher stability of economic yield (P < 0.11) than the semi-dwarf group as measured by Shukla's stability variance. Grain yield was negatively correlated with straw yield (r=-0.41, P < 0.05), and was not correlated with aerial biomass, in the whole set of cultivars. However, it was not correlated with straw yield, and was positively correlated with aerial biomass (r=0.61, P < 0.01), within the semi-dwarf germplasm. Information on straw yield can improve the targeting of cultivars for cereal-livestock farming systems. Breeding for these systems may target either a tall type within semi-dwarf material (i.e. a 'tall dwarf'), or a truly tall plant type.

Notes: Annicchiarico, P Abdellaoui, Z Kelkouli, M Zerargui, H
URL: <Go to ISI>://WOS:000230861800008
Xanthine oxidoreductase (XOR) was purified from caprine milk where more than 90% exists in demolybdo 'inactive' form. The dehydrogenase form of the enzyme, oxidises nicotinamide adenine dinucleotide (reduced) (NADH), in the presence of oxygen, and generates superoxide anion radical (O₂⁻) significantly faster than does the oxidase form. The corresponding forms of human and bovine milk enzymes behaved similarly. The steady-state kinetics of NADH oxidation and O₂⁻ production, in the absence and presence of NAD(+), by the dehydrogenase form of XOR from the three species, are analysed. Allopurinol, oxypurinol and amflutizole blocked the reducing substrates that act at the molybdenum site, and all of which were ineffective in the case of NADH oxidase activity. However, and as expected, diphenyleneiodonium was a powerful inhibitor of NADH oxidation. The possible physiological and pathological significance of reactive oxygen species, especially O₂⁻, arising from NADH oxidation by caprine XOR is discussed. (c) 2004 Elsevier Ltd. All rights reserved.
Granular Co-Ag alloy films elaborated by molecular-beam epitaxy at three temperatures: 20, 250 and 450 degrees C, have been investigated. The influence of substrate temperatures on the growth and the structural properties is studied, using reflection high-energy electron diffraction (RHEED) and X-ray diffraction (XRD) techniques. For all growth temperatures, the in situ RHEED patterns of the Co-Ag alloys exhibit an in-plane six-fold symmetry, which indicates that the Co and Ag deposits are in epitaxy with the Ru buffer surface. At 20 degrees C, the RHEED patterns show a unique lattice with diffuse lines, which is a feature of a rough surface. However, at 250 degrees C, the RHEED patterns show double lines, which indicate the existence of two lattices, associated with Ag and Co metals. RHEED analysis indicates that the Co lattice constant relaxes to its bulk value after a critical thickness of 20 angstrom, while the Ag has already relaxed at the growth beginning. XRD studies give evidence of a strongly textured alloy films, along the growth direction. It is found that, at 20 degrees C, Co impurities are embedded in the Ag matrix. However, in the range 250-450 degrees C, the system segregates and gives the formation of chemically pure entities of Co and Ag. (c) 2004 Elsevier B.V. All rights reserved.
High density polyethylene (HDPE) and polyamide (PA66) are well known to be incompatible. An ionomer (Surlyn) was added as a compatibilizer to HDPE and glass fiber reinforced (HDPE/GFRPA66) and non-reinforced (HDPE/PA66) blends. Two compositions were considered: 25/75 wt % and 75/25 wt %, with an emphasis on the former formulation. The influence of the compatibilizer on the rheology, thermal properties, and the morphology, as well as mechanical properties of the blends, was investigated using melt flow index measurements, DSC, scanning electron microscopy (SEM), and impact strength. The ionomer was found to be more effective as a compatibilizer with HDPE as a minor phase compared to the case when HDPE becomes the major phase. The results indicated that the interfacial properties of the blends were improved, with a maximum appearing at a critical concentration of the ionomer (7.5 vol %). At this level of compatibilization, SEM analysis revealed better interfacial adhesion and a finer dispersion. MFI results revealed a probable reaction between the amine groups of PA66 and the acid functions of the ionomer. The mechanical properties support the above results and showed that the addition of 25 wt % HDPE did not affect the properties of PA66 much and the presence of glass fiber did not hinder the effect of the compatibilizer. Only 20% decrease in notched Izod impact strength of the blends is observed at 7.5 vol % ionomer content, suggesting that the addition of 25 wt % of HDPE to PA66 is not detrimental at this level of compatibilization. The emulsification curve was established and revealed that, in terms of impact properties, the finer the particle size, the higher the impact strength corresponding to 7.5 vol % ionomer content. (c) 2005 Wiley Periodicals, Inc.
We present a generalization of the Extended Thomas Fermi (ETF) theory to fermionic systems at finite temperature and finite angular momentum. In fact the present approach is more general in the sense that it is able to treat an excited system of fermions subject to an external vector field which in the case of nuclear rotations, developed more extensively here, is simply $r \times \omega$. 

Notes: Bartel, J Bencheikh, K Quentin, P 11th Nuclear Physics Workshop Sep 23-26, 2004 Kazimierz, POLAND

URL: <Go to ISI>://WOS:000229619600021
CR-39 type PN3 plastic detectors associated with a polyethylene or PN3 radiator or without radiator were exposed to Pu-Be neutrons to evaluate their effectiveness as fast neutron dosimeters. The detectors were chemically etched and track counting was performed using an automated system. It was found that the dosimeter responses were linear up to a neutron dose equivalent of 200 mSv and that the simple PN3 detector without radiator has the same response as the two-element dosimeters and thus appears as a promising fast neutron dosimeter. (C) 2004 Elsevier Ltd. All rights reserved.
This paper presents a design procedure for Mamdani fuzzy logic controller including rule base minimisation. The rules are modelled with binary weights on which constraints are imposed in order to ensure consistency. A genetic algorithm is used for finding stabilising controllers that minimise the number of rules. The cost function includes a stability/performance coefficient which insures that stable, performance satisfying controllers are given the highest possible fitness. The number of fuzzy sets for the input and the control variables are set by the user and the design procedure is concerned only with the rule base and the distribution of the fuzzy sets in the universes of discourses. Two examples were studied: the control of the pole and cart system and the control of the concentration in CSTR. In both cases, the fuzzy sets were isosceles triangles evenly distributed, in the universe of discourses. (c) 2005 Elsevier Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 13
Author: Belhattab, R. Larous, L. Figueiredo, A. C. Santos, P. A. G. Barroso, J. G. Pedro, L. G.
Year: 2005
Title: Origanum glandulosum Desf. grown wild in Algeria: essential oil composition and glycosidic bound volatiles
Journal: Flavour and Fragrance Journal
Volume: 20
Issue: 2
Pages: 209-212
Date: Mar-Apr
Short Title: Origanum glandulosum Desf. grown wild in Algeria: essential oil composition and glycosidic bound volatiles
ISSN: 0882-5734
DOI: 10.1002/ffj.1387
Accession Number: WOS:000227347400025
Abstract: The essential oils, isolated by distillation-extraction (DE) and hydrodistillation (H) for different extraction periods, from the aerial parts of Origanum glandulosum collected at the flowering phase in Algeria, were analysed by GC and GC-MS. The oil yields determined by hydrodistillation attained 1.8% (v/w) and 2.7% (v/w) when extracted for 10 min and 3 h, respectively. The essential oils were dominated by the monoterpene fraction (DE 95-96% and H 86-97%), carvacrol being the main component of all oils (49-57 and 45-47% for DE and H oils, respectively). The other main components (> 5%) were gamma-terpinene (DE 17-13 and H 18-13%), p-cymene (DE 14-10 and H 17-11%) and thymol (DE 7 and H 5-7%). The composition of the glycosidic bound volatiles showed very little resemblance to the corresponding essential oil fraction. Thirteen components were detected in the glycosidic bound volatiles, only six of which were also present in the essential oil. The oxygen-containing monoterpenes were the dominant fraction (75-97%) of the glycosidic bound volatiles, but the main component was dependent on the extraction period and not on the isolation procedure. Carvacrol (71% for DE and 61% for H) dominated the 10 min distillation, whereas thymoquinone, which was not present on the essential oil, was the dominant component in the 3 h distillation (79% for DE and 59% for H). Copyright (c) 2004 John Wiley & Sons, Ltd.
Notes: Belhattab, R Larous, L Figueiredo, AC Santos, PAG Barroso, JG Pedro, LG
URL: <Go to ISI>://WOS:000227347400025
Thermal evaporation is used to deposit Au/Cu and Cu/Au bilayers on (111) monocrystalline silicon substrates. The layers composition and surface morphology are performed as function of annealing temperature at 200 and 400 degrees C using X-ray diffraction, Rutherford backscattering spectroscopy and scanning electron microscopy. Independently to the sequence of copper and gold deposition, Cu3Si and Cu4Si copper silicides result to the reaction and interdiffusion at the different interfaces. The 1000 and 1200 angstrom thickness of gold and copper diffusion barriers are insufficient to prevent the diffusion of copper and gold atoms respectively, after an annealing of only 200 degrees C. The fitting of concentration profiles of RBS spectra by using the RUMP software revealed a growth of silicides layers not uniform laterally and in depth. (c) 2004 Elsevier B.V. All rights reserved.
Using the Wigner transform, we present an alternative derivation of the partial differential equation satisfied by the Slater sum, which is the diagonal element of the canonical Bloch density matrix. This is done in one dimension for the case of a general confining potential and also for the case of N independent fermions harmonically confined in d dimensions. We also present a simple proof of the so-called differential virial theorem for each of these cases.

Notes: Bencheikh, K Nieto, LM Maamache, M

URL: <Go to ISI>://WOS:000233541400006
Reference Type: Journal Article

Record Number: 16

Author: Benneouala, T. Cherruault, Y. Abbaoui, K.

Year: 2005

Title: New methods for applying the Adomian method to partial differential equations with boundary conditions

Journal: Kybernetes

Volume: 34

Issue: 7-8

Pages: 924-933

Short Title: New methods for applying the Adomian method to partial differential equations with boundary conditions

ISSN: 0368-492X

DOI: 10.1108/03684920510605740

Accession Number: WOS:000231868000002

Abstract: Purpose - To find methods for solving non-linear partial differential equations. The decomposition method may be applied, but a difficulty arises when applied to non-linear partial differential equations with initial and boundary conditions. In this work, two methods are described that take into account the boundary conditions. Design/methodology/approach - The decomposition method whilst being a powerful tool for solving non-linear functional equations encounters difficulties in finding solutions of partial differential equations with boundary conditions. In this paper, two methods are introduced which consist of setting boundary conditions to the equations so that the decomposition methods can be applied. Findings - By using the two proposed methods the decomposition method can then be easily used. In this work the two methods taking account of the boundary conditions were found to be efficient and allows a solution to be found using the Adomian decomposition method. Research limitations/implications - The two new methods provide solutions by the application of the decomposition method of George Adomian as extended by other researchers. Both are efficient: the first giving interesting results for linear and non-linear problems; the second one is also efficient, but difficulties could arise from the calculations of the required series. Practical implications - The research provides two efficient methods. The first method gives the demonstrated results for linear and non-linear problems due to the use of symbolic software such as Mathematica or Maple. Originality/value - Both methods illustrate the powerful use of the decomposition techniques pioneered by Adomian and as a result of their application may be applied to the solving of non-linear functional equations of any kind. This paper tackles the problems by introducing new methods of applying the Adomian techniques to partial differential equations with boundary conditions.

Notes: Benneouala, T Cherruault, Y Abbaoui, K

URL: <Go to ISI>://WOS:000231868000002
Reference Type: Journal Article  
Record Number: 17  
Author: Benter, I. F.  Yousif, M. H. M.  Griffiths, S. M.  Benboubetra, M.  Akhtar, S.  
Year: 2005  
Title: Epidermal growth factor receptor tyrosine kinase-mediated signalling contributes to diabetes-induced vascular dysfunction in the mesenteric bed  
Journal: British Journal of Pharmacology  
Volume: 145  
Issue: 6  
Pages: 829-836  
Date: Jul  
Short Title: Epidermal growth factor receptor tyrosine kinase-mediated signalling contributes to diabetes-induced vascular dysfunction in the mesenteric bed  
ISSN: 0007-1188  
DOI: 10.1038/sj.bjp.0706238  
Accession Number: WOS:000230588500016  
Abstract: 1 In order to characterize the roles of tyrosine kinases (TKs) and epidermal growth factor receptor (EGFR) in diabetes-induced vascular dysfunction, we investigated the ability of a chronic administration of genistein, a broad-spectrum inhibitor of TKs and AG1478, a specific inhibitor of EGFR TK activity to modulate the altered vasoreactivity of the perfused mesenteric bed to common vasoconstrictors and vasodilators in streptozotocin (STZ)-induced diabetes in rats. 2 The vasoconstrictor responses induced by norepinephrine (NE), endothelin-1 (ET-1) and angiotensin II (Ang II), were significantly increased, whereas vasodilator responses to carbachol and histamine were significantly reduced in the perfused mesenteric bed of STZ-induced diabetic rats in comparison with healthy rats. Treatment of diabetic animals with genistein or AG1478 produced a significant normalization of the altered agonist-induced vasoconstrictor and vasodilator responses without affecting blood glucose levels. In contrast, neither inhibitor had any effect on the vascular responsiveness of control (nondiabetic) animals. Treatment of diabetic animals with diadzein, an inactive analogue of genistein, did not affect the vasoconstrictor and vasodilator responses in control or diabetic animals. Phosphorylated EGFR levels were markedly raised in the mesenteric bed from diabetic animals and were normalized upon treatment with AG1478 or genistein. 3 These data suggest that activation of TK-mediated pathways, including EGFR TK signalling are involved in the development of diabetic vascular dysfunction.  
Notes: Benter, IF Yousif, MHM Griffiths, SM Benboubetra, M Akhtar, S  
URL: <Go to ISI>://WOS:000230588500016
For first-principles density functional theory of a many fermion system, the
determination of the kinetic energy functional is important. We consider N independent fermions
with spatially varying effective mass in two dimensions, we derive the corresponding kinetic
energy density using the h semiclassical approach. Our result reduces, as expected, to the one
obtained in the literature for a constant effective mass. We examine the analytical expressions of
the position dependent effective mass terms in the kinetic energy density functional with respect
to the dimensionality d=1,2,3 of the space.
Reference Type: Journal Article
Record Number: 19
Author: Bouamama, K. Daoud, K. Kassali, K.
Year: 2005
Title: Ab initio calculations in the virtual-crystal approximation of the structural and the elastic properties of BeSxSe1-x alloys under high pressure
Journal: Modelling and Simulation in Materials Science and Engineering
Volume: 13
Issue: 7
Pages: 1153-1162
Date: Oct
Short Title: Ab initio calculations in the virtual-crystal approximation of the structural and the elastic properties of BeSxSe1-x alloys under high pressure
ISSN: 0965-0393
DOI: 10.1088/0965-0393/13/7/010
Accession Number: WOS:000233224700010
Abstract: We report the first-principles calculation results on the structural and elastic properties of BeSxSe1-x alloys. These are done using the density functional theory within the local density approximation and employing virtual-crystal approximation. It is found that the lattice parameter, the phase transition pressure and elastic constants (and their derivatives with respect to the pressure) follow a quadratic law in x.
Notes: Bouamama, K Daoud, K Kassali, K
URL: <Go to ISI>://WOS:000233224700010
We report first-principles calculation results on the structural and elastic properties of ZnSxSe1-x alloy. The calculations done using density functional theory within the local density approximation and employing the virtual-crystal approximation. It is found that the lattice parameter, the phase transition pressure, and the elastic constants (and their derivative with respect to the pressure) follow a quadratic law in x.
Reference Type: Journal Article
Record Number: 21
Author: Bouhemadou, A. Khenata, R. Sahnoun, M. Baltache, H. Kharoubi, M.
Year: 2005
Title: First-principles study of structural, elastic and high-pressure properties of cerium chalcogenides
Journal: Physica B-Condensed Matter
Volume: 363
Issue: 1-4
Pages: 255-261
Date: Jun
Short Title: First-principles study of structural, elastic and high-pressure properties of cerium chalcogenides
ISSN: 0921-4526
DOI: 10.1016/j.physb.2005.03.029
Accession Number: WOS:000229654700034
Abstract: A theoretical study of structural, elastic and high-pressure properties of cubic CeS, CeSe and CeTe is presented, using the full-potential augmented plane wave method plus local orbitals (FP-APW + lo) as implanted in the WIEN2K code. In this approach, the generalized gradient approximation (GGA) is used for the exchange-correlation (XC) potential. Results are given for lattice constant, bulk modulus, its pressure derivative and elastic constants for both NaCl- and CsCl-type structures. The pressure transition at which these compounds undergo structural phase transition from NaCl-B1 to CsCl-B2 phases are also calculated. (c) 2005 Elsevier B.V. All rights reserved.
Notes: Bouhemadou, A Khenata, R Sahnoun, M Baltache, H Kharoubi, M
URL: <Go to ISI>://WOS:000229654700034
The effects of Cleome arabica leaf extract, rutin and quercetin on soybean lipoxynase (Lox) activity and on calcium ionophore (A23187)-stimulated generation of the leukotriene B-4 and prostaglandin E-2 by human neutrophils were examined. The extract (25 mug/ml), rutin (25 muM) and quercetin (25 muM) inhibited LTB4 synthesis at all concentrations of A23187 used. The extract at 1-100 mug/ml and rutin at 1-100 muM inhibited LTB4 generation by neutrophils stimulated with 1 muM A23187 by about 50%. PGE(2) production in response to different concentrations of A23187 was affected in a biphasic manner by the extract and rutin. Quercetin at 1-100 muM caused concentration-dependent inhibition of LTB4 and PGE(2) production. The extract, rutin and quercetin caused concentration-dependent inhibition of soybean Lox activity. These results indicate that rutin, quercetin and an extract of C arabica containing these compounds inhibit Lox activity, consequently decreasing LTB4 production. Thus, these compounds or extracts containing them may be beneficial for the treatment of inflammatory conditions, particularly those characterised by excessive leukotriene generation. (C) 2004 Elsevier Ltd. All rights reserved.
The effects of the substrate and thickness on the magnetic properties of Ni thin films were investigated. Series of Ni thin films were prepared by dc diode sputtering on four different substrates: glass, Si(111), Si(100) and mica; the Ni thickness ranged from about 295 angstrom to 3080 angstrom. By X-ray diffraction, we observed that Ni grown on glass has no texture. On the other hand Ni deposited on Si gets the <111> preferred orientation for all samples. Kerr effect experiments were done using light of wavelength $\lambda = 6328$ angstrom and a magnetic field varying from 0 to 7 kOe. Longitudinal and polar Kerr effect measurements were performed on these samples. Kerr rotation $\theta(K)$ and coercivity $H_c$ were deduced from the hysteresis curves. These parameters were studied as a function of the substrate, the film thickness, the grain size and the texture. The experimental results are interpreted and discussed.
Influence of meal on plasma folate and vitamin B12, by three methods - and on vitamin B6, homocysteine and red blood cell folate

Vitamins are brought by meals. Some of them are cofactors in homocysteine metabolism, and, if plasma homocysteine values are not known to have a circadian rhythm, little is known about meal influence on blood folate, and vitamins B12 and B6. The aim of this study is to analyze the effect of breakfast and lunch on plasma folate, vitamins B12 and B6, homocysteine and red cell folate (RCF) in 13 subjects; and, in 6 of them, to compare plasma folate and vitamin B12 values with three analytical methods. In the 13 subjects, folate, vitamins B12 and B6 and RCF were analyzed by RIA, homocysteine by fluorescence polarization immunoassay and vitamin B6 by HPLC. In 6 of the subjects, additionally, plasma folate and vitamin B12 were analyzed by microbiology and by enzymoimmunoassay (EIA). Mean plasma folate levels at 11AM, 2PM, and 4PM were not significantly different, compared with 9AM mean values, independent of the method, while, when analyzed by microbiology, mean vitamin B12 concentrations decreased significantly (-12%), but not by RIA or by microbiology. Plasma folate concentrations, obtained by the different methods, and RCF concentrations were correlated, as for vitamin B12 concentrations. But, when analyzed by EIA, vitamin B12 values were higher than by the two other methods. We conclude that plasma folate levels were constant at the different sampling hours, while vitamin B12 levels were decreased at 11AM, 2PM and 4PM, when compared with the fasting concentrations, and when assayed by microbiology. No difference was seen by RIA or by EIA. The evaluation of clinical data is not easy, due to the lack of a standardized analytical method, and international standards are needed.
Reference Type: Journal Article
Record Number: 26
Author: Chaoui, Z. Bouarissa, N.
Year: 2005
Title: Slow electrons penetration in gold at normal and oblique angles of incidence
Volume: 19
Issue: 11
Pages: 1955-1963
Date: Apr
Short Title: Slow electrons penetration in gold at normal and oblique angles of incidence
ISSN: 0217-9792
DOI: 10.1142/s0217979205029559
Accession Number: WOS:000229380000005
Abstract: Electron penetration in semi-infinite An for normal and oblique angles of incidence at energies between 0.5 and 4 keV is simulated within a Monte-Carlo frame work. The elastic scattering cross sections have been obtained from a modified Rutherford differential cross section, whereas inelastic core and valence electron excitation are calculated using the Gryzinski's expression. The dependence of the backscattering coefficient, mean implantation depth and stopping profiles on the angle of incidence has been examined. These quantities are found to be significantly enhanced as the angle of incidence becomes higher which is generally in consistent with previous simulations.
Notes: Chaoui, Z Bouarissa, N
URL: <Go to ISI>://WOS:000229380000005
X-ray diffraction and magnetic force microscopy techniques were used to investigate the structural and the static magnetic properties of vapor-deposited cobalt films with various thicknesses \( t \) ranging from 50 to 195 nm. Texture measurements revealed that as the thickness increases, the films become predominantly \( c \)-axis oriented. Magnetic stripe domains structure was only observed for the thicker films, with \( t = 195, 173 \) and 125 nm, while such a magnetic configuration was expected for all the samples based on the theoretical studies. Since the layers present increasing \( c \)-axis misorientation when the thickness decreases, we assume that this effect can prevent the stripe domains formation. This behavior is qualitatively explained by a simple model which describes the stripe domains structure taking into account the role of a small misorientation of the anisotropy axis.
Atractylis gummifera L. (Asteraceae) is a thistle located in the Mediterranean region. Despite the plant's well-known toxicity, its ingestion continues to be a common cause of poisoning. The toxicity of Atractylis gummifera resides in atracyloside and carboxyatractyloside, two diterpenoid glucosides capable of inhibiting mitochondrial oxidative phosphorylation. Both constituents interact with a mitochondrial protein, the adenine nucleotide translocator, responsible for the ATP/ADP antiport and involved in mitochondrial membrane permeabilization. Poisoned patients manifest characteristic symptoms such as nausea, vomiting, epigastric and abdominal pain, diarrhea, anxiety, headache and convulsions, often followed by coma. No specific pharmacological treatment for Atractylis gummifera intoxication is yet available and all the current therapeutic approaches are only symptomatic. In vitro experiments showed that some compounds such as verapamil, or dithiothreitol could protect against the toxic effects of atracyloside, but only if administered before atracyloside exposure. New therapeutic approaches could come from immunotherapy research: some studies have already tried to produce polyclonal Fab fragments against the toxic components of Atractylis gummifera. (C) 2004 Elsevier Ireland Ltd. All rights reserved.
Existence, uniqueness and regularity of the trajectories of mild solutions of one-dimensional nonlinear stochastic fractional partial differential equations of order $\alpha > 1$ containing derivatives of entire order and perturbed by space-time white noise are studied. The fractional derivative operator is defined by means of a generalized Riesz-Feller potential. © 2005 Elsevier B.V. All rights reserved.
A mathematical model for the hydrolysis reaction of p-nitro phenol laurate catalyzed by a lipase immobilized in a membrane was developed. In an earlier study this model reaction was found to show very different reaction rates when it was performed in aqueous micellar solution with free enzyme and with membrane immobilized enzyme. It was assumed that a local accumulation of substrate in the membrane is responsible for the observed rate enhancement. The conversion of p-nitro phenol ester within the membrane was modeled by considering a combination of the convective flow through poly(vinyl alcohol) membrane pores, concentration polarization of substrate containing micelles at the membrane surface and the kinetics of the reaction with free enzymes. It was demonstrated that the model offered a comprehensive understanding of the interaction of the involved phenomena. The modeling results are in good agreement with the experimental data from 10 runs with different enzyme and substrate concentrations. The substrate concentration at the membrane surface increased by up to a factor of 3 compared to the feed concentration. This effect explains the observed rate enhancement. Moreover, the model was used to determine the unknown parameters, i.e., the intrinsic retention and the mass transfer coefficient, by fitting the model to the experimental data. The model may also be used to calculate the optimum operating conditions and design parameters of such a reactor.
This paper reports on the performance and its relation with the structure of a highly loaded (41 Wt.%) CO/SiO2 catalyst in the gas phase hydrogenation of crotonaldehyde when varying the thermal treatments to which the catalyst precursor has been subjected. The optimum calcination and reduction temperatures were identified where the highest selectivity to crotyl alcohol (around 90%) was obtained with the catalyst calcined at 400 degrees C and reduced at 350 degrees C even at conversions as high as 60%. Higher temperature of calcination was found to lower the crotyl alcohol selectivity. Both, lower and higher reduction temperatures will not favour the crotyl alcohol formation. These results were interpreted and correlated with the surface structure of the catalyst which was shown by temperature programmed reduction (TPR) and X-ray photoelectron spectroscopy (XPS) analysis. Depending on the thermal conditions imposed, the surface consisted of either Co metal, or coexisting metal and its oxide; structure which favours the high crotyl alcohol selectivity. By TEM analysis, large particles (diameter exceeding 50 nm) were identified after reduction at 350 degrees C. A global activation energy of 44 kJ/mol was obtained with this catalyst. In the light of the obtained results a discussion on the reaction mechanism involving metal, metal-oxide double sites has been put forward. It was emphasised that, for selective hydrogenation of crotonaldehyde into unsaturated alcohol, Co catalysts compete favourably with platinum based catalysts. (c) 2004 Elsevier B.V. All rights reserved.
We have developed a model of TMOS submicronic with ultra thin oxide layers as small as 4,5-nm in order to study MOSFET's output characteristics and its associated characterization facility for advanced integrated-circuit design are described. This model makes use of the SPICE3F4 simulator and takes in consideration the majority of the physical effects describing the device's real behavior. The validation of our model has provided us with results on the drain current $I_{DS}$ versus drain voltage $V_{DS}$. Our analysis and conclusions should be of interest to all who work with VLSI circuit technology.

Notes: Guenifi, N Djahli, F Keraghel, F 4th Conference of Discrete Mathematics and Algorithmics, Polytechnic University of Madrid May 26-28, 2004 Beirut, LEBANON

URL: <Go to ISI>://WOS:000230021800047
Si(100) and (111) oriented silicon wafers were used as a substrate for metallic bilayers deposition of copper and gold. Cu/Au/Si structures were obtained by thermal evaporation and then heated below 400 degrees C in vacuum. These solid-state reactions occurred in the samples have been studied using X-ray diffraction (XRD), Rutherford backscattering spectroscopy (RBS), scanning electronic microscopy (SEM) and X-ray dispersive energy analyzer (XDE). The study shows that heat treatment at 200 degrees C of the multilayered Cu/Au/Si structure leads to the formation and the co-existence of both Cu3Si and Cu4Si copper rich-silicides with the expansion of their respective cells, independently of the orientation of the substrate. The increasing of the annealing temperature until 400 degrees C leads to the growth of well-oriented crystallites corresponding to Cu3Si and Cu4Si silicides on Si(111) but only Cu4Si crystallites with square and rectangular shapes on Si(100). The thermal stability of formed copper silicides after heat treatment at 400 degrees C during 30 min for both Cu/Au/Si(100) and Cu/Au/Si(111) systems is analyzed. (c) 2005 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 34
Author: Issaadi, S.  Haffar, D.  Douadi, T.  Chafaa, S.  Seraphin, D.  Khan, M.  Bouet, G.
Year: 2005
Title: Synthesis, characterization, and electrochemical study of complexes with 4,4'-bis(salicylideneimino) diphenylether and cobalt(II), copper(II), zinc(II), and cadmium(II)
Journal: Synthesis and Reactivity in Inorganic Metal-Organic and Nano-Metal Chemistry
Volume: 35
Issue: 10
Pages: 875-882
Short Title: Synthesis, characterization, and electrochemical study of complexes with 4,4'-bis(salicylideneimino) diphenylether and cobalt(II), copper(II), zinc(II), and cadmium(II)
ISSN: 1553-3174
DOI: 10.1080/15533170500358044
Accession Number: WOS:000234429400020
Abstract: The 4,4'-bis(salicylideneimino) diphenyl ether is a N2O3 Schiff base but it acts as a tetradentate ligand. Its complexes with cobalt (II), copper(II), zinc(II), and cadmium (II) were characterised using spectroscopic determinations, d.s.c. and cyclic voltammetry. In these compounds, the coordination occurs through the non-ionised phenolic hydroxyl of the ligand and the nitrogen atom of the azomethine moiety. These new complexes should be formulated [CuCl2(H2L)]·H2O, [(CoCl2)(2)(H2L)(H2O)(4)]·2H2O, [Zn2Cl2(H2L)] and [Cd(H2L)]Cl-2 respectively. The copper(II) and cadmium(II) complexes are mononuclear while the cobalt(II) and zinc(II) appeared to be binuclear species. The anodic oxidations of cobalt (II), zinc(II), and cadmium(II) compounds show only one peak attributed to the oxidation of the phenolic moiety of the ligand. In addition, the copper complex [CuCl2(H2L)]·H2O exhibits two peaks at +680 mV (ECS) and +965 mV (ECS) corresponding to the complexed couples Cu-II/Cu-III and Cu-I/Cu-II.
Notes: Issaadi, S Haffar, D Douadi, T Chafaa, S Seraphin, D Khan, M Bouet, G
URL: <Go to ISI>://WOS:000234429400020
A reflectometer with vertical sample position has been recently installed at the research reactor NUR. In this paper, a description of this instrument is presented. The test has been performed with a ten nickel-titanium bilayers monochromator with a total thickness of 300 nm. The nominal thicknesses of each bilayer are 15 nm Ti and 15 nm Ni. (c) 2005 Elsevier B.V. All rights reserved.

Notes: Izerrouken, M Guedioura, B Saichi, B Nedjar, A Meftah, A Nekab, M
URL: <Go to ISI>://WOS:000230253100003
This paper presents a new time-frequency distribution which uses a time-dependent two-sided linear predictor model. The current sample is estimated as a weighted sum of the past and future values. The two-sided linear prediction approach yields a smaller prediction error than that obtained by using the usual one-sided linear predictor model. To estimate the time-dependent coefficients of the two-sided linear predictor, these are expanded as a linear combination of a set of time functions basis which leads to an ensemble of equations of the type of Yule-Walker equations. The nonstationary power spectrum estimate is used as a time-frequency distribution to characterize the signal jointly in the time domain and the frequency domain. We show that two-sided prediction-based time-frequency distribution can discriminate two close components in the time-frequency plane that neither Choi-Williams distribution nor one-sided prediction-based time-frequency distribution are capable of resolving. Also, the proposed time-frequency distribution is used to estimate the instantaneous frequency. Examples show that the proposed approach outperforms the usual technique based on the nonstationary autoregressive model. (C) 2004 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 37
Author: Kahoul, A. Nekab, M.
Year: 2005
Title: L1, L2 and L3 subshell ionization cross sections for elements with 71 <= Z <= 80 for protons of 0.5 to 3.0 MeV
Journal: Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms
Volume: 234
Issue: 4
Pages: 412-418
Date: Jul
Short Title: L1, L2 and L3 subshell ionization cross sections for elements with 71 <= Z <= 80
ISSN: 0168-583X
DOI: 10.1016/j.nimb.2005.02.013
Accession Number: WOS:000230261900003
Abstract: We present in this contribution theoretical predictions of the L_i (i = 1, 2, 3) subshells ionization cross sections within the ECPSSR theory for elements with atomic number 71 <= Z <= 80 for protons with energy of 0.5 to 3.0 MeV. These predictions are compared to the experimental data reported by Orlic et al. [At. Data Nucl. Data Tables 56 (1994) 159] and by Sokhi and Crumpton [At. Data Nucl. Data Tables 30 (1984) 49] by plotting the ratio S = sigma(exp)/sigma(ECPSSR) as a function of the reduced velocity parameter for each individual subshell L1, L2 and L3. By fitting separately the ratio S, we deduced reference ionization cross sections for each Li subshell. On the other hand, we report empirical ionization cross sections and make a comparison between the reference cross sections, the empirical cross sections reported in this paper and those reported by Sow et al. [Nucl. Instr. and Meth. B 75 (1993) 58] and by Orlic et al. [Int. J. PIXE 4 (4) (1994) 217]. (c) 2005 Elsevier B.V. All rights reserved.
Notes: Kahoul, A Nekab, M
URL: <Go to ISI>://WOS:000230261900003
Reference Type: Journal Article
Record Number: 38
Author: Khanafi-Benghalem, N. Loucif, K. Benghalem, K. L. Boudoukha, H. Louahdi, R.
Year: 2005
Title: Control of temperature during the wear and tear process of Z12CNS20 steel chafing with Z200C13 steel
Journal: Journal De Physique Iv
Volume: 124
Pages: 189-194
Date: May
Short Title: Control of temperature during the wear and tear process of Z12CNS20 steel chafing with Z200C13 steel
ISSN: 1155-4339
DOI: 10.1051/jp4:2005124027
Accession Number: WOS:000230021800031
Notes: Khanafi-Benghalem, N Loucif, K Benghalem, KL Boudoukha, H Louahdi, R 4th Conference of Discreet Mathematics and Algorithmics, Polytechnic University of Madrid May 26-28, 2004 Beirut, LEBANON
URL: <Go to ISI>://WOS:000230021800031
Implementation of neutron tomography around the Algerian Es-Salam research reactor: preliminary studies and first steps

During the last three years a static neutron radiography facility has been designed and installed around one of the horizontal neutron beam channels of the Es-Salam research reactor. In order to extend the field of application of neutron radiography, a development project is actually undertaken. The purpose of this project is the implementation of neutron tomography (NT). The Es-Salam research reactor provides a 10(9)n/cm(2)s thermal neutron beam for the installation of a tomography facility. The aim of this Tomography facility will be to visualize dynamic processes and to implement fast reconstruction methods. A first step in this direction was the design and the realization of an exposition cell, a beam-catcher, a turn table and a neutron beam collimation system. All electronic parts of the detection system will be provided and installed within the frame work of a Technical Cooperation Project (TCP) with the International Atomic Energy Agency (IAEA). This paper describes the estimation procedure of the main design parameters according to the measurement of the beam properties for final tomography station as well as the composition and the performance of the proposed detection system. Moreover, the influence of physical parameters of the irradiation in-pile parts on the image quality and acquisition process is discussed. (c) 2005 Elsevier B.V. All rights reserved.
The ferromagnetic resonance (FMR) modes of a magnetic tunnel junction-like system are investigated. Such a system consists of an interfacial (F/AF) interaction described by an exchange anisotropy field $H_E$ and a magnetic coupling of two ferromagnetic layers separated by a nonmagnetic interlayer. The latter interaction is accounted for by bilinear $J(1)$ and biquadratic $J(2)$ coupling strengths. The dispersion relation, the resonant frequency, $f$, as well as the corresponding mode intensity, $I$, versus applied field $H$ curves, have been studied. Analytical formulas for the resonance condition and intensity have been derived for the low magnetic coupling/high exchange anisotropy case. In this situation, the system is found to behave as two uncoupled layers with magnetic characteristics different from those of the initial layers; the effect of the low coupling is to modify the different anisotropies: $J(1)$ contributes to the exchange anisotropy while $J(2)$ modifies the magnetocrystalline anisotropies. For very strong coupling, the system behaves as a single (F/AF) system with effective exchange and magnetocrystalline anisotropy fields; these fields have been derived as a function of the individual layer magnetic parameters.

Notes: Layadi, A
URL: <Go to ISI>://WOS:000230890100103
A study of impurity segregation to the surface of an austenitic stainless steel using Auger electron spectroscopy

Louahdi, R. Hayes, V. Marchand, R. Saindrenan, G.

Journal De Physique Iv

Volume: 123
Pages: 105-110
Date: Mar

ISSN: 1155-4339
DOI: 10.1051/jp4:2005123017
Accession Number: WOS:000228377800018

Abstract: The object of this work is to study the segregation of elements such as chromium, phosphorous, sulphur and nitrogen to the surface of an austenitic stainless steel made by UGINE (France). The Investigation is carried out by in-situ annealing inside the ultra-vacuum chamber of an Auger electron spectrometer (AES). The specimens are initially homogenised by an anneal at 1050 degrees C inside evacuated silica capsules. They are then introduced inside the vacuum chamber of the AES where they are first of all activated, at room temperature, by ionic bombardment and then heat treated at various temperatures ranging from 600 degrees C to 900 degrees C. The results are obtained in the form of AES spectra recorded in the differential mode. It is found that the surface of the material undergoes alterations, some of which are temporary and others durable. These alterations are: co-segregation of nitrogen and chromium, segregation of sulphur and competition between nitrogen and sulphur and between phosphorous and sulphur. The driving force of segregation is in the following order: S > P > N.

Notes: Louahdi, R Hayes, V Marchand, R Saindrenan, G 9th International Seminar on the Physical Chemistry of Solid States Materials Oct 30-nov 01, 2002 Agadir, MOROCCO IBN ZOHR Univ

URL: <Go to ISI>://WOS:000228377800018
We study the effect of pressure on the structural and mechanical properties of Pt, Ni and Pd using a first-principle pseudopotential method within the gradient correct approximation of the density functional theory. Our results concerning the effect of pressure on equilibrium volume, elastic constants and bulk modulus were compared with other theoretical calculations and experimental data and are in reasonable agreement. (C) 2004 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 43
Author: Loucif, K. Keraghel, F. Alem, S.
Year: 2005
Title: Elaboration of bronze Cu-8%Sn sintered under pressure and study of its by absorption
Journal: Journal De Physique Iv
Volume: 124
Pages: 135-140
Date: May
Short Title: Elaboration of bronze Cu-8%Sn sintered under pressure and study of its by absorption
ISSN: 1155-4339
DOI: 10.1051/jp4:2005124021
Accession Number: WOS:000230021800022
Notes: Loucif, K Keraghel, F Alem, S 4th Conference of Discrete Mathematics and Algorithmics, Polytechnic University of Madrid May 26-28, 2004 Beirut, LEBANON
URL: <Go to ISI>://WOS:000230021800022
In the present work, the electronic structure and the magnetic behavior of multilayered Co-x/Pd-5(111), where x=1, 3, and 5 monolayers, are investigated using the self-consistent tight-binding linear muttin-tin method with local-density approximation. Such artificially layered magnetic structures attract a great attention, because of their interesting physical properties, which are quite different from that of the bulks, and their potential device applications. At the interface, the Co-Pd spacing distance d(Co-Pd) is found to be close to the average < d >(Co-Pd) of the bulk fcc Co and fcc Pd spacing. This is the reason for which all the investigated systems show a large Co magnetic moment at their interfaces (I). From a magnetic point of view, the multilayered magnetic films of Co exhibit a ferromagnetic interlayer and intralayer order, i.e., between the Co atoms in successive planes and in the same plane. The magnetic moments of the Co atoms at the interface (I) are found to be larger than that obtained for the magnetic atoms located at the central planes. Particularly, the monolayer of Co in the multilayered Co-1/Pd-5(111) shows a magnetic moment (2.03 mu(B)) bigger than that of the isolated Co-1 monolayer (1.97 mu(B)). The Palladium layers were slightly polarized (similar to 0.3 mu(B)) by the epitaxied magnetic films. (C) 2005 American Institute of Physics.
Reference Type: Journal Article
Record Number: 45
Author: Malou, Z. Hamidouche, M. Madjoubi, M. A. Bousbaa, C. Bouaouadja, N.
Year: 2005
Title: Modelling a soft thermic shock of a glass of SSC using a thermomechanical approach
Journal: Journal De Physique Iv
Volume: 124
Pages: 261-267
Date: May
Short Title: Modelling a soft thermic shock of a glass of SSC using a thermomechanical approach
ISSN: 1155-4339
DOI: 10.1051/jp4:2005124039
Accession Number: WOS:000230021800043
Notes: Malou, Z Hamidouche, M Madjoubi, MA Bousbaa, C Bouaouadja, N 4th Franco-Lebanese Conference on Materials Science May 26-28, 2004 Beirut, LEBANON Univ Libanaise, CNRS Liban, ICSI CNRS, Univ Haute Alsace, CNRS, Ambassade France, Beyrouth
URL: <Go to ISI>:://WOS:000230021800043
We have used the simulator of TITAN process. The latter uses the finished elements method for the equations resolution of codiffusion. We have simulated arsenic (10(16) atoms cm(-2), 100 keV) and boron (2 x 10(15) atoms cm(-2), 30 keV) codiffusion profiles in the monosilicon, after rapid thermal annealing (RTA) by using the parameters by defect of simulator. We have noted the difference between the experimental distribution profiles measured with secondary ion mass spectrometry (SIMS) and those simulated. This lead us to readjust the profiles, changing the dopant diffusion coefficient in order to obtain the simulated profiles corresponding in a better way to the experimental profiles. The arsenic diffusivity values vary from 2 x 10(-13) to 2 x 10(-12) cm(2)/s in the amorphised zone; and from 4 x 10(-16) to 6 x 10(-14) cm(2)/s in the crystalline zone. As far as boron is concerned, they are from 10(-15) to 6 x 10(-14) cm(2)/s and from 10(-14) to 4 x 10(-11) cm(2)/s in the two zones cited, respectively. (c) 2005 Elsevier B.V. All rights reserved.

Notes: Merabet, A Symposium on Materials Science and Device Issues for Future Si-Based Technologies held at the 2005 EMRS Meeting May 31-jun 03, 2005 Strasbourg, FRANCE European Mat Res Soc

URL: <Go to ISI>://WOS:000233895800087
Single crystals of K₃Sn₅Cl₃F₁₀, tripotassium trichlorodeca-fluoropentastannate(II), were isolated from a batch of needle-shaped crystals containing several potassium tin(II) fluorides, chlorides and chloride fluorides. The title compound crystallizes in the centrosymmetric space group Cmcm and the unit cell contains three crystallographically distinct tin units, with one SnF₃Cl₂E, in the unusual SnX₅E pseudo-octahedral coordination, while the other two are in an SnX₄E pseudo-trigonal bipyramid (E is a stereoactive lone pair). The SnF₃Cl₂ units form [SnF₂Cl₂](n)(2n) rows parallel to the a axis of the unit cell, sandwiched between rows of [Sn₂F₄](n) units also parallel to the a axis, with adjacent [Sn₂F₄](n) rows being held together by rows of Cl⁻ ions, also parallel to a. This ensemble forms [(Sn₂F₄)(SnF₂Cl₂)(Sn₂F₄)Cl](n)(3n⁻) anionic planes parallel to ac. Two adjacent anionic planes, their terminal F atoms pointing towards each other, are held together by K⁺ ions and form bilayers. Each pair of adjacent bilayers is separated by a sheet of Sn lone pairs, making the structure highly layered.
ZnO thin films were deposited using three processes: d.c. reactive sputtering of Zn, r.f. sputtering of ZnO, and spray pyrolysis. The influence of the temperature (substrate temperature or post-deposition annealing) on composition, structural, and optical properties of these thin films was investigated. All sputtered ZnO thin film exhibit a preferred orientation along the c-axis of the hexagonal structure if they have a crystallised phase. An increase of the substrate temperature to 498 K favours the crystallinity of the samples deposited by reactive sputtering of Zn. At 598 K the preferred orientation disappears and the deposit becomes almost amorphous. The optical transmittance of the ZnO films increases with the substrate temperature. The influence of the post-deposition thermal treatments of the samples obtained by sputtering of ZnO on the optical properties, composition and stress variations is discussed. The spray pyrolysis process using a ZnCl2 solution led to obtain ZnO deposits highly orientated along the c-axis at a temperature close to 573 K. (c) 2005 Elsevier B.V. All rights reserved.
The use of date juice as a substrate for lactic acid production was investigated. Various nitrogen sources were compared with yeast extract for efficient lactic acid production by Lactobacillus casei subsp. rhamnosus. Among different nitrogen sources added to date juice (yeast extract, ammonium sulfate, tryptic soy, urea, peptone, and casein hydrolysate), yeast extract was the most efficient. The effect of yeast extract could have been due to its B vitamin content. The addition of five B vitamins at less than 25 mg/l to date juice with any nitrogen source enhanced lactic acid production to some extent, except for date juice with yeast extract or urea or peptone. The most significant increase was obtained with ammonium sulfate. Half of the yeast extract content (10 g/l) in a supplemented date juice could be replaced by a mixture of B vitamins at less than 25 mg/l, and ammonium Sulfate at 2.6 g/l with no significant decrease in lactic acid production. (C) 2004 Elsevier Ltd. All rights reserved.
Co films deposited on Pt/Si(100) surface by electrodeposition from mixed sulphate chloride baths are investigated. The influence of applied potentials on nucleation, growth and morphological properties is studied using electrochemistry, scanning electronic microscopy (SEM) and atomic force microscopy (AFM) measurements. The electrochemical techniques show a deposition peak characteristic of diffusion-limited growth. For both applied potentials, we note that deposition occurs by instantaneous nucleation and diffusion-limited growth of 3D nucleation mechanism. Morphology observations reveal the granular structure of the electrodeposited Co layers surface with the root-mean-square roughness, R-q, varied between 7.80 and 8.95 nm. The average sizes of the Co crystallites depend strongly on the film thickness and applied potentials.
Tensile tests carried out at different temperatures on Fe-Ni alloys with different sulphur contents revealed a marked drop in ductility in the temperature range 600 degrees C to 1000 degrees C. The presence of manganese was found to reduce the loss of ductility. The morphology of the fracture surface revealed smooth intergranular failure in the most severe cases and failures showing local indications of ductility (dimples) for the less severe cases. The behaviour is explained in terms of sulphur segregation to the grain boundaries and the action of Mn is related to the formation of MnS precipitates which hinder segregation of free sulphur. The presence of nitride formers such as Boron and aluminium was found to have a detrimental effect if these elements are in their combined form (i.e., nitrides) and a beneficial effect if they are in their free atomic form. This behaviour is related to the formation and dissolution of BN and AlN precipitates.
Details concerning the implementation of a versatile genetic algorithm are presented. Solar cell and Schottky diode model parameters are extracted based on the fitness of experimental data to theoretical curves simulated in the framework of certain physical processes and the use of this genetic algorithm. The method is shown to be a reliable alternative to conventional numerical techniques in fitting experimental data to model calculations and the subsequent determination of model-related parameters. It is demonstrated, through two examples in particular, that some of the drawbacks associated with the conventional methods can be circumvented if a genetic algorithm is used instead. For instance, a good initial guess is not a critical requirement for convergence and an initial broad range for each of the fitting parameters is enough to achieve reasonably good fits.
Because of its efficiency, its high precision and its easy use regarding to classical techniques of Si-SiO2 (C-V, DLTS, Conductance...), interface characterization, the charge pumping technique has seen a large evolution these years. Many improvements have been made other, derivation techniques have been developed (at three-level charge pumping, spectroscopic charge pumping...) This technique is particularly used for very slight geometry MOS transistors damaging, where other techniques have no utility. This damaging often leads to the creation of a fixed trapped charge in the oxide coat and active electronically defaults in the oxide Semi-conductor interface after the application of ageing constraint (ionizing radiation, injection carrier). This ageing is so pronounced when the dimensions are slight this represents the main obstacle that the microelectronics must face. In this article we simulate the three-level charge pumping technique with SPICE3F4 simulator. This simulation will permit the obtaining of spatial and energetic spread of defaults at the interface.


URL: <Go to ISI>://WOS:000230021800051
We consider a mathematical model which describes the stationary flow of a Bingham fluid with friction. The frictional contact is modeled by a general velocity dependent dissipation functional. We derive a weak formulation of the model which consists in a variational inequality for the velocity field. We establish the existence and uniqueness of the weak solution as well as its continuous dependence with respect to the contact condition. Finally, we describe a number of concrete friction conditions which may be set in this general framework and for which our results apply.
We prove in this paper that a finitely generated soluble group in which every infinite subset contains a pair of distinct elements $x, y$ such that $(x, y)$ is torsion-by-nilpotent (respectively, $(x, x(y))$ is Chernikov-by-nilpotent), is itself torsion-by-nilpotent (respectively, finite-by-nilpotent).
Abstract: Let $B_p, B_q$ be the $R^2$-valued process $(B_p, B_q)$ with independent Bessel components $B_p$ and $B_q$ with indices $p$ and $q$ strictly positive. In this paper we compute explicitly the law of the hitting time and place of a circle, centered at the origin, when $B_p, B_q$ starts from the center and deduce a Reuter-type independence result. We use mainly analytical tools from PDE theory. (C) 2004 Academie des sciences. Published by Elsevier SAS. All rights reserved.
Purpose
Aims to present study of the coupling of the Alienor method with the algorithm of Piyavskii-Shubert for global optimization applications.

Design/methodology/approach
The Alienor method allows us to transform a multivariable function into a function of a single variable for which it is possible to use an efficient and rapid method for calculating the global optimum. This simplification is based on the use of the established Alienor methodology. Findings - The Alienor method allows us to transform a multidimensional problem into a one-dimensional problem of the same type. It was then possible to use the Piyavskii-Shubert method based on sub-estimators of the objectives function. The obtained algorithm from coupling the two methods was found to be simple and easy to implement on any multivariable function. Research limitations/implications - This method does not require derivatives and the convergence of the algorithm is relatively rapid if the Lipschitz constant is small. Practical implications - The classical multidimensional global optimization methods involve great difficulties for their implementation to high dimensions. The coupling of two established methods produces a practical easy to implement technique. Originality/value - New method couples two established ones and produces a simple and user-friendly technique.
Reference Type: Journal Article
Record Number: 58
Author: Ziadi, A. Khelladi, S. Cherruault, Y.
Year: 2005
Title: The Alienor method coupled to the Brent algorithm
Journal: Kybernetes
Volume: 34
Issue: 7-8
Pages: 1059-1069
Short Title: The Alienor method coupled to the Brent algorithm
ISSN: 0368-492X
DOI: 10.1108/03684920510605876
Accession Number: WOS:000231868000015
Abstract: Purpose - Classical multidimensional global optimization methods are difficult to implement in high dimensions. To show that the Alienor method coupled with the Brent algorithm can avoid this difficulty. Design/methodology/approach - Use is made of the Alienor method and the Brent algorithm to obtain algorithms that were applied to test functions having several local minima. Findings - Interesting results concerning the number of evaluation points were obtained. It was shown that this coupling can be improved if a-dense curves of minimal length were used. Research limitations/implications - Multidimensional global optimization problems have proven to be difficult to implement in high dimensions. This research continues the search for improved methods by coupling existing established methods such as Alienor with others such as the Brent algorithm. Originality/value - A new coupled method has been developed and algorithms obtained to tackle such global optimization problems. The coupling is unique and the algorithms are tested numerically on selected functions.
Notes: Ziadi, A Khelladi, S Cherruault, Y
URL: <Go to ISI>://WOS:000231868000015
The school/university orientation interests a broad and often badly informed public. Technically, it is an important multicriterion decision problem, which supposes the combination of much academic professional and/or lawful knowledge, which in turn justifies software resorting to the techniques of Artificial Intelligence. CORUS is an expert system of the "Conseil et ORientation Universitaire et Scolaire", based on a knowledge representation language (KRL) with rules and objects, called/known as Ibn Rochd. CORUS was developed thanks to DeGSE, a workshop of cognitive engineering which supports this LRC. CORUS works out many acceptable solutions for the case considered, and retains the most satisfactory among them. Several versions of CORUS have extended its services gradually.


URL: <Go to ISI>://WOS:000260416300045
This paper describes the Simulink design of real time digital interfaces linked to I/O devices. This method is a hardware-software co-design of digital blocks, based on Simulink and real time windows target and is an alternative to S-function tool, which is a computer language description of a Simulink block. It gives a better level of abstraction of digital design and is straightforward applicable to I/O devices described by timing diagrams. This method seeks the use microcontroller resources such CPU, AID, PWM in a control system designed in Simulink environment. A Simulink interface to a PIC 18Fxx8 microcontroller, operating at low level and involved in a two level hierarchical control system, is presented. The capability of the method as an alternative tool for S-function is detailed through an interfacing example of an A/D converter and a Simulink block. The procedure of real time simulation is described and the simulation result of the A/D conversion is presented and discussed.


URL: <Go to ISI>://WOS:000240653707041
Reference Type: Book Section
Record Number: 3
Author: Bencherif-Madani, A. Pardoux, T.
Year: 2005
Title: Homogenization of a diffusion with locally periodic coefficients
Editor: Emery, M. Ledoux, M. Yor, M.
Book Title: Seminaire De Probabilities Xxviii
Volume: 1857
Pages: 363-392
Series Title: Lecture Notes in Mathematics
Short Title: Homogenization of a diffusion with locally periodic coefficients
ISBN: 0075-8434 3-540-23973-1
Accession Number: WOS:000228297100024
Abstract: We present a result of homogenization for a class of second order parabolic partial differential equations with locally periodic coefficients, and highly oscillating potential. Our method of proof is mainly probabilistic. We deduce the homogenization result from weak convergence for a class of diffusion processes.
Notes: Bencherif-Madani, A Pardoux, T
URL: <Go to ISI>://WOS:000228297100024
Abstract: Concave cone fabricated by chemical etching process similar to previous technique used to make fiber tips (convex cone) is presented. Typically, optical fibers are etched in a fluorhydric (HF) solution with a thin layer of oil floating on top of the HF. The present investigation shows that concave cone etched fiber (CCEF) can be obtained by following the beginning of etching process. Comprehensive measurements of the dependence of the width and height of taper angle of the concave cone are plotted. The results of this investigation have led to an optimum approach for fiber cores alignment that is suitable for use in connecting fibers for efficient coupling between single-mode fibers.

This paper proposes a declarative language for knowledge representation (Ibn Rochd), and its environment of exploitation (DeGSE). This DeGSE system was designed and developed to facilitate Ibn Rochd writing applications. The system was tested on several knowledge bases by ascending complexity, culminating in a system for recognition of a plant or a tree, and advisors to purchase a car, for pedagogical and academic guidance, or for bank savings and credit. Finally, the limits of the language and research perspectives are stated.


URL: <Go to ISI>://WOS:000260416300046
Insulation co-ordination requires accurate prediction of the overvoltages at different points in the substation resulting from a lightning stroke outside the substation from the point of view of equipment protection. For that purpose, one of the most important aspects is to consider the dynamic characteristics of metal-oxide surge arresters. Among several models, proposed in the literature, the modified IEEE recommended model is chosen. This dynamic model is used to evaluate lightning overvoltage protection in a complete three-phase scheme of an operational 220 kV substation (El-Hassi, Algeria). The effect of metal oxide surge arrester connections are also taken into account. Lightning overvoltage is generated by back-flashovers on physical multi-conductor model of real lines. The resulting overvoltages shapes and magnitudes in several basic points in the substation (line input, bus and power transformer) are computed. The simulations are performed with the Alternative Transients Program (ATP) version of Electromagnetic Transient Program (EMTP).
In this paper we consider a quasilinear parabolic system of the form $A(t) |u(t)|^{m-2} u(t) - \Delta u = |u|^{p-2}$, $m \geq 2$, $p > 2$, in a bounded domain associated with initial and Dirichlet boundary conditions. We show that, for suitable initial datum, the energy of the solution decays "in time" exponentially if $m = 2$ whereas the decay is of a polynomial order if $m > 2$. 

Notes: Berrimi, S Messaoudi, SA 5th European Conference on Elliptic and Parabolic Problems - A Special Tribute to the Work of Haim Brezis Mar 05, 2004 Gaeta, ITALY iii

URL: <Go to ISI>://WOS:000234130600005
This paper assesses two popular speaker features pitch and cepstral coefficient (static and dynamic). We compare the performance of individual features and features combined via LDA. The identification process can be performed both in the temporal and cepstral domains. The temporal analysis determines which phonemes or utterances exhibit the highest degree of speaker specificity, while the cepstral analysis examines individual cepstra within these temporal divisions.
During the last decade, speed sensorless field-oriented control of induction motor has given a particular attention by researchers worldwide and a great number of papers have been published on this issue. In most of them, the authors proposed the speed estimation algorithms based on Kalman filter theory, neural networks and model of reference. In indirect vector control strategy, the accurate knowledge of the rotor resistance is critical to ensure field-orientation. However, very few papers have been published on the simultaneous estimation of the speed and the rotor resistance. This paper describes the use of artificial neural networks and neuro-fuzzy networks for the simultaneous estimation of the speed, rotor flux and rotor resistance of an induction motor. This achievement is in authors' opinion a great contribution. Simulation results showed the effectiveness of the proposed schemes.
In this paper, we establish the existence of a relation between the topological structures of the set of controllable affine systems denoted by $C_a$ and topological structures of the set of controllable homogeneous systems $C_h$. We consider the following affine system $x = Ax + u (Dx + b)$, $x \in \mathbb{R}^2$, $b \in \mathbb{R}^2$, $u \in \mathbb{R}$. Where $u$ is a piecewise constant control with values in the subset $Q$ of $\mathbb{R}$, bounded or not; $A$ and $D$ are two real $2 \times 2$ matrices. To (1) we associate the homogeneous system $x = (A + uD)x$, $x \in \mathbb{R}^2 - \{0\}$, $u \in \mathbb{R}$. It is known that if (2) is controllable in $\mathbb{R}^2 - \{0\}$ and (1) has not a fixed point, then (1) is completely controllable in $\mathbb{R}^2 (2)$. It turns out that in certain cases (1) can be controllable but (2) is not controllable, but that these cases are marginal. The set of such pairs is the boundary of the set of controllable pairs, the interior being constituted by pairs for which (2) is controllable. It is also known on the one hand that the set $C_h$ is connected and its boundary present two types of boundary points, on the other hand the set $C_a$ is connected. The question is: can one establish a relation between the boundary of $C_a$ and the one of $C_h$?
In this paper, we introduce a robust state feedback controller design using Linear Matrix Inequalities (LMIs) and guaranteed cost approach for Takagi-Sugeno fuzzy systems. The purpose on this work is to establish a systematic method to design controllers for a class of uncertain linear and non-linear systems. Our approach utilizes a certain type of fuzzy systems that are based on Takagi-Sugeno fuzzy models to approximate nonlinear systems. We use a robust control methodology to design controllers. This method not only guarantees stability, but also minimizes an upper bound on a linear quadratic performance measure. A simulation example is presented to show the effectiveness of this method.


URL: <Go to ISI>://WOS:000231379200064
PRODUCTION SCIENTIFIQUE ANNEE 2006
Let $n$ be an integer $\geq 2$. A group $G$ is called generalized $n$-abelian if it admits a positive polynomial endomorphism of degree $n$, that is if there exist $n$ elements $a(1), a(2), \ldots, a(n)$ of $G$ such that the function $\phi : x \mapsto x(a1)x(a2) \ldots x(an)$ is an endomorphism of $G$. In this paper we give some sufficient conditions for a generalized $n$-abelian group to be abelian. In particular, we show that every group admitting a positive polynomial monomorphism of degree 3 is abelian. 

Notes: Abdollahi, A. Daoud, B. Endimioni, G.
URL: <Go to ISI>://WOS:000245884200008
In this paper, we describe a new primal-dual path-following method to solve a convex quadratic program (QP). The derived algorithm is based on new techniques for finding a new class of search directions similar to the ones developed in a recent paper by Darvay for linear programs. We prove that the short-update algorithm finds an epsilon-solution of (QP) in a polynomial time.
This study analyses the thousand kernel weight (TKW) component of grain yield in five local Algerian populations of durum wheat in the Setif area, taking into account the geographic location, the climatic conditions, and eight morphological traits related to plant development and car yield. The data analysed cover two years (1994 and 1995) and two contrasting locations. The multivariate analysis of variance (Manova) and the general linear model (GLM) are used to show the relationship existing between the TKW and the set of factors-variables considered. This approach aims at highlighting some of the genotype x environment interaction aspects in populations in a Mediterranean area. Each method demonstrates the influence of morphological traits on yield (TKW) and the variability specific to the location and year for each population.
This paper deals with the miscibility of polyvinyl chloride (PVC) with polymethyl methacrylate (PMMA). Blends of variable compositions from 0 to 100 wt% were prepared in the presence (15, 30 and 50 wt%) and in the absence of diethyl-2 hexyl phthalate as plasticizer. Their miscibility was investigated by using various analytical methods: determination of the Vicat softening temperature, alpha viscometry method based on the a criterion of polymer-polymer miscibility, differential scanning calorimetry (DSC) and Fourier transform infrared spectroscopy (FTIR). The results show that the plot of Vicat temperature against composition is a continuous curve, indicating the miscibility of the blend. The viscometry method and DSC find that the two polymers are miscible up to about 60 wt% of PMMA. This miscibility is due to a specific interaction of hydrogen bonding type between carbonyl groups (C = O) of PMMA and hydrogen from (CHCl) groups of PVC, as evidenced by FTIR spectroscopy. The two-band deconvolution shows an increase in associated groups percentage in the domain of miscibility. (C) 2006 Elsevier Ltd. All rights reserved.
The aim of this work was to study the thermo-oxidative dehydrochlorination of rigid and plasticised poly(vinyl chloride)/poly(methyl methacrylate) blends. For that purpose, blends of variable compositions from 0 to 100 wt% were prepared in the presence (15, 30 and 50 wt%) and in the absence of diethyl-2-hexyl phthalate as plasticiser. Their miscibility was investigated by using differential scanning calorimetry (DSC) and Fourier transform infrared spectroscopy (FTIR). Their thermo-oxidative degradation at 180 ± 1 degrees C was studied and the amount of HCl released from PVC was measured by a continuous potentiometric method. Degraded samples were characterised, after purification, by FTIR spectroscopy and UV-visible spectroscopy. The results showed that the two polymers are miscible up to 60 wt% of poly(methyl methacrylate) (PMMA). This miscibility is clue to a specific interaction of hydrogen bonding type between carbonyl groups (C=O) of PMMA and hydrogen (CHCl) groups of PVC as shown by FTIR analysis. On the other hand, PMMA exerted a stabilizing effect on the thermal degradation of PVC by reducing the zip dehydrochlorination, leading to the formation of shorter polyenes. (c) 2005 Elsevier Ltd. All rights reserved.
Abstract: We study convergence of a combined spectral and (S-N) discrete ordinates approximation for a multidimensional, steady state, linear transport problem with isotropic scattering. The procedure is based on expansion of the angular flux in a truncated series of Chebyshev polynomials in spatial variables that results in the transformation of the multidimensional problems into a set of one-dimensional problems. The convergence of this approach is studied in the context of the discrete-ordinates equations based on a special quadrature rule for the scattering integral. The discrete-ordinates and quadrature errors are expanded in truncated series of Chebyshev polynomials of degree <= L, and the convergence is derived assuming L <= sigma(t)-4 pi sigma(s), where sigma(t) and sigma(s) are total and scattering cross-sections, respectively. (c) 2006 Elsevier Ltd. All rights reserved.
Spin densities and currents in the Routhian approximation

The structure of spin densities and the associated spin-current densities, induced by the coupling of external vector fields to the orbital and spin degrees of freedom, is studied within the framework of the Extended Thomas-Fermi method, a semiclassical version of the density-functional theory. A special emphasis is put on the rotational case where our approach amounts to perform a semiclassical approximation of the so-called generalized Routhian approach.

Notes: Bartel, J Bencheikh, K Quentin, P 12th Workshop on Nuclear Physics - Marie and Pierre Curie Sep 21-25, 2005 Kazimierz Dolny, POLAND

URL: <Go to ISI>://WOS:000235760600042
A scanning electron microscopic (SEM) study of the aerial parts of Marrubium vulgare L. grown wild in Algeria showed a dense woolly indumentum of stellate, nonglandular, point-shaped trichomes that completely hide both the adaxial and abaxial leaf epidermes, as well as the stem and flower surfaces bearing the glandular trichomes. Peltate and two types of capitate trichomes constitute the morphological distinct glandular trichomes that are spread over the vegetative and reproductive organs. The essential oils of M. vulgare were obtained by hydrodistillation and distillation-extraction from the aerial parts collected during the flowering (F) and vegetative phases (V), and analyzed by GC and GC/MS. The essential oils were obtained in a yield of <= 0.05 % (v/w). Eugenol was the main component in the F oil (50%) but comprised only 16% in the V oil. beta-Bisabolene was the dominant component of the V oil (29%) and the second main component in the F oil (11%).

Notes: Belhattab, Rachid Larous, Larbi Figueiredo, A. Cristina Santos, Pedro A. G. Costa, Monya M. Barroso, Jose G. Pedro, Luis G.
URL: <Go to ISI>:://WOS:000239770100006
Identification of asynchronous machine parameters by evolutionary techniques

Four evolutionary techniques (scatter search, evolutionary programming, ant colony, and particle swarm algorithms) were used for off-line identification of three phase asynchronous machine parameters. Optimization techniques were then tested on two distinct machines. In order to evaluate how much good the achieved machines parameters obtained, experimental and simulation input-output behaviors are presented for each method. The performances in term of objective function and convergence time prove the effectiveness of this class of optimization methods.
Bilayers of pure palladium and gold films were evaporated alternatively on (100) and (111) monocrystalline silicon substrates. After annealing, in a vacuum furnace from 100 to 650 degrees C during 30 min, the growth sequence of the Pd2Si and PdSi phases that evolved as the result of the diffusion reaction was examined by means of Rutherford backscattering spectrometry (RBS), X-ray diffraction (XRD), whereas the surface morphology was investigated by scanning electron microscopy (SEM) technique. The effect of the intermediate gold layer is investigated in order to test its effectiveness as barrier for Cu and Si atoms interdiffusion and its influence on the morphology of the formed palladium silicides. The effect of substrate orientation on the palladium silicides growth and formation was also explored. (c) 2006 Elsevier Ltd. All rights reserved.
The corrosion is a chemical phenomenon which can affect the quality of a glass Surface, since the glass can fail as a result of its continuous exposure to a corrosive environment. If a glass surface is put into contact with water or with any aqueous Solution, it may chemically react with this medium and this chemical exchange may spread all over the Surface of the glass, hence causing some undesirable effects, particularly a change in mechanical strength as well as the transmittance. Therefore, the objective of this work was to study the effect of water attacks on the transmittance of glass plates, which have been damaged by sand and then immersed in water at different temperatures and for different immersion times. (c) 2005 Elsevier Ltd. All rights reserved.
A semiclassical description at finite temperature is presented for an N fermion system experiencing velocity fields coupling to the linear momentum of each of the particles. Spin degrees of freedom are also considered. Analytical expressions are derived for various local and integrated physical quantities in the framework of the Extended Thomas-Fermi method. Low and high-temperature limits are carefully examined. This formalism is then applied to the particular case of hot rotating nuclei. (c) 2005 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 14
Author: Benmahammed, K. Hamzaoui, A. Essounbouli, N.
Year: 2006
Title: Partial fraction decomposition and correlation sequence in 2D systems
Journal: Multidimensional Systems and Signal Processing
Volume: 17
Issue: 1
Pages: 75-87
Date: Jan
Short Title: Partial fraction decomposition and correlation sequence in 2D systems
ISSN: 0923-6082
DOI: 10.1007/s11045-005-6238-1
Accession Number: WOS:000236542500005
Abstract: In this paper, results of the one-dimensional (1D) digital filtering are extended to the two-dimensional (2D) case. It introduces a technique and an algorithm for the computation of the product $H(z(1), z(2)H(z(1)(-1), z(2)(-1))$. The technique is used to find a minimum phase transfer function of a 2D system such that the previous product matches a given correlation sequence. The algorithm requires less arithmetic operations than the traditional methods. The former is based on a matrix formulation of the product, which is used to investigate the 2D partial fraction decomposition (PFD) and stability.
Notes: Benmahammed, K Hamzaoui, A Essounbouli, N
URL: <Go to ISI>://WOS:000236542500005
Reference Type: Journal Article
Record Number: 15
Author: Benouattas, N. Mosser, A. Bouabellou, A.
Year: 2006
Title: Surface morphology and reaction at Cu/Si interface - Effect of native silicon suboxide
Journal: Applied Surface Science
Volume: 252
Issue: 20
Pages: 7572-7577
Date: Aug
Short Title: Surface morphology and reaction at Cu/Si interface - Effect of native silicon suboxide
ISSN: 0169-4332
DOI: 10.1016/j.apsusc.2005.09.010
Accession Number: WOS:000240478100034
Abstract: Copper thin films are deposited by thermal evaporation on unetched and etched monocrystalline silicon. The study by alpha particles backscattering (RBS) raises a strong diffusion of copper in silicon substrates with and without native suboxide layer. On the other hand, the X-rays diffraction shows the formation and the growth of CU3Si and Cu4Si silicides. Whereas the scanning microscopy underlines large crystallites growth surrounded by black zones of silicon coming from the uncovered substrate, independently to the surface state of the substrate, after annealing at high temperature. The presence of native silicon suboxide at Cu/Si interface, influences in a drastic way the minimal temperature to which the interfacial reaction occurs. The oxygen impurities detected by microanalysis, after heat treatment under vacuum, are closely related to the growth of silicides crystallites. (c) 2006 Published by Elsevier B.V.
Notes: Benouattas, N. Mosser, A. Bouabellou, A.
URL: <Go to ISI>://WOS:000240478100034
Cu/Au and Au/Cu multilayered films were thermally evaporated alternatively on (100) and (111) monocrystal silicon substrates with and without native silicon oxide. After heat treatment in situ either at 400 or at 600 degrees C, the interfacial transformations were analyzed by Rutherford backscattering spectrometry, theta-2 theta X-ray diffraction and scanning electron microscopy. It was found, that the samples surface was covered with Cu3Si and Cu4Si crystallites of square, rectangular and hexagonal basis shapes well-oriented on Si(100) and of triangular shape on Si(111) owing to the strong interneming between the different elements. The dilution of the entire gold deposited layer in the Cu-Au-Si formed mixture suggests that gold atoms have a high limit solubility in the formed polycrystalline Cu3Si and Cu4Si silicides. (c) 2006 Published by Elsevier B.V.

URL: <Go to ISI>://WOS:000240149800009
In a bounded domain, we consider $u(t) - \Delta u + \int_0^t g(t - \tau)\Delta u \, d\tau = |u(\gamma)u$, where $\gamma > 0$, and $g$ is a nonnegative and decaying function. We prove a local existence theorem and show, for certain initial data and suitable conditions on $g$ and $\gamma$, that this solution is global with energy which decays exponentially or polynomially depending on the rate of the decay of the relaxation function $g$. (c) 2005 Elsevier Ltd. All rights reserved.

Notes: Berrimi, S Messaoudi, SA

URL: <Go to ISI>://WOS:000237045200010
Setif, a mid-sized city located on the Algerian highlands, was founded in 1847; its agriculture was soon wholly devoted to large-scale grain farming without any green belt to feed its inhabitants. Setif is growing rather quickly today and takes mainly periurban farmland for new construction. Moreover, new towns are planned to surround Setif, at 2 to 5 kms from the city limits, which ultimately threatens the ring of farmland between them and the central city. This paper analyzes the possible role of periurban agriculture in the urban policy of Setif: is the loss of farmland a problem from the city's point of view? Annual urban expansion has been about 50 ha since 1966. Government policy has sometimes been oriented towards urban planning, sometimes more market-oriented and liberal. Agriculture is still directed mainly towards the Algerian market, not only for cereals, but also for new products, such as ornamentals; trends for the urban area are very similar to those for the entire wilaya (administrative region). Moreover, one effect of globalisation is the reduced necessity for farmland. There is thus not really any local interest in preventing construction of farmland. Until now, neither farmers, as owners as well as new city dwellers, nor urban planners have been sensitive to the urban values of agriculture (landscape, green belt, etc.). Nevertheless, some signs of other points of view are now discernible: some people seek local production for its specific qualities (especially freshness), and some families want gardens for their own consumption. At the same time, a new concept of rural amenities is emerging, as seen in oued Boussellam valley or Zenadia forest, now designed as green belt. On a larger scale, the Algerian government is again anxious to improve food security, which today depends mainly on importation. We concluded that although farmland today is considered only a land reserve for construction, local planning policies may soon take other, newer concepts into account.

Notes: Boudjenouia, A Fleury, A Tacherift, A

URL: <Go to ISI>://WOS:000237307200007
Reference Type: Journal Article
Record Number: 19
Author: Bouguerra, Y. Maamache, M. Bounames, A.
Year: 2006
Title: Time-dependent 2D harmonic oscillator in presence of the Aharonov-Bohm effect
Journal: International Journal of Theoretical Physics
Volume: 45
Issue: 9
Pages: 1807-1813
Date: Sep
Short Title: Time-dependent 2D harmonic oscillator in presence of the Aharonov-Bohm effect
ISSN: 0020-7748
DOI: 10.1007/s10773-006-9145-9
Accession Number: WOS:000241750400018
Abstract: We use the Lewis-Riesenfeld theory to determine the exact form of the wavefunctions of a two-dimensional harmonic oscillator with time-dependent mass and frequency in presence of the Aharonov-Bohm effect (AB). We find that the auxiliary equation is independent of the AB magnetic flux. In the particular case of quantized AB magnetic flux the wavefunctions coincide exactly with the wavefunctions of the 2D time-dependent harmonic oscillator.
Notes: Bouguerra, Y. Maamache, M. Bounames, A.
URL: <Go to ISI>://WOS:000241750400018
First principle calculations of structural and elastic properties of ZnAl2O4, ZnGa2O4 and ZnIn2O4 compounds are presented, using the pseudo-potential plane-waves approach based on density functional theory, within the generalized gradient approximation GGA. The lattice constants and internal parameters are in good agreement with the available experimental results. Young's modulus, Poisson ratio, bulk modulus, elastic constants and their pressure dependence are also calculated. As the experimental elastic constants are not available hence our results were only compared with the available theoretical values obtained at equilibrium volume. (c) 2006 Elsevier B.V. All rights reserved.
Abstract: Ab initio calculations have been performed on the structural, elastic and high pressure properties of cubic inter-metallic LaS, LaSe and LaTe compounds. The Kohn-Sham equations were solved by applying the full-potential (linear) augmented plane wave method plus local orbitals (FP-(L)APW+lo) as implanted in the WIEN2K package. In this approach, the generalized gradient approximation (GGA) and the local density approximations (LDA) are used for the exchange-correlation (XC) potential. Results are given for lattice constant, bulk modulus and its pressure derivative. The pressure transition at which these compounds undergo structural phase transition from NaCl-type (B1) to CsCl-type (B2) structure are calculated and compared with previous calculations and available experimental data. The elastic constants at room conditions and under pressure in both B1 and B2 phases are also calculated. (c) 2006 Elsevier B.V. All rights reserved.
A theoretical studies of structural, electronic, elastic and high pressure properties in barium chalcogenides BaX (X = S, Se, Te, Po) are performed, using the full-potential augmented plane wave plus local orbitals method (FP-APW + lo). In this approach the local-density approximation (LDA) and generalized gradient approximation (GGA) are used for the exchange-correlation (XC) potential. Moreover, the alternative form of GGA proposed by Engel and Vosko (GGA-EV) is also used for band structure calculations. The equilibrium lattice constant and the bulk modulus agree well with the experiments. The pressures at which these compounds undergo structural phase transition from NaCl (B1) to CsCl (B2) phase were found to be in good agreement with the available experimental data. Results obtained for band structure using GGA-EV show a significant improvement over other theoretical work and are closer to the experimental data. A linear relationship is observed between theoretical band gap and 1/alpha(2) (where a is lattice constant). We have determined the elastic constants C-11, C-12 and C-44 at ambient conditions in both B1 and B2 structures, which have not been established neither experimentally nor theoretically. Further, we have also calculated the pressure dependence of the elastic constants for the B1 structure of the four compounds. (c) 2006 Elsevier B.V. All rights reserved.
Influence of annealing temperature on the properties of ZnO thin films deposited by thermal evaporation

ZnO thin films were deposited by thermal evaporation of a ZnO powder. The as-deposited films are dark brown, rich zinc and present a low transmittance. Then, these films were annealed in air atmosphere at different temperatures between 100 and 400 degrees C. Their microstructure and composition were studied using XRD and RBS measurements respectively. By increasing the temperature, it was found that film oxidation starts at 250 degrees C. XRD peaks related to ZnO appear and peaks related to Zn decrease. At 300 degrees C, zinc was totally oxidised and the films became totally transparent. The electrical conductivity measurement that were carried out in function of the annealing temperature showed the transition from highly conductive Zn thin film to a lower conductive ZnO thin film. The optical gap (E_g) was deduced from the UV-vis transmittance, and its variation was linked to the formation of ZnO. (c) 2006 Elsevier B.V. All rights reserved.
A problem of oxygen diffusion in absorbing medium is complex. A mathematical model of this problem is presented, which has previously been investigated by Crank and Gupta (J. Inst. Math. Appl. 1972; 10: 19-33) is studied using a different method of solution. Approximate analytical and numerical solutions of its partial differential equations are obtained, which describe the diffusion of oxygen in absorbing tissue. A moving boundary is an essential feature of this problem but the conditions which determine its movements are different. The results are compared with those of Crank and Gupta. In most cases the agreement is fair.
We report new coplanar (e, 2e) measurements for ionization of He and Ar under kinematics characterized by large energy transfer and close to minimum momentum transfer from the projectile to the target. These kinematics have remained rather unexplored to date due to the smallness of the corresponding cross sections. They could be investigated here thanks to the high sensitivity of our multi-collection spectrometer. The experimental results are used as a sensitive test of state-of-the-art available theoretical models for multi-electron atoms, namely the BBK and a hybrid DWBA+R-matrix (close coupling) models. An overall satisfactory agreement with experiment is obtained for the hybrid DWBA results for both targets. However, a close inspection of the remaining discrepancies calls for further refinement of the theory.
Reference Type: Journal Article
Record Number: 26
Author: Champion, C. Cappello, C. D. Houamer, S. Mansouri, A.
Year: 2006
Title: Single ionization of the water molecule by electron impact: Angular distributions at low incident energy
Journal: Physical Review A
Volume: 73
Issue: 1
Date: Jan
Short Title: Single ionization of the water molecule by electron impact: Angular distributions at low incident energy
ISSN: 1050-2947
DOI: 10.1103/PhysRevA.73.012717
Article Number: 012717
Accession Number: WOS:000235008900105
Abstract: Recent experimental results of Milne-Brownlie on the ionization of the water molecule by low-energy electron (250 eV) have been compared to theoretical predictions performed in the distorted-wave first Born model [Phys. Rev. A 69, 032701 (2004)]. It was found that this theory was unable to predict the very large recoil scattering observed experimentally. In this work, more sophisticated theoretical models are investigated in order to better understand the water ionization process at the multidifferential level and to reproduce the experimental observations.
Notes: Champion, C Cappello, CD Houamer, S Mansouri, A
URL: <Go to ISI>://WOS:000235008900105
Backscattering (Bcs) coefficients for low-energy positrons (similar to 100 eV) from elemental solids have been simulated using an analytic approach. The model is based on the use of the transport cross-sections (TCSs) and the stopping power calculated from partial wave methods and the best-fit stopping power data of Ashley, respectively. The new result is an extension of recent calculations in the medium energy range. Comparisons, when possible, with experimental and Monte-Carlo (MC) simulation data have been made. (c) 2005 Elsevier B.V. All rights reserved.
An improved practical method to simulate elastic electron scattering is described. Single scattering events are simulated using simple analytical expressions derived from the Wentzel model. The present paper shows that simulating with the Wentzel model reduces to a pure problem of optimization. Indeed, a novel method of optimization, based on genetic algorithms, has been applied so as to reproduce the values of the total elastic cross sections and the first and second transport cross sections obtained from partial wave calculations. The resulting model yields a simple analytical formula for the random sampling of the angular deflection that overcomes the problem of the unfeasibility of the detailed simulation when the energy of the incident particles is larger than a hundred keV.
The energy losses of fast electrons vary because of the stochastic nature of the interactions. In order to describe these processes and calculate the spectra of the total energy loss (straggling spectra), Monte Carlo simulations of fast electrons traversing a thin silicon absorber have been used. The distribution functions needed are described by the electronic energy losses in single collision calculated by Bichsel. Comparison between straggling spectra calculated on the basis of the single collision spectrum and that from its first moment (very often 'stopping power' in the literature), shows that the latter, the so-called 'Continuous Slowing Down Approximation (CSDA),' is a poor approximation in its description of the individual energy deposition. Copyright (C) 2006 John Wiley & Sons, Ltd.
This paper presents a simple and successful method for evaluating the series resistance, the ideality factor, the saturation current and the shunt conductance in illuminated solar cells. The approach involves the use of an auxiliary function and a computer-fitting routine. The validity of this method has been confirmed by the way of current-voltage measurements of a commercial silicon solar cell, a module and a plastic solar cell. (c) 2006 Elsevier Ltd. All rights reserved.
Non-linear emissions of MOVPE ZnSe epilayers have been studied at low temperature. The processes involved in the spectra of photoluminescence in highly excited ZnSe epilayers are assumed to be a combination of exciton-exciton (P-bands) and electron exciton collisions (M-band). Recombination processes by inelastic collisions of free excitons are then predominant. They are the principal processes of stimulated emission. (c) 2006 Elsevier B.V. All rights reserved.
We propose a new version of potentially optimal intervals for the DIRECT algorithm. A two-point based sampling method is presented. The method starts from a distinguished point (the peak point) by forming an initial triangle. The idea is to sample the midpoint of a specific interval: the basis of the resulting triangle. This specific interval is obtained by translating the initial interval towards the lowest function value: \( \min \{f(c(i)), f(c(i+1))\} \) and then overcoming the disadvantage if the global minimum lies at the boundaries. Two-dimensional version of our subdivision and sampling method is also discussed. (c) 2005 Published by Elsevier Inc.
Reference Type: Journal Article
Author: Chiter, L.
Year: 2006
Title: A new sampling method in the DIRECT algorithm
Journal: Applied Mathematics and Computation
Volume: 175
Issue: 1
Pages: 297-306
Date: Apr
Short Title: A new sampling method in the DIRECT algorithm
ISSN: 0096-3003
DOI: 10.1016/j.amc.2005.07.051
Accession Number: WOS:000241776800023
Abstract: Drawing inspiration from the fact that each point sampled by the DIRECT algorithm will be a midpoint of the center subinterval, we present a one-dimensional version which considers two symmetric points, the one-third and two-third of the length of the considered interval. The center subinterval will be the region of interest. The interval is then bisected and two new points are added at every step. The two points sampled before became two-third and one-third, respectively. Two possibilities of definition of potentially optimal intervals are given. The proposed version predicts a fast convergence, and overcomes some disadvantages of the DIRECT in the case where the global minimum lies at the boundaries. (c) 2005 Elsevier Inc. All rights reserved.
Notes: Chiter, Lakhdar
URL: <Go to ISI>://WOS:000241776800023
Abstract: Ionization-excitation by electron impact of diatomic species in general and hydrogen molecule in particular presents very interesting mechanisms which can be observed in coincidence (e, 2e) experiments. The dissociative character of the final excited state makes these types of experiments easier to perform than those of atomic targets for which the coincidence measurement of the emitted electron and the photon is necessary. Recently Takahashi et al (2003) Phys. Rev. A 68 042710 have shown large disagreements between their experimental results and theoretical ones obtained by the first-order plane-wave impulse approximation at intermediate impact energies. These authors conclude that a second-order treatment, including the two-step mechanisms (TS1 and TS2), would be necessary to explain these differences. In this paper, we present a second-order Born treatment including the two-step mechanisms and study the simple ionization of H-2 and the ionization-excitation of H-2 to the (2)Sigma(g)(2s sigma(g)) and (2)Sigma(u)(2p sigma u) levels of H-2(+) by electron impact.
Concave cone fabricated by a chemical etching process similar to the technique used to make fibre tips (convex cone) is presented. Typically, optical fibres are etched in a hydrofluoric (HF) solution with a thin layer of oil floating on top of the HF solution. The present investigation shows that concave cone etched fibre (CCEF) can be obtained by following the beginning of the etching process. Comprehensive measurements of the dependence of the width and height of the taper angle of the concave cone are plotted. The results of this investigation have led to an optimum approach for core fibre alignment that is suitable for use in connecting fibres for efficient coupling between single-mode fibres.

**Notes:** Demagh, NE Guessoum, A Aissat, H

**URL:** <Go to ISI>://WOS:000234953600021
In the structure of the mononuclear title complex, [Cu(C8H7O4)(2)(C2H6OS)(2)], the Cu II atom lies on an inversion centre and has an octahedral coordination geometry of type MO6. The bidentate dehydroacetic acid (DHA) ligands occupy the equatorial plane of the complex in a trans configuration, and the dimethylsulfoxide (DMSO) ligands are weakly coordinated through their O atoms.
Reference Type: Journal Article
Record Number: 37
Author: Ferria, K. Grulkowski, I. Kwiek, P.
Year: 2006
Title: Acousto-optic lens based on interaction of narrow laser beam with cylindrical ultrasound
Journal: Journal De Physique Iv
Volume: 137
Pages: 67-72
Date: Nov
Short Title: Acousto-optic lens based on interaction of narrow laser beam with cylindrical ultrasound
ISSN: 1155-4339
DOI: 10.1051/jp4:2006137013
Accession Number: WOS:000243690500013
Abstract: Experimental studies of narrow light beam interaction with cylindrical standing ultrasonic wave are presented. As the focusing and defocusing effects are observed, the considered arrangement appears to be an acousto-optic lens. The proposed system acts as an equivalent optical spherical lens whose focal length changes periodically. Additionally, the system based on cylindrical ultrasound serves as an efficient laser light modulator with the rise time of 100 ns. The parameters of both considered modalities (lens and modulator) can be easily controlled.
URL: <Go to ISI>://WOS:000243690500013
The crystal structure of a new Schiff base: 1,2-di[4-(2-imino 4-oxo pentane)phenyl]ethane (H2L) is described. This molecule undergoes tautomerism with three tautomers: keto-imine, enol-imine and keto-amine. It acts mainly as a tetradeutate ligand. Its complexes with cobalt(II), nickel(II), copper(II) are characterised using spectroscopic determinations and cyclic voltammetry. These new complex species are formulated as [CoL] center dot (H2O)(3), [(NiCl2)(2)(H2L)], [CuCl2(H2L)] and [CdCl2(H2L)], respectively. The coordination occurs through the N2O2 system, using various tautomers. (C) 2006 Elsevier Ltd. All rights reserved.
Power systems stiffen from various types of disturbances, which may cause serious damage to system components (generators, receptors, storage elements, power control systems). These disturbances can create system instability and can lead to significant imbalances between energy production and consumption. Because of its importance to the reliability and continuity of service, the problem of power system transient stability has received a great deal of attention. Over the years, various models and analysis methods have been proposed to handle specific types of problems related to transient stability. This paper surveys the different methodologies for assessing power system transient stability. The methods are organized chronologically with an emphasis on their advantages and disadvantages.
Prognostic value of homocysteinemia in patients with congestive heart failure

Background: Elevated plasma homocysteine levels are associated with increased risk of vascular disease and of congestive heart failure (CHF), with a relationship between homocysteine values and disease severity. Hyperhomocysteinemia is a risk factor for cardiac dysfunction. In this study, the predictive value of elevated homocysteine levels was investigated in the prognosis of ischemic and non-ischemic CHF.

Methods: A total of 159 patients with CHF, 89 with non-ischemic and 70 with ischemic CHF (83% males, mean age 62 years, mean ejection fraction 27%), and 119 controls (79% males, mean age 59.8 years) had fasting blood samples taken to measure plasma homocysteine, vitamin B-12 and folate levels. Coronary angiography was performed for all patients. The mean duration of follow-up was 49.6 +/- 36.7 months.

Results: As in other studies, the mean level of homocysteinemia was significantly higher in the CHF group (15.80 mmol/L) than in the control group (10.90 mmol/L) (p = 0.001) whatever the etiology (non-ischemic, 16.11 +/- 6.84 mmol/L; ischemic, 15.41 +/- 6.45 mmol/L). This result was observed without vitamin deficiency, but in patients, the mean creatinine value was moderately higher than in controls. We found a positive correlation between plasma homocysteine levels and New York Heart Association (NYHA) classification, creatinine and age. Moreover, hyperhomocysteinemia appears to be a powerful predictive factor of mortality in CHF patients (relative risk of death, 4.23; p = 0.0003). In the follow-up of this study, 41.5% of patients with homocysteinemia > 17 mu mol/L died vs. 21.3% of patients with levels < 17 mu mol/L. In multivariate analysis, when homocysteine levels were adjusted for a second parameter (age, NYHA, creatinine, diabetes), the risk of death remained significant after each adjustment.

Conclusions: Elevated homocysteine levels observed in CHF patients, whatever the etiology of their heart disease (ischemic or non-ischemic), were correlated with the severity of the disease. Hyperhomocysteinemia appears to be a predictive factor of mortality in CHF patients.
Polycrystalline vanadium nitrides thin films were deposited onto (100)-oriented silicon wafers by reactive dc planar magnetron sputtering. The influence of the nitrogen gas flow (from 0 to 15 sccm) was studied. Several substrate temperatures were investigated: 150, 400 and 650 degrees C. Analytical techniques including X-ray diffraction and reflectivity, atomic force microscopy and optical photospectrometry were used to characterize the structure, the morphology and the optical properties of the films. The measured thickness indicates that the deposition rate is decreased (from 3.5 angstrom for 0 sccm to 1.5 angstrom for 15 sccm) with increasing nitrogen gas flow. Obtained structures depend on the substrate temperature. The structure of pure vanadium (0 sccm) varies from amorphous phase at 150 and 400 degrees C to alpha-V phase at 650 degrees C. The films crystallize dominantly in beta-V2N1-x phase at low nitrogen gas flows and in delta-VN1-x phase at high nitrogen gas flows. The as-deposited VN films were highly textured. The texture seems to depend on the nitrogen gas flow. The root mean square (rms) derived from atomic force microscopy (AFM) varies with the nitrogen gas flow. The optical reflectivity of VN films shows high values in the infrared region. (c) 2005 Elsevier B.V. All rights reserved.
Emission and excitation spectra of the Ce3+ ion in LuF3 single crystal were measured at 77 K. The broad bands observed in these spectra were attributed to the parity-allowed electric-dipole 4f - 5d transitions within Ce3+ ion. No zero-phonon lines were observed, which is indicative of a strong electron-phonon coupling in this host. It is shown that Ce3+ 5d excited configuration splits into five crystal-field components in LuF3. The influence of the crystalline environment on the position of the lowest Ce3+ 5d level is investigated. The energy of the lowest level of the 4f(N-1)5d excited configuration was predicted for all the trivalent rare earth ions embedded in LuF3. Positions of crystal field splitting levels of 4f(N-1)5d configuration relative to the host electronic bands were discussed.
The luminescence of three orthoborates: LuBO$_3$ with calcite and vaterite structures and vaterite YBO$_3$ doped with Pr$^{3+}$ ions has been investigated. The intense broad bands observed in the emission and excitation spectra were attributed to Pr-3 4f5d $\leftrightarrow$ 4f(2) transitions. The emission was ascribed to four spin-allowed transitions and one spin-forbidden from the lowest 4f5d level to 4f(2) configuration multiplets. Two additional broad emission bands with very weak intensity at 440 and 580 nm were studied. Evidence of the presence of Ce$^{3+}$ traces is reported and their influence on Pr$^{3+}$ luminescence is discussed.
Reduction of oxygen was investigated on porous electrodes made of La$_{1-x}$Ca$_{x}$CoO$_3$ (with $0 \leq x \leq 0.6$) perovskite-structured oxides, prepared by a sol-gel process. It was found that both the reaction rate and the electrode active surface area (determined by cyclic voltammetry in a narrow capacitive potential range and by impedance spectroscopy) depend on the partial substitution ratio $x$, both displaying a maximum value for $x$ nearly equal to 0.4. However, in spite of the parallel trend exhibited by the reduction current and the electroactive surface area parameter, the current varies much more with $x$, that is, while the change in the surface area amounts to approximately 40% over the explored $x$ range, the current increases fivefold. Subsequent investigation of the electrode surface composition revealed that surface cobalt concentration (estimated by XPS analysis) deviates significantly from the nominal bulk composition (determined by EDX analysis). It follows a similar dependence on $x$, showing equally a maximum for $x$ near to 0.4. Such a behaviour seems to have a greater effect on the reaction rate, since Co cations are the surface active sites for oxygen electro-reduction. (c) 2005 Elsevier B.V. All rights reserved.

Notes: Hammouche, A Kahoul, A Sauer, DU De Doncker, RW Meeting of the International-Battery-Association (IBA) Apr 18-22, 2004 Graz, AUSTRIA Int Battery Assoc

URL: <Go to ISI>://WOS:000236479000007
Reference Type: Journal Article
Record Number: 46
Author: Hannat, S. Chermat, R. Nechadi, A. Skhettabi, F. Z. M. Malek, R.
Year: 2006
Title: Cerebral vascular accident in diabetic patients in the hospital
Journal: Diabetes & Metabolism
Volume: 32
Pages: S86-S86
Date: Mar
Short Title: Cerebral vascular accident in diabetic patients in the hospital
ISSN: 1262-3636
Accession Number: WOS:000236344600277
Notes: Hannat, S Chermat, R Nechadi, A Skhettabi, FZM Malek, R
URL: <Go to ISI>://WOS:000236344600277
We concentrate on the dynamics of one-dimensional and two-dimensional cubic maps, it describes how complex behaviors can possibly arise as a system parameter changes. This is a large class of diffeomorphisms which provide a good starting point for understanding polynomial diffeomorphisms with constant Jacobian and equivalent to a composition of generalized Henon maps. Due to the theoretical and practical difficulties involved in the study, computers will presumably play a role in such efforts.
The present work is devoted to study the short-time reactor neutron irradiation of yttria stabilised zirconia (YSZ) at 315 K. The samples were prepared by the reactive calcination method and characterised by X-ray diffraction (XRD) analysis and scanning electronic microscope. The prepared samples were irradiated by reactor neutrons at different exposure times and investigated by XRD analysis. The results obtained show good radiation resistance of YSZ to reactor neutron irradiation.
The effects of essential oil extracted from Nigella sativa (L.) seeds and its main components on human neutrophil elastase activity were investigated. Essential oil was extracted from N. sativa (L.) seeds using hydrodistillation. The yield was equal to 0.4%. Inhibition of HNE activity by essential oil was found to be dose dependent. The highest inhibitory concentration (HIC) of essential oil which caused total inhibition of HNE activity was 5.8 mg/ml. Microassays carried out to evaluate the inhibitory effect of major components of essential oil on HNE activity revealed that carvacrol (5-isopropyl-2-methylphenol) showed marked HNE inhibitory activity with a very low IC50 value (12 μm). Based on these results, the inhibitory effects of essential oil on HNE activity are due to the presence of bioactive molecules, mainly carvacrol this compound is an inhibitor of HNE and could be considered as a natural antielastase agent and possible candidate for phytotherapy in the treatment of injuries that appear in some pathologic cases such as chronic obstructive pulmonary disease and emphysema.
Purpose - This paper sets out to review a study of the set of affine controllable systems connexity denoted by $C_{a}$. Design/methodology/approach - With each affine system a homogeneous system is associated. Jurdjevic and Sallet proved that, if a homogeneous system is controllable in $\mathbb{R}^2 - \{0\}$ and, if the affine system has not a fixed point, then the affine system is controllable in $\mathbb{R}^2$. Findings - It is shown that these systems are denoted by $S$, and are dense in $C_{a}$. Research limitations/implications - Allows one to tackle the problem by using the connexity of a dense set in $S$. Originality/value - Succeeds in completing a study of the set of affine controllable systems connexity denoted by $C_{a}$.

Notes: Kadem, Abdelouahab

URL: <Go to ISI>://WOS:000238997900010
The structural, electrical and optical properties of RF sputtered $\text{In}_2\text{O}_3: \text{Sn}$ (ITO) thin films and the effect of post-deposition annealing have been studied. The thickness ranges from 225 to 862 nm. X-ray diffraction, scanning electron microscopy (SEM) and atomic force microscopy (AFM) experiments were performed to study the structure and the surface morphology of these samples. We found that thinner films have a $<100>$ texture and as the film grows the preferred orientation changes from $<100>$ to $<111>$. The lattice parameters are found to be larger than the bulk value, indicating that the samples are under a tensile stress. The grain size increases with increasing thickness. SEM images show a dense granular structure with grains having different shapes and sizes. From AFM images, the average surface roughness (rms) was estimated to be 3.89 nm. The energy gap was found to decrease from 3.65 to 3.50 eV as $t$ increases from 225 to 866 nm. Annealing experiments were done, in the air, at temperature $T$ in the $100$–$500$ degrees C range. We found that the $<111>$ texture becomes stronger after the annealing treatment. A large increase of the grain size with increasing $T$ is observed. The lattice constant decreases with $T$ to become closer to the bulk value, i.e. annealing seems to relieve the stress present in the as-deposited films; $T = 400$ degrees C seems to be the best temperature to obtain practically a stress free sample. We observe a large decrease in the electrical resistivity $p$ after annealing. The lowest $p$ value ($16 \times 10^{-4}$ Omega cm) was noted in the 699 nm thick sample annealed at 500 degrees C. The decrease of $p$ seems to be the consequence of a larger grain size and a stronger $<111>$ texture.
Abstract: This paper deals with the synthesis of a new robust adaptive fuzzy control for a class of nonlinear and disturbed single-input single-output (SISO) systems. To attenuate the effect of both of the approximation errors and the external disturbances to a prescribed level, two signals are added to the indirect adaptive fuzzy control law: the first deduced from a fuzzy system allows approximation errors and external disturbances to be eliminated; the second signal deduced from the Riccati equation attenuates the effect of the residual errors to a prescribed level. To illustrate the efficiency of the proposed approach, a simulation example is presented.
The characterization of neutron absorbing materials as well as quantification of neutron attenuation through matter is very essential in various fields, namely in shielding calculation. The objective of this work is to describe an experimental procedure to be used for the determination of neutron transmission through different materials. The proposed method is based on the relation between the gray value measured on neutron radiography image and the corresponding inducing neutron beam. For such a purpose, three kinds of materials (in shape of plate) were investigated using thermal neutrons: (1) boron-alloyed stainless steel as strong absorber; (2) copper and steel as fair absorbers and (3) aluminum as weak absorber. This work is not limited to the determination of neutron transmission through matters; it is also spread out to the measure of the surface density of the neutron absorbing elements (p,) as a function of thickness of neutron absorbing material such as boron-alloyed stainless steel. The beam hardening effect depending on material thickness was also studied using the neutron transmission measurements. A theoretical approach was used to interpret the experimental results. The neutron transmission measurements were performed at the Neutron Radiography and Tomography facility of the Atomic Institute of the Austrian Universities in Vienna. Finally, a Maxwellian neutron distribution of incident neutron beam was used in the theoretical calculations of neutron energy shift in order to compare with experiments results. The obtained experimental results are in a good agreement with the developed theoretical approach. (c) 2006 Elsevier B.V. All rights reserved.
We have performed the first principles full-potential linearized augmented plane wave calculations (FP-LAPW) with density functional theory in local density approximations (LDA), in aim to determine and to predict the pressure dependence of structural and optical properties of zinc-blende BeS, BeSe and BeTe compounds. The elastic constant, refractive index and its variation with hydrostatic pressure are well described. (c) 2006 Elsevier Ltd. All rights reserved.
Elastic, electronic and optical properties of ZnS, ZnSe and ZnTe under pressure

The results of first-principles theoretical study of the structural, electronic and optical properties of zinc monochalcogenides ZnS, ZnSe and ZnTe, have been performed using the full-potential linear augmented plane-wave method plus local orbitals (FP-APW + lo) as implemented in the WIEN2k code. In this approach the local density approximation (LDA) is used for the exchange-correlation (XC) potential. Results are given for lattice constant, elastic constant, bulk modulus, and its pressure derivative. The band structure, density of states, pressure coefficients of elastic constants, energy gaps and refractive indices are also given. The results are compared with previous theoretical calculations and the available experimental data.

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Notes: Khenata, R. Bouhemadou, A. Sahnoun, M. Reshak, Ali H. Baltache, H. Rabah, M.

URL: <Go to ISI>:://WOS:000241300200004
Luminescence spectra of Ce$^{3+}$-ion in Ca$_{1-x}$Sr$_x$S solid solutions have been investigated. It has been shown that the evolution of Ce$^{3+}$ excitation and emission spectra through the concentration range may be interpreted in correlation with the variations, with the host lattice composition, of the lattice constant, the local structure in the activator neighborhood and the band gap. Under activator excitation, in addition to the two conventional bands, an additional band peaking at about 650 nm was observed (mainly in SrS) and was related to the contamination of the samples as a consequence of extended storage. Except for this band, the luminescence properties did not change relatively to those obtained previously on the same samples. The most drastic modification affected SrS:Ce$^{3+}$, despite the fact that all the samples have been stored in the same conditions.
The chemical composition of the essential oil of Saccocalyx satureioides Coss. et Dur. (Lamiaceae) was analyzed by chiral and achiral GC/MS and 42 components were identified. The main constituents were (+)-alpha-terpineol (35.9%), thymol (15.6%) and borneol (12.4%). The in vitro antibacterial and antifungal activities of the essential oil were assessed by the disc diffusion method, and were significant on the six microorganisms tested. A moderate inhibitory activity against hepatitis C virus polymerase was also evidenced.
Magnetization curves are predicted for a magnetic-tunnel-junction-like system in some special cases of interest: (i) weak interlayer magnetic coupling/high exchange anisotropy field $H_E$ and (ii) strong coupling/low $H_E$. Analytical expressions for different switching fields are derived in these situations. These fields depend on the magnetizations ($M_A, M_B$) and thicknesses ($t(A), t(B)$) of the two ferromagnetic layers, on the bilinear ($J(1)$) and biquadratic ($J(2)$) coupling parameters, and on the exchange ($H_E$) and uniaxial ($H_A$) anisotropy fields of the pinned layer. In the first case, the whole system is found to behave as two uncoupled layers with equivalent exchange and planar anisotropy fields. The effect of the biquadratic coupling $J(2)$ on the hysteresis curves is discussed for both ferromagnetic and antiferromagnetic coupling cases. In the second case, the system behaves as a single (ferromagnetic/antiferromagnetic) bilayer with effective exchange and magnetocrystalline anisotropy fields. These findings confirm some of the results inferred from a ferromagnetic resonance analysis and previously reported. (c) 2006 American Institute of Physics.
Reference Type: Journal Article
Record Number: 60
Author: Louail, L. Maouche, D. Hachemi, A.
Year: 2006
Title: Elastic properties of InAs under pressure up to 18 GPa
Journal: Materials Letters
Volume: 60
Issue: 27
Pages: 3269-3271
Date: Nov
Short Title: Elastic properties of InAs under pressure up to 18 GPa
ISSN: 0167-577X
DOI: 10.1016/j.matlet.2006.03.011
Accession Number: WOS:000240901500017
Abstract: We have carried out the first-principles total energy calculations to investigate the elastic properties of both the zinc-blende and rocksalt structures of InAs. We found the transition pressure and we report the elastic constants as a function of the hydrostatic pressure. Detailed comparisons with the available measured values and with the results obtained in previous theoretical studies reveal good agreement concerning some quantities and discrepancies for another. (c) 2006 Elsevier B.V. All rights reserved.
Notes: Louail, L. Maouche, D. Hachemi, A.
URL: <Go to ISI>://WOS:000240901500017
We show that the procedure used by Ferreira [Phys. Rev. A 66, 024103 (2002)] is not correct for the following reasons: (i) the invariant I(t) they derived does not satisfy the Liouville-Von Neuman equation. (ii) They found that the eigenvalues of I(t) are time dependent which should not be the case according to the Lewis-Riesenfeld theory. We give a correct procedure to find the solution of the system they considered, i.e., the Schrodinger equation for a two-dimensional harmonic oscillator with time-dependent mass and frequency in the presence of a static magnetic field.
By using the Lewis-Riesenfeld theory and algebraic method, we present an alternative approach to obtain the exact solution of time-dependent Hamiltonian systems involving quadratic, inverse quadratic, and (1/x)p plus p(1/x) terms. This solution is discussed and compared with that obtained by Choi, J. R. (2003). [International Journal of Theoretical Physics 42, 853].
We present the calculation of the impedance variation using a half-analytical formulation based on coupled electromagnetic variables. Such a formulation concerns an axisymmetrical device constituted with a voltage supplied solenoidal inductor and a conducting workpiece. In this field of modelling, authors have already developed a method [Maouche and Feliachi, J. Phys. III France 10, 1967 (1997)] that determines the current distribution inside inductor coil loops in the case of weak skin depth and a low number of these coil loops. In the proposed development, the number of loops is relatively large and the skin effect in these loops is negligible. This formulation uses a voltage excitation, which makes the source field depending on induced currents and permits to consider the real geometry of the inductor. The model is applied to study an eddy current non destructive testing (ECNDT) device. The variation of the system impedance is calculated in the case of an axisymmetrical device. The obtained modelling results are validated by comparison to measurements and finite element computations [Remy, Ph. D. thesis, University of Compiègne, France, 1997; La et al., Rev. Prog. Quant. Non-Destructive Eval. 16A, 295 (1997)]. Once validated, the proposed model is applied to determine geometrical and physical characteristics of an ECNDT device. To assemble this interest, we visualise the evolution of the impedance variation according respectively to the air-gap, to the thickness of the workpiece and its electric conductivity. The model is implemented within a software tool (CECM: Coupling Electromagnetic Circuits Method) developed in Matlab environment.
In this paper we present a new theoretical model for the modelling of the microstrip line as well as two types of discontinuities: regular (open end, step, bend and T- and cross-junctions) and irregular (stub and bent-stub). The two-dimensional exact dyadic Green function of a grounded dielectric slab has been used with the Galerkin's technique. The subdivision of the discontinuity in a network of juxtaposed unit cells, characterized by their own longitudinal and transversal current distributions, allowed the treatment of a large class of irregular discontinuities in addition to the regular discontinuities. The obtained results have been commented and compared with those of different approaches and with experimental results where a good concordance has been observed. Copyright (C) 2006 John Wiley & Sons. Ltd.
The solvent extraction of zinc and cadmium from phosphoric acid solution by di-2-ethyl hexyl phosphoric acid in kerosene diluent has been investigated. The influence of the following parameters was investigated: the extractant concentration, the organic/aqueous phase ratio and the equilibrium pH. Extraction experiments were carried out to determine the effects of equilibrium pH, O/A phase ratio and D2EHPA concentration and their interactions on the extraction yield of zinc and cadmium by using the factorial design and the Yates algorithm for non-linear regression. Based on the above results and taking into consideration that D2EHPA exists in a dimeric form in kerosene, the extraction of 0.45 x 10\(^{-2}\) mol/L zinc and 0.05 x 10\(^{-2}\) mol/L cadmium from 5.5 M phosphoric acid solution by D2EHPA in kerosene could be represented at equilibrium by Zn\(\text{aq}(2+)\) + 1.5(H\(\text{2}A(2)\))(org) \(\rightarrow\) ZnA(2)(HA)(org) + 2H(aq)(2+) and Cd\(\text{aq}(2+)\) + 1.25(H\(\text{2}A(2)\))(org) CdA(2)(HA)(1/2 org) + 2H(aq)(+). The equilibrium constants for the extraction of zinc and cadmium from phosphoric acid solution were found to be 1.28 x 10\(^{-2}\) mol/(1/2) L-1/2 and 3.50 x 10\(^{-4}\) mol(3/4) L-3/4, respectively. (c) 2006 Elsevier B.V. All rights reserved.
The solvent extraction of zinc, cadmium and chromium contained in 5.5 mol/L phosphoric acid solutions (30% P2O5) was investigated using 7-(4-ethyl-1-methyloctyl)-8-hydroxyquinoline-Kelex 100 (R) as extractant and treated kerosene as diluent. At organic-to-aqueous phase ratio (1/1) and at room temperature, 58% of zinc, 34% of chromium and 15% of cadmium were recovered in 240 min. In order to improve the kinetics of extraction, a modifier reagent was added to the organic phase. The addition of n-decanol (10 vol.%) increased the rate of metals extraction by reducing the equilibrium time from 240 min to 30 min, along with 60% recovery of metals. Extraction of metal ions increased with increasing aqueous phase pH. The pH(0.5) values difference of 0.1 M with Kelex 100 (R) indicates the possible separation of cadmium, zinc and chromium. Increasing the concentration of Kelex 100 (R) increased the percentage extraction of metal ions. The loading capacity values were found to be 83%, 80% and 71% for zinc, chromium and cadmium, respectively, at 0.4 M Kelex 100 (R) concentration, indicating that the extractant is highly selective for the metal ions considered. (c) 2005 Elsevier B.V All rights reserved.
In this work we study the dopant redistribution of arsenic and boron during rapid thermal annealing (RTA) from implantation-doped polycrystalline silicon films into underlying single crystalline silicon. Arsenic (2 x 10(15) or 5 x 10(15) atoms/cm(2); 100 keV) and boron (10(16) atoms/cm(2); 25 keV) codiffusion are studied in an emitter and extrinsic base of bipolar transistor in PNP configuration. The purpose of this study has been carried out to test the effect of arsenic fluence on the boron redistribution for annealing 1000-1150 degrees C and of 1-20 s duration. The increase arsenic fluence products a delay boron diffusion which becomes more significant at 1150 degrees C. At this temperature, the stopping is estimated at 500 angstrom. (c) 2006 Elsevier B.V. All rights reserved.

Notes: Merabet, A. Marcon, J. Symposium on Si-Bases Materials for Advanced Microelectronic Devices held at the 2006 E-MRS Spring Meeting May 29-jun 02, 2006 Nice, FRANCE European Mat Res Soc, IUMRS, ICEM

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Reference Type: Journal Article
Record Number: 68
Author: Nekab, M. Kahoul, A.
Year: 2006
Title: Semi-empirical and empirical L X-ray production cross sections for elements with 50 <= Z <= 92 for protons of 0.5-3.0 MeV
Journal: Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms
Volume: 245
Issue: 2
Pages: 395-405
Date: Apr
Short Title: Semi-empirical and empirical L X-ray production cross sections for elements with 50 <= Z <= 92 for protons of 0.5-3.0 MeV
ISSN: 0168-583X
DOI: 10.1016/j.nimb.2005.10.035
Accession Number: WOS:000236500500007
Abstract: We present in this contribution, semi-empirical production cross sections of the main X-ray lines L alpha, L beta and L gamma for elements from Sn to U and for protons with energies varying from 0.5 to 3.0 MeV. The theoretical X-ray production cross sections are firstly calculated from the theoretical ionization cross sections of the Li (i = 1, 2, 3) subshell within the ECPSSR theory. The semi-empirical L alpha, L beta and L gamma cross sections are then deduced by fitting the available experimental data normalized to their corresponding theoretical values and give the better representation of the experimental data in some cases. On the other hand, the experimental data are directly fitted to deduce the empirical L X-ray production cross sections. A comparison is made between the semi-empirical cross sections, the empirical cross sections reported in this work and the empirical ones reported by Reis and Jesus [M.A. Reis, A.P. Jesus, Atom. Data Nucl. Data Tables 63 (1996) 1] and those of Strivay and Weber [Strivay, G. Weber, Nucl. Instr. and Meth. B 190 (2002) 112]. (c) 2005 Elsevier B.V. All rights reserved.
Notes: Nekab, M Kahoul, A
URL: <Go to ISI>://WOS:000236500500007
Salicylaldehyde or 5-bromosalicylaldehyde reacted with 2,3-diaminophenol in absolute EtOH in a 2:1 molar ratio to give new unsymmetrical Schiff bases (H2L). The bases were used as ligands to coordinate Mn(III), Ni(II) and Cu(II) chlorides leading to [(MnClL)-Cl-III] center dot EtOH and [(ML)-L-II] or [(ML)-L-II] center dot 2H(2)O (M = Ni or Cu) complexes. Their structures were determined using mass spectroscopy, IR, u.v.-vis and H-1-n.m.r. The cyclic voltammetry in acetonitrile showed irreversible waves for both ligands. Under the same experimental conditions, the complexes exhibited mainly the non-reversible reduction of the Ni(II) or Cu(II) ion to Ni(0) or Cu(0), while the reduction of Mn(III) to Mn(II) was found to be a quite reversible phenomenon.
Reference Type: Journal Article
Record Number: 70
Author: Rouabhia, S. Bounecer, H. Abbas, L. Azizi, D. Laouar, A. K. Boukrousse, H. Benouar, A. Mallem, D. Malek, R.
Year: 2006
Title: Hepatobiliary attacks and diabetes
Journal: Diabetes & Metabolism
Volume: 32
Pages: S96-S96
Date: Mar
Short Title: Hepatobiliary attacks and diabetes
ISSN: 1262-3636
Accession Number: WOS:000236344600321
Notes: Rouabhia, S Bounecer, H Abbas, L Azizi, D Laouar, AK Boukrousse, H Benouar, A Mallem, D Malek, R
URL: <Go to ISI>://WOS:000236344600321
Reference Type: Journal Article
Record Number: 71
Author: Rouabhia, S. Bounecer, H. Abbas, L. Azizi, D. Mallem, D. Malek, R.
Year: 2006
Title: Prevalence of diabetes of type 2 in the region of Batna by one simple method
Journal: Diabetes & Metabolism
Volume: 32
Pages: S66-S67
Date: Mar
Short Title: Prevalence of diabetes of type 2 in the region of Batna by one simple method
ISSN: 1262-3636
Accession Number: WOS:000236344600196
Notes: Rouabhia, S Bounecer, H Abbas, L Azizi, D Mallem, D Malek, R 1
URL: <Go to ISI>://WOS:000236344600196
Symmetric heavy-ion collisions are known to display an 'extra-push' effect. That is, the energy at which the s-wave transmission is 0.5 lies significantly higher than the nominal Coulomb barrier. Despite this, however, the capture cross section is still greatly enhanced below the uncoupled barrier. It is shown that this phenomenon can be simply explained in terms of entrance-channel effects which account for long-range Coulomb excitations. (c) 2005 Elsevier B.V. All rights reserved.

Notes: Rowley, N Grar, N Hagino, K

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Electrochemical nucleation and growth of Co and CoFe alloys on Pt/Si substrates

Electrochemical nucleation and growth of Co and CoFe alloys on Pt/Si(100) surface from watts (mixed chloride sulfate) baths were studied by voltammetric, chronoamperometric and AFM measurements. The CoFe alloys were deposited from solution with molar ratio of (1/1) and (10/1). The Scharifker and Hills model was employed to analyse the current transients. For both Co and CoFe (10/1) alloys the nucleation was a good agreement with the instantaneous model followed by 3D diffusion-limited growth. Inversely, for CoFe (1/1) alloy the nucleation was an agreement with the progressive model. It is evident that the compositions of the electrolyte influence greatly the type of nucleation. The atomic force microscopy (AFM) images revealed a compact and a granular structure of the electrodeposited Co layers and CoFe alloys.

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Essential oils extracted by hydrodistillation from the aerial parts of 23 samples of Algerian Origanum glandulosum Desf. were analysed by gas chromatography (GC) and GC-mass spectrometry (MS). Overall, 30 components have been fully characterized. However, all the oils were characterized by the predominance of four components, thymoll (18.5-73.1%), carvacrol (7.6-72.6%), p-cymene (1.7-18.5%) and gamma-terpinene (1.1-18.7%). Cluster analysis of the identified components allowed us to establish the presence of three main groups, characterized by carvacrol, thymoll and comparable amounts of both compounds, respectively. The free radical scavenging activity of essential oils was determined by the 1,1-diphenyl-2-pierylhydrazyl (DPPH) model system. The SC50 (scavenging concentration) values were in the range 16.2-26.7 µg/ml, representing a good antioxidant effectiveness. The roles of thymol and carvacrol, the main components of all oils, were estimated by measuring their stoichiometric factors. The essential oils were also evaluated for their antimicrobial activity by the agar disc diffusion method and the determination of minimum inhibitory concentration (MIC) against six standard strains (Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Enterococcus hirae, Candida albicans, Candida tropicalis). All microbial strains employed (Gram-positive and Gram-negative bacteria and yeasts) showed a fairly similar degree of susceptibility to the essential oils under investigation, although no evident difference was observed in their sensitivity. Furthermore, a similar level of toxicity was observed for all oils examined, with MIC values of 31.25-125.00 µg/ml. Finally, the addition of the emulsifier Tween 80 to the oil or to the agar markedly decreases the antimicrobial activity of the essential oils against all microbial strains employed, thus suggesting that the antimicrobial activity of the essential oils is dependent on the physicochemical characteristics of their components and also on the microbial strains employed. Copyright (c) 2006 John Wiley & Sons, Ltd.
Reference Type: Journal Article
Record Number: 75
Author: Selmani, L. Selmani, M.
Year: 2006
Title: Analysis of a viscoelastic contact problem with Normal damped response and damage
Journal: Bulletin of the Belgian Mathematical Society-Simon Stevin
Volume: 13
Issue: 2
Pages: 207-220
Date: Apr-Jun
Short Title: Analysis of a viscoelastic contact problem with Normal damped response and damage
ISSN: 1370-1444
Accession Number: WOS:000245884200002
Abstract: We consider a mathematical model for the process of contact between a viscoelastic body and a reactive foundation. The material is viscoelastic with internal state variable which may describe the damage of the system. We establish a variational formulation for the model and prove the existence and uniqueness result of the weak solution. Finally we prove a dependence result with respect to the data.
Notes: Selmani, L. Selmani, M.
URL: <Go to ISI>://WOS:000245884200002
We consider two quasistatic frictionless contact problems for viscoelastic bodies with long memory. In the first problem the contact is modelled with Signorini's conditions and in the second one is modelled with normal compliance. In both problems the adhesion of the contact surfaces is taken into account and is modelled with a surface variable, the bonding field. We provide variational formulations for the mechanical problems and prove the existence of a unique weak solution to each model. The proofs are based on arguments of time-dependent variational inequalities, differential equations, and a fixed point theorem. Moreover, we prove that the solution of the Signorini contact problem can be obtained as the limit of the solutions of the contact problem with normal compliance as the stiffness coefficient of the foundation converges to infinity. Copyright (C) 2006 M. Selmani and M. Sofonea. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
A copper(II) coordination polymer based on flexible spacer ligands: Synthesis, crystal structure, and magnetic properties of the adipato complex Cu-4(bpy)(4)(adip)(3) (tcnp)(2) 

bpy=C10H8N2; adip(2-) = O2C(CH2)(4)CO22-; tcnp(-) = (NC)(2)CC(OEt)C(CN)(2)(-)

Journal: Inorganica Chimica Acta

Volume: 359
Issue: 10
Pages: 3269-3274
Date: Jul

Abstract: One-pot reaction of copper(II) chloride dihydrate CuCl2 (. ) 2H(2)O with sodium adipate Na(2)adip (adip(2-) = O2C(CH2)(4)CO22-) in the presence of 2,2'-bipyridyl (bpy = C10H8N2) and potassium 1,1,3,3-tetracyano-2-ethoxypropenide (tcnp = (NC)(2)CC(OEt)C(CN)(2)(-)) gives the new compound [Cu-4(bpy)(4)(adip)(3)](tcnp)(2) (1), which was characterized by single crystal X-ray diffraction analysis. Each metal ion presents an elongated square pyramidal CuN2O3 environment, with an oxygen atom in apical position and a base plane involving almost equivalent bond lengths. The structure can be described as a pseudo dinuclear species in which two Cu(bpy) units are triply bridged by two unsymmetrical bridging oxygen atoms of two carboxylate groups with a k-mu-bridging mode and by an almost symmetrical OCO unit with a bidentate syn-syn k:k-mu-bridging mode. Such coordination modes generate the tetranuclear Cu-2(adip)(2)Cu-2 units which are bound by a symmetrical adipate ligand through a k-mu-bridging mode to lead to infinite chains involving a succession of Cu, units alternatively bridged by one or two aliphatic chains of adipate ligands. Magnetic measurements exhibit a maximum in the ch(i)(m) versus T plot (at similar to 15.2 K), which is characteristic of weak antiferromagnetic exchange interactions between the Cu(II) ions bridged by the carboxylate groups. Fit of the magnetic data with appropriate model led to J value of -7.74 cm(-1) (the Hamiltonian is written as H = -2JS(a)S(b)). (c) 2006 Elsevier B.V. All rights reserved.

Notes: Setifi, Fatima Bouchama, Abdelaziz Sala-Pala, Jean Salaun, Jean-Yves Triki, Smail

URL: <Go to ISI>://WOS:000238877200023
The proton diffusion coefficient for both fresh and heat-treated (140 and 230 degrees C, respectively) alpha and beta-PbO2 electrodes was estimated at room temperature using Galvanostatic Intermittent Titration Technique (GITT). PbO2 samples were prepared by electroformation of cured plates. H3bO3 center dot xH(2)O with a conductivity of 3.29 x 10(-3) Omega(-1) cm(-1), was used as solid protonic conductor (SPC) electrolyte. It was found that when structural water is removed, the capacity of both alpha and P-PbO2 electrodes decreases and the ohmic drop increases. The departure of structural water affects considerably the value of proton diffusion coefficient. (c) 2005 Elsevier B.V. All rights reserved.
Abstract: The elastic constants and related properties of zinc-blende Al(x)In(1-x)P(y)Sb(1-y) and AlxGa1-xPySb1-y quaternary semiconductor alloys lattice matched to InAs substrate are obtained for various aluminium concentrations over the range 0-1 using the pseudopotential method within the virtual crystal approximation combined with the Harrison bond-orbital model. The agreement between our results and published experimental data, which are only available for binary parent compounds, is generally satisfactory, while our calculated results for quaternaries of interest are predictions. Except for the internal strain parameter, all studied quantities are found to exhibit the same qualitative behavior with respect to the composition x when replacing the indium (In) by the gallium (Ga). The numerically calculated results provide more opportunities to obtain diverse elastic properties while still controlling the composition components. (c) 2005 Elsevier B.V. All rights reserved.
Elastic properties of AlxIn1-xPySb1-y and AlxGa1-xPySb1-y lattice matched to InAs substrate (vol 60, pg 546, 2006)
Preparation and characterization of polystyrene/montmorillonite nanocomposite by melt intercalative compounding

Polymer composites based on modified montmorillonite (OMMT) and polystyrene (PS) were prepared with different compositions by melt processing. The pristine montmorillonite (MMT) was obtained from Algerian plant with a cation exchange capacity (CEC) of 119 meq/100 g. The modification of MMT was carried out by treating with octadecylammonium cation. The polymer composites were characterized using different techniques such as X-ray diffraction (XRD), infrared spectrophotometry (IR), differential scanning calorimetry (DSC), thermal gravimetric analysis (TGA), and rheology and tensile measurements. The results showed that, the basal space of the silicate layer increased, as determined by XRD, from 12.6 to 32.3 angstrom. The microstructure was detected by X-ray patterns and transmission electronic microscopy (TEM) at 2 wt% OMMT, however, higher than 2 wt% OMMT reveals partial intercalation structure. The composite with 5 wt% was indicated the greatest improvement in thermal stability. The rheological properties of the PS/OMMT composites were investigated using ARES-rheometer operated in the dynamic mode with a parallel plate geometry. The storage and loss moduli were increased with increasing the clay content. The stress-at-break is also improved relatively compared to the virgin polystyrene in our experimental conditions.
This paper gives a general design of a fuzzy logic controller (FLC), based on Simulink and DSP engine, and is an alternative to fuzzy processors in terms of speed and generality. This design can be implemented easily on FPGA's and digital signal controller (DSC) chips too. The implementation on DSC chips, outlined in this paper, aims to emphasize the feasibility of inexpensive implementation of FLC with microcontroller technology. More, DSC resources such as A/D. PWM and I/O ports can be designed in Simulink environment and added to the design of an embedded controller. This idea is applied to design an FLC dedicated to a PCB shunt current sensing resistor. The FLC is simulated in Simulink environment. The simulation results show that the designed FLC operates successfully and yield results similar to those given by the FLC designed by means of the Fuzzy Logic Toolbox of MATLAB.
We have studied the magnetization hysteresis loops of a twinned and detwinned single crystals in a temperature range between 4.2 and 100 K and a magnetic field (H) range between 0 and 6 T. We carried out relaxation measurements on the samples at different temperatures and magnetic fields. We investigated the twin pinning as a function of temperature (T) and the fishtail anomaly in the critical current density of the two samples. We tried in this study to confirm or infirm the different models which explain the fishtail effect by confronting them to our experimental results. We found that the collective creep theory is consistent with the results of our experiment in the field region where the magnetization is at its minimum. This field marks a crossover between the small and large bundle pinning regimes. (c) 2006 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

Notes: Boudissa, M. Halimi, R. Frikach, K. Senoussi, S. 4th International Conference on Magnetic and Superconducting Materials Sep 05-08, 2006 Agadir, MOROCCO

URL: <Go to ISI>://WOS:000241696600025
To measure the components of the magnetization vector along the XYZ directions of a reference frame, in the superconducting materials, we have conceived a three axes magnetometer with a detection system equipped with three series of pick-up coils with axes parallel to the three directions X, Y, and Z. We describe in this paper the details of the design and the method of measurement, with some results obtained by magnetic measurements on samples of oriented YBCO powder, with size of the grains between 20 gin and 40 mu m, for values of the angle theta between the magnetic field H and the c-axis, between 0 degrees and 90 degrees and for values of fields up to 12 T. The direct measurement of the Z and the XY components of the irreversible magnetization vector, M-irr, allowed us to observe the twin effect (channeling) on the vortex pinning observed by many authors, the evolution of the magnetization vector and to measure with a high accuracy the anisotropy factor of our samples. (c) 2006 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.
The simulation and experimental study of new IT (Integrator Proportional) controlled DC bus voltage of three phase shunt active power filter (APF), to improve power quality by compensating harmonics and reactive power required by nonlinear load is proposed. The compensation process is based on sensing mains currents only, an approach different from conventional methods, which require harmonics or reactive volt-ampere values of the load. The not sinusoidal mains voltage form problem is resolved by using PLL system. PWM signal generation is based on hysteresis control comparators to obtain the switching signals. Various simulation and experimental results are presented under steady state and transient conditions.


URL: <Go to ISI>://WOS:000245905009019
As first part of this project, Polypropylene/organoclay nanocomposites have been prepared via solvent casting in order to study their viscoelastic properties. The extent of this clay inside the matrix can be later evaluated by melt rheology beside more techniques like electron microscopy, FTIR and X-ray diffraction. The clay used in our work (Montmorillonite) was prepared und organophilically modified under several conditions depending on the alkyl ammonium content and the cationic exchange capacity (CEC). Scanning electron microscopy was used in order to verify the intercalation of alkylammonium in the interlayer space of clay.

The results are in good agreement with the results of FTIR and X-ray diffraction, which proved also, in case of nanocomposite, the intercalation of polymer chains into the interlayer space. Rheological investigation in melt state of polypropylene will be done. The preparation of nanocomposite using melt-compounding method is being prepared and the results will be exposed in a forthcoming report.

Note: Chaoui, S. Mehamha, A. Willenbacher, N. 5th International Nanotechnology Symposium Nov 21-22, 2006 Karlsruhe, GERMANY

URL: <Go to ISI>://WOS:000244471700028
An entirely automatic procedure for the classification of cerebral tissues from magnetic resonance nuclear imaging (MRN) 3D of the head are described in this paper. This procedure doesn't make any assumption nor on the number of classes nor on the shape of the density. Indeed, this last is estimated by a non-parametric method, it is about the method of the Parzen's Kernel. A new objective function is proposed to improve the FCM algorithm by the addition of one term of entropy aiming to maximize the number of "good" ordering. A supplementary correction is operated by a probabilistic procedure said of fuzzy relaxation including the probabilities of the neighboring points. The validation of the algorithm is made on simulated data and on real cerebral imaging RMN.


**URL:** <Go to ISI>://WOS:000260420400002
The fusion probability for heavy symmetric systems is known to show certain very specific features. Apart from the large variance of the fusion barrier distribution, it is found that the energy at which the s-wave transmission is 0.5 is shifted to an energy significantly higher than the nominal (e.g. Bass) Coulomb barrier. This last feature is referred to in the literature as the 'extra push' effect. Many models have been devised to explain the origin of these findings. It is worth noting, however, that despite the extra push, the capture cross section is still greatly enhanced at the very lowest energies. This fact cannot be explained within the framework of macroscopic theories involving conditional saddle points or frictional forces. We have performed full coupled-channel calculations for heavy, symmetric systems treating correctly the long-range Coulomb excitations of the collective quadrupole- and octupole-phonon states in the target and projectile. The results obtained show that the extra push and the overall shape of the fusion probability are simply explained by these entrance-channel effects.

URL: <Go to ISI>://WOS:000240548300028
The development of aid's systems for the medical diagnosis is not easy thing because of presence of inhomogeneities in the MRI, the variability of the data from a sequence to the other as well as of other different source distortions that accentuate this difficulty. A new automatic, contextual, adaptive and robust segmentation procedure by MRI brain tissue classification is described in this article. A first phase consists in estimating the density of probability of the data by the Parzen-Rozenblatt method. The classification procedure is completely automatic and doesn't make any assumptions nor on the clusters number nor on the prototypes of these clusters since these last are detected in an automatic manner by an operator of mathematical morphology called skeleton by influence zones detection (SKIZ). The problem of initialization of the prototypes as well as their number is transformed in an optimization problem; in more the procedure is adaptive since it takes in consideration the contextual information presents in every voxel by an adaptive and robust non parametric model by the Markov fields (MF). The number of bad classifications is reduced by the use of the criteria of MPM minimization (Maximum Posterior Marginal).
Abstract: Although the Induction Motor (IM) is considered by its qualities of robustness and low cost of construction, it happens nevertheless that this one presents an electric breakdown or mechanics, which can reveal expensive in term of immobilization and maintenance time of the production equipment. Therefore it required the integration of a diagnosis and monitoring system there. This last be to detect and locate the faults of the system and y to propose quite obvious solutions. In this paper we will develop a method currently very answered which uses the Relations of Redundancies Analytical (RRA) for faults detection. The generation of such relations makes it possible to generate residues for the detection of defects based on the use of models. A residue is temporal signal, function of the inputs and Outputs Of the process. In absence of faults, this residue is statically zero. During the appearance of a fault, its amplitude vary significantly. Finally the analysis of these residues makes it possible to detect the time of appearance of faults.
This paper presents a strategy based on residual generation to detect acetate formation during a culture of Escherichia coli as producer of recombinant proteins. Indeed protein productivity is both affected by acetate concentration that inhibits cell growth and by acetate production that reduces protein production. Formation of acetate occurs when the specific glucose uptake exceeds a critical value. This situation must consequently be avoided. The proposed approach deeply uses a model that gathers the knowledge about the process. It aims to study the possibility to identify the current biological behaviour from this model and from a reduced instrumentation. Depending on the instrumentation, specialized residuals are generated for the different biological modes. These residuals, calculated from the available measurement, have to be close to zero when the mode they have been design for is active. According to the residuals that trigger a deviation from zero test, it is then possible to recognize the current mode and, that way, to determine the strain biological activity.
PRODUCTION SCIENTIFIQUE ANNEE 2007
Reference Type: Journal Article
Record Number: 1
Author: Adjouadi, N. Laouar, N. Bousbaa, C. Bouaouadja, N. Fantozzi, G.
Year: 2007
Title: Study of light scattering on a soda lime glass eroded by sandblasting
Journal: Journal of the European Ceramic Society
Volume: 27
Issue: 10
Pages: 3221-3229
Short Title: Study of light scattering on a soda lime glass eroded by sandblasting
ISSN: 0955-2219
DOI: 10.1016/j.jeurceramsoc.2007.01.011
Accession Number: WOS:000246744200015
Abstract: In Saharan areas of Algeria, sandstorms can damage vehicles windshields inducing incidental light diffusion that affects the driver's visibility. Vehicles technical controllers find some difficulties with damaged windshields. The control being made visually with the naked eye, it is therefore difficult to judge when a damaged windshield is no more valid to use. In this context, we studied the influence of the surface state of a soda lime glass on the scattering of a white light. The varying parameters considered are the projected sand mass, the opening of the light beam and the distance sample-receptor. By increasing the projected sand mass up to 200 g, the optical transmission falls from 91.6 to 13% and the roughness increases from 0.035 up to 2.27 µm and then tends toward a constant level. For the as-received state, the image obtained using a CCD camera presents a net boundary and the transmission profile shows a saturation plateau. By damaging the surface, the image boundary deforms and becomes diffuse. For the highly damaged states, the image become completely blurred and the transmission profile disappears. The variation of the transmission according to roughness shows an inflection point at \( T = 73\% \) and \( R_{a} = 1.5 \) µm. This point seems to separate two domains: a transparent field (\( R_{a} < 1.5 \) µm) and a blur field (\( R_{a} > 1.5 \) µm). The visibility limit obtained in our tests conditions is estimated at about 73%. (C) 2007 Elsevier Ltd. All rights reserved.
Notes: Adjouadi, Nora Laouar, Naamane Bousbaa, Chabane Bouaouadja, Nourredine Fantozzi, Gilbert
URL: <Go to ISI>:://WOS:000246744200015
In this study, the effectiveness of transmutation for the long-lived fission product technetium-99 in the experimental fast reactor "JOYO" is evaluated. The cluster of reflector subassembly was replaced with a new moderator and target subassembly. The Beryllium metal is selected as the moderator. The calculation of Ruthenium concentration evolution under irradiation was performed using Chain-Solver 2.20 code. For 140 full power irradiation days, the transmutation yield is similar to 30% and 87% in the radial reflector and target subassembly, respectively. The approximation used for the transmutation calculation is the assumption that the influence of change in irradiated materials structures on the reactor operator mode characteristics is insignificant. (c) 2007 Elsevier Ltd. All rights reserved.
Modelling and simulation of a pumping system fed by photovoltaic generator within the Matlab/Simulink programming environment

In spite of poor efficiency of the photovoltaic systems developed up to date and the high cost of the installations of the equipment of this kind of station of solar energy conversion into electric power, this did not stop the researchers to continue to make efforts in this field in order to minimize the expenses of installation of equipment and to increase the output efficiency of the photovoltaic systems. In order to make solar energy competitive with the other forms of renewable energies, a better exploitation of its advantages especially environmental side, this will be possible only with the development of the less expensive and high output efficiency systems. The objective of this work is to bring a contribution to the study of the behaviours of the photovoltaic generators and converters used to feed a well defined load, in our case an asynchronous machine actuating a centrifugal pump, this through modelling and simulation of the various stages that constitute the overall system.

Arrouf, M. Ghabrou, S. 9th Arab International Conference on Solar Energy (AICSE-9) Nov 05-07, 2006 Bahrain

URL: [Go to ISI]:://WOS:000246790900004
Reference Type: Journal Article
Record Number: 4
Author: Balannec, B. Bouguettoucha, A. Amrane, A.
Year: 2007
Title: Unstructured model for batch cultures without pH control of Lactobacillus helveticus - Inhibitory effect of the undissociated lactic acid
Journal: Biochemical Engineering Journal
Volume: 35
Issue: 3
Pages: 289-294
Date: Aug
Short Title: Unstructured model for batch cultures without pH control of Lactobacillus helveticus - Inhibitory effect of the undissociated lactic acid
ISSN: 1369-703X
DOI: 10.1016/j.bej.2007.01.023
Accession Number: WOS:000247896100005
Abstract: During lactic acid fermentation, the positive effect of precultivating without pH control is now clearly established. At acidic pH, growth was inhibited. To account for this inhibition, the well-known Luedeking-Piret model was modified by introducing an additional term involving the undissociated form of the lactic acid, the main inhibitory species. The Henderson-Hasselbach equation was also considered in the model to describe the relationship between pH, also involved in growth inhibition, and both the dissociated and the undissociated forms of lactic acid. The model was found to describe satisfactory experimental growth and production data in a wide range of culture conditions. Indeed, whey permeate supplemented by a large range of nitrogen supplementations was considered and analysed, since the growth- and non-growth-associated part of the production can be easily deduced from the model. High supplementation of whey permeate, namely 20 g l(-1) yeast extract and 10 g l(-1) peptones, the usual seed culture supplementation, led to the main part of the lactic acid produced by a growth-associated mechanism (74%). (C) 2007 Elsevier B.V. All rights reserved.
Notes: Balannec, Beatrice Bouguettoucha, Abdellah Amrane, Abdeltif
URL: <Go to ISI>://WOS:000247896100005
Reference Type: Journal Article
Record Number: 5
Author: Barra, K. Benmahammed, K.
Year: 2007
Title: New extended cascaded predictive control with multiple reference models ECGPC/MRM of an induction motor drive with efficiency optimization
Journal: Journal of Electrical Engineering-Elektrotechnicky Casopis
Volume: 58
Issue: 2
Pages: 71-78
Date: Mar-Apr
Short Title: New extended cascaded predictive control with multiple reference models ECGPC/MRM of an induction motor drive with efficiency optimization
ISSN: 1335-3632
Accession Number: WOS:000255737700002
Abstract: In this paper, a new extended cascaded predictive control with multiple reference models method ECGPC/MRM is synthesized under energy saving control of an induction motor drive to improve high efficiency of the drive system. The method gives the possibility to control at the same time different variables more than in conventional CGPC. For this method, the plant is assumed to be divided into three parts and three G.P.C algorithms must be computed. The control law is then derived under polynomial structure in order to analyze the stability of the different controlled open loops in the frequency domain. Simulation results demonstrate the performance of the proposed method.
Notes: Barra, Kamel Benmahammed, Khier
URL: <Go to ISI>://WOS:000255737700002
Thermosensitive hydrogels based on poly(ethylene glycol) - I. Synthesis, characterization and release

**Abstract:** Thermosensitive hydrogels based on poly(ethylene glycol) (PEG), diisocyanate (aromatic or aliphatic) and glycerol were prepared. The influence of the molecular weight, nature and amount of the crosslinking agent on the swelling properties and the mechanism of water transport through these hydrogels were examined. The exponential relationship \( \frac{M-t}{M-\infty} = kt(n) \) was applied to calculate the exponent (n) describing the Fickian or non-Fickian behaviour of swelling polymer networks. Diffusion coefficients of an anti-inflammatory agent and network properties of hydrogel systems were calculated. The microscopic pore properties of the hydrogels were determined by SEM, which indicated an interconnected cylindrical porous structure and a few structural imperfections. The average diameter of the pores was 0.4 \( \mu m \), which depends on the molar mass of PEG. The release of the anti-inflammatory agent from hydrogels was studied by determination of the diffusion coefficient which are in the range of \((0.4-10) \times 10^{-6} \) cm(2)/s.

**Notes:** Bartil, Tahar Bounekhel, Mahmoud Calberg, Cedric Jerome, Robert

**URL:** <Go to ISI>://WOS:000249783900002
Affinity adsorption of human vitamin K-dependent coagulation factor IX onto heparin-like poly (styrene sodium sulfonate) adsorbent

Materials Science & Engineering C-Biomimetic and Supramolecular Systems

Volume: 27  Issue: 4  Pages: 849-854  Date: May

ISSN: 0928-4931  DOI: 10.1016/j.msec.2006.10.003

Abstract: Adsorption of proteins on polymer material plays an important role in a number of fields, particularly in separation of biomolecules by chromatographic methods. The work reports here the synthesis of modified cross-linked polystyrene gel beads as a stationary phase in liquid chromatography for the purification of factor IX. Suitable chemical groups, such as sulfonate which confer this polymer heparin-like adsorbing property, were grafted on the aromatic ring of the hydrophobic matrix. This functional group was chosen on the basis of the biospecific molecular interactions between factor IX and its ligand particularly heparin in such manner to enhance its binding ability and efficacy. Adsorption of factor IX on to this functional polymer was performed under physiological conditions according two modes: non-competitive adsorption (adsorption of factor IX alone) and competitive adsorption (adsorption of factor IX in the presence of another vitamin-K dependent coagulation factors). The adsorbed factor IX content at the interface allows to establish the chemisorption isotherm curves. The adsorption rate in both cases was found to be significantly high and the affinity constants, estimated by the Langmuir model, were: 4.7 x 10(8) and 4.1 x 10(8) I/M respectively. Affinity chromatography on column using this functional polymer as a stationary phase confirms its high ability to adsorb factor IX at low ionic strength. Thus, the synthesized packing material gel functionalised by sulfonate group can be used advantageously as a heparin-like adsorbent in purification of factor IX. (C) 2006 Elsevier B.V. All rights reserved.

Notes: Belattar, Noureddine

URL: <Go to ISI>://WOS:000246630600039
A significant toughening could be obtained by incorporating zirconia (ZrO2) particles in a mullite matrix (3Al2O3·2SiO2). The mechanism involved in the toughening of mullite composites by zirconia addition is a stress-induced structural transformation of zirconia (tetragonal to monoclinic). In this work, we elaborated by reaction sintering a mullite-zirconia composite from a stoichiometric powder mixture of monohydrated alumina (Boehmite AlOOH) and zircon (ZrSiO4). Reactions and phase transformations during the powder sintering were studied by dilatometry, DTA-TGA, XRD and SEM. The dilatometric curves and differential thermal analysis showed several microstructure transformations in these mixtures. From the X-ray diffractionograms, we put in evidence the zircon decomposition (into zirconia and silica) and the mullite-zirconia composite formation, by reaction sintering (with the boehmite), starting from a temperature of 1450 degrees C. The micrographic observations of the samples showed also a presence of dispersed fine zirconia particles of rounded shape in the mullite matrix.
Auger Electron Spectroscopy (AES) has been used to study the surface of aluminium-Lithium alloy (Al-3,49wt%-Li). In this work, the surface atomic composition as a function of temperature was followed. A great amount of Chemisorbed oxygen and carbon induce the Li segregation and shows that oxygen reacts first with the segregated Li, then with both Li and Al. The carbon adsorbed forms the lithium carbonate which decomposes to form a lithium oxide. The formed Li oxides have been characterised using the activation energy of Li segregation determined experimentally. The heat of the Li2CO3 formation and the Li oxide layer formed have been estimated.

Notes: Belkhiat, S. Keraghel, F.

URL: <Go to ISI>://WOS:000255028600010
Reference Type: Journal Article
Record Number: 10
Author: Belkhir, N. Bouzid, D. Herold, V.
Year: 2007
Title: Correlation between the surface quality and the abrasive grains wear in optical glass lapping
Journal: Tribology International
Volume: 40
Issue: 3
Pages: 498-502
Date: Mar
Short Title: Correlation between the surface quality and the abrasive grains wear in optical glass lapping
ISSN: 0301-679X
DOI: 10.1016/j.triboint.2006.05.001
Accession Number: WOS:000242523100010
Abstract: The subject of this study is to determine the relation between the optical glass surface quality and the wear of abrasive grains used in finishing process. The glass surface quality was characterized by the roughness (rms,CLA and peak to valley). Alumina abrasive grains (Al2O3) are used with average sizes (80, 40, 20, 7 μm) respectively. After 2 min lapping for each fraction of grains the following RMS are obtained 1.39, 0.57, 0.51, 0.33 μm. The corresponding peak to valley are respectively 7.5, 3.66, 2.88, 2.10 μm. The grains wear was characterized by the grains edges wear (roundness) and by their fractures. An optical microscope (CMM Scope Check) and a SEM are used for their observation. The alumina grains size distribution was also studied using a laser diffraction particle size analyzer (Shimadzu Said-2001). (c) 2006 Elsevier Ltd. All rights reserved.
Notes: Belkhir, N. Bouzid, D. Herold, V.
URL: <Go to ISI>://WOS:000242523100010
This study examines the use of space in the traditional M'zabite dwelling in the Algerian Sahara. Domestic space in the M'zab is typically divided into several distinct zones, where identity is derived mainly from the gender of the occupants. The paper considers the house as a composition of zones of users and seeks to shed light on the configurational properties of these zones. The innovation here is to analyze space as zones of users rather than zones of functions, employing the methodology of space syntax to interrogate the plans and explore the way social ideology may be embedded in spatial genotypes. Analysis of a sample of houses, drawn from the five settlements of the M'zab, shows that the house is transpatially organized, with space structured in accordance with male and female solidarities. The results also show that female zones are well integrated with respect to the dwelling as a whole and not segregated as might be expected. The paper points to the need for a reassessment of the received view of design strategy and suggests an agenda for the development of research in the area of lifestyles in relation to domestic space. The patterns of spatial organization in the houses of the M'zab clearly express social and cultural practice.
Composite coatings suitable for protection against corrosion were prepared by electrodeposition of chloride-nickel coating containing silicon carbide particles maintained in the suspension. The Ni-SiC composite coatings showed a better corrosion resistance in 0.6 M NaCl solution and high hardness than nickel, electrodeposited under the same conditions. The coatings deposited were uniform and adherent to the substrates. X-Ray diffraction (XRD) studies showed that the nickel coatings grow with (111) preferred orientation.
Sunflower oil (SO) is a renewable resource that can be epoxidized, and the epoxidized SO has potential uses as an environmentally friendly and reactive material in polymeric formulations, especially for polyvinyl chloride. SO was epoxidized with peracetic acid, which was either preformed or prepared in situ. In order to optimize the formation of oxirane rings, the epoxidation and the extent of the side reactions were studied at different temperatures. The peracetic acid was obtained by acidic catalysis in the presence of a cation-exchange resin. The optimum conversions were obtained within a 4-h reaction period at 55 degrees C by the in situ epoxidation technique. The epoxidation was also carried out with hydrogen peroxide in the presence of peroxotungstic acid complexed with lipophilic phosphorus-based ligands. H-1 NMR was used to define the new indices A and Q, which are the mean numbers of C=C double bonds and oxirane rings per fatty acid chain, respectively. This allowed monitoring of the reaction and quantification of the results. Peroxotungstic catalysts appeared less performing than peracids in the epoxidation of SO, but were found very efficient for the epoxidation of the SO methyl esters.
In recent years, great progress in the development of new power semiconductor devices has been made and called the insulated gate bipolar transistor (IGBT). It has been widely used in new power electronics application which are adjustable speed motor drives, appliance controls and robotics/numerical controls and was the most commercially advanced devices. The aim of this paper is to present a detailed study and to achieve an improved understanding of commercially available IGBTs of IXYS and International Rectifier subjected to extreme stress. In this paper, we will focus on the simulation of IGBTs (IR and IXYS) under short circuit situation using a design (at first, simple design where an ideal switch is used and secondly a power switch is used) which will require both understanding of underlying physical mechanisms and adequate testing procedures for IGBT. On the other hand, the influence of temperature, short circuit voltage, short circuit pulse duration (cc) shows to be an important failure mechanisms. However, the relation between basic physical phenomena and the resulting short circuit response deserves more attention. Besides, our approach is an attempt to focalise the behavior study of IGBT of IR and IXYS, where we will try to understand the influence of IGBT structure on aptitude to stain the short circuit and to determine the physical destruction mechanisms. All the simulation results presented in this paper are compared with measurement other structures of IGBTs presented by Calmon [F. Calmon, Participation du comportement electrothermique des IGBTs (Transistor Bipolaire a Grille Isolee), Doctorat. Thesis, INSA Lyon, France, 1995] and identified from studies of the physical description of IGBT structure. (C) 2007 Published by Elsevier Ltd.


URL: <Go to ISI>:://WOS:000250604600088
Reference Type: Journal Article
Record Number: 15
Author: Bencheikh, K. Nieto, L. M.
Year: 2007
Title: On the density profile in Fourier space of harmonically confined ideal quantum gases in d dimensions
Journal: Journal of Physics a-Mathematical and Theoretical
Volume: 40
Issue: 45
Pages: 13503-13510
Date: Nov
Short Title: On the density profile in Fourier space of harmonically confined ideal quantum gases in d dimensions
ISSN: 1751-8113
DOI: 10.1088/1751-8113/40/45/001
Accession Number: WOS:000250687300003
Abstract: Closed-form analytical expressions and asymptotic results are obtained for the density distribution in Fourier space of harmonically trapped fermion gases at zero and nonzero temperatures in d dimensions. The result is applied to weakly interacting Fermi gases and to the elastic scattering from atomic nuclei. The Fourier transform of the momentum density for a d-dimensional harmonic confinement is also found.
Notes: Bencheikh, K. Nieto, L. M.
URL: <Go to ISI>://WOS:000250687300003
Inspired by a recent paper of Giacomini et al [3], we give the exact expression of the limit cycles for a class of two-dimensional differential systems. We study also the uniqueness of such limit cycles. An application to Lienard equation and several examples are given at the end.
This paper presents a feasible primal algorithm for linear semidefinite programming. The algorithm starts with a strictly feasible solution, but in case where no such a solution is known, an application of the algorithm to an associate problem allows to obtain one. Finally, we present some numerical experiments which show that the algorithm works properly.
In this paper, direct power control (DPC) of three-phase PWM rectifiers based on fuzzy logic controller is presented, without line voltage sensors. The instantaneous active and reactive powers, directly controlled by selecting the optimum state of the converter, are used as the PWM control variables instead of the phase line currents being used. The proposed fuzzy logic controller presents the advantage to be based on linguistic description and does not require a mathematical model of the system. The controller ensures a good regulation of the output voltage, and guarantees the power factor close to one. The simulation results show that the designed fuzzy controller has a good dynamic behavior, a good rejection of impact load disturbance, and is very robust.

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Notes: Bouafia, A. Krim, F.
URL: <Go to ISI>://WOS:000255214100008
Reference Type: Journal Article  
Record Number: 19  
Author: Bouamama, K. Djemia, P.  
Year: 2007  
Title: Theoretical investigation of the elastic properties and Lattice dynamics of the MgSxSe1-x alloy  
Journal: Modern Physics Letters B  
Volume: 21  
Issue: 5  
Pages: 249-259  
Date: Feb  
Short Title: Theoretical investigation of the elastic properties and Lattice dynamics of the MgSxSe1-x alloy  
ISSN: 0217-9849  
DOI: 10.1142/s0217984907012621  
Accession Number: WOS:000251352700002  
Abstract: Structural and elastic properties as well as lattice dynamics of ternary MgSxSe1-x alloy have been studied using first-principles calculations. These are done using density functional theory (DFT) and density functional perturbation theory (DFPT) within the local density approximation (LDA) and employing the virtual-crystal approximation (VCA). We found that the lattice parameters, the elastic constants and the phonon frequencies follow a quadratic law in x.  
Notes: Bouamama, K. Djemia, P.  
URL: <Go to ISI>:://WOS:000251352700002
Reference Type: Journal Article
Record Number: 20
Author: Bouamama, K. Djemia, P. Lebga, N. Kassali, K.
Year: 2007
Title: Ab initio calculation of the lattice dynamics of the boron group-V compounds under high pressure
Journal: High Pressure Research
Volume: 27
Issue: 2
Pages: 269-277
Short Title: Ab initio calculation of the lattice dynamics of the boron group-V compounds under high pressure
ISSN: 0895-7959
DOI: 10.1080/08957950701265359
Accession Number: WOS:000248751300007
Abstract: High-pressure effects on the lattice dynamics and dielectric properties of the BN, BP, BAs, BSb and BBi alloys have been carried out using the density-functional perturbation theory within the local density approximation. We study the variation of the optical phonon frequencies (omega(TO) and omega(LO)), the high-frequency dielectric coefficient (epsilon(infinity)) and the dynamic effective charge (Z*) with pressure. The omega(TO) and omega(LO) have a quadratic form with pressure for all boron compounds. The obtained epsilon(infinity) and Z* for BN, BP remain constant with pressure. However, for BAs, BSb and BBi, epsilon(infinity) and Z* have a quadratic form with pressure. Our results are in good agreement with the available experimental data for BN and BP and they allow prediction for BAs, BSb and BBi.
Notes: Bouamama, K. Djemia, P. Lebga, N. Kassali, K.
URL: <Go to ISI>://WOS:000248751300007
The title compound, C20H16N2O, obtained from the reaction of benzil with phenylhydrazine, crystallizes with two crystallographically independent and conformationally different molecules in the asymmetric unit. The dihedral angle between the two phenyl rings of the benzil unit is 15.04 (6)° in one molecule and 68.81 (5)° in the other. The crystal structure is stabilized by N-H center dot center dot center dot O and C-H center dot center dot center dot pi interactions.
The title compound, [Cu(C8H7O4)(2)(C3H7NO)(2)], is a mononuclear copper(II) complex where the Cu-II atom, lying on an inversion center, is coordinated in elongated octahedral fashion by six O atoms, four from two 3-acetyl-6-methyl-2-oxo-2H-pyran-4-olate ligands in equatorial positions and the remaining two from dimethylformamide molecules in axial positions.
During lactic acid fermentation, seed cultures are usually carried out without pH control to obtain active cells, while cultures are usually carried out at pH maintained at the optimal value, 5.9, to overcome inhibitory effects. The Luedeking-Piret expression was therefore previously modified by introducing an additional term (i) involving the residual lactose concentration to account for the carbon substrate limitation, responsible for cessation of production during cultures at controlled pH, on one hand; (ii) or involving the undissociated form of the lactic acid, the main inhibitory species, in case of an absence of pH control, namely the usual seed culture conditions, on the other hand. To avoid the use of two different expressions, depending on the culture conditions, a generalised model for production was developed, involving a unique expression taking into account both a nutritional limitation and an inhibitory effect. The nutritional limitation term was modified by introducing the carbon limitation constant, in place of the residual lactose concentration, which varied in absence of pH control, namely in absence of carbon limitation. The model proved to be satisfactory in a large range of culture conditions; and also allow to deduce accurately the growth- and non-growth-associated parts of the production. (c) 2007 Elsevier Inc. All rights reserved.

Notes: Bouguettoucha, Abdellah Balannec, Beatrice Nacef, Saci Amrane, Abdeltif

URL: <Go to ISI>://WOS:000247360900028
In this paper, a general class of split-radix fast Fourier transform (FFT) algorithms for computing the length-2(m) DFT is proposed by introducing a new recursive approach coupled with an efficient method for combining the twiddle factors. This enables the development of higher split-radix FFT algorithms from lower split-radix FFT algorithms without any increase in the arithmetic complexity. Specifically, an arbitrary radix-2/2(s) FFT algorithm for any value of s, 4 <= s <= m, is proposed and its arithmetic complexity analyzed. It is shown that the number of arithmetic operations (multiplications plus additions) required by the proposed radix-2/2(s) FFT algorithm is independent of s and is (2m-3)(2(m+1) + 8 regardless of whether a complex multiplication is carried out using four multiplications and two additions or three multiplications and three additions. This paper thus provides a variety of choices and ways for computing the length-2(m) DFT with the same arithmetic complexity.
Reversibly crosslinked isotactic polypropylene (iPP) was prepared in the presence of dicumyl peroxide. The effects of the peroxide oxy-radicals in the melt were investigated in relation to the modification of the polymer. The dynamic rheology analysis of the crosslinking process was carried out by using a plastograph. The crosslinking reaction was evaluated by the Monsanto method. The resulting structure of the modified samples was studied by means of differential scanning calorimetry (DSC), wide-angle X-ray scattering (WAXS), microhardness, and mechanical properties. The degree of crystallinity of the modified iPP, derived from DSC and WAXS, remains almost unchanged, i.e., the crystalline structure is unaffected, though the lamellar thickness slightly decreases. The impact strength of the crosslinked iPP is greatly improved with reference to that of the unmodified material. A transition from brittle to ductile behavior appears in the modified iPP for all the crosslinking agents studied. (c) 2006 Wiley Periodicals, Inc.
Abstract: Using first-principles density functional calculations, the effect of high pressures, up to 30 GPa, on the structural, elastic and electronic properties of SiX2O4, with X = Mg, Zn and Cd, was studied by means of the pseudo-potential plane-waves method. We used both the local density approximation and the generalized gradient approximation to the exchange-correlation approximation energy. The results of bulk properties, including lattice constants, internal parameters, bulk modulus and derivatives, are obtained. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk modulus, shear modulus, Young's modulus and Poisson's ratio for ideal polycrystalline SiX2O3 aggregates. We estimated the Debye temperature of SiX(2)O4 from the average sound velocity. Band structure, density of states and pressure coefficients of some gaps are also given. This is the first quantitative theoretical prediction of the elastic and electronic properties of SiMg2O4, SiZn2O4 and SiCd2O4 compounds, and still awaits experimental confirmation.
Using first-principles density functional calculations, the effect of high pressures, up to 20 GPa, on the structural and elastic properties of M2GaC, with M=Ti, V, Nb, and Ta, were studied by means of the pseudopotential plane-waves method. Calculations were performed within the local density approximation to the exchange-correlation approximation energy. The lattice constants and the internal parameters are in agreement with the available results. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's moduli, and Poisson's ratio for ideal polycrystalline M2GaC aggregates. We estimated the Debye temperature of M2GaC from the average sound velocity. This is a quantitative theoretical prediction of the elastic properties of Ti2GaC, V2GaC, Nb2GaC, and Ta2GaC compounds and it still awaits experimental confirmation. (c) 2007 American Institute of Physics.
A theoretical study of structural, elastic, electronic and optical properties of the cubic antiperovskite SbNMg3 is presented using the pseudo-potential plane wave method (PP-PW) within the generalized gradient approximation (GGA). Results are given for lattice constant, elastic constants and their pressure dependence. Band structure, density of states and pressure coefficients of energy gaps are also given. Furthermore, the optical reflectivity, refractive index, extinction coefficient, dielectric function and electron energy loss are calculated for radiation up to 30 eV. The results are compared with the available theoretical and experimental data. (C) 2006 Elsevier B.V. All rights reserved.
First-principles studies of pressure dependence of elastic and electronic properties in filled tetrahedral semiconductors LiMgX (X = N, P, and As)
A theoretical studies of structural, elastic and high pressure properties in MSb (M = Sc, Y) are performed, using the full-potential augmented plane wave plus local orbitals method (FP-APW + lo). The equilibrium lattice constant and the bulk modulus agree well with the experiments. The pressures at which these compounds undergo structural phase transition from NaCl (B1) to CsCl (B2) phase were found to be in good agreement with the available experimental data. We have determined the elastic constants C-11, C-12 and C-44 at zero pressure in both B1 and B2 structures, which have not been established neither experimentally nor theoretically. Further, we have also calculated the pressure dependence of the elastic constants. (c) 2006 Elsevier B.V. All rights reserved.
Using first-principles density functional calculations, the effect of high pressures, up to 20 GPa, on the structural and elastic properties of Zr2AlX and Ti2AlX, with X = C and N, were studied by means of the pseudo-potential plane-waves method. Calculations were performed within the local density approximation to the exchange-correlation approximation energy. The lattice constants and the internal parameters are in agreement with the available results. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline Zr2AlX and Ti2AlX aggregates. We estimated the Debye temperature of Zr2AlX and Ti2AlX from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Zr2AlC, Zr2AlN and Ti2AlN compounds, and it still awaits experimental confirmation.
Bouhemadou, A. Khenata, R. Chegaar, M. Maabed, S.

Title: First-principles calculations of structural, elastic, electronic and optical properties of the antiperovskite AsNMg3

Journal: Physics Letters A

Volume: 371

Issue: 4

Pages: 337-343

Date: Nov

Short Title: First-principles calculations of structural, elastic, electronic and optical properties of the antiperovskite AsNMg3

ISSN: 0375-9601

DOI: 10.1016/j.physleta.2007.06.030

Abstract: The density functional theory (DFT) calculations of structural, elastic, electronic and optical properties of the cubic antiperovskite AsNMg3 has been reported using the pseudo-potential plane wave method (PP-PW) within the generalized gradient approximation (GGA). The equilibrium lattice, bulk modulus and its pressure derivative have been determined. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's modulus and Poisson's ratio for ideal polycrystalline AsNMg3 aggregate. We estimated the Debye temperature of AsNMg3 from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of AsNMg3 compound, and it still awaits experimental confirmation. Band structure, density of states and pressure coefficients of energy gaps are also given. The fundamental band gap (F-F) initially increases up to 4 GPa and then decreases as a function of pressure. Furthermore, the dielectric function, optical reflectivity, refractive index, extinction coefficient, and electron energy loss are calculated for radiation up to 30 eV. The all results are compared with the available theoretical and experimental data. (c) 2007 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 33
Author: Bouhemadou, A. Khenata, R. Rached, D. Zerarga, F. Maamache, M.
Year: 2007
Title: Structural, electronic and optical properties of spinel oxides: cadmium gallate and cadmium indate
Journal: European Physical Journal-Applied Physics
Volume: 38
Issue: 3
Pages: 203-210
Date: Jun
Short Title: Structural, electronic and optical properties of spinel oxides: cadmium gallate and cadmium indate
ISSN: 1286-0042
DOI: 10.1051/epjap:2007094
Accession Number: WOS:000247671500002
Abstract: The structural, electronic and optical properties of two principal representatives of spinel oxides CdGa2O4 and CdIn2O4 have been investigated using the full-potential augmented plane-wave plus local orbitals method within density functional theory. We used the generalized gradient approximation (GGA) for the exchange-correlation (XC) potential. Moreover, the alternative form of GGA proposed by Engel and Vosko (GGA-EV) is also used for the band structure calculations. The equilibrium lattice constants and the internal parameters are in agreement with the available experimental results. Results obtained for band structure using GGA-EV show a significant improvement over other theoretical work and are closer to the experimental data. The pressure dependence of band gaps is investigated. The dielectric function, reflectivity spectra and refractive index are calculated up to 50 eV. Pressure and volume dependence of the static refractive index have been also calculated.
Notes: Bouhemadou, A. Khenata, R. Rached, D. Zerarga, F. Maamache, M.
URL: <Go to ISI>://WOS:000247671500002
First principle calculations of structural and elastic properties of CdAl2O4, CdGa2O4 and CdIn2O4 compounds are presented, using the pseudo-potential plane-waves approach based on density functional theory, within the generalized gradient approximation GGA. The lattice constants and internal parameters are in good agreement with the available experimental results. Young modulus, Poisson ratio, bulk modulus, elastic constants and their pressure dependence are also calculated. Since, the elastic constants and their pressure derivatives of these compounds have not yet been established theoretically or experimentally, our results can serve as a prediction for future investigations. (C) 2006 Elsevier B.V. All rights reserved.
We perform ab initio calculations using a pseudo-potential plane-wave method based on density functional theory, within the local density approximation and generalized gradient approximation, in order to determine and predict the pressure dependence of structural and elastic properties of spinel compounds: MgAl2O4, MgGa2O4 and MgIn2O4. The results are in agreement with the available experimental data and other theoretical calculations.
First principle calculations of elastic properties under pressure of the filled tetrahedral semiconductors LiZnN, LiZnP and LiZnAs are presented, using the pseudo-potential plane-waves approach based on density functional theory, within the local density approximation. Elastic constants, bulk modulus, Young's modulus and Poisson's ratio are calculated at zero pressure. A linear dependence of the bulk modulus and elastic constants with applied pressure is found. As the experimental elastic constants are not available for LiZnX, we have also calculated the elastic constants of GaN, GaP and GaAs, the binary analogues of LiZnN, LiZnP and LiZnAs, respectively, for checking the reliability and accuracy of our predicted results for LiZnX. The obtained results agree well with the available experimental data. (C) 2006 Elsevier Ltd. All rights reserved.
Elastic scattering of holes by acoustic phonons in thin GaAs/GaAlAs quantum wells

The rates of scattering by acoustic phonons $y(i \rightarrow j)$ from subband $i \rightarrow j$ are calculated for holes in a narrow GaAs quantum well using the deformation potential, the Luttinger hamiltonian and the Debye approximation. At room temperature, we find that the energy dependences for both intra- and inter-subband scattering rates follow roughly the behavior of the density of states in the subband to which the hole scatters. Moreover, we study the influence of the overlap between the initial and final states, and for elastic processes we find that, unlike for the case of wide quantum wells, for narrow ones integration over the phonon transverse wavevector $q(z)$ should be restricted to about 4% of the bulk Brillouin zone extent. In addition the impact of the well width on $y(i \rightarrow j)$ is investigated. (C) 2007 Elsevier Ltd. All rights reserved.
alpha(1)-Antitrypsin is well known for its ability to inhibit human neutrophil elastase. Pretreatment of alpha(1)-antitrypsin with hypohalous acids HOCl and HOBr as well as with the myeloperoxidase-hydrogen peroxide-chloride (or bromide) system inactivated this proteinase. The flavonols rutin, quercetin, myricetin, and kaempferol inhibited the inactivation of alpha(1)-antitrypsin by HOCl and HOBr with rutin having the most pronounced effect. In contrast, these flavonols did not remove the proteinase inactivation by the myeloperoxidase-hydrogen peroxide-halide system. Taurine did not protect against the inactivation of alpha(1)-antitrypsin by HOCl, HOBr, or the myeloperoxidase-hydrogen peroxide-halide system, while methionine was efficient in all systems. A close association between myeloperoxidase and alpha(1)-antitrypsin was revealed by native gel electrophoresis and in-gel peroxidase staining. In addition, alpha(1)-antitrypsin binds to the myeloperoxidase components transferred after SDS-PAGE on a blotting membrane. With this complex formation, myeloperoxidase overcomes the natural antioxidative protective system of plasma and prevents the inactivation of alpha(1)-antitrypsin. (c) 2006 Elsevier Inc. All rights reserved.

Notes: Bouriche, Hamama Salavei, Pavel Lessig, Jacqueline Arnhold, Juergen

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This paper presents a new technique for the evaluation of the parameters of illuminated solar cell with a single diode lumped circuit model and considering the series and shunt resistances. This method includes the presentation of the standard I=f(V) function as V=f(I) and the determination of the factors C-0, C-1, C-2 of this function that provide the calculation of the illuminated solar cell parameters. These parameters are usually the saturation current (I-s), the series resistance (R-s), the ideality factor (n), the shunt conductance (G(sh) = 1/R-sh) and the photocurrent (I-ph). Parameter values were extracted using the present method from experimental I-V characteristics of commercial solar cells and modules. The method proposed below appears to be accurate even in the presence of noise and/or random errors during measurement and it needs no a prior knowledge of the parameters compared to other methods. (C) 2007 Elsevier B.V. All rights reserved.
The aim of this article is to explore materials made of polymer-titanate composites for application towards the size reduction of high frequency electronic components. A study has therefore been done on the dielectric effect of composites made of an epoxy matrix loaded with a mixture of barium titanate and calcium titanate. The effects have been quantified according to volume fraction of load. Results obtained from time domain reflectometry have been compared to modelling predictions from the generalized Lichtenecker law. Low frequency analysis (in the range DC - 500 MHz) has also been performed throughout this work, and it has primarily concentrated on conductivity behaviour which may be attributed to the effects of a percolation process. The study has confirmed the validity of the ternary mixture law being applied in order to predict the electromagnetic behaviour of the composite material. This material family may therefore find use in microelectronic applications and in the miniaturization of circuit components (substrates, components, cavities, antennas, etc.).

Notes: Bouzit, N. Fornies-Marquina, J. M. Benhamouda, A. Bourouba, N.

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Reference Type: Journal Article
Record Number: 41
Year: 2007
Title: New coplanar (e,2e) experiments for the ionisation of He and Ar atoms
Journal: Journal of Electron Spectroscopy and Related Phenomena
Volume: 161
Issue: 1-3
Pages: 27-30
Date: Oct
Short Title: New coplanar (e,2e) experiments for the ionisation of He and Ar atoms
ISSN: 0368-2048
DOI: 10.1016/j.elspec.2007.02.026
Accession Number: WOS:000250688500007
Abstract: We report new coplanar measurements of the (e,2e) TDCS for the ionisation of helium Is-shell and argon 3p- and 2p-shells. The kinematics employed remained rather unexplored to date, and could be investigated here using an improved version of our multi-angle (e,2e) spectrometer, with increased sensitivity. The results are discussed in the light of state-of-the-art theoretical models. (c) 2007 Elsevier B.V. All rights reserved.
URL: <Go to ISI>://WOS:000250688500007
Ar-40/Ar-39 step-heating analyses performed on plagioclase separates from seven doleritic basalts (four sills, one dyke and two lava flows) from southwestern Algeria display disturbed age spectra, reflecting various contributions of alteration by sericite and/or excess argon. Weighted mean ages corresponding to the less altered plagioclase fractions yielded minimum ages ranging from 192.7 +/− 3.0 to 197.9 +/− 2.0 Ma and a minimum date of 198.9 +/− 1.8 Ma was obtained on a saddle-shaped age spectrum (excess argon). These ages are in accordance with those previously obtained on the CAMP province and partly in agreement with the peak activity of the CAMP at 198 Ma, highlighted in the neighbouring Taoudenni basin (Mali). In Algeria, the eastern boundary of the CAMP seems to coincide with the Pan-African suture zone.
Fuzzy modelling is an important topic in fuzzy sets theory and applications. An efficient method for automatically constructing a Takagi-Sugeno (TS) fuzzy model, where only the input-output data of the identified system are available, is presented. The TS fuzzy model is automatically generated by the process of structure and parameter identification. In the structure identification step, a clustering method based on the Gustafson-Kessel algorithm is proposed. In the parameter identification step, the Kalman filter algorithm is applied twice to choose the parameter values in the premise and consequent parts from the given membership functions defined point-wise and from input-output data. The effectiveness of this approach is demonstrated using two examples.
The simulation and experimental study of proportional integrator (PI) controlled DC bus voltage of three phase shunt active power filter (APF) to improve power quality by compensating harmonics and reactive power required by nonlinear load is proposed. The compensation process is based on sensing mains currents only, an approach different from conventional methods, which usually require harmonics or reactive volt-ampere values of the load. The non-sinusoidal mains voltage problem is resolved by using phase locked loop (PLL) system. Pulse width modulation (PWM) signal generation is based on hysteresis control comparators to obtain the switching signals. Various simulation and experimental results are presented under steady state and transient conditions.
Reference Type: Journal Article  
Record Number: 45  
Author: Cherbal, O. Drir, M. Maamache, M. Trifonov, D. A.  
Year: 2007  
Title: Fermionic coherent states for pseudo-Hermitian two-level systems  
Journal: Journal of Physics a-Mathematical and Theoretical  
Volume: 40  
Issue: 8  
Pages: 1835-1844  
Date: Feb  
Short Title: Fermionic coherent states for pseudo-Hermitian two-level systems  
ISSN: 1751-8113  
DOI: 10.1088/1751-8113/40/8/010  
Accession Number: WOS:000245026300013  
Abstract: We introduce creation and annihilation operators of pseudo-Hermitian fermions for two-level systems described by a pseudo-Hermitian Hamiltonian with real eigenvalues. This allows the generalization of the fermionic coherent states approach to such systems. Pseudo-fermionic coherent states are constructed as eigenstates of two pseudo-fermion annihilation operators. These coherent states form a bi-normal and bi-overcomplete system, and their evolution governed by the pseudo-Hermitian Hamiltonian is temporally stable. In terms of the introduced pseudo-fermion operators, the two-level system Hamiltonian takes a factorized form similar to that of a harmonic oscillator.  
Notes: Cherbal, O. Drir, M. Maamache, M. Trifonov, D. A.  
URL: <Go to ISI>://WOS:000245026300013
The magnetic properties of evaporated Ni/Cu and Ni/glass thin films have been investigated by means of the vibrating sample magnetometer (VSM), the Brillouin light scattering (BLS) and magnetic force microscopy (MFM). The Ni thickness, t, ranges from 31 to 165 nm. The second- and fourth-order magnetic anisotropy constants, K-1 and K-2, have been included; for the Ni/Cu series, K-1 was found to decrease from 1.0 x 10(6) to 0.18 x 10(6) erg/cm(3) as t increases from 31 to 165 nm, while K increased from 0.24 x 10(6) to 0.8 x 10(6) erg/cm(3). Over all the thickness range, the magnetization easy axis is in plane. For thinner films, there is a good agreement between anisotropy constant values inferred from VSM and BLS. Stripe domains were observed for t >= 165 nm in Ni/glass and t >= 90 nm in Ni/Cu. (c) 2006 Elsevier B.V. All rights reserved.
The chemical composition of the essential oil of Pituranthos chloranthus ssp. cossonianus Maire (Apiaceae) was investigated by gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS) to reveal 54 compounds. The main constituents were myristicine (27.4%), limonene (15.8%), alpha-pinene (11.4%), and alpha-phellandrene (8.3%). The antibacterial activity of the oil was evaluated against several strains and was shown to be significant against Pseudomonas aeruginosa.
In this work, the theory of optical bistability for the homogeneously broadening of a nonlinear absorber inside Fabry-Perot interferometer is treated. The theoretical influence of the resonator losses on the optical bistability is examined mainly in the cases for which losses depend on both the mode frequency and the density of photons. On the basis of the Rate Equation Approach (REA), we analytically and numerically solved this type of equation for stationary case.
The title compound, C15H15NO3, derived from the condensation of dehydroacetic acid and p-toluidine, crystallizes in a zwitterionic form with cationic iminium and anionic enolate groups, which complete a six-membered pseudocycle via an intramolecular N-H center dot center dot center dot O hydrogen bond. C-H center dot center dot center dot O interactions link the molecules into a two-dimensional network.
Brillouin light scattering, Raman light scattering and visible-infrared reflectometry techniques have been used to investigate, respectively, the elastic properties, the phonons and the optical properties of bulk textured polycrystalline yttrium-aluminum garnet doped with 2 at% neodymium obtained by the sintering of commercial oxides. From the analysis of the observed bulk longitudinal and transverse acoustic modes with the knowledge of the refractive index 1.81 inferred from the visible reflectometry, the two independent effective elastic constants of the isotropic polycrystal $C_{11} = 362$ GPa and $(C_{11} - C_{12})/2 = 121$ GPa are determined leading to the value of the bulk modulus $B = (C_{11} + 2C_{12})/3 = 200$ GPa. The ratio $\epsilon(0)/\epsilon(\infty) = 3.1$ and the optic permittivity $\epsilon(\infty) = 3.46$ are derived from the infrared reflectivity data. Pair potential calculations of the three single crystal elastic constants $c(11) = 340$, $c(12) = 127$ and $c(44) = 112$ GPa, of the bulk modulus $B = (c(11) + 2c(12))/3 = 198$ GPa, of the zone-center ($\Gamma$) phonons and of the permittivity function provide good comparison with our experimental results. (C) 2007 Elsevier Ltd. All rights reserved.

Notes: Djemia, P. Tetard, F. Bouamama, K. Charron, Eric Tetard, D. Rabinovitch, Y.

URL: <Go to ISI>://WOS:000251803600035
Composites from PVC and chemically treated olive pomace have been prepared. The effect of the incorporation of virgin and benzylated olive pomace in the poly(vinyl chloride) matrix on dielectric, mechanical and thermal stability properties, of olive pomace composites was studied. The mechanical properties of the benzylated composites were improved. Furthermore, the thermal characterization of the different samples carried out by thermogravimetric analysis revealed an increase in the onset temperatures of decomposition for the treated composites. The dielectric investigation indicated that the samples containing olive pomace treated with the benzyl chloride can be used in electrical applications as insulators.

**Notes:** Djidjelli, H. Benachour, D. Boukerrou, A. Zefouni, O. Martinez-Vega, J. Farenc, J. Kaci, M.

**URL:** <Go to ISI>://WOS:000206190200011
Mechanical property changes, thermal stability, and water absorption capacity of poly(vinyl chloride) (PVC)/sisal fiber composites were assessed with respect to the effect of maleic anhydride chemical treatments of the sisal fiber, for five different sisal fiber contents, varying from 0 to 30% by weight in the composite. The composites prepared with the untreated sisal exhibited higher tensile modulus and hardness than the unloaded resin, while elongation and tensile strength were reduced. The deterioration in the mechanical properties of PVC blended with sisal fiber is attributed to the presence of moisture, interfacial defects at the fiber and polymer interface, and fiber dispersion in the PVC matrix. The amount of absorbed water is a function of the amount of fiber in the composite (F0 = 0 phr, F5 = 0.77 phr, and F20 = 4.83 phr). The comparison of the results of characterization of F5, F20, and F30 formulations prepared with the untreated fibers and the treated ones showed a reduction in absorbed water after the chemical treatment of fiber with maleic anhydride (170 0 phr, F5 = 0.28 phr, and F20 = 2.99 phr), thus improving the mechanical properties of composites prepared with the treated sisal. (c) 2006 Wiley Periodicals, Inc.
In this study two Poly (Ethylene Terephthalate) (PET) polymers obtained from mineral water bottles and a virgin fiber grade PET polymer were investigated. In order to improve their properties when reprocessed at high temperatures, recycled polymers were blended with virgin one. Thermal and rheological properties of extruded recycled/virgin (PET-V/R) blends showed a good microstructural stability compared to extruded pure recycled polymers. Mechanical behaviour of melt spun fibers obtained from recycled/virgin blends were investigated in static (tensile) and dynamic (DMA) modes and gave interesting properties. Fatigue failure of fibers was also studied and resulting fracture morphologies were analysed by Scanning Electron microscopy (SEM).
Morphology of the crack surface of surgical bone cements has seldom been studied in the past despite the clinical relevance of cement failure. Previous studies on a specific cement type suggest that crack morphology depends on crack propagation rate. The objectives of this work were: (i) to develop a quantitative indicator for describing crack morphology; and (ii) to assess if dependency on crack-propagation rate is affected by cement formulation. Known crack surfaces were obtained from specimens under controlled loading conditions. Crack surface roughness was measured for different crack-propagation rates, and compared against the amount of cleaved pre-cured beads (measured with a semi-automated procedure based on micrographs). Such indicators were extremely robust, operator-independent, highly correlated, and sensitive to the type of fracture. Moreover, it was found that crack surface morphology heavily depends upon cement composition. Thus, crack surface roughness is proposed as a method for quantitatively identifying crack morphology, and finally classifying fracture type.
Abstract: In this paper we present a selection strategy of a reduced relevant and non redundant number of parameter to represent a vibratory signature of the bearing defects. We show that the performance of the pattern recognition method is closely related to these reduced indicators. The method has been validated by using real vibration data of a rig set-tip with normal and defective bearings. Copyright (c) 2007 Praise Worthy Prize S.r.l. - All rights reserved.

Notes: Felkaoui, A. Bekka, R. E. Antoni, J. Sidahmed, M. Fedala, S.

URL: <Go to ISI>://WOS:000255406900014
North Africa is one of the major Nasopharyngeal Carcinoma (NPC) endemic regions. Specific food items unique to this area were implicated to be associated with NPC risk, but results were inconsistent. Here we have performed a large-scale case-control study in the Maghrebian population from Tunisia, Algeria and Morocco. From 2002 to 2005, interviews were conducted on 636 cases and 615 controls. Controls were hospitalized individuals from 15 non-cancer hospital departments, or friends and family members of non-NPC cancer subjects, matched by center, childhood household type (rural or urban), age and sex. Conditional logistic regression is used to evaluate the risk of factors. In results, consumption of rancid butter, rancid sheep fat and preserved meat not spicy (mainly quaddid) were associated with significantly increased risk of NPC, while consumption of cooked vegetables and industrial preserved fish was associated with reduced risk. Other foods such as fresh citrus fruits and spicy preserved meat, (mainly osban) in childhood, industrial made olive condiments in adulthood, were marginally associated. In multivariate analyses, only rancid butter, rancid sheep fat and cooked vegetables were significantly associated with NPC. In regard to possible causative substances, our results implicate the involvement of butyric acid, a potential Epstein-Barr virus (EBV) activator. (C) 2007 Wiley-Liss, Inc.

Notes: Feng, Bing-Jian Jalbout, Majida Ben Ayoub, Wided Khyatti, Meriem Dahmoul, Sami Ayad, Messaoud Maachi, Fatima Bedadra, Wided Abdoun, Meriem Mesli, Sarah Hamili-Cherif, Mokhtar Boualga, Kada Bouaouina, Noureddine Chouchane, Lotfi Benider, Abdellatif Ben Ayed, Farhat Goldgar, David Corbex, Marilys

URL: <Go to ISI>://WOS:000249109600019
We present experimental results on the structural and magnetic properties of series of Fe thin films evaporated onto Si(111), Si(100) and glass substrates. The Fe thickness, t, ranges from 6 to 110 nm. X-ray diffraction (XRD) and atomic force microscopy (AFM) have been used to study the structure and surface morphology of these films. The magnetic properties were investigated by means of the Brillouin light scattering (BLS) and magnetic force microscopy (MFM) techniques. The Fe films grow with (110) texture; as t increases, this (110) texture becomes weaker for Fe/Si, while for Fe/glass, the texture changes from (110) to (211). Grains are larger in Fe/Si than in Fe/glass. The effective magnetization, 4\pi M_{\text{eff}}, inferred from BLS was found to be lower than the 4\pi M_S bulk value. Stress induced anisotropy might be in part responsible for this difference. MFM images reveal stripe domain structure for the 110 nm thick Fe/Si(100) only. (C) 2006 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 58
Author: Gonin, J. Kadiri, H. Bensaci, S. Le Tourneau, A. Molina, T. J. Diebold, J. Abdellouche, D. J. Audouin, J.
Year: 2007
Title: Primary mediastinal anaplastic alk-1-positive large-cell lymphoma of T/NK-cell type expressing CD20
Journal: Virchows Archiv
Volume: 450
Issue: 3
Pages: 355-358
Date: Mar
Short Title: Primary mediastinal anaplastic alk-1-positive large-cell lymphoma of T/NK-cell type expressing CD20
ISSN: 0945-6317
DOI: 10.1007/s00428-007-0371-1
Accession Number: WOS:000244752900015
Abstract: We describe an unusual case of ALK-1-positive primary mediastinal lymphoma with the morphology of an anaplastic large-cell lymphoma (ALCL) of T/NK cell type but expressing CD20. This tumour had T/NK morphology and immunophenotype, as demonstrated by its expression of CD30, EMA, ALK-1, CD7 and TiA-1 and the lack of expression of B-cell markers other than CD20. The significance of such a co-expression of a B cell-associated antigen in a case of ALCL of T/NK cell type is discussed.
Notes: Gonin, J. Kadiri, H. Bensaci, S. Le Tourneau, A. Molina, T. J. Diebold, J. Abdellouche, D. J. Audouin, J.
URL: <Go to ISI>://WOS:000244752900015
Vanadium and hafnium nitride nanoscale films were synthesized onto (100)-oriented silicon wafers by reactive dc-magnetron sputtering. The temperature of the substrate was fixed at 150 degrees C. Several analysis techniques were used to characterize the resulting films: Wave Dispersion Spectroscopy (WDS) to determine nitrogen concentration, X-ray Diffraction (XRD) to study crystallographic structures, X-ray Reflectivity (XRR) to estimate their thicknesses and finally optical spectrophotometry (UV-Vis-IR) to measure the optical reflectance. The experimental conditions were selected in order to achieve two goals. The first one is to obtain ultra thin films (in the nanoscale range). The second one is to compare two symmetric systems, in terms of stoichiometry: over-stoichiometric hafnium nitrides and sub-stoichiometric vanadium nitrides. The XRR results showed that all synthesized films approximately presented the same thickness in the nanoscale range (less than 70 nm). The nitrogen concentration, measured by means of WDS, was in the sub-stoichiometric region for vanadium nitrides (N/V atomic ratio between 0.78 and 0.83) and over-stoichiometric region for hafnium nitrides (N/Hf atomic ratio between 1.18 and 1.25). From XRD patterns, the crystallographic film structure was found to be of NaCl type for the two systems, delta-VN and delta-HfN, with an amorphous part in the first system. Optical constants were derived from experimental reflectance spectra. Good agreement was found between experimental and calculated reflectance spectra using Drude and extended Drude models.
The relationships between leaf senescence, carbon isotope discrimination and yield performance were examined in durum wheat (Triticum durum Desf.), in the high plains of Setif, eastern Algeria. Ten CIMMYT high-yielding cultivars were grown during two cropping seasons characterized by low rainfall (217 and 162 mm, respectively), freezing temperatures at heading stage and terminal heat stress. Senescence was assessed using numerical image analysis (NIA). Carbon isotope discrimination was analyzed in flag leaves at anthesis and grain at maturity. Senescence was significantly negatively correlated to grain yield in season 1, but not in season 2. There was no relationship between Delta and grain yield in both seasons. The absence of association between Delta and grain yield is likely to be due to a strong contribution of pre-anthesis assimilates to yield together with a sink limitation of yield.
A zircon-mullite composite was made by reaction sintering from a mixture of mullite and zircon powders. The thermomechanical characterization (strength and toughness) revealed an intermediate behavior between mullite and zircon. The composite presents a high cooling thermal shock resistance for temperatures between the ambient and 1000 degrees C. Bending creep tests were made at temperatures between 1100 and 1300 degrees C using stresses from 10 up to 90 MPa. The stress exponent value is between 2 and 3 while the activation energy varies from 280 up to 900 kJ mol(-1) between 1000 and 1300 degrees C. Microscopic observations suggest an intergranular creep mechanism. The grain interface forces between mullite and zircon are more important than those of zircon-zircon grains. The incorporation of mullite particles in a zircon matrix produces a composite that has both the good mullite behavior toward creep and the high thermal shock resistance of, zircon. (c) 2006 Elsevier Ltd and Techna Group S.r.l. All rights reserved.
A theoretical approach is presented to calculate multiply differential and total cross sections of the ionization of H$_2$O molecule in the vapour phase. The wave function of the target is described by molecular orbitals consisting of a linear combination of slater type atomic orbitals centered on the heaviest atom which is the oxygen atom in this case. The calculations are carried out in the first Born approximation where the projectile is described by a plane wave while the ejected electron is described by a coulomb wave taking into account its interaction with the residual ion. The spherical average over the Euler solid angle due to the randomly oriented gaseous target molecule is carried out analytically using the rotation matrix properties. The differential and total cross sections are thus evaluated without any special difficulty and compared with experiments and distorted wave calculations. Fair agreements are observed. (c) 2007 Elsevier B.V. All rights reserved.


URL: <Go to ISI>://WOS:000250688500010
Elevated plasma total homocysteine (tHcy) is an independent risk factor for cardiovascular disease (CVD). Also known is that plasma folate and vitamin B12 influence homocysteine metabolism as cosubstrate and cofactor, respectively. This population-based study was conducted to evaluate the plasma concentrations of tHcy, folate, and vitamin B12 in 54 older patients aged >= 51 years (40 males; 14 females) of Nice hospital cardiology service. After excluding cases with a serum creatinine >120 mmol/L, we established the test properties of a plasma tHcy concentration <15 μmol/L (Group 1) or >= 15 μmol/L (Group 2). In the population aged >= 51 years, plasma tHcy was higher in women (18.0 μmol/L) than in men (15.5 μmol/L; not significant), conversely, serum vitamin B12 was higher in men (376.9 pg/ml) than in women (340.7 pg/ml; not significant). Average plasma tHcy was 11.5 μmol/L in Group 1 and 21.6 μmol/L in Group 2. Vice versa, serum vitamin B12 was higher in Group 1 (419.5 pg/ml) than in Group 2 (307.2 pg/ml) (p < 0.05). Correlation analysis (Pearson's r) in the total study population (20-84 years) indicated an inverse correlation between serum folate and age (r = -0.231, p < 0.05). In the subjects, aged = 51 years, there was a significant negative correlation between age and tHcy levels (r = -0.283, p < 0.05) and serum vitamin B12 concentrations (r = -0.326, p < 0.01) but not with serum folate. However, in subjects with tHcy < 15 μmol/L, a significant inverse correlation existed between plasma tHcy and serum folate (r = -0.455; p < 0.05). In conclusion, these results highlight the relevance of the vitamin status and particularly of folate levels in the modulation of fasting tHcy levels in the patients with clinical hyperhomocysteinemia, defined as plasma tHcy >15 μmol/L.
Effects of methanolic extract and commercial oil of Nigella sativa L. on blood glucose and antioxidant capacity in alloxan-induced diabetic rats

Nigella sativa is a medicinal plant widely used in the Arabic and Islamic world against a number of human pathologies. In this present study the methanol extraction (85% then 50%) of plant seeds gave an important yield of 27% of dry substance. The anti-hyperglycaemia effect of the crude methanolic extract and the commercial oil of these seeds were tested in alloxan-induced, intra peritoneal, diabetic rats (150 mg/kg). Effects of these two substances on other diabetes-linked factors such as the reducing power of the plasma and the osmotic fragility of erythrocytes. The daily orally administration of the crude methanolic extract (810 mg/kg/day) and the oil (2.5 ml/kg/day) for 25 days leads to a significant decrease of glycaemia, especially during the first 10 days of treatment (decreases of 58.09 and 73.27% respectively). However, the dose of 270 mg/kg of crude methanolic extract had no effect, which is probably due to the low dose. In addition the antioxidant capacity, measured by the ferric reducing ability of plasma (FRAP) technique, increased in all diabetic rats and the introduction of either the crude methanolic extract or the oil fraction showed any improvement on this factor. However, a slight resistance, not reaching significance, against the osmotic fragility of erythrocytes was induced in diabetic rats. The anti-hyperglycaemic effect of both substances is not related to inhibition of intestinal glucose absorption or stimulation of insulin secretion. We suggest that the action is a result of the inhibition of enzymes involved in the neoglucogenesis pathway in the liver. As shown the stress associated with the metabolic perturbation observed in diabetes induces a physiological anti-oxidant response, which probably masks the antioxidant effect of our two substances of this medicinal plant.

Notes: Houcher, Zahira Boudiaf, Khaouther Benboubetra, Mustapha Houcher, Bakhouche

URL: <Go to ISI>://WOS:000257417400002
The general purpose Monte Carlo code PENELOPE is used to calculate microdosimetric quantities including dose-weighted lineal energy spectra, which can be used to predict relative biological effect (RBE), for binary radiation therapies that utilise the photoabsorption of X-ray of high-Z materials. Spectra are calculated for Gd homogenously distributed at a concentration of 10 mg/ml in water and irradiated by 70 keV monoenergetic photons, around 20 keV above the k-edge of Gd (50.239 keV), which has been shown to give optimal dose enhancement, and for a metallic Gd surface in close proximity (within 2 μm) to a sensitive component of the nucleosome, modelled as a sphere of water of 1 μm diameter, for 60 and 70 keV monoenergetic X-rays. X-ray interactions with homogenously distributed Gd lead to a greater population of high lineal energy electrons than in liquid water, probably due to the creation of short range Auger electrons and photoelectrons, whereas interactions with Gd outside of the sensitive volume are longer ranged increasing the population of low lineal energy electrons. The data does not support increased therapeutic advantage through increased RBE in the case of Gd bearing contrast systems where little cellular absorption of Gd occurs. Homogenously distributed Gd leads to higher lineal energies than pure water, probably due to the creation of short range, high LET Auger and photoelectrons, whereas photoelectrons that originate in Gd that are outside the sensitive volume tend to have relatively higher energies and long ranges increasing the population of low LET electrons. Crown Copyright (C) 2007 Published by Elsevier B.V. All rights reserved.
The induced damage in single crystals of yttrium alumina garnet (Y3Al5O12) bombarded at GANIL with 561 MeV Cr-51, 466 MeV Te-128, and 957 MeV Pb-208 ions, and at Algiers with reactor neutrons has been studied by optical measurements. Optical absorption bands centered at 250, 300 and 380 nm are observed after irradiation with ions and neutrons. The variation of the absorption as a function of fluence and electronic stopping power are presented and discussed. Photoluminescence, excited from 380 nm optical absorption band of this garnet is measured at room temperature. The results show the increase of the emission band width with increasing electronic stopping power. The confrontation of the results obtained with ions and neutrons irradiation confirm the contribution of the energetic heavy ions to point defects production. Furthermore, the existence of an electronic stopping power threshold between 10 and 15 keV/nm for oxygen ions displacements is derived. (c) 2006 Elsevier B.V. All rights reserved.
The thermal annealing behavior of the Y₃Al₅O₁₂, CaF₂ and LiF single crystals bombarded at Algiers with reactor neutrons has been monitored by optical absorption spectroscopy. The irradiation was performed at about 315 K. On heating samples after irradiation, the optical absorption bands decrease and disappear completely at 873 and 523 K in the case of Y₃Al₅O₁₂ and CaF₂, respectively. Activation energies of 1.2 ± 0.02 and 0.9 ± 0.2 eV are estimated for Y₃Al₅O₁₂ and CaF₂, respectively. On the other hand, the LiF crystal shows a complex annealing behavior. Here, the optical absorption spectrum presents different shapes after each annealing temperature. Four steps are distinguished and discussed on heating samples from 300 to 673 K. Above 673 K, the absorption drops by about 50%; it completely disappears at 773 K. (C) 2007 Elsevier B.V. All rights reserved.
The induced damage in single crystals of Yttrium aluminium garnet (Y3Al5O12) bombarded at GANIL with 561 (MeV Cr) - Cr-51, 466 MeV Te-123, 880 and 957 (MeV Pb)-Pb-208 and 885 (MeV U)-U-238 ion beams, and at Algiers with reactor neutrons has been studied by optical measurements, profilometry and X-ray diffraction techniques (XRD). The optical absorption spectrum increases with fluence up to saturation level and absorption bands at about 250, 300, and 380 are observed after irradiation with ions and neutrons. X-ray diffraction as well as profilometry measurements show the volume expansion of the sample after irradiation due to the phase transformation from crystalline to amorphous phase. This volume expansion increases as a function of fluence and mean electronic stopping power $S_e$. It reaches saturation at high fluence, but the evolution with $S_e$ shows a maximum at 17 keV/nm then it decreases significantly at 31 keV/nm. The track radii deduced from these techniques is seen to increase as a function of mean electronic stopping power from 8 to 17 keV/nm. From the analysis of the results, it is clear that the color centres do not contribute significantly to the swelling in the case of heavier ions with $S_e$ larger than 12 keV/nm. © 2007 Elsevier B.V. All rights reserved.
Crystal structure of a new pentadentate symmetrical: di 4-(phenylimino)pentan-2-one ether. Structural and electrochemical studies of its Co-II, Ni-II, Cu-II and Cd-II complexes

Abstract: The crystal structure of a new symmetrical pentadentate N2O3 Schiff base: di[4-(phenylimino)pentan-2-one] ether (H2L) is described. In the solid state, the ligand appears as a keto-imine tautomer, while in DMSO solution, the eneamine form is observed. This ligand coordinates cobalt(II), nickel(II), copper(II) and cadmium(II). The structures of these new complexes are described using infrared and electronic spectroscopy, H-1-n.m.r. and d.s.c. The cyclic voltammograms of the ligand and the complexes in DMF are discussed.
Reference Type: Journal Article
Record Number: 70
Author: Kadem, A.
Year: 2007
Title: Solution of the three-dimensional transport equation using the spectral methods
Journal: Kybernetes
Volume: 36
Issue: 1-2
Pages: 236-252
Short Title: Solution of the three-dimensional transport equation using the spectral methods
ISSN: 0368-492X
DOI: 10.1108/03684920710741242
Accession Number: WOS:000246779000018
Abstract: Purpose - The paper presents a method for solving the 3D steady state, linear transport equation in bounded domain. Design/methodology/approach - The method can be extended easily to general linear transport problem. Findings - The idea of using the spectral method for searching solutions to the multi-dimensional transport problems, leads us to a solution for all values of the independent variables. Research limitations/implications - The procedure is based on the development of the angular flux in a truncated series of Chebyshev polynomials in the spatial variables. Practical implications - The methodology used will permit us to transform the 3D problem into a set of 1D problems. The convergence of this approach is studied in the context of the discrete-ordinates method. Originality/value - An adaptation of this method for the convergence of the spectral solution within the framework of the analytical solution to study and prove convergence is relatively new.
Notes: Kadem, Abdelouahab
URL: <Go to ISI>:://WOS:000246779000018
In this paper, we propose an interior point method of type projective to minimize a nonlinear function under linear constraints. We combine the approach of linearization with ingredients brought by Karmarkar. The theoretical results deduct of those established later. (C) 2007 Elsevier Inc. All rights reserved.
Ferromagnetic resonance, at different frequencies (6-12 GHz), has been used to investigate the magnetic properties of a series of Co thin films evaporated onto Si (100) and glass substrates. The Co thickness \( t(\text{Co}) \) ranges from 50 to 195 nm. The thinner films are characterized by a single magnetic region; as the film grows, a second magnetic region appears and becomes even more important than the first one as \( t(\text{Co}) \) is increased further. The first region, presumably located at the substrate-film interface, is characterized by a magnetocrystalline anisotropy constant \( K_{u(1)} \) between \( (3.05 \text{ to } 4.31) \times 10^6 \text{ erg/cm}^3 \). The constant \( K_{u(2)} \) of the second region, located next to the surface, is practically the same for all thick samples (about \( 2.5 \times 10^6 \text{ erg/cm}^3 \)), i.e., \( K_{u(2)} \) is independent of the substrate and of the Co thickness. Moreover, \( K_{u(2)} \) is always lower than \( K_{u(1)} \). The linewidth \( \Delta H(1) \) of the peak associated with the interfacial region is larger than \( \Delta H(2) \) of the surface region, indicating that the surface region is magnetically more homogeneous (probably less anisotropy axis dispersion) than the interfacial region. Moreover, a sequence of spin wave resonance (SWR) modes is observed when \( H \) is applied perpendicular to the film plane. These SWR modes follow, mainly, the low resonant field indicating a pinning of the interfacial layer. It was found that the linewidth of the nth mode \( \Delta H-n \) varies as \( \Delta H-n=n(2)(\Delta H-') + \Delta H-'; \) this type of linewidth variation suggests that the spin waves are associated with dynamic pinning. © 2007 American Institute of Physics.

Notes: Kharmouche, A. Ben Youssef, J. Layadi, A. Cherif, S.-M.

URL: <Go to ISI>://WOS:000247306000095
A series of Co$_{x}$Cr$_{1-x}$ thin films have been evaporated under vacuum onto Si(100) and glass substrates, where $x$ variations were between 0.51 and 0.61. Thickness ranges from 350 to 4000 angstrom. DRX measurements show an hcp structure. AGFM measurement gives saturation magnetization ranging from a negligible value to 120 emu/cm$^3$. Coercive field may reach values up to 200 Oe, depending on the percentage of chromium. The saturation magnetization decreases as the Cr content increases. Magnetic force microscopy (MFM) study reveals the absence of stripe domains equilibrium magnetization structure. Brillouin light scattering (BLS) measurements were possible only for the 1800 angstrom thick sample. They confirm, through the derived magnetic parameters, the absence of stripe magnetic domains as observed by MFM on one hand, and, on the other hand, the adjustment of theoretical and experimental results lead to a stiffness constant 10 times lower than pure Co one. These results are analyzed and correlated. (c) 2006 Elsevier B.V. All rights reserved.
Multiple description wavelet-based image coding using correlating transforms

The objective of multiple description coding (MDC) is to represent a source into multiple descriptions such that various reconstruction qualities are obtained from different subsets of the descriptions. In this paper, we propose a simple scheme that combines the multiple descriptions transform coding (MDTC) method with the discrete wavelet transform (DWT). We compare the performance of the proposed scheme with a discrete cosine transform (DCT)-based scheme prevalent in other papers. Simulation results show that our proposed DWT technique outperforms both objectively and subjectively the method based on DCT in the case of packet loss. (C) 2006 Elsevier GmbH. All rights reserved.

Khelil, Khaled Bekka, Rais El Hadi Djebari, Ali Rouvaen, Jean M.
The complex density-functional theory calculations of structural, electronic, and optical properties for two principal representatives of the filled skutterudites CeFe4P12 and ThFe4P12 have been reported using the full-potential linearized augmented plane-wave method plus local orbitals, as implemented in the WIEN2K code. In this approach, the local-density approximation is used for the exchange-correlation potential. We performed these calculations with and without spin-orbit interactions. Results are given for lattice constant, bulk modulus, and its pressure derivative. Band structure, density of states, pressure coefficients of energy gaps, and refractive indices are also given. We note that both CeFe4P12 and ThFe4P12 are semiconductors with indirect and direct energy gaps, respectively. The valence-band maximum is located at Gamma for both compounds, whereas the conduction-band minimum is located at Gamma for ThFe4P12 and at N for CeFe4P12. Our results are compared with previous theoretical calculations and experimental data.
Modern digital technology has made it possible to manipulate multi-dimensional signals with systems that range from simple digital circuits to advanced parallel computers. The goal of this manipulation can be divided into three categories: Image Processing \( \rightarrow \) image out. Image Analysis \( \rightarrow \) measurements out. Image Understanding \( \rightarrow \) high-level description out. Further, we will restrict ourselves to two-dimensional (2D) image processing although most of the concepts and techniques that are to be described can be extended easily to three or more dimensions. The Wiener filter is a solution to the restoration problem based upon the hypothesized use of a linear filter and the minimum mean-square (or rms) error criterion. In the example given below the image \( a[m, n] \) was distorted by a bandpass filter and then white noise was added to achieve an SNR = 30 dB. (C) 2006 Published by Elsevier Ltd.
A refractory material was elaborated from kaolin extracted from the region of Djebel Debbagh (Algeria). Kaolin grog was obtained by calcination at a temperature of 1350 degrees C during 1 h. It was used as aggregates with granulometric distribution composed of fine fraction (mean grain size: 100-250 μm) and coarse fraction (mean grain size: 1000-2500 μm). Crude kaolin (size < 75 μm) was also used as a binder with an amount representing 15% of the dry material. After a 9.28% moistening and a rotting of 1 day, cylindrical samples were shaped by uniaxial pressure at 80 MPa. The samples were submitted to a natural drying during 24 h, a stoving at 100 degrees C and a calcination at 600 degrees C during 1 h. They were fired at high temperatures between 1250 and 1450 degrees C. An X-ray diffraction (XRD) analysis showed that the refractory samples are composed of mullite and silica. Silica is a mixture of a vitreous phase and cristobalite at 1300, 1350 and 1400 degrees C and becomes completely amorphous when the samples are fired at higher temperature (1450 degrees C). The sample porosity is about 30%. The mechanical tests carried out as a function of temperature revealed different behaviours of the material. From the ambient up to 600 °C, the refractory behaviour is pseudo-plastic caused by micro-cracking. Between 700 and 900 degrees C, the samples become more rigid. At 1000 °C, the material exhibits a visco-plastic behaviour. The amorphous phase governs the sample properties variation with temperature increasing. Its content varies between 28% and 34% according to the firing temperature. Thermal shock tests realized in water showed that the refractory samples present good thermal shock resistance. (c) 2007 Elsevier Ltd and Techna Group S.r.l. All rights reserved.
Abstract: The competition between alpha, beta and gamma polymorphs has been studied in a P-nucleated metalloconic isotactic polypropylene, iPP, as a function of the cooling rate and of the isothermal crystallization temperature, by performing X-ray diffraction and DSC experiments. It was found that the addition of a 1% by weight of a typical P-nucleating agent is not enough to develop any appreciable amount of beta modification, at least under the crystallization conditions used, which cover a wide range of cooling rates. In comparison, the same amount of nucleating agent added to a Ziegler-Natta iPP leads to almost 100% of beta form at low cooling rates. It seems that such amount of beta nucleating agent is not enough to counterbalance the well-known gamma nucleation ability of the relatively high content of defects (stereo- and regioerrors) which are present in the studied metalloconic iPP, and only different proportions of gamma and a modifications are obtained in this sample, the relative amount of them depending on the cooling rate. On the contrary, if a 5% nucleating agent is added, the beta modification is also obtained, in addition to the gamma and alpha polymorphs. However, now the amount of beta crystals as a function of the cooling rate follows a trend opposite to that for the Ziegler-Natta iPP: the higher are the cooling rates (or the lower are the isothermal crystallization temperatures) the larger proportions of beta modification are obtained. It is deduced, therefore, that the nucleation ability of the chain errors which leads to the development of the gamma form predominates over that one of the nucleating agent. The enthalpies for the 100% crystalline modifications, estimated from the enthalpies of melting and from the X-ray determined proportions of the different polymorphs, are rather similar: 162, 159, and 158 J/g for the alpha, beta and gamma phases, respectively. These values are inside the experimental error.
Within the envelope function scheme, a theory of the Rashba spin-orbit parameter is developed for an arbitrary heterostructure with sharp interfaces. In the first order of perturbation theory, the zero-field spin splitting in a given subband is found to be determined solely by the properties of the wave function at the interfaces; moreover, our results identify the proper electric field responsible for this splitting. The present work gives clear-cut proof that discontinuities in the band-structure parameters in the conduction band are the origin of the Rashba effect. Comparing our results to the Raman scattering data of Jusserand [Phys. Rev. B 51, R4707 (1995)], in its simplest form our present theory rules out the valence-band offset as the source of the Rashba spin splitting, contrary to common belief. The corrections found here give hope for the use of accurate measurements of the Rashba spin splitting in heterostructures as a means to deduce conduction band offsets.
Catalytic combustion of soot with an O-2/NO mixture on Pt/Bi2Ru2O7 catalysts

Calcination of the pyrochlore (Bi2Ru2O7) under oxygen gas and addition of 0.2%Pt to this sample improved the catalytic activity by reducing the temperature of soot oxidation. The results showed no effect of feed oxygen gas on carbon oxidation. The oxidation rate was mainly favoured by the oxygen of the pyrochlore.
A mathematical model which describes the quasistatic frictional contact between a piezoelectric body and a deformable conductive foundation is studied. A nonlinear electro-viscoelastic constitutive law is used to model the piezoelectric material. Contact is described with the normal compliance condition, a version of Coulomb's law of dry friction, and a regularized electrical conductivity condition. A variational formulation of the model, in the form of a coupled system for the displacements and the electric potential, is derived. The existence of a unique weak solution of the model is established under a smallness assumption on the surface conductance. The proof is based on arguments of evolutionary variational inequalities and fixed points of operators.
The chemical composition of essential oil obtained by steam distillation of dried aerial parts of Phlomis bovei De Noe subsp. bovei collected from Algeria, was analyzed by GC and GC/MS. Seventy five constituents (corresponding to 86.37% of the total weight) were identified. The main components were: germacrene D, fl-caryophyllene, beta-bourbonene, thymol and hexahydrofarnesyl acetone. Furthermore, the antimicrobial activity of the oil was evaluated against six Gram (+/-) bacteria and three pathogenic fungi, using the agar dilution technique. It was found that the oil exhibited strong antimicrobial activity against most of the tested microorganisms.
Reference Type: Journal Article
Record Number: 83
Author: Louaar, S. Akkal, S. Laouer, H. Guilet, D.
Year: 2007
Title: Flavonoids of Retama sphaerocarpa leaves and their antimicrobial activities
Journal: Chemistry of Natural Compounds
Volume: 43
Issue: 5
Pages: 616-617
Date: Sep
Short Title: Flavonoids of Retama sphaerocarpa leaves and their antimicrobial activities
ISSN: 0009-3130
DOI: 10.1007/s10600-007-0207-x
Accession Number: WOS:000252223000031
Notes: Louaar, S. Akkal, S. Laouer, H. Guilet, D.
URL: <Go to ISI>://WOS:000252223000031
According to the classical model developed by Evans and co-workers on the double torsion test [(1972) J Mater Sci 7:1137 and (1973) J Testing Eval 1:264], the stress intensity factor is independent of the crack length. Recent applications and analysis question this independency (Chevalier et al (1996) Cer Inter 22:171, Ciccotti et al (2000) Inter J Rock Mech Min Sci 37:1103). This work consists of using samples with different lengths of a typical brittle material (a soda-lime glass) in order to discuss on the validity of the different equations proposed to analyse the DT technique. Experimental compliance tests always showed linear variations with crack length. Successive relaxation tests revealed, however, a clear dependency of the stress intensity factor on crack length. This dependency, observed through the non reproducibility of the V-K-I diagrams, is reduced as the sample length increases. The corrections proposed by Chevalier and Ciccotti on Evans model revealed that their applications remain limited to the sample and the loading configurations used by the authors. The application of Evans model without correction is conditioned by the use of sufficiently long samples and advanced crack lengths.
Reference Type: Journal Article
Record Number: 85
Author: Maouche, D. Ruterana, P. Louail, L.
Year: 2007
Title: Carrier-mediated ferromagnetism in N co-doped (Zn, Mn)O-based diluted magnetic semiconductors
Journal: Physics Letters A
Volume: 365
Issue: 3
Pages: 231-234
Date: May
Short Title: Carrier-mediated ferromagnetism in N co-doped (Zn, Mn)O-based diluted magnetic semiconductors
ISSN: 0375-9601
DOI: 10.1016/j.physleta.2007.01.014
Accession Number: WOS:000247249100010
Abstract: Mn-doped ZnO is anti-ferromagnetic spin glass state, however, it becomes half-metallic ferromagnets upon hole doping. In this Letter we report a theoretical study of (Zn, Mn)O system codoped with N, and show that this codoping can change the ground state from anti-ferromagnetic to ferromagnetic. We have carried out the first-principles electronic structure calculations and report total energy to estimate whether the ferromagnetic state was stable or not. Our approach is based on the spin-polarized relativistic Korringa-Kohn-Rostoker (SPR-KKR) density functional theoretical (DFT) method, within the coherent potential approximation (CPA). Self-consistent electronic structure calculations were performed within the local density approximation, using the Vosko-Wilk-Nusair parameterization of the exchange-correlation energy functional. Our results for energy difference between ferromagnetic state and spin glass state as well as their dependence on concentrations were presented and discussed. (C) 2007 Elsevier B.V All rights reserved.
Notes: Maouche, D. Ruterana, P. Louail, L.
URL: <Go to ISI>:://WOS:000247249100010
We have carried out the first-principles total energy calculations to investigate the structural properties of ZnO, we report total energy calculations for ZnO in the B4 (wurtzite), B3 (zinc blende), B2 (cesium chloride), and B1 (rocksalt) crystal structure over a range of pressure and we present a description of the transition phases of ZnO. The calculations are based on the density functional theory and we have used both the generalized gradient approximation (GGA) and local density approximation (LDA) for the exchange and correlation potential. Our results for transition pressures and equilibrium lattice parameters as well as their dependence on pressure were compared with experimental data and previous calculations. (C) 2007 Elsevier B.V. All rights reserved.
Abstract: This work is devoted to the physico-chemical characterization of pretreated phosphoric acid produced at the Annaba plant (East of Algeria) and the activation of bentonite, used for the elimination of heavy metals contained in the pretreated phosphoric acid. The pretreatment of phosphoric acid is performed using activated carbon to remove organic matter. The activation of bentonite was carried out by a chemical process, by using H2SO4. Two important parameters were examined, concentration of the acid and temperature. Adsorption tests of zinc (II), cadmium (II) and chromium (III), contained in pretreated H3PO4 5.5 M (30% P2O5), were carried out under various conditions of temperature, pH and quantities of bentonite, with the aim of developing a process of fixing on the laboratory scale. A modeling of this process was also carried out. The model application, defined in the experimental range 1.25 <= pH <= 2.50; 0.50g <= mass of bentonite <= 2.5 g; 20 degrees C <= T <= 70 degrees C, made it possible to give an average yield of 88 % for the adsorption of zinc (II) and 89 % for cadmium (II) and chromium (III).

Notes: Mellah, Abdelhamid Benachour, Djafar

URL: <Go to ISI>://WOS:000249783900005
In this paper, the solvent extraction of zinc(II), cadmium(II) and chromium(III) from phosphoric acid solutions by tri-n-butyl phosphate (TBP) in kerosene as diluent was investigated. The distribution coefficients were determined and the results showed clearly a maximum values at 5.5 mol/L H₃PO₄ concentration and a minimum values at 1.0 mol/L H₃PO₄ concentration. The apparent standard molar enthalpies triangle $H^\circ$ degrees for extraction of zinc(II), cadmium(II) and chromium(III) were found to be, respectively, 51.11, 45.43 and 59.87 kJ/mol which indicate the endothermic nature of the extraction process. The apparent standard entropies triangle $S^\circ$ degrees were also determined $1.685 \times 10^{-3}$, $1.377 \times 10^{-3}$ and $1.961 \times 10^{-3}$ kJ/mol K. The apparent standard Gibbs free energies triangle $G^\circ$ degrees of extraction of zinc(II), cadmium(II) and chromium(III) were consequently calculated. Based on the regression analysis of the data, the equations for prediction of the distribution coefficients D of zinc(II), cadmium(II) and chromium(III), respectively were obtained. (c) 2007 Elsevier B.V. All rights reserved.
A new bacterial isolate (NH) from salt-affected soil was identified as Azospirillum brasilense using phenotypic analyses and 16SrDNA-based phylogeny. This isolate showed resistance towards 3,4-dehydroproline and optimal growth at 200 mmol/L NaCl, tolerating salt stress of 300 mmol/L NaCl in the absence of osmoprotectants and up to 600 mmol/L NaCl in the presence of glycine betaine and Ova lactuca extracts. This effect was enhanced with extracts of the marine algae Ova lactuca. A. brasilense strain NH can produce auxin indole acetic acid under saline conditions. The hypothesis was tested that the inoculation of this osmotolerant rhizosphere strain could improve the growth of wheat under saline stress conditions. Normal wheat growth was restored in the presence of both 150 mmol/L and 200 mmol/L NaCl after inoculation with A. brasilense NH. Under saline conditions, its effect of promoting plant growth of wheat was significantly superior to that of A. brasilense Sp7, the non-halotolerant type strain. A. brasilense NH restored wheat growth at elevated salt concentrations in pot and field experiments even better in the presence of osmoprotective Ulva lactuca extracts.

Notes: Nabti, E. Sahnowne, M. Adjrad, S. Van Dommelen, A. Ghoul, M. Schmid, M. Hartmann, A.

URL: <Go to ISI>: //WOS:000248203100007
The drift flux concept has been used to describe and analyse some hydrodynamic parameters such as the flow regimes and the retention phases in three-phase fluidised and fixed bed reactors. The effects of the gas, liquid and solid properties and the characteristics of the apparatus (distributor quality) on the hydrodynamics have been studied. Two hydrodynamic data banks as well as experimental results have been used to study the influence of the coalescence inhibiting behaviour of liquids and to determine flow regime transitions and phase retentions. In heterogeneous regime, the ratio of the drift flux density to the superficial gas velocity tends to a limit, approximately independent on the liquid velocity in both fixed and fluidised beds. Two correlations of the drift flux have been developed by this analysis; the first of which is valid in the three-phase fluidised beds and the other in the three-phase fixed beds. (c) 2007 Elsevier Ltd. All rights reserved.
The structural, electrical and magnetic properties of Ni thin films evaporated onto glass and polycrystalline Cu substrates have been investigated. The Ni thickness ranges from 31 to 165 nm. X-ray diffraction (XRD), scanning electron microscopy (SEM) and atomic force microscopy (AFM) have been used to study the structure and morphology of these systems. The Ni/Cu and Ni/glass thin films are found to be polycrystalline with a (1 1 1) texture. There is an overall increase of the grain size with increasing thickness. A negative strain was noted indicating that all the samples are under a compressive stress. Diffusion at the grain boundaries seems to be a major contribution to the electrical resistivity in this thickness range. Study of the hysteresis curves, obtained by vibrating sample magnetometer (VSM), indicates that all samples are characterized by an in-plane magnetization easy axis. Higher in-plane coercive fields seem to be associated with higher grain size, indicating that coercivity may be due to nucleation of reverse domains rather than pinning of domain walls. The saturation field and the squareness have been studied as a function of the Ni thickness. (c) 2006 Elsevier B.V. All rights reserved.
Measurements of the (e, 2e) triply differential cross sections (TDCS) are presented for the ionization of the nitrogen molecule in coplanar asymmetric geometry at an incident energy of about 600 eV and a large energy transfer to the target. The experimental results are compared with state-of-the-art available theoretical models for treating differential electron impact ionization of molecules. The experimental TDCS are characterized by a shift towards larger angles of the angular distribution with respect to the momentum transfer direction, and by a large intensity in the recoil region, especially for ionization of the 'inner' 2 sigma(g) molecular orbital. Such shifts and intensity enhancement are not predicted by the model calculations which rather yield a TDCS symmetrically distributed around the momentum transfer direction.
We have performed ab-initio self-consistent calculations on the full-potential linear muffin-tin orbital method with the local-density approximation and local spin-density approximation to investigate the structural and electronic properties of EuS and EuSe in its stable (NaCl-B1) and high-pressure phases. The magnetic phase stability was determined from the total energy calculations for both the nonmagnetic (NM) and magnetic (M) phases. These theoretical calculations clearly indicate that both at ambient and high pressures, the magnetic phase is more stable than the nonmagnetic phase. The transition pressure at which these compounds undergo the structural phase transition from NaCl-B1 to CsCl-B2 phase is calculated. The elastic constants at equilibrium in both NaCl-B1 and CsCl-B2 structures are also determined. (c) 2007 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

Notes: Rached, D. Ameri, M. Rabah, M. Khenata, R. Bouhemadou, A. Benkhettou, N. el Hannani, M. Dine

URL: <Go to ISI>://WOS:000247328200037
The essential oils obtained by hydrodistillation from the green branchlets of Cupressus dupreziana A. Camus growing wild in Tassili n' Ajjer (Algeria) were analyzed by GC and GC/MS. The main constituents of the essential oils were alpha-pinene (27.2% - 44.2%), germacrene D (16.2% - 27.2%) and Delta(3)-carene (14.2% - 26.7%). The oils showed insignificant activity on the growth of Escherichia coli (ATCC 25922), Pseudomonas aeruginosa (ATCC 27853) and Staphylococcus aureus (ATCC 25923), when investigated by the diffusion method.
The motor unit action potential (MUAPs) shapes depend on the anatomy and the physiology of the contracted muscle. The aim of this work is the identification of some characteristics of the motor unit (MU) and the volume conductor, namely the MU depth, the innervation zone width and the thickness of fat and skin layers based on MUAP signal parameters. The relationship between these characteristics and MUAP parameters are non-linear and complex. Thus, the use of the neural networks approach becomes an efficient tool to put in evidence this relationship. We have used the similarity and the homogeneity of the parameter criterions to choose which parameters are appropriate for the extraction. Two identification systems are presented and compared, a global system and a separate one. In order to evaluate the performance of each system, we have tested them using several simulated MUAP signals corrupted with additive Gaussian noise at different signal to noise ratios (SNR). A new test is introduced in which the electrode radius, the bar electrode dimensions and inclination angles for the detection system, fixed during the training process, are changed. (c) 2007 Elsevier B.V. All rights reserved.
The effects of quenching temperature including different thermal histories on mechanical, physical, and thermal properties of pigmented polycarbonate (PC/TiO2) were investigated. Tensile test, Izod impact strength and heat distortion temperature (HDT) were performed on specimens of 3 mm thickness. Pigment content and quenching temperature are two key factors that affect the properties of the materials. A higher content of pigments results in an increase of modulus of elasticity and a decrease of unnotched and notched Izod impact strength, as well as elongation at break. A maximum of yield stress and HDT is obtained at 3% of TiO2, which was considered as the optimum level of pigment. An additional second quenching at 40 degrees C has allowed to improve Izod impact strength and elongation at break of specimens with 3% of TiO2; whereas modulus of elasticity, density, yield stress, and HDT were minimum at this quenching temperature. (c) 2007 Wiley Periodicals, Inc.
Reference Type: Journal Article
Record Number: 97
Author: Rouabhi, T. Trabelsi, N.
Year: 2007
Title: A note on torsion-by-nilpotent groups
Journal: Rendiconti Del Seminario Matematico Della Universita Di Padova
Volume: 117
Pages: 175-179
Short Title: A note on torsion-by-nilpotent groups
ISSN: 0041-8994
Accession Number: WOS:000249272700010
Abstract: In this note we prove that a finitely generated soluble-by-finite group G is torsion-by-nilpotent if and only if every infinite subset contains two distinct elements x, y such that (x, x(y)) is torsion-by-nilpotent.
Notes: Rouabhi, Tarek Trabelsi, Nadir
URL: <Go to ISI>://WOS:000249272700010
The differences in the calculated apparent Schottky barrier heights as obtained from different approaches assuming a Gaussian distribution model of barrier potential are discussed. A modified theoretical expression for the saturation current and consequently a new expression for the apparent barrier height, evaluated numerically, are proposed. The current-voltage (I-V) expression obtained is subsequently used to generate I-V curves. An adequate genetic algorithm has been used to extract diode parameters. While the previous approaches used may lead to an unphysical negative apparent barrier height at low temperatures, or may suggest the existence of a lowest critical temperature up to which the apparent barrier height can be calculated, our approach presented here yields results for the apparent barrier height in good agreement with the extracted values at different temperatures. Therefore, it is concluded that the temperature dependence of the apparent Schottky barrier height can be successfully explained with the presently proposed approach, the detailed aspects of which are presented in this contribution.
From the first-principles calculations, we have investigated the elastic stiffness coefficients $C_{11}, C_{12}, C_{44}$ and the bulk modulus $B$ of the II-VI semiconductors ZnS and MgS under hydrostatic pressure. The calculations are based on the density functional theory within the generalized gradient approximation (GGA) for exchange-correlation interaction. For the structural properties we have shown that ZnS adopt the rocksalt (NaCl or B1) structure over 11.87 GPa pressure, the same character is adopted by MgS over 0.8 GPa. The elastic coefficients have the same behavior for the different structures of alloys; they increase with increasing pressure values. Our results for the structural parameters and equilibrium phase elastic constants are in good agreement with the available theoretical and experimental data. (c) 2006 Elsevier B.V All rights reserved.
We consider a model for the quasistatic, adhesive and frictionless contact problem for an elasto-viscoplastic material with damage. The adhesion process on the contact surface is modelled by a surface internal variable, the bonding field, and the tangential shear due to the bonding field is included. The problem is formulated as a system of a variational equality for the displacements, an inclusion of parabolic type for the damage field and an integro-differential equation for the bonding field. The existence of the weak solution for the problem is established by monotone operator and fixed-point arguments.
A new compound of formula \([\text{Fe(qsal)}(2)][\text{Ni(dmit)}(2)]\) (1) has been synthesised, structurally and magnetically characterised (qsalH = N(8-quinolyl)salicyaldimine, dmit(2-) = 1,3-dithiol-2-thione-4,5-dithiolato). Its structural features and its magnetic behaviour were compared with those of \([\text{Fe(qsal)}(2)]\)-based complexes, and more particularly \([\text{Fe(qsal)}(2)][\text{Ni(dmit)}(2)]\) center dot 2CH(3)CN. (c) 2007 Elsevier B.V. All rights reserved.


URL: <Go to ISI>://WOS:000250291300016
Dairy cattle production has always been considered as an important axis of all agricultural policies adopted by Maghreb countries since the beginning of the post independence era (Algeria, Morocco, and Tunisia). It has mainly been encouraged as a means of securing income and employment at the farm level. It is also considered to be a relevant way of ensuring the supply of high quality protein for rapidly growing populations characterised by changing nutritional habits. Dairy policies vary from country to country (Supply with imported milk in Algeria, local dairy cattle production in Morocco and an intermediary choice in Tunisia), relying on different approaches and producing contrasting results. Thus, obvious differences exist between countries in terms of dairy performance and domestic market Supply. This paper aims at comparing the recent dynamics of dairy production in the Maghreb countries with an emphasis on their future prospects: challenges due to the continuing effort to secure supply and to the upgrading of the, whole supply chain by a better management of dairy goods quality and an equitable distribution of the income to dairy operators.
Abstract: The wave concept iterative procedure (WCIP) is used to analyze arbitrarily shaped frequency selective surfaces (FSS). The WCIP method is developed from the fast modal transform based on a two-dimensional fast Fourier transform algorithm. Using the proposed procedure, less computing time and memory are needed to calculate the scattering parameters of the FSS structure. The method is applied to the modeling of an FSS structure of a rectangular patch and a comparison with experimental results confirms good agreement.

Notes: Titaouine, Mohammed Neto, Alfredo Gomes Baudrand, Henry Djahli, Fadd
Reference Type: Journal Article
Record Number: 104
Author: Trabelsi, N.
Year: 2007
Title: On minimal non-(torsion-by-nilpotent) and non-((locally finite)-by-nilpotent) groups
Journal: Comptes Rendus Mathematique
Volume: 344
Issue: 6
Pages: 353-356
Date: Mar
Short Title: On minimal non-(torsion-by-nilpotent) and non-((locally finite)-by-nilpotent) groups
ISSN: 1631-073X
DOI: 10.1016/j.crma.2007.02.009
Accession Number: WOS:000245936100002
Abstract: Let Omega be a class of groups. A group is said to be minimal non-Omega if it is not an Omega-group, while all its proper subgroups belong to Omega. In this Note we prove that a minimal non- (torsion-by-nilpotent) (respectively, non-((locally finite)-by-nilpotent)) group G is a finitely generated perfect group which has no proper subgroup of finite index and such that G/Frat(G) is an infinite simple group, where Frat(G) stands for the Frattini subgroup of G.
Notes: Trabelsi, Nadir
URL: <Go to ISI>://WOS:000245936100002
Cultures, designated Ag1, Ag2 and Ag3, of a fungus resembling Ascochyta rabiei, Didymella rabiei (teleomorph), were isolated from blighted chickpea plants growing in three regions of Algeria. The isolates were shown to be the cause of the disease by fulfilling Koch's postulates and were identified as A. rabiei by sequencing ribosomal DNA. When grown on a defined liquid medium, consisting of Czapek Dox nutrients and five cations, the filtrates inhibited germination of chickpea seed, and elongation of hypocotyls and radicles of seedlings. All three isolates produced the phytotoxin solanapyrone A in culture and maximal concentrations in the culture filtrates, recorded after incubation for 14 days were 15.1 +/- 1.29 μg/ml, 8.4 +/- 1.19 μg/ml and 7.4 +/- 0.85 mg/ml for Ag1 Ag2 and Ag3, respectively. ED50 values were 7.15 +/- 1.77, 5.87 +/- 1.40 and 3.60 +/- 1.47 μg solanapyrone A/ml for inhibition of germination, hypocotyl elongation and radicle elongation, respectively. Concentrations of solanapyrone A in dilutions of culture filtrates that caused 50% inhibition of these three parameters were sufficient to explain their inhibitory effects in all cases except the inhibition of germination and hypocotyl elongation by filtrates of Ag2 and Ag3. Here they were only 65 % and 58 % of the amount required to cause the inhibition of germination, respectively and 60% and 63% of the amount required to inhibit hypocotyl elongation, respectively, suggesting that other factors may be involved.
The structural parameters and hydrostatic pressure coefficients of CdS\textsubscript{x}Te\textsubscript{1-x} in the two phases, namely zinc-blende and NaCl as well as the transition pressures from zinc-blende to NaCl structures at various S concentrations are presented. The calculations are performed using the full potential linearized augmented plane wave (FP-LAPW) method within the density functional theory (DFT) in the local density approximation (LDA), and two developed refinements, namely the generalized gradient approximation (GGA) of Perdew et al. for the structural properties and Engel-Vosko for the band structure calculations. Detailed comparisons are made with published experimental and theoretical data and show generally good agreement. The present results regarding the studied quantities for compositions x in the 0-1 range (0 < x < 1) and for the NaCl phase are predictions and may serve as a reference for experimental work.
New microwave electronic technology challenges require the integration of many passive components onto chips. Among them, isolators and circulators are non-reciprocal passive devices that contain magnetic materials. It is therefore important to know the magnetic properties of suitable materials. The permeability tensor is the most important parameter to define, because it governs the interaction between the electromagnetic wave and the material, and is thus the origin of all magnetic phenomena. Our work consists of performing the characterization of thin films of BaM and YIG over a frequency range of 0.4 GHz to 65 GHz. The work shows the presence of a gyroresonance phenomenon and locates the resonance frequencies. The technique is based on S parameter measurements on the magnetic materials performed with a network analyser and a probe tester. Polder's model is used to calculate the different elements of the permeability tensor, which consider the ferrite in its saturated state.
Polymer composites based on modified montmorillonite (OMMT) and polystyrene (PS) were prepared with different compositions by melt processing. The modification of MMT-Na was carried out by treating with octadecylammonium cation. The polymer composites were characterized using different techniques such as x-ray diffraction (XRD), infrared spectrophotometer (IR), differential scanning calorimetry (DSC), Thermogravimetric analysis (TGA), rheology and tensile measurements. The results showed that, the basal space of the silicate layer increased due to the cationic exchange of the sodium ions by the long chains of octadecylammonium ions, as determined by XRD analysis, from 12.6 to 32.3 angstrom. A microstructure was detected by x-ray patterns and the TEM (transmission electronic microscopy) micrograph at 2 wt % OMMT However, the sample with higher than 2 wt % OMMT reveals partial intercalation structure. The composite with 5 wt % OMMT indicated the highest improvement in thermal stability. The rheological properties of the PS/OMMT composites were investigated using ARES-rheometer operated in the dynamic mode with a parallel plate geometry. The storage and loss moduli increased with increasing the clay content. The stress at break is also improved relatively to the virgin polystyrene in our experimental conditions.
Following the seminal paper of Datta and Das (1) where a new device called the spin FET was proposed, the study of spin orbit effects in semiconductor research has increased tremendously (2). In this new device spin polarized electrons are injected by a ferromagnetic source and collected by a ferromagnetic drain. If the length of the conduction channel is smaller than the length of spin dephasing through Dyakonov Perel mechanism (3) then transport is ballistic and a phase shift $\Delta \theta$ appears between spin components. With $m$ being the effective mass and $\alpha$ the Rashba parameter (4) this phase shift is $2m \alpha L$. The same authors then predicted spin modulation of current by a gate. This outstanding idea was greeted with much enthusiasm and motivated a large number of experiments worldwide (5). Nonparabolicity (6,7), and population? of subbands turned out essential. Our work in Ref. 7 was numerical, but recently (8) we introduced a fully analytic theory of the Rashba parameter using the invariant expansion of Rossler et al (9). The present contribution is a numerical implementation of this framework.

Notes: Lamari, S. 1st Sharjah International Conference on Nanotechnology and Its Applications Apr 10-12, 2007 Sharjah, U ARAB EMIRATES Al Sharif Grp LLC, ADNOC & Its Grp Co, Petrofac, Sharjah Chamber Commerce & Ind, Sharjah Municipal, Dubai Silicon Oasis Author, Veeco, Agilent Technologies
URL: <Go to ISI>://WOS:000250403600010
Abstract: The theory of input-output feedback linearization is extensively used for the control of nonlinear systems. In this paper, this theory is developed from the mathematical viewpoint, and then, applied for the regulation of the torque and the flux of the induction machine. The results of simulations testify the hardness of the method developed.
Abstract: Model reference adaptive control is applied to linear time varying systems and to nonlinear systems amenable to virtual linearization. Asymptotic stability is guaranteed even if the perfect model following conditions do not hold, provided that some sufficient conditions are satisfied. Simulations show the scheme to be capable of effectively controlling certain nonlinear systems.
We give some simple algebraic conditions on the coefficients of a boundary value problem for a differential equations of Ventcel type, depending on a spectral parameter, which guarantee the existence, uniqueness of a solution and coerciveness estimate, for a spectral parameter lying in some sector.
This paper presents a new control method entitled direct power control (DPC) for shunt active power filtering, which is applied to eliminate line current harmonics and compensate reactive power. Its main goal is to rebuild active and reactive powers to be compared to references values using hysteresis control. The outputs of hysteresis controllers associated with a switching table, control the instantaneous active and reactive power by selecting the optimum switching state of the voltage source inverter (VSI). A theoretical analysis with a complete simulation of the system and experimental results are presented to prove the excellent performance of the proposed technique.
An agent-based approach for designing and implementing a virtual laboratory

Virtual laboratories are necessary in e-learning environments, especially in technical and scientific disciplines. Our research objectives consist in proposing an environment to allow, on one hand, teachers to design virtual practical works, and on the other hand, learners to work together and perform laboratory experiments from remote locations through a web browser in distant environment with virtual objects and appropriate pedagogical scenarios. In this article we describe the design and implementation of an agent based environment of a virtual laboratory for cooperative learning over the web.

Notes: Mechta, Djamila Harous, Saad Djoudi, Mahieddine Douar, Amel 4th International Conference on Innovations in Information Technology Nov 18-20, 2007 Dubai, U ARAB EMIRATES Ieee

URL: <Go to ISI>:://WOS:000255983000043
In this Paper, we present a systematically method based on the transformer coupling effect to establish the d- and q- axes equivalent circuits, which can describe the transient behavior of the synchronous machine. The MATLAB/Simulink Power System Blockset tools (PSB) is used for the simulation of synchronous machines by their equivalent circuits. One used an empirical method, based on the comparison between the practical and numerical results, to elaborate an improved synchronous machine model during dynamic behaviors.
PRODUCTION SCIENTIFIQUE ANNEE 2008
The correct and adequate modelling of ZnO surge arresters characteristics is very important for insulation coordination studies and systems reliability. In this context many researchers addressed considerable efforts to the development of surge arresters models to reproduce the dynamic characteristics observed in their behaviour when subjected to fast front impulse currents. The difficulties with these models reside essentially in the calculation and the adjustment of their parameters. This paper proposes a new technique based on genetic algorithm to obtain the best possible series of parameter values of ZnO surge arresters models. The validity of the predicted parameters is then checked by comparing the predicted results with the experimental results available in the literature. Using the ATP-EMTP package, an application of the arrester model on network system studies is presented and discussed. (c) 2007 Elsevier B.V. All rights reserved.
Several methods can be used to provide water to plants in cropping systems where irrigation is necessary. For instance, drip irrigation has recently received much attention due to its advantages for water conservation. The type of irrigation can also impact the development of several pathogens responsible for soilborne diseases. Here, we studied the effect of drip irrigation and furrow irrigation on the development of grey mould, caused by the airborne fungus Botrytis cinerea, on tomato plants. A field experiment was conducted in 2004 in five unheated greenhouses. Plants were examined individually every 8 days and the proportion of plants attacked by grey mould on leaves, stems or fruits was recorded from the end of March until the end of June. Our results show that the attacks of Botrytis on the stems occurred earlier in furrow irrigation, 98.8 days after planting on average, than in drip irrigation: 106.3 days after planting. The kinetics of plant infection on stems, leaves and fruits were higher under furrow than under drip irrigation. Disease severity was measured by the average number of stem lesions per plant. Disease severity was higher in plants under furrow than under drip irrigation, reaching 1.32 and 0.99, respectively, at the end of June. Plant mortality due to grey mould was first recorded at 94 and 110 days after planting, respectively, in the furrow- and in the drip-irrigated greenhouses. These results suggest that drip irrigation could be a useful tool for the implementation of integrated protection schemes and for reducing the use of pesticides in unheated tomato greenhouses. They may also provide an additional incentive for growers to switch from furrow to drip irrigation in sheltered tomato production.

Notes: Aissat, Kamel Nicot, Philippe C. Guechi, Abdelhadi Bardin, Marc Chibane, Mohamed

URL: <Go to ISI>://WOS:000258262600006
Reference Type: Journal Article
Record Number: 3
Author: Alikhodja, C. E. Chermat, R. Khettabi, S. Hannat, S. Mekideche, F. Z. Rezig, M. F. Malek, R.
Year: 2008
Title: Evaluation of care and treatment of type 2 diabetes in general practitioners
Journal: Diabetes & Metabolism
Volume: 34
Pages: A65-A66
Date: Mar
Short Title: Evaluation of care and treatment of type 2 diabetes in general practitioners
ISSN: 1262-3636
Accession Number: WOS:000255327900215
Notes: Alikhodja, C. E. Chermat, R. Khettabi, S. Hannat, S. Mekideche, F. Z. Rezig, M. F. Malek, R. 1
URL: <Go to ISI>://WOS:000255327900215
Flavonoids are a large heterogeneous group of benzo-gamma-pyrone derivatives, which are abundantly present in our diet. In this study we investigated the effects of six flavonoids (apigenin, genistein, quercetin, rutin, naringenin and catechin) on the gastric tone in mouse isolated stomach. The mechanical activity was recorded as changes of intraluminal pressure. All flavonoids tested produced a concentration-dependent relaxation, which was reversible after washout. The relative order of potency of the flavonoids was apigenin >= genistein > quercetin > naringenin >= rutin > catechin. Analysis of the chemical structure showed that the relaxant activity was progressively diminished by the presence of hydroxyl group at C-3, saturation of the C-2, C-3 double bound, saturation of the C-2. C-3 double bound coupled with lack of the C-4 carbonyl and glycosylation. The flavonoid-induced relaxations were not modified in the presence of tetrodotoxin, a voltage-dependent Na(+) channel blocker, N(omega)-nitro-L-arginine methyl ester (L-NAME), an inhibitor of nitric oxide synthase, indomethacin, an inhibitor of cyclooxygenase or tetraethylammonium, a non-selective blocker of potassium channels. In conclusion, this study provides the first experimental evidence for gastric relaxant activity of flavonoids. This action is influenced to a great extent by the structure of the molecules and it seems not to be dependent on neural action potentials, NO/prostaglandin production or activation of K(+) channels. (C) 2008 Elsevier B.V. All rights reserved.
The effectiveness of transmutation for the long-lived fission product Technetium-99 in a high flux research reactor is evaluated, taking into account its large capture cross section in the thermal and epithermal regions. Calculation of the evolution of the Ruthenium concentration under irradiation was performed using the ChainSolver 2.20 code. The results on Technetium transmutation suggest an effective use of this kind of research reactors and describes a new concept of multi-recycle Technetium transmutation using HFRTRAN (high flux research reactor for transmutation). (C) 2008 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 6
Author: Annicchiarico, P. Abdelguerfi, A. Ben Younes, M. Bouzerzour, H. Carroni, A. M. Pecetti, L. Tibaoui, G.
Year: 2008
Title: Adaptation of sulla cultivars to contrasting Mediterranean environments
Journal: Australian Journal of Agricultural Research
Volume: 59
Issue: 8
Pages: 702-706
Short Title: Adaptation of sulla cultivars to contrasting Mediterranean environments
ISSN: 0004-9409
DOI: 10.1071/ar08001
Accession Number: WOS:000257978100002
Abstract: Sulla coronaria (L.) Choi & Ohashi (syn. Hedysarum coronarium L.) may become a major forage species in various Mediterranean-climate areas. This study aimed to assess the extent of genotype x environment (GE) interaction in the western Mediterranean region and its implications for breeding programmes. The milestone Italian varieties Grimaldi and Sparacia, one recent Italian variety, and the Tunisian cv. D'Italian (evolved under moderately favourable conditions from Italian germplasm introduced about 40 years ago) were evaluated in three environments of Tunisia (of which two were irrigated), two of Algeria, and one of Sardinia (Italy). Water available over the crop cycle (rainfall+possible irrigation from October 2004 to June 2006), ranging from 881 to 1906 mm, accounted for 85% of the variation among environments and 72% of the GE interaction variation for dry matter yield. The latter was adequately described by one- covariate factorial regression, which was preferable to joint regression and additive main effects and multiplicative interaction modelling. D'Italian was specifically adapted to environments with available water exceeding 1200 mm, Grimaldi was top-ranking between 950 and 1200 mm, and Sparacea below 950 mm. The crossover GE interaction between top-yielding material (P < 0.05) has implications for adaptation targets, genetic resources, selection environments, and opportunities for international co-operation between breeding programmes. It suggests breeding either for rainfed cropping in semi-arid or near semi-arid environments, or for definitely subhumid or irrigated environments.
Notes: Annicchiarico, P. Abdelguerfi, A. Ben Younes, M. Bouzerzour, H. Carroni, A. M. Pecetti, L. Tibaoui, G.
URL: <Go to ISI>:://WOS:000257978100002
Reference Type: Journal Article
Record Number: 7
Year: 2008
Title: Lattice dynamics properties of zinc-blende and Nickel arsenide phases of AlP
Journal: Physics Letters A
Volume: 372
Issue: 32
Pages: 5340-5345
Date: Aug
Short Title: Lattice dynamics properties of zinc-blende and Nickel arsenide phases of AlP
ISSN: 0375-9601
DOI: 10.1016/j.physleta.2008.06.010
Accession Number: WOS:000258254400017
Abstract: Ab initio calculations, based on norm-conserving non-local pseudopotentials and the density functional theory (DFT), have been performed to investigate the behaviour under hydrostatic pressure of the Structural, electronic, elastic and dynamical properties of AlP, in both zinc-blende and nickel arsenide phases. Our calculated structural and electronic properties are in good agreement with previous theoretical and experimental results. The phonon dispersion curves, the elastic constants, Born effective charge, etc., were calculated with the local density approximation and the density functional perturbation theory (DFPT). Our results in the pressure behaviour of the elastic and dynamical properties of both phases are in agreement with the experimental data when available, in other case they can be considered as predictions. (C) 2008 Elsevier B.V. All rights reserved.
URL: <Go to ISI>://WOS:000258254400017
Reference Type: Journal Article
Record Number: 8
Author: Arrar, L. Hanachi, N. Rouba, K. Charef, N. Khennouf, S. Baghiani, A.
Year: 2008
Title: Anti-xanthine oxidase antibodies in sera and synovial fluid of patients with rheumatoid arthritis and other joint inflammations
Journal: Saudi Medical Journal
Volume: 29
Issue: 6
Pages: 803-807
Date: Jun
Short Title: Anti-xanthine oxidase antibodies in sera and synovial fluid of patients with rheumatoid arthritis and other joint inflammations
ISSN: 0379-5284
Accession Number: WOS:000258010600001
Abstract: Objectives: To study anti-bovine milk xanthine oxidoreductase (XOR) antibody levels in synovial fluid as well as in serum of patients suffering from rheumatoid affections to assess a possible correlation between antibody titres and severity of disease. Methods: Sera and synovial fluids were collected from volunteer donors at Setif University Hospital, Setif, Algeria from 2001-2007 with the consent of patients. Human IgG and IgM levels of free and bound anti-bovine milk XOR antibodies were determined using bovine XOR as antigen, with enzyme-linked immunosorbent assay (ELISA). Results: Serum IgG anti-(bovine milk XOR) titres in 30 healthy normal subjects (2-74+/-.31 mu g/mL) are in agreement with that reported in the literature. Immunoglobulin G and IgM anti-(bovine milk XOR) antibody titres were found to be significantly higher in serum from patients with rheumatoid arthritis (RA), and latex positives subjects. Synovial IgM antibody titres to bovine XOR were found to be significantly higher in rheumatoid arthritis patients compared to patients with other joint inflammations. Conclusion: In rheumatoid arthritis patients, high concentrations of antibodies against XOR were noticed. These antibodies may play a major role in RA by inhibiting both xanthine and NADH oxidase activities of XOR. They may also play a key role in eliminating XOR from serum and synovial fluid (positive role) but unfortunately, immune complex formation could also activate complement and participate in self maintenance of inflammation.
Notes: Arrar, Lekhmici Hanachi, Nadjet Rouba, Khaled Charef, Noureddine Khennouf, Seddik Baghiani, Abderrahmane
URL: <Go to ISI>://WOS:000258010600001
Sr$_2$CoMoO$_6$ and Sr$_2$CoMoO$_6$-$\delta$ ceramics have been obtained by solid state reaction in air and in a H$_2$/N$_2$ gas mixture. At room temperature, as shown by X-ray diffraction, both compounds have a tetragonal perovskite-like structure with doublet unit-cell parameters, space group $I4/m$, with $a=5.5575$, $c=7.9342$ in Sr$_2$CoMoO$_6$ and $a=5.5683$ and $c=7.9395$ in Sr$_2$CoMoO$_{0.95}$. The latter contains small traces of Co and SrCoO$_{2.61}$, with an almost expansion. The magnetic susceptibility indicates that Sr$_2$CoMoO$_6$ is an antiferromagnet with $T_N=37$ K. The magnetization was found to be the same in both samples, while the electric properties, originating from the oxygen content, are drastically affected.
Reference Type: Journal Article
Record Number: 10
Author: Bahlouli, F. Bouzerzour, H. Benmahammed, A.
Year: 2008
Title: Effects of speed and the duration of grain filling and the accumulation of assimilates of the stem in developing the durum wheat yield (Triticum durum Desf.) in the culture conditions of the high plains of eastern Algeria
Journal: Biotechnologie Agronomie Socieete Et Environnement
Volume: 12
Issue: 1
Pages: 31-39
Short Title: Effects of speed and the duration of grain filling and the accumulation of assimilates of the stem in developing the durum wheat yield (Triticum durum Desf.) in the culture conditions of the high plains of eastern Algeria
ISSN: 1370-6233
Accession Number: WOS:000256941400004
Abstract: The present study was led on the experimental site of station ITGC in Setif. The objective is to determine the differences of duration and speed of filling and the contribution of the assimilates of the stems to the yield of 5 durum wheat genotypes (Triticum durum Desf.). The year effect is significant, what explains the fluctuation of the conditions of one growth year to another. The grain yield is associated to the great quantity of assimilates stored and transferred from the stems to the grain filling. The Mbb genotype which has an important stem height transfers more assimilates. The genotypes ADS497 and Deraa present large standard leaves. The beginning of the active phase of the grain filling corresponds to the beginning of the foliar senescence. Mbb presents a slower foliar drying rate, the speed of drying stationary recorded by ADS497 is of -0.5957 cm(2) per day. The speed of grain filling is negatively related to the duration of filling. The participation of the assimilates coming from the stem decreases when the environment allows the expression of a better grain yield. Keywords. Wheat, assimilates, duration of filling, yield, speed of filling, Algeria.
Notes: Bahlouli, Faycal Bouzerzour, Hamenna Benmahammed, Ammar
URL: <Go to ISI>://WOS:000256941400004
Reference Type: Journal Article
Record Number: 11
Author: Bartel, J. Bencheikh, K. Meyer, J.
Year: 2008
Title: Extended Thomas-Fermi density functionals in the presence of a tensor interaction in spherical symmetry
Journal: Physical Review C
Volume: 77
Issue: 2
Date: Feb
Short Title: Extended Thomas-Fermi density functionals in the presence of a tensor interaction in spherical symmetry
ISSN: 0556-2813
DOI: 10.1103/PhysRevC.77.024311
Article Number: 024311
Accession Number: WOS:000253764600019
Abstract: For a one-body Hamiltonian obtained from the energy-density functional associated with a Skyrme effective interaction, including a tensor force, semiclassical functional densities are derived in the framework of the Extended Thomas-Fermi method, in spherical symmetry, for the kinetic energy and spin-orbit density. The structure of the self-consistent mean-field potentials constructed with such semiclassical functionals is studied. The impact of the tensor force in particular on the spin-orbit form factor clearly indicates the necessity of including such tensor-force terms in the theoretical description of atomic nuclei and their possible influence on the shell structure of exotic nuclei.
Notes: Bartel, J. Bencheikh, K. Meyer, J.
URL: <Go to ISI>://WOS:000253764600019
Origanum glandulosum Desf., an endemic species of Algeria is used not only as a herb tea but as medicinal plant to cure several pains including cough and rhumatism. The oil was obtained from the aerial parts of the plant by hydrodistillation and analysed by GC and GC-MS. The main components of the oil were carvacrol (57%), thymol (7%), and their biogenic precursor's gamma-terpinene (13%) and p-cymene (11%). The antibacterial activity of a serial dilution of the oil was evaluated against ten strains of bacteria using the disk diffusion test. Escherichia coli and Acinetobacter boumanii were the most susceptible to the oil, whereas Pseudomonas aeruginosa ATCC 27853 was the least one. The ability of the oil to inhibit Aspergillus favus growth and aflatoxin B(1) (AFB(1)) production was conducted on yeast extract sucrose (YES) medium. The minimal inhibitory concentration (MIC) for the growth of this fungus was at 400 ppm, whereas that for the AFB(1) production was 200 ppm. Carvacrol was used as control and the values for the two MICs were 180 ppm and 50 ppm, respectively.
The spontaneous mechanical activity of the proximal, middle and distal colon of the rabbit shows in vitro two types of contractions: phasic contractions with low amplitude and high frequency, giant contractions (GCs) with high amplitude and low frequency. Both patterns of contractions did not present differences according to the region. Investigations on the neural control of giant contractions in the middle colon gave the following results. (1) GCs are insensitive to muscarinic antagonism by atropine and ganglionic blockade by hexamethonium; (2) GCs are converted into phasic contractions following the inhibition of acetylcholinesterase by neostigmine, and are abolished for a short period by dimethyl-phenyl-piperazinium, a ganglionic nicotinic receptor agonist; (3) application of L-arginine, the substrate of nitric oxide (NO) synthase prolonged the duration of GCs without affecting their amplitude; sodium nitroprusside, a donor of NO, reduced both the amplitude and frequency of GCs; (4) inhibition of guanylate cyclase by methylene blue converted GCs into phasic contractions; (5) blockade of K+ channels with the non-selective blocker, tetraethylammonium, or with the more selective apamin-sensitive Ca2+-dependent K+ channels blocker, dequalinium, increased the resting tone and decreased the amplitude of contractions; whereas opening of ATP-sensitive K+ channels by diazoxide abolished any rhythmic contractile activity. These data taken together suggest that the amplitude and frequency of GCs are controlled by the endogenous release of NO which activates guanylate cyclase, the subsequent formation of cGMP activates in turn the opening of Ca2+-dependent K+ channels. The cholinergic input seems to be responsible of the resting tone, and an increase of this tone is prone to impose the phasic contractions pattern to the tissue. (C) 2008 Elsevier Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 15
Author: Benahmed, M. Elomri, A. Akkal, S. Laouar, H. Verite, P. Seguin, E.
Year: 2008
Title: Flavonoids from Bupleurum montanum Coss. (Apiaceae)
Journal: Planta Medica
Volume: 74
Issue: 9
Pages: 1055-1055
Date: Jul
Short Title: Flavonoids from Bupleurum montanum Coss. (Apiaceae)
ISSN: 0032-0943
Accession Number: WOS:000258261801009
URL: <Go to ISI>://WOS:000258261801009
A theoretical study of elastic and electronic properties of the filled skutterudite CeFe4P12 is presented, using the full-potential linear muffin-tin orbital (FP-LMTO) method. In this approach the local spin density approximation (LSDA) was used for the exchange-correlation (XC) potential. Results are given for lattice constant, bulk modulus, its pressure derivative and elastic constants. Our calculations performed for band structure and density of state show that this compound is an indirect band gap material (Gamma-N). The results are compared with previous calculations and experimental data. (C) 2008 Elsevier B.V. All rights reserved.
Abstract: Sunflower oil is a renewable resource that can be epoxidised. Epoxidised sunflower oil has the potential for use as an environmentally friendly, reactive material in polymer formulations. Sunflower oil of iodine value 130 was epoxidised in situ, with preformed peracetic acid, or using a mixed strategy, to determine the optimisation of double bond to oxirane rings. The epoxidation of sunflower oil and the extent of side reactions were studied at different temperature. Epoxidation was carried out in toluene with preformed peroxyacetic acid, in situ with partially preformed peroxyacetic acid and with "in situ" formed peroxyacetic acid in the presence of an ion exchange resin as the catalyst. H-1 nuclear magnetic resonance spectra of a series of epoxidized sunflower oil were recorded with a 200 MHz instrument using deuterated chloroform as solvent. The optimum conversions were obtained with 4 hours reaction period at 55 degrees C by the in situ epoxidation technique; using 30% hydrogen peroxide and ion exchange resin as catalyst the mole ratio of the reactants was unsaturation/hydrogen peroxide/acetic acid (1/1.5/0.5). The epoxidized oil obtained from various processes was determined by analytical titration.
Closed form analytical expressions are obtained for the Wigner transform of the Bloch density matrix and for the Wigner phase-space density of a two-dimensional harmonically trapped charged quantum gas in a uniform magnetic field of arbitrary strength, at zero and nonzero temperatures. An exact analytic expression is also obtained for the autocorrelation function. The strong magnetic field case, where only few Landau levels are occupied, is also examined, and useful approximate expressions for the spatial and momentum densities are given.
We present a simple analytical method, based on the canonical density matrix, for the calculation of the equilibrium spin current as a function of temperature in a two-dimensional electron gas with both Rashba and Dresselhaus spin-orbit coupling terms. We find that the persistent spin current is extremely robust against thermal disorder: its variation with temperature is exponentially small (proportional to $e^{(F)(-T)/T}$) at temperatures much smaller than the Fermi temperature $T(F)$ and changes to a power law $T(F)/T$ for $T > T(F)$.
A novel polynitrile ligand with different coordination modes: Synthesis, structure and magnetic properties of the series M(tcnoprOH)(2)(H2O)(2) (M = Mn, Co and Cu) (tcnoprOH(-) = (NC)(2)CC(OCH2CH2CH2OH)C(CN)(2) (-))

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Pages: 255-262
Date: Nov

Short Title: A novel polynitrile ligand with different coordination modes: Synthesis, structure and magnetic properties of the series M(tcnoprOH)(2)(H2O)(2) (M = Mn, Co and Cu) (tcnoprOH(-) = (NC)(2)CC(OCH2CH2CH2OH)C(CN)(2) (-))
ISSN: 0022-2860
DOI: 10.1016/j.molstruc.2008.04.044
Accession Number: WOS:000261121100041

Abstract: A novel polynitrile ligand (tcnoprOH(-) = [(NC)(2)CC(OCH2CH2CH2OH)C(CN)(2)](-)) with up to five potentially coordinating groups has been synthesized in a one-pot reaction from a cyclic acetal and malononitrile. The combination of this novel ligand with different transition metal ions has led to the synthesis of two different structural types with the same formula but with different coordination modes in the ligand. Mn(II) and Cu(II) lead to a mu(2)-N,O-coordinating mode in the series of compounds formulated as [M(N,O-tcnoprOH)(2)(H2O)(2)] (M = Mn-II (1) and Cu-II (2)), whereas Co(II) and, most probably Ni(II), lead to a mu(2)-N,N'-coordinating mode in [Co(N,N'-tcnoprOH)(2)(H2O)(2)] (3). Both structural types consist of linear chains of metal ions connected by a double tcnoprOH(-) bridge. These ligands are connected to the metal ions through one -CN and one -OH group in compounds 1 and 2 (N,O-coordinating mode) or through two -CN groups in compound 3. Magnetic measurements show that all compounds are paramagnetic with a low zero field splitting for the Mn derivative. (c) 2008 Elsevier B.V. All rights reserved.

Notes: Benmansour, Samia Setifi, Fatima Gomez-Garcia, Carlos J. Triki, Smail Coronado, Eugenio Salaun, Jean-Yves Si

URL: <Go to ISI>://WOS:000261121100041
The present work deals with the study of a composite based on poly(vinyl chloride) (PVC) and aluminum hydroxide (Al(OH)(3)) which is treated with different concentrations of the silane coupling agent N-(2-aminoethyl)-3-aminopropyltrimethoxysilane. The composites containing untreated Al(OH)(3) and those treated with the coupling agent were prepared by melt mixing using a two-roll mill. Analysis of the treated filler by means of Fourier Transform Infrared spectroscopy (FTIR) showed the formation of oligoaminosilanes resulting from the condensation of the silane coupling agent. The tensile properties of the PVC/Al(OH)(3) composite reflected the effect of the addition of the mineral filler and also the influence of the chemical treatment on the interfacial adhesion. The incorporation of aluminum hydroxide into PVC resulted in an increase of Young's modulus and the yield stress. From the calculation of a parameter B which was used to quantify the state of adhesion between the polymeric matrix and the filler, it was concluded that the surface chemical treatment of the filler with the silane coupling agent leads to higher reinforcement as a result of the interfacial interactions developed between PVC and Al(OH)(3).
The results of first-principles theoretical study of the structural, electronic and optical properties of SrCl2 in its cubic structure, have been performed using the full-potential linear augmented plane-wave method plus local orbitals (FP-APW+lo) as implemented in the WIEN2k code. In this approach both the local density approximation (LDA) and the generalized gradient approximation (GGA) are used for the exchange-correlation (XC) potential. Also we have used the Engel-Vosko GGA formalism, which optimizes the corresponding potential for band structure calculations. We performed these calculations with and without spin-orbit interactions. Including spin-orbit coupling cause to lifts the triple degeneracy at Gamma point and a double degeneracy at X point. Results are given for structural properties. The pressure dependence of elastic constants and band gaps are investigated. The dielectric function, reflectivity spectra and refractive index are calculated up to 30 eV. Also we calculated the pressure and volume dependence of the static optical dielectric constant.
This article considers the order selection problem of periodic autoregressive models. Our main goal is the adaptation of the Bayesian Predictive Density Criterion (PDC), established by Djuric' and Kay (1992) for selecting the order of a stationary autoregressive model, to deal with the order identification problem of a periodic autoregressive model. The performance of the established criterion, (P-PDC), is compared, via simulation studies, to the performances of some well-known existing criteria.
We propose in this study, a practical modification of Karmarkar's projective algorithm for linear programming problems. This modification leads to a considerable reduction of the cost and the number of iterations. This claim is confirmed by many interesting numerical experimentations. (C) 2007 Elsevier Inc. All rights reserved.
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Year: 2008
Title: Cannabis Smoking and Risk of Lung Cancer in Men A Pooled Analysis of Three Studies in Maghreb
Journal: Journal of Thoracic Oncology
Volume: 3
Issue: 12
Pages: 1398-1403
Date: Dec
Short Title: Cannabis Smoking and Risk of Lung Cancer in Men A Pooled Analysis of Three Studies in Maghreb
ISSN: 1556-0864
Accession Number: WOS:000261712300007

Abstract: Background: Cannabis is the most widely consumed illicit drug worldwide and the relation between cannabis smoking and lung cancer is suggestive, albeit inconclusive. Method: We conducted three hospital based case-control studies in Tunisia, Morocco, and Algeria, three areas of high prevalence of cannabis consumption as well as production. This paper presents the pooled analysis of these three Studies restricted to men with a total of 430 cases, and 778 controls. Results: Ninety-six percent of the cases and 67.8% of the controls were tobacco smokers and 15.3% of the cases and 5% of the controls were ever cannabis smokers. All cannabis smokers were tobacco users. Adjusting for country, age, tobacco smoking, and occupational exposure, the odds ratio (OR) for lung cancer was 2.4 (95% confidence interval [CI]: 1.6-3.8) for ever cannabis smoking. This association remained after adjustment for lifetime tobacco packyears as continuous variable, OR = 2.3 (95% CI: 1.5-3.6). The OR adjusted for intensity of tobacco smoking (cigarette/d) among current tobacco snickers and never cannabis smokers was 10.9 (95% CI: 6.0-19.7) and the OR among current tobacco users and ever cannabis smokers was 18.2 (95% CI: 8.0-41.0). The risk of lung cancer increased with increasing joint-years, but not with increasing dose or duration of cannabis smoking. Conclusion: Our results suggest that cannabis smoking may be a tobacco smoking or other potential confounders may explain part of the increased risk.

Notes: Berthiller, Julien Straif, Kurt Boniol, Mathieu Voirin, Nicolas Benhaim-Luzon, Veronique Ben Ayoub, Wided Dari, Iman Laouamri, Slimane Hamdi-Cherif, Mokhtar Bartal, Mohamed Ben Ayed, Fahrat Sasco, Annie J.
URL: <Go to ISI>://WOS:000261712300007
Effects of epoxidized sunflower oil on the mechanical and dynamical analysis of the plasticized poly(vinyl chloride)

Epoxidized soybean oil (ESBO), is one of the most commonly used epoxides because of its typical combined roles as a plasticizer and heat stabilizer. In this study, a novel plasticizer of poly(vinyl chloride) (PVC) resins, epoxidized sunflower oil (ESO), was synthesized, and its performance was evaluated. ESO was designed to act as a coplasticizer and a heat stabilizer like ESBO. ESO is used as organic coplasticizer for plasticized PVC containing Ca and Zn stearates as primary stabilizers and stearic acid as lubricant. Di-(2-ethylhexyl) phthalate (DEHP), a conventional plasticizer for PVC, was partially replaced by were investigated. The performance of ESO to ESBO (20 g) for comparison, indicated that ESO could be used as secondary plasticizer for PVC in combination with DEHP. All mechanical and dynamical properties of plasticized PVC sheets varied with the oxirane oxygen of the ESO. (c) 2007 Wiley Periodicals, Inc.

Notes: Bouchareb, Badra Benaniba, Mohamed Tahar
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Author: Boucherit, S. Bouamama, L. Benchickh, H. Lenoir, J. M. Simoens, S.
Year: 2008
Title: Three-dimensional solid particle positions in a flow via multiangle off-axis digital holography
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Short Title: Three-dimensional solid particle positions in a flow via multiangle off-axis digital holography
ISSN: 0146-9592
DOI: 10.1364/ol.33.002095
Accession Number: WOS:000259891400026
Abstract: We present a new development of digital off-axis (OA) holography for determining the instantaneous solid particle positions in a flow. This holographic imaging method uses a CCD camera for the simultaneous digital recording of two views of digital Fresnel OA holograms on the same support. The reconstruction is obtained numerically. The method provides two orthogonal views of the same flow area of interest at the same instant. It helps to overcome the depth of focus problem existing for the particle image reconstructions and that is inherent to the method. This method has the advantage of being simpler than the methods presently available, and it does not suffer from the flaws of in-line holographic configuration. Furthermore it is completely digital and thus avoids the cumbersome analysis following hologram recording. Digital holograms and digital reconstructions are obtained for solid particles of 200 μm moving into a stirred flow cell of 5 cm(3). (c) 2008 Optical Society of America
Notes: Boucherit, Sebti Bouamama, Larbi Benchickh, Halim Lenoir, Jean-Michel Simoens, Serge
URL: <Go to ISI>:://WOS:000259891400026
This paper studies the impact of wireless technologies on enterprises. A multitude of new paradigms and new software technologies have emerged from the web. E-business' and e-manufacturing have really transformed concepts and practices in enterprises. Wireless technologies added new possibilities for these technologies, by this work we propose m-manufacturing as a component of e-manufacturing when practiced in mobile environment, then compare e-manufacturing to m-manufacturing. We applied our proposed approach to model m-maintenance of spare parts. Combination of mobile agent technology and fault-tolerant principles has given an appropriate global solution to m-maintenance issues.
Abstract: The suburban agriculture in Setif which is mainly based on the specialized agricultural activities (cereals, animal production) has an important role. Its economic and social values are regarded in terms of the hugeness of its areas, the number of its manpower and the quality of its production. It covers 75% of the municipality surface and production systems are generally organized according to the climatic conditions. However, the new, rapid and diffused urban growth greatly affects these traditional structures. It is subjected to different inconvenient factors from the nearby urban area and has difficulties in functioning due to vandalism of the cultures, neighboring conflicts often due to environmental problems such as degradation of the material, defection of irrigation network, illegal grazing, soil stamping, car traffic, etc. The conversion of agricultural lands, generally of high quality, into non-agricultural lands results mainly from the urban development at the expense of agriculture. The socio-economic needs in land have rendered the agricultural activities difficult and decreased the agriculture in suburban areas. Landscape is not considered as an essential structure by the city. Urban planning, decided only by the elected members, is somewhat inefficient in terms of agricultural land protection. Paradoxically, the laws of protection exist but are not applied. Four major considerations have been pointed out by this study: the constraints generated by the suburban agriculture in Setif, the situation of the agricultural land, the high urban pressure and its consequences, and the need to define the place of the suburban agriculture in the sustainable development of the city.
We use the Lewis-Riesenfeld theory to determine the exact form of the wavefunctions of a two-dimensional Pauli equation of a charged spin 1/2 particle with time-dependent mass and frequency in the presence of the Aharonov-Bohm effect and a two-dimensional time-dependent harmonic oscillator. We find that the irregular solution at the origin as well as the regular one contributes to the phase of the wavefunction. (c) 2008 American Institute of Physics.
During lactic acid fermentation, an inhibitory effect was recorded during seed cultures, usually carried out without pH control; while nutritional limitations (nitrogen) were observed during cultures, carried out at pH controlled at 5.9, which ceased when carbon became limiting. To avoid the use of two different expressions, depending on culture conditions, a generalized model for production was developed, involving a unique expression taking into account both a nutritional limitation and an inhibitory effect. In some conditions, namely at acidic pH control, the model failed to describe accurately growth- and non-growth-associated production. Therefore, the inhibitory term related to the undissociated lactic acid inhibition was added in the growth relation (modified Verlhust model), instead of the production model. The modified Verlhust model allowed a dissociation of the inhibitory and the nutritional effects. A modified Luedeking-Piret expression, involving a carbon substrate limitation to account for cessation of production was considered for the production model. This model proved to satisfactorily describes growth and production data in the wide range of culture conditions examined; it also allowed a fine identification and characterization of growth and production parameters. (c) 2007 Elsevier B.V. All rights reserved.
An efficient 8 x 8 sparse orthogonal transform matrix is proposed for image compression by appropriately introducing some zeros in the 8 x 8 signed discrete cosine transform (SDCT) matrix. An algorithm for its fast computation is also developed. It is shown that the proposed transform provides a 25% reduction in the number of arithmetic operations with a performance in image compression that is much superior to that of the SDCT and comparable to that of the approximated discrete cosine transform.
Reversibly crosslinked blends of isotactic polypropylene and low density polyethylene (iPP/LDPE) were prepared in the presence of crosslinking agents using reactive extrusion. The structure and properties of the modified blends were investigated by means of wide-angle X-ray scattering (WAXS), differential scanning calorimetry (DSC), and macro- and micro-mechanical measurements. The crystallinity of the modified samples (LDPE, iPP, and their blends) does not seem to be so much affected by the crosslinking process. Results show that the microhardness of the iPP/LDPE blends notably increases with the iPP content. The micromechanical properties of the modified blends only improve slightly as a consequence of the crosslinking process. In the iPP samples, and also in the iPP/LDPE blends, this process gives rise to the appearance of new, crystalline ethylenic chains, as evidenced by the calorimetric measurements. Furthermore, the impact strength of the modified materials is improved as compared with that of the original ones, while some of the crosslinked blends show a ductile fracture behavior. (C) 2008 Wiley Periodicals, Inc.
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Author: Bouhemadou, A.
Year: 2008
Title: Elastic constants and high pressure structural transitions in yttrium pnictides
Journal: Computational Materials Science
Volume: 43
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Short Title: Elastic constants and high pressure structural transitions in yttrium pnictides
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DOI: 10.1016/j.commatsci.2008.03.006
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Abstract: We present first-principles calculations on the structural, elastic and high pressure properties of yttrium pnictide compounds, using the pseudo-potential plane-waves approach based on density functional theory, within the generalized gradient approximation. Results are given for lattice constant, bulk modulus and its pressure derivative. The pressure transition at which these compounds undergo structural phase transition from NaCl-type (B1) to CsCl-type (B2) structure is calculated and compared with previous calculations and available experimental data. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's modulus and Poisson's ratio of the B1 phase for YN, YP, YAs and YSb compounds. We estimated the Debye temperature of these compounds from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of YN, YP, YAs and YSb compounds, and it still awaits experimental confirmation. (C) 2008 Elsevier B.V. All rights reserved.
Notes: Bouhemadou, A.
URL: <Go to ISI>:://WOS:000260916900070
Bouhemadou, A.

2008

Calculated structural and elastic properties of M2InC (M = Sc, Ti, V, Zr, Nb, Hf, Ta)

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Calculated structural and elastic properties of M2InC (M = Sc, Ti, V, Zr, Nb, Hf, Ta)

0217-9849

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WOS:000259234700003

Using ab initio calculations, we have studied the structural and elastic properties of M(2)Inc, with M = Sc, Ti, V, Zr, Nb, Hf and Ta. Geometrical optimization of the unit cell is in agreement with the available experimental data. We have observed a quadratic dependence of the lattice parameters versus the applied pressure. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline M2InC aggregates. We estimated the Debye temperature of M2InC from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Sc2InC, Ti2InC, V2InC, Zr2InC, Hf2InC and Ta2InC compounds, and it still awaits experimental confirmation.

Bouhemadou, A.

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Using first-principles calculations, we have studied the structural and elastic properties of M2SnC, with M = Ti, Zr, Nb and HE Geometrical optimization of the unit cell is in good agreement with the available experimental data. The effect of high pressures, up to 20 GPa, on the lattice constants shows that the contractions along the a-axis were higher than those along the c-axis. We have observed a quadratic dependence of the lattice parameters versus the applied pressure. The elastic constants and their pressure dependence are calculated using the static finite strain technique. A linear dependence of the elastic stiffnesses on the pressure is found. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline M2SnC aggregates. We estimated the Debye temperature of M2SnC from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Ti2SnC, Zr2SnC, Nb2SnC, and Hf2SnC compounds. (C) 2008 Elsevier B.V. All rights reserved.
Theoretical study of the structural, elastic and electronic properties of the GeX2O4 (X = Mg, Zn, Cd) compounds under pressure

Abstract: The effect of high pressures, up to 30GPa, on the structural, elastic and electronic properties of GeX2O4, with X = Mg, Zn and Cd, were studied by means of the pseudo-potential plane waves method within the local density approximation for exchange and correlation. The results of bulk properties, including lattice constants, internal parameters, bulk modulus and derivatives are obtained. The band structures show a direct (Gamma-Gamma) band gap for the three compounds. All the calculated band gaps increase with increasing pressure and fit well to a quadratic function. The analysis of the density of states revealed that the lowering of the direct gap Gamma-Gamma from GeMg2O4 to GeZn2O4 to GeCd2O4 can be attributed to the p-d mixing in the upper valence band of GeZn2O4 and GeCd2O4. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We have observed a linear dependence of the elastic moduli on the pressure. We derived the bulk modulus, shear modulus, Young's modulus and Poisson's ratio for ideal polycrystalline GeX2O3 aggregates. We estimated the Debye temperature of GeX2O4 from the average sound velocity.
The structural and elastic properties under pressure effect of Hf$_2$AlN and Hf$_2$AlC have been studied using the pseudo-potential plane-waves method based on density functional theory. Lattice parameters and their pressure dependence as well as elastic constants and their pressure dependence were calculated. We derived the bulk and shear moduli, Young's modulus and Poisson's ratio for ideal polycrystalline Hf$_2$AIX aggregates. We estimated the Debye temperature of Hf$_2$AIX from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Hf$_2$AlC and Hf$_2$AlN compounds, and it still awaits experimental confirmation.
First principles study of structural, elastic, electronic and optical properties of the cubic perovskite BaHfO₃

Abstract: First principles study of structural, elastic, electronic and optical properties of the cubic perovskite-type BaHfO₃ has been reported using the pseudo-potential plane wave method within the local density approximation. The calculated equilibrium lattice is in a reasonable agreement with the available experimental data. The elastic constants and their pressure dependence are calculated using the static finite strain technique. A linear pressure dependence of the elastic stiffnesses is found. Band structures show that BaHfO₃ is a direct band gap between the occupied O 2p and unoccupied Hf d states. The variation of the gap versus pressure is well fitted to a quadratic function. Furthermore, in order to understand the optical properties of BaHfO₃, the dielectric function, absorption coefficient, optical reflectivity, refractive index, extinction coefficient, and electron energy loss are calculated for radiation up to 30 eV. We have found that O 2p states and Hf 5d states play a major role in the optical transitions as initial and final states, respectively. This is the first quantitative theoretical prediction of the elastic, electronic and optical properties of BaHfO₃ compound, and it still awaits experimental confirmation. (C) 2008 Elsevier B.V. All rights reserved.
Using ab initio calculations, we have studied the structural, electronic and elastic properties of M2SC (M = Ti, Zr, Hf) compounds. Geometrical optimization of the unit cell are in good agreement with the available experimental data. The band structures show that all three materials are conducting. The analysis of the site and momentum projected densities shows that the bonding is achieved through a hybridization of M-atom d states with S and C-atom p states. The Md-Sp bonds are lower in energy and are stiffer than Md-Cp bonds. The elastic constants are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline M2SC aggregates. We estimated the Debye temperature of M2SC from the average sound velocity. This is a quantitative theoretical prediction of the elastic properties of Ti2SC, Zr2SC, and Hf2SC compounds, and it still awaits experimental confirmation. (C) 2008 Elsevier B.V. All rights reserved.
The elastic, electronic and optical properties of the filled tetrahedral semiconductor LiCdP have been investigated using the pseudo-potential plane wave method within the local density functional theory. A numerical first-principles calculation of the elastic constants was used to calculate $C_{11}$, $C_{12}$ and $C_{44}$. The values of the sound velocities in different directions have been calculated. We derived the bulk and shear moduli, Young modulus and Poisson's ratio for ideal polycrystalline LiCdP. We estimated the Debye temperature of LiCdP from the average sound velocity. Band structures show that LiCdP is a direct band gap. The density of states and Mulliken charge populations analysis show that the Cd-P bond is typically covalent with a strong hybridization as well as that the Li-P bond has a significant ionic character. The variation of the gap versus pressure is well fitted to a quadratic function and a direct to an indirect band gap transition occurs at 6.80 GPa. Furthermore, the dielectric function, optical reflectivity, refractive index, extinction coefficient and electron energy loss are calculated for radiation up to 20 eV. The results are compared with the available theoretical and experimental data.
Using first-principles calculations, the structural and elastic properties of Sc(2)AC, with A = Al, Ga, In and Tl, were studied by means of the pseudo-potential plane-waves method. Calculations were performed within the local density approximation to the exchange-correlation approximation energy. The effect of high pressures, LIP to 20 GPa, on the lattice constants and the internal parameters is calculated. The elastic constants are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline Sc(2)AC aggregates. We estimated the Debye temperature of Sc(2)AC from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Sc2AlC, Sc2GaC, Sc2InC and Sc2TlC compounds, and it still awaits the experimental confirmation. (C) 2008 Elsevier Ltd. All rights reserved.
We have theoretically studied the structural, magnetic, and magneto-optical behaviours of Fe ultra-thin films pseudomorphically epitaxied on semi-infinite Ir(001). The magnetic film crystallizes in the body-centered tetragonal (bct) structure with a tetragonality ratio 1.21. The new crystalline structure of iron in the magnetic film enhances the magnetic properties and a correlation between the interlayer spacing and the magnetic moment is found. The calculation of the magnetic properties shows a ferromagnetic interlayer coupling. The polar magneto-optical Kerr effect (P-MOKE) spectra are calculated over a photon energy range extended to 10 eV. The microscopic origin of the most interesting features is explained from interband transitions in various regions of the Brillouin zone.
A mathematical model is presented which describes the diffusion of oxygen in absorbing tissue, and numerical solution of its partial differential equation is obtained by the finite difference equations. The diffusion with absorption model is associated with the process of a moving boundary which marks the furthest penetration of oxygen in the absorbing cylindrically shaped sections of tissue and also allows for an initial distribution of oxygen through the absorbing tissue. Copyright (C) 2007 John Wiley & Sons, Ltd.
A mathematical model is developed for the simulation of the amperometric response of a biosensor for catechol using polyphenoloxidase. The model is based on transient diffusion equations containing nonlinear terms of Michaelis-Menten for two space regions: the diffusion layer and the biomembrane containing the immobilized enzyme. The set of partial derivatives of nonlinear equations and the corresponding boundary and initial conditions was solved using the implicit finite difference technique. This numerical solution was then exploited to study the effects of permeability and thickness of the biomembrane on the maximum response of the reduction current and the amplification factor corresponding to the maximum of catalytic activity of the enzyme. This amplification factor increases with the thickness of the biomembrane while permeability is weak. In the case of the low initial concentrations (10(-6) to 5.10(-4) mM), its value is maximal and remains independent of substrate concentration. Also, the amplification factor is more significant when the diffusion resistance is more important, i.e. for high thicknesses or weak permeabilities of the biomembranes.


URL: <Go to ISI>://WOS:000260526300005
Abstract: This paper presents a new control method entitled direct power control (DPC for shunt active power filtering (5th, 7th, 11th,...) (SAPF), which is applied to eliminate line current harmonics and compensate reactive power. Its main goal is to rebuild active and reactive powers to be compared to references values using hysteresis control. The outputs of hysteresis controllers associated with a switching table, control the instantaneous active and reactive power by selecting the optimum switching state of the voltage source inverter(VSI). A theoretical analysis with a complete simulation of the system and experimental results are presented to prove the excellent performance of the proposed control technique. (c) 2008 Elsevier Ltd. All rights reserved.
Abstract: In thin target and sub-volumes, electronic energy losses in single collisions vary considerably for individual charged particles. These fluctuations resulting from the stochastic nature of the interactions can be described through a simulation with Monte Carlo calculations. Models used in the present simulations to describe the electron scattering processes are derived from quantum mechanics. The resulting cross sections for energies up to 200 keV are shown for both processes, i.e. elastic and inelastic interactions. Influence of the Monte Carlo strategy adopted to calculate energy loss spectra (straggling functions) is discussed. Stragglng functions calculated from the general purpose Monte Carlo code Penelope and the convolution method of Bichsel are included for comparisons. The results are new. In fact, disagreements have been found in the calculated energy spectra when using different strategies. These deviations are explained in the present study by investigating the thickness dependence on the electron energy. As a central result, energy deposition in silicon detectors can be described accurately when event by event Monte Carlo strategy is used. (C) 2008 Elsevier B.V. All rights reserved.

Notes: Chaoui, Zine-El-Abidine

URL: <Go to ISI>:\WOS:000261824100003
This paper presents a new method to determine the five solar cell parameters of the single diode lumped circuit model. These parameters are usually the saturation current, the series resistance, the ideality factor, the shunt conductance and the photocurrent. This method is based on the measured current-voltage data. The method has been successfully applied to a commercial silicon solar cell, a module and an organic solar cell. (C) 2008 Elsevier Ltd. All rights reserved.
The title compound, C(9)H(11)N(3)O(4) center dot H(2)O, was prepared by the reaction of dehydroacetic acid and semicarbazide hydrochloride. It crystallizes in a zwitterionic form with cationic iminium and anionic enolate groups. In the crystal structure, the almost planar molecules are held together by N-H center dot center dot center dot O, O-H center dot center dot center dot O, and C-H center dot center dot center dot O hydrogen bonds, some of them involving the water molecules.
Clutch size is an important life history trait, and factors such as nest predation and food availability can both be of crucial importance for its variation in nature. The aim of the present Study was to evaluate the effects of extra food on clutch size, laying date and hatching success in the White Stork. Three different colonies of White Storks were studied in northern Algeria over a three-year period (2002-2004) that was characterised by considerable variation in both food availability and precipitation. This study demonstrated that an extra food supply during the pre-laying period had a positive effect on clutch size - nests with extra food had larger clutches. There was also an advance in laying date and a greater hatching success in nests with access to extra food. In addition to food supply, clutch size was independently affected by the year, which could have been due to differences in rainfall. Furthermore, the results of this study suggest that extra food during the incubation period could help the parent birds resolve the conflict between incubation behaviour and minimizing the time off the nest, i.e. increasing nest attentiveness in nests with extra food and enhancing hatching success.
Intra-brood food distribution in altricial birds can strongly affect nestling competitive hierarchies and subsequent brood reduction. Food allocation patterns result from scramble competitions among the nestlings, various forms of parental favoritism, and/or agonistic interactions among nestlings. Food allocation is related to agonistic interactions among nestlings or to parental favouritism in non-aggressive species. Since white stork chicks are not aggressive and they do not receive direct feeding, parental infanticide has been proposed as an alternative mechanism to control brood reduction. The capacity of white stork parents to control food allocation was examined. We hypothesized that parents favour the senior chick by adjusting prey size to suit its ingestion capacity. We experimentally manipulated (Spain 1996 and Algeria 2004) nestling size by exchanging the senior chick for a larger one. After the exchange parents delivered longer and heavier prey items and they increased the total food amount delivered to the brood, which benefited not only the senior chick but also its smaller nestmate. We also discuss the effect of environmental conditions over brood reduction by comparing chick mortality, intrabrood weight asymmetries and fledging success in years with above (2003 and 2004) and below (2002) average rainfall in the area. We conclude that parents may control intra-brood food distribution which enables them to invest more in larger sibs but not (under favourable conditions) at the expense of junior chicks.
In this study many composites based on low density polyethylene (LDPE) with calcium carbonate (CaCO₃) and maleic anhydride-grafted polyethylene (MAH-g-LDPE) as a compatibilizer have been investigated in order to study their behavior and the reinforcing mechanisms involved. Different types of chemical modifications of the filler surface were carried out in an attempt to enhance the interactions with the polymeric matrix by using silane and zirconate coupling agents. The compatibilizer was created using a single screw extruder by impregnating LDPE granulates with a solution obtained by dissolving in acetone the dicumyl peroxide used as the initiator for the grafting reaction, maleic anhydride as the grafting monomer, and triphenyl phosphine (TPP) as the stabilizer. Titration measurements indicated that the extent of grafting achieved was 0.21% by weight. The composites containing different concentrations of untreated CaCO₃ and those treated with 2% of the compatibilizer were prepared by melt mixing using a two roll mill. It was found that the mechanical properties, which depended greatly on the state of the dispersion of the filler as well as the nature of the interface, were relatively better than the composites prepared by the humid method. Higher reinforcement was obtained with the composites treated with the zirconate coupling agent than those modified with the silane coupling agent.
This study deals with the chemical modification of calcium carbonate (CaCO3) by means of coupling agents and its effect on the mechanical, rheological, and thermal properties of the ternary composite of low density polyethylene (LDPE), calcium carbonate (CaCO3), and maleic anhydride-grafted low density polyethylene (MAH-g-LDPE). The variations in the properties were dependent on the treatment method and on the nature and extent of the interactions developed between the filler particles, the matrix and the compatibilizer. The impact resistance results revealed a transition in the behavior of the composite from ductile to brittle. This embrittlement becomes more pronounced as the concentration of CaCO3 and that of the coupling agents are increased. The rheological characterization showed that the interactions developed at the interface greatly affected the flow of the material. The differential scanning calorimetry results showed that even though the fusion temperature and the crystallization temperature were not influenced by the filler or by its treatment, crystallization was altered. Finally, the thermogravimetric analysis showed that the dispersion and the adhesion of the filler with the matrix significantly affect the thermal stability.
Purpose - This study aims to calculate 2D free surface potential flow of a liquid poured from a container when the liquid runs along the underside of the spout.

Design/methodology/approach - The effect of surface tension is taken into consideration and gravity is neglected. The solutions for the free-surface profiles were computed numerically using a boundary-integral equation. Findings - The numerical computation shows that the solutions are found for different values of a and a train of capillary waves in the far field for $4.16 \leq \alpha < 10$. Research limitations/implications - No solutions were found for $\alpha < 4.16$.

Originality/value - The study provides an application of the use of cybernetic methodology to a practical problem.

Notes: Guechi, F. Mekias, H.

URL: <Go to ISI>://WOS:000257527800005
This study was performed in order to evaluate the effects of transesterification reactions on the thermal properties of the PC/PET system, as a function of homopolymer and exchange catalyst concentrations. DSC results support well that when transesterification occurs, the glass transition temperature of the PC-rich phase decreases with the increase of the catalyst's concentration. The evaluation of the PC-rich phase composition using Wood's equation showed its strong dependence on the catalyst concentration and on the initial amount of homopolymers in the system. Furthermore, it was found that the thermal stability of the studied blends falls in between those of the two homopolymers and shows an evident improvement relatively to that of the neat PET.
The effects of mixing conditions and transesterification catalyst concentration on the structural, thermal and morphological properties of a 50/50 polycarbonate (PC)/poly (ethylene terephthalate) (PET) system were investigated by differential scanning calorimetry (DSC), scanning electron microscopy (SEM) and by solubility measurements. From the increase in the solubility of the blends in dichloromethane and the decrease of their degree of crystallinity, it was concluded that on increasing the mixing time and the catalyst concentration, transesterification becomes more important. Thermal analysis revealed also a noticeable increase of the crystallization temperature and a slight decrease of the melting temperature. These results suggest that when transesterification occurs extensively, the crystallization tendency declines progressively until finally a completely soluble material is obtained as revealed by solubility measurements.
We report on the effect of thickness on the structural and electrical properties of permalloy thin films Ni81Fe19 (Py). Permalloy films were deposited onto Si(100) substrates at room temperature using a KrF (wavelength of 248 nm, pulse duration of 30 ns) excimer laser at a fluence of 3 J/cm². The thickness ranges from 25 nm to 250 nm. The micrographs reveal the formation of irregular droplets with dimensions between 4.6 μm and 0.24 μm. We show that all samples presented a strong <100> texture. The lattice constant (a) monotonously increases with increasing thickness. Also, we note that for thickness below 127 nm, the lattice constant (a) is lower than the bulk value, however, for thickness more than 127 nm, (a) is higher than a(bulk). The grain size increases from 30 nm to 54 nm as the thickness increases from 45 nm to 250 nm. The different contributions to the electrical resistivity are investigated as a function of the Py thickness.

Notes: Guittoum, A. Layadi, A. Kerdja, T. Lafane, S. Bouterfaia, S.

URL: <Go to ISI>://WOS:000257337500008
The moderate-pressure elastic properties of potassium halides KX (X=F, Cl, Br) was studied theoretically using the density functional theory (DFT) with normconserving pseudopotentials method. The phase transformation from the B1 phase (NaCl-type structure) to the denser B2 phase (CsCl-type structure) occurred at 7.7, 3.46 and 2.96 GPa for KF, KCl and KBr, respectively. The elastic stiffness coefficients and bulk modulus of these materials were calculated as function of hydrostatic pressure and compared with both the experimental and theoretical values.
The effect of temperature on the characteristics of GaAs/AlGaAs quantum cascade lasers operating in the mid-infrared range is theoretically investigated and compared with reported experimental results. We have included the dependence of the phonon scattering rate linewidth variations and thermionic lifetime, on temperature. It is found that the characteristics depend strongly on temperature. Our model yields threshold current densities in good agreement with the experiments. The effect of injection efficiency on the unsaturated modal gain is also considered. (C) 2008 Elsevier B.V. All rights reserved.
The band structure and optical properties of the CdSexTe1-x ternary mixed crystals have been studied using the pseudopotential formalism under an improved virtual crystal approximation approach. Quantities such as, energy gaps, band-gap bowing parameters, electron effective mass and dielectric constants are calculated. Our results agree well with the available data in the literature. The composition dependence of all studied quantities has been expressed by quadratic polynomial forms. (C) 2008 Elsevier Ltd. All rights reserved.
Using first-principle density functional calculations, the structural, electronic and magnetic properties of cubic perovskite LaMnO$_3$ were studied by means of the full-potential linear muffin-tin orbital method. Calculations were performed within the local spin density approximation (LSDA) to the exchange correlation potential. The magnetic phase stability was determined from the total energy calculations for both ferromagnetic (FM) and non-magnetic (NM) phases. Our calculations show that the magnetic phase is more stable than the non-magnetic phase. To our knowledge the elastic constants of this compound have not yet been measured or calculated, hence our results serve as a first quantitative theoretical prediction for future study. Additionally, the band structure, the density of state and the magnetic moments were analyzed. (C) 2009 Elsevier Ltd. All rights reserved.
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Author: Hannat, S. Khettabi, S. Chermat, R. Nechadi, A. Malek, R.
Year: 2008
Title: Trophic diabetic foot lesions. Regarding 236 cases
Journal: Diabetes & Metabolism
Volume: 34
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Date: Mar
Short Title: Trophic diabetic foot lesions. Regarding 236 cases
ISSN: 1262-3636
Accession Number: WOS:000255327900249
Notes: Hannat, S. Khettabi, S. Chermat, R. Nechadi, A. Malek, R.
URL: <Go to ISI>://WOS:000255327900249
We study the thermal stability, local structure, and electrical properties of the alpha-MnO\(_2\) phase doped with Sn and Co. It is found that doping prevents the transformation from alpha-MnO\(_2\) to alpha-Mn\(_2\)O\(_3\) that occurred in the temperature range of 500-600 degrees C. Samples have been synthesized in an acidic medium using the reduction of potassium permanganate by fumaric acid. X-ray diffraction patterns (XRD) of pure and doped alpha-MnO\(_2\) prepared at 450 degrees C do not show new peaks related to dopant species. Thermogravimetric analysis (TGA) of the Sn and Co doped MnO\(_2\) reveals that transformation from MnO\(_2\) to alpha-Mn\(_2\)O\(_3\) starts above 700 degrees C. The increase in the thermal stability is attributed to the presence of Sn or Co ions incorporated inside the large 2 x 2 tunnels as revealed by Fourier transform infrared (FTIR) spectra measurements. An increase in the electrical conductivity with the presence of Sn or Co ions is observed. Electrochemical features of the doped MnO\(_2\) samples in alkaline cells are reported and compared with that of the pristine alpha-MnO\(_2\) phase.
We have studied the effect of substrates [glass and Si(100)], of Ni thickness (t(Ni)) and of the deposition rate [v(1) = 13 nm/min and v(2) = 22 nm/min] on the structural and electrical properties of evaporated Ni thin films. The Ni thickness, measured by the Rutherford backscattering (RBS) technique, ranges from 28 to 200 nm. From X-ray diffraction, it was found that all samples are polycrystalline and grow with the <111> texture. From the measure of the lattice constant, we inferred that Ni/Si samples are under a higher tensile stress than the Ni/glass ones. Moreover, in Ni/glass deposited at nu(1), stress is relived as t(Ni) increases while those deposited at nu(2) are almost stress-free. The grain size (D) in Ni/glass with low deposition rate monotonously increases (from 54 to 140 angstrom) as t(Ni) increases and are lower than those corresponding to Ni/Si. On the other hand, samples grown at nu(2) have a constant D(i) for small t(Ni) with D in Ni/glass larger than D in Ni/Si. Ni/glass deposited at low nu(1) are characterized by a higher electrical resistivity (ρ) than those deposited at nu(2). For the litter series, ρ is practically constant with t(Ni) but decreases with increasing grain size, indicating that diffusion at the grain boundaries rather than surface effect is responsible for the variation of ρ in this thickness range. For the Ni/glass deposited at nu(1) and the Ni/Si series, ρ has a more complex variation with thickness and deposition rate. These results will be discussed and correlated.

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Notes: Hemmous, M. Layadi, A. Guittoum, A. Bourzami, A. Benabbas, A.

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Reference Type: Journal Article
Record Number: 67
Author: Houcher, B. Bourouba, R. Djabi, F. Houcher, Z.
Year: 2008
Title: The prevalence of neural tube defects in Setif University Maternity Hospital, Algeria-3 years review (2004-2006)
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Short Title: The prevalence of neural tube defects in Setif University Maternity Hospital, Algeria-3 years review (2004-2006)
ISSN: 0933-4807
Accession Number: WOS:000259454000002
Abstract: Neural tube defects (NTDs) including spina bifida, anencephaly and encephalocele are among the most common birth defects, with high associated mortality and morbidity. There are no data concerning the incidence, associated anomalies, treatment and outcome of NTDs in Algeria. The objective of this study is to analyse data on NTD cases from 2004-2006 at Setif Hospital, a hospital with 8,000-10,000 deliveries annually. A retrospective chart review of patients with NTDs was performed, who were born at Setif Hospital 2004-2006. During the 3 year period we examined, there were 215 patients with NTDs treated in the Setif Hospital. The incidence of NTD is 7.5 per 1,000 births. The sex distribution was not equal among NTD cases, 126 (58.6%) females, 88 (40.9%) males and one (0.5%) unidentified sex. Among all NTD cases, there were 122 (56.7%) with spina bifida, 69 (32.1%) with anencephaly, 1 (0.5%) with encephalocele and 23 (10.7%) with anencephaly and spina bifida. Hundred and seventeen (54.4%) cases died in utero and 4 cases (1.9%) unknown. The rate of consanguinity among all NTD cases was 13% (28/215). The rate of affected newborns was highest in mothers aged 31-35 years (21.9%). The peak prevalence was in June (15.8%). A half of NTDs were spina bifida and there was a high rate of mortality. This study demonstrates that NTD represents a significant public health problem in Algeria. In Algeria there were no population-wide educational campaigns about folic acid or its association with the prevention of birth defects. Public health interventions aimed at increasing the periconceptional consumption of folic acid should be implemented or enhanced to reduce the incidence of NTDs in Algeria.
URL: <Go to ISI>://WOS:000259454000002
In this paper, we propose a time-varying vector two-sided autoregressive (VTAR) model for time-frequency analysis of multichannel signals. The multichannel approach is suitable in many applications, such as electroencephalogram analysis and spatial data processing, where the signals are recorded from several sensors, giving rise to vector or multichannel processes. In VTAR modeling, the current sample of the signal in some channel is estimated by a symmetrically weighted sum of past and future samples of this channel as well as of the other channels. The multidimensional VTAR parameters are assumed to be time varying and they are modeled as a linear combination of a set of basis functions. The recursive least-squares algorithm is used to estimate the coefficients of the linear combination. The VTAR model requires a smaller order than the conventional vector autoregressive (VAR) model to achieve better resolution in the time-frequency plane. Numerical examples are given in order to compare the VTAR-based time-frequency distribution with the conventional VAR-based time-frequency distribution and the Choi-Williams distribution.
A method for the solution of the neutron transport equation in three-dimensional case by using Walsh function and the Sumudu transform formulation is presented. The main characteristic of this technique is that it reduces these problems to those of solving a system of algebraic equations, thus greatly simplifying the problem.
We report on the carrier doping effect (achieved through La doping) on the electronic structure, crystalline structure, grain morphology, and electric and magnetic properties of the ferromagnetic perovskite Sr$_2$FeMoO$_6$. X-ray diffraction on Sr$_2$-$x$La$_x$FeMoO$_6$ ($x=0$, 0.25, 0.5, and 1) ceramic powders shows that all compounds have the tetragonal crystal structure with I4/mmm symmetry. The cell parameter $a$ and the volume of the tetragonal structure increase with the La doping and the grain size is halved with respect to that of undoped Sr$_2$FeMoO$_6$. Mossbauer spectroscopy shows that the presence of La reduces the degree of ordering on the Fe and Mo sites which causes a reduction of the saturation magnetization $M_S$. However, the addition of electrons in the system results in an increase of the Curie temperature of the Sr$_2$FeMoO$_6$. All these results are supported by ab initio calculations which indicate that the half-metallic character is preserved upon doping and that the magnetization decreases for perfect samples by 1 mu(B)/La atom in a formula unit.

Notes: Kahoul, A. Azizi, A. Colis, S. Stoeffler, D. Moubah, R. Schmerber, G. Leuvrey, C. Dinia, A.

URL: <Go to ISI>:://WOS:000262225100072
A large database containing about 5400 experimental K-shell ionization cross-sections by protons for elements from Be to U is collected from various sources and compilations available in the literature from 1953 to 1999. The data are divided into groups corresponding to their atomic numbers and fitted separately by analytical functions to deduce empirical K-shell ionization cross-sections. The deduced empirical K-shell ionization cross-sections are presented together with the reference ones obtained by Paul and Sacher for selected elements [H. Paul, J. Sacher, At. Data Nucl. Data Tables 42 (1989) 105]. The two sets of results are compared to the calculations within the ECPSSR theory and discussed. (C) 2008 Elsevier B.V. All rights reserved.
According to the plane wave Born approximation (PWBA) and the binary encounter approximation (BEA) models, it is possible to fit the cross sections obtained with any atomic element at any particle energy using a scaling law for a K-shell. The semi-empirical K-shell ionization cross sections are then deduced by fitting the available experimental data normalized to their corresponding theoretical values. For the empirical K-shell ionization cross sections, a third-order polynomial was used to fit the same experimental data for protons. Our results are compared with the predictions of the ECPSSR theory and with other earlier works. Good agreement is obtained, but it is emphasized that the ultimate solution is to deduce the cross sections by fitting the available experimental data for each element separately. Copyright (c) 2008 John Wiley & Sons, Ltd.

Notes: Kahoul, A. Nekkab, M. Deghfel, B.

URL: <Go to ISI>:://WOS:000259539800010
We have performed first principles full-potential augmented plane wave plus local orbitals (FP-APW+lo) calculations within the local density approximation (LDA) and the generalized gradient approximation (GGA), with the aim to determine and predict the elastic constants and their pressure dependence for the alkali-metal sulfides Li2S, Na2S, K2S and Rb2S. The ground state properties are found to agree with the experimental and other theoretical results. The calculated elastic constants at zero pressure for Li2S and Na2S are compared with the available experimental data and other theoretical results. With regard to K2S and Rb2S, we are not aware of any experimental or theoretical data for the elastic constants and their pressure dependence, so that the data here represent the first determination of these quantities. The shear modulus, Young's modulus and the Poisson's ratio for these compounds are derived. The Debye temperature is also estimated from the average sound velocity. (c) 2008 Elsevier Ltd. All rights reserved.

Notes: Khachai, H. Khenata, R. Bouhemadou, A. Reshak, Ali. H. Haddou, A. Rabah, M. Soudini, B.

URL: <Go to ISI>://WOS:000258263200005
Series of CoxCr1-x thin films have been evaporated under vacuum onto Si (100) and glass substrates. Chemical composition and interface properties have been studied by modelling Rutherford backscattering spectra (RBS) using SIMNRA programme. Thickness ranges from 17 to 220 nm, and x from 0.80 to 0.88. Simulation of the energy spectra shows an interdiffusion profile in the thickest films, but no diffusion is seen in thinner ones. Microscopic characterizations of the films are done with X-ray diffraction (XRD) measurements. All the samples are polycrystalline, with an hcp structure and show a <0001> preferred orientation. Atomic force microscopies (AFM) reveal very smooth film surfaces. (c) 2008 Elsevier B.V. All rights reserved.

Notes: Kharmouche, A. Djouada, I.
URL: <Go to ISI>://WOS:000256815000015
Computer aided aroma design (CAAD) is likely to become a hot issue as the REACH EC document targets many aroma compounds to require substitution. The two crucial steps in computer aided molecular design (CAMD) are the generation of candidate molecules and the estimation of properties, which can be difficult when complex molecular structures like odours are sought and when their odour quality are definitely subjective whereas their odour intensity are partly subjective as stated in Rossitier's review [K.J. Rossitier, Structure-odour relationships, Chem. Rev. 96 (1996) 3201-3240]. In part I, provided that classification rules like those presented in part II exist to assess the odour quality, the CAAD methodology presented proceeds with a multi-level approach matched by a versatile and novel molecular framework. It can distinguish the infinitesimal chemical structure differences, like in isomers, that are responsible for different odour quality and intensity. Besides, its chemical graph concepts are well suited for genetic algorithm sampling techniques used for an efficient screening of large molecules such as aroma. Finally, an input/output eXtensible Markup Language (XML) format based on the aggregation of Chemical Markup Language (CML) and ThermoML enables to store the molecular classes but also any subjective or objective property values computed during the CAAD process. (C) 2008 Elsevier B.V. All rights reserved.


URL: <Go to ISI>://WOS:000259718200002
Abstract: Computer-aided aroma design (CAAD) is likely to become a hot issue as the REACH EC document targets many aroma compounds to require substitution. The two crucial steps in computer-aided molecular design (CAMD) are the generation of candidate molecules and the estimation of properties, which can be difficult when complex molecular structures like odours are sought and their odour quality are definitely subjective or their odour intensity are partly subjective as stated in Rossitier's review [K.J. Rossitier, Structure-odour relationships, Chem. Rev. 96 (1996) 3201-3240]. The CAAD methodology and a novel molecular framework were presented in part I. Part II focuses on a classification methodology to characterize the odour quality of molecules based on structure-odour relation (SOR). Using 2D and 3D molecular descriptors, linear discriminant analysis (LDA) and artificial neural network are compared in favour of LDA. The classification into balsamic/non-balsamic quality was satisfactorily solved. The classification among five sub-notes of the balsamic quality was less successful, partly due to the selection of the Aldrich's catalog as the reference classification. For the second case, it is shown that the sweet sub-note considered in Aldrich's catalog is not a relevant sub-note, confirming the alternative and popular classification of Jaubert et al. [J.N. Jaubert, C. Tapiero, J.C. Dore, The field of odour: toward a universal language for odour relationships, Perfumer Odourist 20 (2) (1995) 1-16], the field of odours. (C) 2008 Elsevier B.V. All rights reserved.


URL: <Go to ISI>://WOS:000259718200003
Tin dioxide layers have been prepared by vacuum evaporation of tin on ordinary glass substrates. Thickness of the deposited tin layers was 500 or 1000 angstrom. Enrichment in oxygen was ensured by a thermal annealing at temperatures between 300 and 500 degrees C, for 1, 2, 4, 6, 8 and 10 h. The layers were characterized using X-ray diffraction, environmental scanning electron microscopy and EDX analysis and conductivity by the 4 point method. Oxygen enrichment of these films during annealing at high temperature induces the formation of the nanocrystalline tin oxide. (C) 2007 Elsevier Ltd. All rights reserved.
The zero-field spin properties of GaAs/Ga0.67Al0.33As quantum wells are investigated numerically through extensive self-consistent computations for selected geometries. Different mechanisms are found to contribute to the Rashba parameter alpha, the main ones being the conduction band offsets and the bulk spin-orbit coupling constant discontinuities at interfaces. Mismatches at the interfaces of both the normal and parallel effective masses do contribute, but are about an order of magnitude less important. Addition of a Ga0.8Al0.2As step reduces a, while in a narrow well a vanishes for some specific doping profile. (c) 2007 Elsevier B.V. All rights reserved.
In Algerian traditional medicine, the aerial parts of Ammoides atlantica (Coss. et Dur.) Wolf. (Apiaceae) are reported to have a wide range of biological activities such as antibacterial and antidiarrheic activity. The in vitro antibacterial activity of the oil was evaluated by Disc diffusion method against several strains of bacteria, and this activity was shown to be very strong against most of the tested microorganisms, especially Escherichia coli ATCC 25922, Staphylococcus aureus ATCC 25923, and Enterococcus faecalis ATCC 29212. The MIC was also carried out and Bacillus subtilis ATCC 6633 (vegetative form) resulted to be the most sensitive microorganism with a MIC value inferior to 6.25 mg/L. The essential oil was analyzed by GC and GUMS. The main components were thymol (53.2%), gamma-terpinene (19.4%) and p-cymene (10.6%).
Haustoria and associated regions of the host-pathogen interfaces of the autoecious rust Puccinia menthae, during mono- and dikariotic phases of development on its host Mentha spicata, differed in ultrastructural and cytochemical features. By application of the PA-TCH-SP procedure, polysaccharides were shown not only to be major constituents of the walls of intercellular hyphae, haustorial mother cells (HMC) and haustoria of both the monokaryon and dikaryon (m- and d-haustoria, respectively) of P. menthae, but were also present within the extra-haustorial matrix (EM) of both types of haustoria. In the neck region of d-haustoria, which is structurally more differentiated than in m-haustoria, there was evidence for the presence of lipopolysaccharides and glycoprotein. However, the characteristic neck-band, which stains densely in conventional staining of the d-haustorium, did not react with PA-TCH-SP.

The outermost layer of the dikaryotic HMC wall was completely digested by protease, whereas treatment with protease and cellulase did not affect either mono- or dikariotic intercellular hyphae or walls of m-haustoria, although these treatments indicated the presence of protein and cellulose in the EM. In dikaryotic infections, protein was found to be a major constituent of the EM. Cellulase treatment resulted in almost complete digestion of the host wall, except for a thin outer layer, whereas hyphal and haustorial walls were unaffected. The morphology and structural differences observed between the mono- and dikaryotic infection structures of P. menthae, and their interactions with host cells were clarified, and confirmed the possibility of their functional differences. Such information should facilitate further comparative studies on host-parasite interfaces at different stages of the rust life cycle and other biotrophic fungi.
Co₃O₄ and Mn₃O₄ nanoparticles dispersed on SBA-15: Efficient catalysts for methane combustion

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Co₃O₄ and Mn₃O₄ nanoparticles were successfully impregnated on SBA-15 mesoporous silica. A high dispersion of these metal oxide particles was achieved while using a "two-solvents" procedure, allowing a proper control of the metal oxides loading (7 wt%) and size (10-12 nm). These Co₃O₄ and Mn₃O₄ supported oxides on SBA-15 were characterised by means of XRD, BET and TEM techniques. The influence of the nature of the silica support was investigated in terms of porosity and specific surface area. Since, an improved catalytic activity was achieved over SBA-15 mesoporous silica; it appears that its organised porous meso-structure creates a confinement medium which permits a high dispersion of metal oxide nanoparticles. Supported Co₃O₄/SBA-15 (7 wt%) showed the highest catalytic performance in the combustion of methane under lower explosive limit conditions, comparable to perovskites. These materials become therefore novel efficient combustion catalysts at low metal loading.
Electronic band structure of calcium selenide under pressure

Energy band structures under pressure of calcium selenide (CaSe) were calculated using the plane-wave pseudopotential code CASTEP. The results show a progressive transition from a direct to an indirect gap semiconductor at a pressure of about 2 GPa, in the B1 phase. An insulator-conductor change was also observed at 70 GPa, in the B2 phase. Concerning CaSe, these two results could not be evidenced in previous literature. Hence, our work is a first attempt in this direction. (C) 2008 Elsevier B.V. All rights reserved.
By defining "a virtual gap" for the continuous spectrum through the notion of eigendifferential (Weyl's packet) and using the differential projector operator, we present a rigorous demonstration and discussion of the quantum adiabatic theorem and the validity condition of the adiabatic approximation for systems having a nondegenerate continuous spectrum. We show that a quantal system in an eigenstate, of operators with a continuous nondegenerate eigenvalue spectrum, slowly transported around a closed curve C by varying parameters in its Hamiltonian, will acquire a generalized geometrical phase factor where an explicit formula is derived in terms of the eigenstates of the Hamiltonian. Examples are given for illustration.
By defining "a virtual gap" for the continuous spectrum through the notion of eigendifferential (Weyl's packet) and using the differential projector operator, we present a rigorous demonstration and discussion of the quantum adiabatic theorem for systems having a nondegenerate continuous spectrum. An explicit formula for a generalized geometrical phase is derived in terms of the eigenstates of the Hamiltonian. Examples are given for illustration.
Polyterthiophene (P3T) film was synthesized on Types 304 (UNS S30400) and 316 (UNS S31600) stainless steel (SS) electrodes from an acetonitrile (ACN) solution containing 10(-2) M terthiophene (3T) and 10(-1) M lithium perchlorate (LiClO4), by cycling voltammetry between 0 and 1.20 V, with a scan rate of 25 mV/s. The electrochemical behavior of the SS samples with and without polymer films were studied in 0.5 M sulfuric acid (H2SO4) and 3016 sodium chloride (NaCl) solutions, using cyclic voltammetry, electrochemical impedance spectroscopy (EIS), and open-circuit potential measurements. It was shown that homogeneous and adherent P3T films deposited on the electrode surface reduce the corrosion rate of SS, but it does not protect the metal completely against corrosion. The obtained results were promising for using the conducting polymers in corrosion protection.
We have investigated and modelled the diffusion of boron implanted into crystalline silicon in the form of boron difluoride BF2+. We have used published data for BF2+ implanted with an energy of 2.2 keV in crystalline silicon. Fluorine effects are considered by using vacancy-fluorine pairs which are responsible for the suppression of boron diffusion in crystalline silicon. Following Uematsu's works, the simulations satisfactory reproduce the SIMS experimental profiles in the 800-1000 degrees C temperature range. The boron diffusion model in silicon of Uematsu has been improved taking into account the last experimental data. (C) 2008 Elsevier B.V. All rights reserved.
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Year: 2008
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DOI: 10.1016/j.ssc.2008.09.006
Accession Number: WOS:000261406000026
Abstract: Using pseudopotential plane waves approach based on density functional theory within the generalized gradient approximation, we have performed a study of the structural and electronic properties of selected M2InC compounds belonging to the so-called MAX phases, with M = Ti, Zr, and HE. The calculated equilibrium lattice parameters are in good agreement with the experimental values. The effect of high pressures, up to 50 GPa, on the lattice constants shows that the contractions along the c-axis were higher than along a axis. The elastic constants are calculated using the static finite strain technique. The analysis of the band structure, density of states and electron charge density show that these compounds are electrical conductors, with a strong directional bonding between M and C atoms assured by the hybridisation of M-atom d states with C-atom p states. The hydrostatic pressure effect on the bond lengths showed that strengths of M-C and M-In bonds decreases in the sequence Hf2InC -> Ti2InC -> Zr2InC. (c) 2008 Elsevier Ltd. All rights reserved.
Notes: Medkour, Y. Bouhemadou, A. Roumili, A.
URL: <Go to ISI>://WOS:000261406000026
The one-dimensional Schrödinger equation associated with a time-dependent Coulomb potential is studied. The invariant operator method (Lewis and Riesenfeld) and unitary transformation approach are employed to derive quantum solutions of the system. We obtain an ordinary second-order differential equation whose analytical exact solution has been unknown. It is confirmed that the form of this equation is similar to the radial Schrödinger equation for the hydrogen atom in a (arbitrary) strong magnetic field. The qualitative properties for the eigenstates spectrum are described separately for the different values of the parameter $\omega(0)$ appearing in the $x(2)$ term, $x$ being the position, i.e., $\omega(0) > 0$, $\omega(0) < 0$ and $\omega(0) = 0$. For the $\omega(0) = 0$ case, the eigenvalue equation of invariant operator reduces to a solvable form and, consequently, we have provided exact eigenstates of the time-dependent Hamiltonian system.

Notes: Menouar, S. Maamache, M. Saadi, Y. Choi, J. R.

URL: <Go to ISI>://WOS:000256387800017
We report results of first-principles calculations for the electronic and optical properties under pressure effect of Li2O, Na2O, K(2)O and Rb2O compounds in the cubic antifluorite structure, using a full relativistic version of the full-potential augmented plane-wave plus local orbitals (FP-APW+lo) method based on density functional theory, within the local density approximation (LDA) and the generalized gradient approximation (GGA). Moreover, the alternative form of GGA proposed by Engel and Vosko (GGA-EV) is also used for band structure calculations. The calculated equilibrium lattices and bulk moduli are in good agreement with the available data. Band structure, density of states, and pressure coefficients of the fundamental energy gap are given. The critical point structure of the frequency dependent complex dielectric function is also calculated and analyzed to identify the optical transitions. The pressure dependence of the static optical dielectric constant is also investigated.
We construct black hole solutions to three-dimensional Einstein-Maxwell theory with both gravitational and electromagnetic Chern-Simons terms. These intrinsically rotating solutions are geodesically complete, and causally regular within a certain parameter range. Their mass, angular momentum and entropy are found to satisfy the first law of black hole thermodynamics. These Chern-Simons black holes admit a four-parameter local isometry algebra, which generically is sl(2, R) x R, and may be generated from the corresponding vacua by local coordinate transformations.
Reference Type: Journal Article
Record Number: 92
Author: Nekkaa, S. Guessoum, M. Chebira, F. Haddaoui, N.
Year: 2008
Title: Effect of Fiber Content and Chemical Treatment on the Thermal Properties of Spartium junceum Fiber-Reinforced Polypropylene Composites
Journal: International Journal of Polymeric Materials
Volume: 57
Issue: 8
Pages: 771-784
Short Title: Effect of Fiber Content and Chemical Treatment on the Thermal Properties of Spartium junceum Fiber-Reinforced Polypropylene Composites
ISSN: 0091-4037
DOI: 10.1080/00914030801963283
Accession Number: WOS:000260779100002
Abstract: The thermal and crystallization behavior of PP/Spartium junceum fiber composites were studied by thermogravimetry (TGA) and differential scanning calorimetry (DSC). The surface modification of Spartium junceum fibers was carried out using silane coupling agents in order to improve the interfacial adhesion between the fiber and the matrix. The effects of fiber content and chemical treatment on thermal properties were evaluated. It was found that Spartium junceum fiber degraded before the PP matrix but the thermal stability of the PP/Spartium junceum fiber composites was higher than those of the fiber and the matrix. DSC measurements showed that the incorporation of Spartium junceum fiber caused an increase in the crystallinity of the matrix. These effects have been attributed to the fact that the surfaces of Spartium junceum fibers act as nucleating agents for the crystallization of the polymer, promoting the growth and the formation of transcristalline regions around the fibers.
Notes: Nekkaa, S. Guessoum, M. Chebira, F. Haddaoui, N.
URL: <Go to ISI>://WOS:000260779100002
Reference Type: Journal Article  
Record Number: 93  
Author: Noureddine, C. Lekhmici, A. Mubarak, M. S.  
Year: 2008  
Title: Sorption properties of the iminodiacetate ion exchange resin, amberlite IRC-718, toward divalent metal ions  
Journal: Journal of Applied Polymer Science  
Volume: 107  
Issue: 2  
Pages: 1316-1319  
Date: Jan  
Short Title: Sorption properties of the iminodiacetate ion exchange resin, amberlite IRC-718, toward divalent metal ions  
ISSN: 0021-8995  
DOI: 10.1002/app.26627  
Accession Number: WOS:000250822400075  
Abstract: The sorption properties of the commercially available cationic exchange resin, Amberlite IRC-718, that has the iminodiacetic acid functionality toward the divalent metal-ions, Fe2+, Cu2+, Zn2+, and N2+ were investigated by a batch equilibration technique at 25 degrees C as a function of contact time, metal ion concentration, mass of resin used, and pH. Results of the study revealed that the resin exhibited higher capacities and a more pronounced adsorption toward Fe2+ and that the metal-ion uptake follows the order: Fe2+ > Cu2+ > Zn2+ > Ni2+. The adsorption and binding capacity of the resin toward the various metal ions investigated are discussed. (C) 2007 Wiley Periodicals, Inc.  
Notes: Noureddine, Charef Lekhmici, Arrar Mubarak, Mohammad S.  
URL: <Go to ISI>://WOS:000250822400075
Three manganese (III) complexes were obtained with H(2)Salen derivatives and used as catalysts in the epoxidation reactions of E- and Z-stilbene isomers. The preparative electrolyses were carried out at 25 degrees C in acetonitrile solution containing 0.1 M TBAP, 10(-3) M complex, 10(-2) M 2-methylimidazole and 0.1 M benzoic anhydride plus stilbene as substrate. Our results showed clearly that E-stilbene was totally converted to Z-stilbene oxide whereas Z-stilbene leads to a mixture in which the benzaldehyde was the major by-product. In our experimental conditions, the turnovers recorded for different experiments were located in the 3.7-6.6 range. (C) 2008 Elsevier B.V. All rights reserved.
Salicylaldehyde or 5-bromosalicylaldehyde react with 2,3-diaminophenol to give two unsymmetrical Schiff-bases H(2)L(1), H(2)L(2), respectively. With Fe(III) and Co(II), these ligands lead to four complexes: Fe(III)ClL(1), Fe(III)ClL(2), Co(II)L(1), Co(II)L(2). The structures of these complexes were determined by mass spectroscopy, infrared and electronic spectra. Cyclic voltammetry in dimethylformamide (DMF) showed irreversible waves for both ligands. In the same experimental conditions, Fe(III)ClL(1) exhibited a reversible redox couple Fe(III)/Fe(II) while the three other complexes showed quasi-reversible systems. The behavior of some of these complexes in the presence of dioxygen and the comparison with cytochrome P450 are described.

Notes: Ourari, Ali Ouari, Kamel Khan, Mustayeen A. Bouet, Gilles

URL: <Go to ISI>://WOS:000260213200012
In this paper we suggest a new extension of the method of Piyavskii for global optimization of a Holder function with exponent $1/\beta$ ($\beta > 1$). In the one-dimensional case a modification of Piyavskii’s algorithm is introduced and it is based on the construction of subestimators which are piecewise linear. The algorithm is then somewhat easily. Moreover, the results we obtain seem interesting. In the higher dimension, a new variant of the Alienor reducing transformation, which has been devised for exploiting one-dimensional global optimization techniques known for their great efficiency, is used. The method consists in reducing a multidimensional problem to a one-dimensional one using the so called alpha-dense curves. The convergence of the methods is also studied. (c) 2007 Elsevier Inc. All rights reserved.
To synthesize an acrylamide-based resin, two functional acrylamide monomers, N-methylolacrylamide and N-butoxyethylolacrylamide, were prepared and copolymerized separately with two methacrylate esters: methylmethacrylate and butylmethacrylate. The resin derived from N-methylolacrylamide proved to be inadequate due to its instability. To adjust the necessary amount of the reagents needed for the synthesis, different concentrations of the initiator, benzoyl peroxide, and various concentrations of the molecular weight regulator, tertio-dodecyl mercaptan transfer agent, were tested by monitoring the resulting viscosity and conversion. The paint formulation containing N-butoxyethylolacrylamide co-monomer was characterized in terms of hardness, impact and embossing resistance, gloss and adhesion to a metal substrate. The performance properties, which were compared with those of a commercial paint composition, considered as a reference, were overall satisfactory.
The effect of different thermal treatments on the mechanical and thermal properties of polycarbonate was investigated. The first quenching procedure which involves the quench of the samples from the melt state to different temperatures allowed improving impact strength and elongation at break for a quenching temperature of 0 degrees C. A second quenching procedure, corresponding to specimens heated again at 160 degrees C (T-g + 15 degrees C) and quenched a second time, showed a better enhancement of the impact strength and elongation at break to the detriment of other properties such as elastic modulus, density, yield stress, and heat distortion temperature, for a quenching temperature of 40 degrees C. This effect was associated to the existence of a relaxation mode around 35 degrees C. (C) 2008 Wiley Periodicals, Inc.
Field surveys were carried out in the major stone fruit growing areas of eastern Algeria to assess the sanitary status of stone fruits. A total of 454 samples from peach, apricot, almond, sweet and sour cherry, plum and myrobalan were tested by ELISA or RT-PCR for the presence of Prunus necrotic ringspot virus (PNRSV), Prune dwarf virus (PDV), Apple mosaic virus (ApMV), Apple chlorotic leaf spot virus (ACLSV) Apricot latent virus (ApLV), Cherry virus A (CVA), Cherry green ring mottle virus (CGRMV), and Plum bark necrosis stem pitting-associated virus (PBNSPaV). The overall average infection level was 10.4%. The most frequent virus was PNRSV (56.8%), followed by PDV (27.2%) and ApMV (22.7%). The most infected species was cherry (21.9%) and the less almond (4.4%). ACLSV, ApLV, CVA, CGRMV and PBNSPaV were not detected. Of 531 samples tested for the presence of viroids by tissue-print hybridization, 28 (5.2%) were infected. Peach latent mosaic viroid (PLMVd) and Hop stunt viroid (HSVd) were detected in 15 and 13 samples, respectively. This is the first large-scale study on viruses and viroids of stone fruits in Algeria and reports for the first time the presence of HSVd in the country.
Reference Type: Journal Article
Record Number: 100
Author: Sahari, A. Azizi, A. Schmerber, G. Dinia, A.
Year: 2008
Title: NUCLEATION, GROWTH, AND MORPHOLOGICAL PROPERTIES OF ELECTRODEPOSITED NICKEL FILMS FROM DIFFERENT BATHS
Journal: Surface Review and Letters
Volume: 15
Issue: 6
Pages: 717-725
Date: Dec
Short Title: NUCLEATION, GROWTH, AND MORPHOLOGICAL PROPERTIES OF ELECTRODEPOSITED NICKEL FILMS FROM DIFFERENT BATHS
ISSN: 0218-625X
Accession Number: WOS:000262617800002
Abstract: The processes of nickel electrodeposition on Pt/Si(100) substrate from an aqueous sulfate, Watts, and chloride solution have been studied using electrochemical techniques and atomic force microscopy (AFM). It was found that hydrogen evolution reaction (HER) was shifted more cathodically and the nickel electrodeposition obeys to inhibition process, caused by adsorbed species in surface substrate. At early stage of the deposition chronoamperometric results were compared with Sharifker and Hills theoretical model. The nucleation was in agreement with progressive mode followed by 3D diffusion growth mechanism. The nucleation is generally slow at low over potentials, in all studied baths. AFM images show distribution nickel clusters, with different sizes.
Notes: Sahari, A. Azizi, A. Schmerber, G. Dinia, A.
URL: <Go to ISI://WOS:000262617800002>
In this report, several materials such as M/glass (M = Cu, Ru, Ag and Pt) and Pt/Si were investigated to test their suitability for studying the early nucleation stage and growth of cobalt clusters. It was found that most of these materials stand as good substrates to be used in the study of the nucleation and growth of electrodeposited cobalt from aqueous solution containing CoSO4, CoCl2, Na2SO4 and H3BO3. Among these substrates, Ag shows a transition from instantaneous to progressive nucleation. In the other hand the cobalt electrodeposited on Cu, Ru and Pt substrates followed progressive nucleation. Pt/Si substrates gave short transient time at maximum transient current and instantaneous cobalt nucleation on it surface. (C) 2007 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 102
Author: Sahnoune, F. Chegaar, M. Saheb, N. Goeuriot, P. Valdivieso, F.
Year: 2008
Title: Algerian kaolinite used for mullite formation
Journal: Applied Clay Science
Volume: 38
Issue: 3-4
Pages: 304-310
Date: Feb
Short Title: Algerian kaolinite used for mullite formation
ISSN: 0169-1317
DOI: 10.1016/j.clay.2007.04.013
Accession Number: WOS:000253740900016
Abstract: In the present study, mullite was synthesized through reaction sintering of Algerian kaolinite and high purity alumina. The raw powders were wet ball milled in a planetary ball mill. Powders' morphology and the microstructure of the sintered samples were characterized by means of a scanning electron microscope. An X-ray diffractometer equipped with a heating facility and a differential thermal analyzer were used to follow mullite formation. Cylindrical specimens were produced by uniaxial cold compaction at a pressure of 75 MPa and sintered at different sintering temperatures for different sintering times. The heating rate was 10 degrees C/min. It was found that Algerian kaolinite was suitable for mullite production through reaction sintering with pure Al2O3. Formation of complete mullite occurred at 1550 degrees C. A relative density of 94% (of the theoretical density) was achieved at a relatively low sintering temperature of 1600 degrees C and a sintering time of 4 h. (C) 2007 Elsevier B.V. All rights reserved.
Notes: Sahnoune, F. Chegaar, M. Saheb, N. Goeuriot, P. Valdivieso, F.
URL: <Go to ISI>://WOS:000253740900016
Reference Type: Journal Article
Record Number: 103
Author: Sahraoui, F. A. Arab, F. Zerroug, S. Louail, L.
Year: 2008
Title: First-principles study of structural and elastic properties of MgSe under hydrostatic pressure
Journal: Computational Materials Science
Volume: 41
Issue: 4
Pages: 538-541
Date: Feb
Short Title: First-principles study of structural and elastic properties of MgSe under hydrostatic pressure
ISSN: 0927-0256
DOI: 10.1016/j.commatsci.2007.05.015
Accession Number: WOS:000254338800014
Abstract: The structural and elastic properties were calculated using ab initio plane wave pseudopotential method within the generalized gradient approximation (GGA). Our results indicated that MgSe undergoes a structural phase transition from NaCl-type (B1) to FeSi-type (1328) at a pressure near to about 111 GPa. The calculated elastic stiffness coefficients presented a linear behaviour versus pressure. The structural parameters and elastic constants of the fundamental ground are generally in good agreement with the available theoretical and experimental data. (C) 2007 Elsevier B.V. All rights reserved.
Notes: Sahraoui, F. Ali Arab, F. Zerroug, S. Louail, L.
URL: <Go to ISI>://WOS:000254338800014
Modified differential evolution algorithm for optimal power flow with non-smooth cost functions

Energy Conversion and Management

Volume: 49
Issue: 11
Pages: 3036-3042
Date: Nov

Abstract: Differential evolution (DE) is a simple but powerful evolutionary optimization algorithm with continually outperforming many of the already existing stochastic and direct search global optimization techniques. DE algorithm is a new optimization method that can handle non-differentiable, non-linear, and multi-modal objective functions. This paper presents an efficient modified differential evolution (MDE) algorithm for solving optimal power flow (OPF) with non-smooth and non-convex generator fuel cost curves. Modifications in mutation rule are suggested to the original DE algorithm, that enhance its rate of convergence with a better solution quality. A six-bus and the IEEE 30 bus test systems with three different types of generator cost curves are used for testing and validation purposes. Simulation results demonstrate that MDE algorithm provides very remarkable results compared to those reported recently in the literature. (C) 2008 Elsevier Ltd. All rights reserved.

Notes: Sayah, Samir Zehar, Khaled Si

URL: <Go to ISI>://WOS:000260898500012
To yield quantitative information about their interface states, PtSi/p-Si Schottky structures have been studied using conductance and capacitance measurements over a wide range of frequencies (1 kHz to 1 MHz) and at several temperatures (80-140 K). The increase in capacitance at lower frequencies is seen as a signature of interface states, the densities of which are evaluated to be of the order of $10^{12}$ eV$^{-1}$ cm$^{-1}$. The presence of interface states is also evidenced as a peak in the conductance-frequency characteristics that increases in magnitude with decreasing temperatures. The variations of interface conductance are best described by an analytical equation derived assuming an energy-dependent cross-section of these interface states. The conductance data is subsequently used to extract the relaxation times of interface states and their energy distribution with respect to the top of the valence band. Relaxation times, in particular, while temperature dependent with an average value of similar to 4 μs, show a noticeably weak dependence on bias. (C) 2008 Elsevier B.V. All rights reserved.
We consider a mathematical model which describes the antiplane shear deformation of a cylinder in frictionless contact with a rigid foundation. The adhesion of the contact surfaces, caused by the glue, is taken into account. The material is assumed to be electro-viscoelastic and the foundation is assumed to be electrically conductive. We derive a variational formulation of the model which is given by a system coupling an evolutionary variational equality for the displacement field, a time-dependent variational equation for the electric potential field and a differential equation for the bonding field. Then we prove the existence of a unique weak solution to the model. The proof is based on arguments of evolution equations with monotone operators and fixed point.
The electrooxidation of ring-substituted bromobenzylgermatranes in CH(3)CN and DMF solutions was studied. By cyclic voltammetry supported by DFT B3LYP/6-311G calculations, donor activity of the nitrogen atom was shown to be substantially reduced because of the dative N--Ge coordination compared to Et(3)N and (HOCH(2)CH(2))(3)N. In the electrochemical context, the transmission of electronic effects between the ArCH(2) moiety and the reaction center (the lone pair of N pointed inside the atrane cage) is well described by the generalized additive inductive model including mesomeric interactions. The oxidation process follows classical scheme for tertiary amines - reversible electron transfer with the ensuing deprotonation of alpha-carbon atom; at low scan rates the process is reversible/quasi-reversible and at higher rates it is under electron transfer control. Anodic cyanation of m-bromobenzylgermatrane was performed. (C) 2008 Elsevier B.V. All rights reserved.
Reference Type: Journal Article  
Record Number: 108  
Author: Soukkou, A. Khellaf, A. Leulmi, S. Boudeghdegh, K.  
Year: 2008  
Title: OPTIMAL CONTROL OF A CSTR PROCESS  
Journal: Brazilian Journal of Chemical Engineering  
Volume: 25  
Issue: 4  
Pages: 799-812  
Date: Oct-Dec  
Short Title: OPTIMAL CONTROL OF A CSTR PROCESS  
ISSN: 0104-6632  
DOI: 10.1590/s0104-66322008000400017  
Accession Number: WOS:000261207700017  
Abstract: Designing an effective criterion and learning algorithm for find the best structure is a major problem in the control design process. In this paper, the fuzzy optimal control methodology is applied to the design of the feedback loops of an Exothermic Continuous Stirred Tank Reactor system. The objective of design process is to find an optimal structure/gains of the Robust and Optimal Takagi Sugeno Fuzzy Controller (ROFLC). The control signal thus obtained will minimize a performance index, which is a function of the tracking/regulating errors, the quantity of the energy of the control signal applied to the system, and the number of fuzzy rules. The genetic learning is proposed for constructing the ROFLC. The chromosome genes are arranged into two parts, the binary-coded part contains the control genes and the real-coded part contains the genes parameters representing the fuzzy knowledge base. The effectiveness of this chromosome formulation enables the fuzzy sets and rules to be optimally reduced. The performances of the ROFLC are compared to these found by the traditional PD controller with Genetic Optimization (PD_GO). Simulations demonstrate that the proposed ROFLC and PD_GO has successfully met the design specifications.  
Notes: Soukkou, A. Khellaf, A. Leulmi, S. Boudeghdegh, K.  
URL: <Go to ISI>://WOS:000261207700017
Wave concept iterative procedure (WCIP) is used for the determination of scattering characteristics of single and double metallic ring frequency selective surfaces (FSS). In the WCIP method, the analysis of the FSS is reduced to that of the unit cell. Basically, the WCIP method consists of scattering the incident waves at the interface and the reflection of the scattered waves by the closing ends of the periodic wall box containing the FSS unit cell. The use of the two dimensional fast Fourier transform algorithm results in a reduction of the running time and memory space. FSSs based on single and double metallic rings are analyzed by the WCIP method. A good agreement is observed between the WCIP results and the experimental results. (c) 2008 Wiley Periodicals, Inc.
Nigella sativa, commonly known as black cumin seed, belongs to the botanical family of Ranunculaceae. The active antioxidant components of Nigella sativa display a remarkable array of biochemical, immunological and pharmacological actions, including bronchodilatory, anti-inflammatory, antibacterial, hypoglycaemic, antitumoural and immunopotentiating effects. Effects of Nigella sativa seeds extracts were investigated in freshly isolated human peripheral blood mononuclear cells stimulated with the mitogens phytohaemagglutinin and concanavalin A in vitro. Tryptophan degradation and neopterin production were monitored in culture supernatants, both these immunobiochemical pathways are induced by pro-inflammatory cytokine interferon-gamma. Compared to unstimulated cells, the mitogens enhanced degradation of tryptophan and production of neopterin. Nigella sativa seeds extracts significantly suppressed both pathways in a dose-dependent way. Suppression of tryptophan degradation and neopterin formation by Nigella sativa seeds extracts demonstrates an inhibitory influence on activated T-cells and macrophages. Data are in line with an anti-inflammatory activity of the extracts.

Notes: Winkler, Christiana Schroecksnadel, Katharina Ledochowski, Maximilian Schennach, Harald Houcher, Bakhouché Fuchs, Dietmar

URL: <Go to ISI>:://WOS:000265600200002
Harmful ecological effects caused by the emission of gaseous pollutants like sulfur dioxide (SO2) and nitrogen oxides (NOx), can be reduced by load adequate distribution between power plants. However, this leads to a noticeable increase in their operating cost. In order to eliminate this conflict, and to study the trade-off relation between fuel cost and emissions, an approach to solve this multiobjective environmental/economic load dispatch problem, based on an efficient successive linear programming technique is proposed. Simulation results on the Algerian 59-bus power system prove the efficiency of this method thus confirming its capacity to solve the environmental/economic power dispatch problem. (C) 2008 Elsevier Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 113
Author: Zerroug, S. Sahraoui, F. A. Bouarissa, N.
Year: 2008
Title: Ab initio calculations of structural properties of ScxGa1-xN
Journal: Journal of Applied Physics
Volume: 103
Issue: 6
Date: Mar
Short Title: Ab initio calculations of structural properties of ScxGa1-xN
ISSN: 0021-8979
DOI: 10.1063/1.2884580
Article Number: 063510
Accession Number: WOS:000254536900026
Abstract: We present first-principles total energy calculations within the full-potential linearized augmented plane wave method in the gradient-generalized approximation so as to study the structural properties of ScxGa1-xN in zinc blende, NaCl and CsCl-like structures at normal, and under hydrostatic pressure. Our results showed generally reasonable agreement with the available experimental and theoretical findings. It is found that with scandium concentrations of 0%, 25%, and 50%, zinc blende is the most stable configuration among those considered here, whereas for scandium concentrations of 75% and 100%, rocksalt is the most stable one. Deviation of the lattice constants from Vegard's law is shown to be alloy composition dependent. We provide analytical expressions for the scandium concentration dependence of the lattice constant, bulk modulus, and its pressure derivative. (c) 2008 American Institute of Physics.
Notes: Zerroug, S. Sahraoui, F. Ali Bouarissa, N.
URL: <Go to ISI>://WOS:000254536900026
Reference Type: Journal Article
Record Number: 114
Author: Zoukrami, F. Haddaoui, N. Vanzeveren, C. Sclavons, M. Devaux, J.
Year: 2008
Title: Effect of compatibilizer on the dispersion of untreated silical in a polypropylene matrix
Journal: Polymer International
Volume: 57
Issue: 5
Pages: 756-763
Date: May
Short Title: Effect of compatibilizer on the dispersion of untreated silical in a polypropylene matrix
ISSN: 0959-8103
DOI: 10.1002/pi.2406
Accession Number: WOS:000255313300013
Abstract: BACKGROUND: A new processing method for polypropylene-untreated precipitated silica (PP/SiO2) Composites based on the incorporation of a second polymer phase of polyamide 6 (PA6) is presented and compared with a more classic one making use of compatibilizers: glycerol monostearate (GMS), ethylene acrylic acid ionomer (IAAZE) and maleic anhydride grafted polypropylene (NIA-graft-PP). The effects of processing methods and conditions on the microstructure and properties Of PP/SiO2 Composites prepared by melt compounding are investigated with a view to reduce the size of aggregates of silica from the micrometre to the nanometre scale and to improve the link between filler and matrix. RESULTS: On the one hand, the presence of GMS and LAAZE compatibilizers significantly improves the dispersion of the silica particles. On the other hand, when using a PA6 second phase, the SiO2 particles are dispersed in PA6 nodules. Within these nodules, SiO2 appears dispersed at the nanoscale but with larger particles ('aggregates') of about 200 nm. Significant improvements in tensile strength and modulus are obtained using MA-graft-PP compatibilizer. An increase in impact strength is observed in the case of GMS compatibilizer. Thermal parameters indicate also that silica plays the role of nucleation agent for PP matrix. All improvements (tensile strength, modulus and impact strength) increase with the addition of compatibilized PA6 second phase.
CONCLUSION: By the incorporation of masterbatch of silica in PA6 as a second polymer polar phase, a successful new production method for PP/SiO2 nanocomposites has been developed. Interestingly, this method does not require any (expensive) pre-treatment of the silica. (c) 2007 Society of Chemical Industry.
Notes: Zoukrami, Fouzia Haddaoui, Naceredidine Vanzeveren, Celine Sclavons, Michel Devaux, Jacques
URL: <Go to ISI>://WOS:000255313300013
Abstract: The artificial neural networks have been studied for several years. Their effectiveness makes it possible to expect high performances. The privileged fields of these techniques remain the recognition and classification. Various applications of optimization are also studied under the angle of the artificial neural networks. They make it possible to apply distributed heuristic algorithms. In this article, a solution to placement problem of the various cells at the time of the realization of an integrated circuit is proposed by using the KOHONEN network.
Abstract: About fifteen years ago, the challenge of simulation in power electronics was to predict and understand the global behavior of various topologies of devices. For years, this fact could be observed in microelectronics, whereas in power electronics simulation has mostly been restricted to system design. Recently, the insulated gate bipolar transistor (IGBT) has gained increasing acceptance as a power transistor for a variety of power electronic applications. At the same time, the ever increasing calculation power of computers allows representing the devices more accurately to aid to design of the switching section (design of the snubbers, prediction of the current and voltage overshoots, study and optimization of the losses in the switch etc...). Moreover, The ability of the IGBT transistors to sustain increasingly strong voltages and currents as well as increasingly high switching frequencies has increased to need to detect impending degradation, which might appear during the operation of this power device, leading to its destruction. Then, the degradation study of power IGBT device has received as much attention. The aim of this paper, two dimensional numerical simulation are carried out to demonstrate the static and dynamic performance of two commercial IGBTs, IRGBC40F for international Rectifier and IXHG40N60A for IXYS and to analyze the forward voltage drops of IGBTs (IR and IXYS) as function of its conception and of temperature. Furthermore, this paper provides detailed analyses of the (dv/dt) capability for (IR and IXYS) IGBTs devices and examination of their response at turn-off with variations in gate resistor, Cd freewheeling diode capacitance and in temperature. At the same time, we try to study and investigate the evolution of electrical properties of IGBT submitted to thermal stress where the influence of temperature during IGBT operation is dominant. Thermal stress technique can be used to simulated and evaluated natural ageing and its resulting parameters degradation of the device when the later found to operate under normal conditions. Our study is then validated by use of two (213) dimensional modeling tool (Pspice, Spice). I hope that this paper can contribute to the understanding the dv/dt capability, to detect impending degradation under thermal stress of commercial IGBT (IR, IXYS) devices operation, show how it relates to some underlying physical mechanisms and achieve high power switching efficiency, reduced cost, improved reliability and reduced parasitic. Comparison between measurements and simulation shows good agreement.


URL: <Go to ISI>://WOS:000257432600038
In this paper, we define a blind-block reciprocal-transpose matrix operator (BBRT). One of the interesting properties of the BBRT matrix is that it is very easy to obtain its inverse. We then propose a new blind-block reciprocal parametric transform and show that its matrix operator is a BBRT matrix. The transform has a large number of independent parameters that are useful for many applications and can specifically be used as an additional secret key for encryption and watermarking. It is shown that the proposed transform reduces to some of the existing transforms and also to new classes of parametric transforms having some desirable properties.
This paper presents new stability conditions for the continuous Takagi-Sugeno (T-S) fuzzy systems by using the Linear Matrix Inequality (LMI) approach. These new conditions are applied to design problems of fuzzy regulator. First Takagi-Sugeno fuzzy models and some stability results are recalled. To design fuzzy control systems, nonlinear systems are represented by Takagi-Sugeno fuzzy models. The concept of parallel distributed compensation (PDC) is employed to design fuzzy controllers from the Takagi-Sugeno fuzzy models. New stability conditions are obtained by relaxing the classical stability conditions. The stability conditions (classic and relaxed) of the closed-loop system are expressed in terms of LMI. Design examples for nonlinear systems demonstrate the utility of the relaxed stability conditions and the LMI procedures.


URL: <Go to ISI>://WOS:000257193900018
This paper presents the design and analysis of a neural network-based identification of the inverse dynamic model of a C5 parallel robot. The identification structure is designed using the black box form (the dynamic model is completely unknown). This identification uses real data acquired on the C5 parallel robot by applying a nominal control scheme (PD). The desired trajectories of this scheme are based on Fourier series and the coefficients are chosen in a heuristic way. We have used this type of desired trajectories to obtain exciting trajectories for identification procedure. Three identification schemes are tested and compared. The comparison is performed based on the number of parameters used in each architecture and the quality of the generalization error. The used neural network is of MLP type and composed of one hidden layer.
Abstract: This work presents an overview on ultrasonic motors of type traveling wave (TWUSMs). The mathematical model for the TWUSMs is developed where two additional cases, neglected in the literature, concerning the dynamic behavior of the rotor and the stator, are detailed. The major utility of this study is to detail the various additional cases, describing more the functional work of the motor, by exposing particular cases which represent our contributions and also by putting in value our results of simulation, implemented and realized in the environment Matlab/Simulink. The refined model resulting of this study is implemented on software Matlab/Simulink. This mathematical model describes the dynamic behavior of ultrasonic motor AMW90. The implementation is based on the aptitude of the different blocks of simulation in to be adapted according to our needs. The obtained simulation results in comparison with manufacturer measures are satisfactory, and confirm the robustness of the refined model.


URL: <Go to ISI>://WOS:000257193900068
The aim of this paper is to control a nonaffine nonlinear system single input single output (SISO). Based on the implicit function theory, the existence of an unknown ideal controller is demonstrated. A fuzzy system is used to approximate this controller and its parameters are updated according to gradient descend method. The closed-loop control structure stability is guaranteed using Lyapunov analysis. An illustrative simulation example is given to demonstrate the feasibility of the proposed method.

One present in this paper the design of a robust direct model reference adaptive control (DMRAC) algorithm which will be applied to systems with unmodeled dynamics. These unmodeled dynamics are represented as either additive or multiplicative norm bounded perturbations in the transfer function. Frequency domain design conditions for a feedforward compensator have been developed. The validity of the algorithm is illustrated by means of examples.
We describe an attempt of bridging the gap between web-based learning and agents capable of learning from experience. The emphasis is made on the interaction between two core fields, namely agents and Unified Modeling Language (UML) as a standard for Object-Oriented Design. The tangible results remain the integration of agents for elearning based on machine learning methods such as entropy-based Decision Tree Learning, AdaBoost and First Order Inductive Learning (FOIL). As a special case of soft computing methods, fuzzy agents are used for profile personalization. Prospectively, much effort is still required to meet the actual challenges so as to scale up to real-life problems of any significant complexity.
Abstract: Currently many techniques of marking are exploited in a great number of sectors, on various materials (cardboard, textile, wood, leather, plastic, metal, ceramics and glass). The printing is done on supports of great or small dimension for all geometrical forms (plane, round, conical and ovalised). We can print colour as much than we wish. The marking technology for the identification of the glass parts knows a remarkable development carried by the new needs for the industrialists using transparent materials such as the optical, chemical, pharmaceutical sectors, the luxury and drink industries or publicity and decoration (neon signs, advertising mirrors). The objective of our work consists particularly in engraving on glass the measurement scales forming a whole of ordered graduation which the goal is to carry out reading systems of measuring apparatus about 1/10 µm of precision. We used as tool for marking the laser CO2. Our choice is justified by the flexibility of the laser, the permanent lifespan of the graduations carried out and the guarantee of the facility of reading incidentally the precision and the accuracy of the measuring apparatus. The study parameters of the laser beam are the velocity (400, 600, 800, 1000 m/s.), the power (25, 75 and 80% of 25W) and the numbers pass (one, two and three pass). The optical observations results obtained suggest that the highest and the average power used remain the favourable parameters for the quality of the graduations carried out.
Abstract: This work presents a development of adaptive type-1 and type-2 fuzzy controls for uncertain nonlinear systems. Using the adaptive type-1 fuzzy control, the dynamic of the nonlinear systems is approximated with type-1 fuzzy systems whose parameters are adjusted by appropriate law adaptation. For adaptive type-2 fuzzy control, the dynamic of the nonlinear systems is approximated with interval type-2 fuzzy systems. The use of this type-2 control requires an additional operation which is the type reduction, in comparing with type-1 control. The closed-loop system stability is guaranteed by the Lyaponov synthesis. To show the performance of the developed controls, a comparative study is realized through the application of these controls so that an inverted pendulum tracks a given trajectory in presence of disturbances.

A power system stabilizer based on adaptive fuzzy technique is presented. The design of a fuzzy logic power system stabilizer (FLPSS) requires the collection of fuzzy IF-THEN rules which are used to initialize an adaptive fuzzy power system AFPSS. The rule-base can be then tuned on-line so that the stabilizer can adapt to the different operating conditions occurring in the power system. The adaptation laws are developed based on a Lyapunov synthesis approach. Assessing the validity of this technique simulation of a power system is conducted and results are discussed.


URL: <Go to ISI>://WOS:000257193900085
The main objective of this paper is to develop and implement new algorithms of classification and show that the method of the nearest neighbors rule can be also applied successfully to deal with the medical classification problems. In this context, we developed two original algorithms of classification by the method of the nearest neighbors rule and we validated them by a real application in the field of classification for the assistance to the treatment of the breast cancer to detect possible benign or malignant tumors.
Reference Type: Book
Record Number: 1
Author: Abdeldjebar, B. Khier, B. Icros/Komma,
Year: 2008
Title: Generalized predictive control: Application of the induction motor
Series Title: 2008 International Conference on Smart Manufacturing Application
Number of Pages: 526-529
Short Title: Generalized predictive control: Application of the induction motor
ISBN: 978-89-950038-8-6
DOI: 10.1109/icsma.2008.4505580
Accession Number: WOS:000257506800109
Abstract: Generalized predictive control (GPC) is nowadays, widely spread in control theory as well as in the industrial world. Generalized predictive control (GPC) belong to this family has been demonstrated as a powerful controlling process plants. In this work a polynomial approach of generalized predictive control is proposed whose aim to find optimal values for the tuning control and application of predictive control with polynomial form RST and application of induction motor and developed prediction optimal equation with cost function and resolved of the Diophantine equations this application is reserved in our work for the induction motor with example of a dynamic system and non linear multivariable with load torque.
Notes: Abdeldjebar, Bektache Khier, Benmahammed International Conference on Smart Manufacturing Application Apr 09-11, 2008 Goyangsi, SOUTH KOREA
URL: <Go to ISI>://WOS:000257506800109
Generalized predictive control (GPC) is nowadays, widely spread in control theory as well as in the industrial world. Generalized predictive control (GPC) belong to this family has been demonstrated as a powerful controlling process plants. In this work a polynomial approach of generalized predictive control is proposed whose aim to find optimal values for the tuning control and application of predictive control with polynomial form RST and application of induction motor and developed prediction optimal equation with cost function and resolved of the Diophantine equations this application is reserved in our work for the induction motor with example of a dynamic system and non-linear multivariable with load torque.
Ontology is increasingly seen as a key factor for sharing and understanding concepts among heterogeneous implementation platforms and Architecture Description Languages (ADLs). Ensuring various views as desired by its stakeholders requires conformance to sound principals and rules of ontology engineering. In this article we propose a meta-ontology called (OntoArch) to describe ADLs and MDA (Model Driven Architecture) platforms from their core level, rather than architecture and implementation. Our objective is to increase the high level of systems' concepts abstracting for wrapping and integrating heterogeneous software concepts into MDA platforms via a top-level ontology.
Model Driven Development (MDD) is typically based on models which heavily lead the quality production of application's architecture. This is because architectural decisions are often implicitly embedded in software engineering, therefore lacks first-class consideration. Architecture has been established as a key to develop software systems that meet quality expectations of their stakeholders. The explicit definition of architectural decisions, aims to well control the quality on the software development process. In this paper, we propose to extend the MDA framework by integrating decision aspects. We propose also an approach to use architectural decisions as a meta-model for the MDD process. Integration of architectural decisions allows architectural design to be defined explicitly and guides architects in creating systems with desirable qualities; and for MDA it extends the approach by integrating true decisional concerns into MDD process.
EJB components' communication in current implementations of EJB platform often suffer from unreasonable interactions overheads when the dependencies among components are complex. This is because connectors are often considered to be explicit at the level of architecture and implicit in a system's implementation. Elimination of these overheads is quite beneficial to crucial applications especially real-time ones. The explicit separation of architecture and implementation is the main concern of the Model Driven Architecture (MIDA), aiming to well understanding and controlling interactions and inter-connections among components. This article defines an automatic transformation from COSA (Component Object based Software Architecture), which is software architecture model that describes systems as a collection of components and connectors, to a standard java platform EJB using UML profiles. The goal of our work is rapid mapping and smooth integration of COSA concepts into EJB platform in order to achieve a higher level of abstraction.
In this paper, a new switching table is presented for direct power control (DPC) of three-phase PWM rectifiers. The proposed switching table is synthesized by analyzing the instantaneous active and reactive power correction. For this reason, and based on the sign and magnitude of the change in instantaneous active and reactive power, the best converter switching state allowing smooth control of active and reactive power simultaneously during each sector is selected. The dc-bus voltage is maintained at the required level by controlling active power to be constant and equal to its reference value. The unity power factor (UPF) operation of the converter is achieved by maintaining the reactive power zero during all sectors. Simulation and experimental results have proven that the proposed DPC is much better than the classical one and verify the validity and performance of the presented DPC.
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Record Number: 7
Author: Bouafia, A. Krim, F. Gaubert, J. P. IEEE,
Year: 2008
Title: Direct Power Control of Three-Phase PWM Rectifier Based on Fuzzy Logic controller
Series Title: 2008 IEEE International Symposium on Industrial Electronics, Vols 1-5
Number of Pages: 52-57
Short Title: Direct Power Control of Three-Phase PWM Rectifier Based on Fuzzy Logic controller
Accession Number: WOS:000266702100010
Abstract: In this paper, direct power control (DPC) of three-phase PWM rectifiers based on fuzzy logic controller is presented, without line voltage sensors. The instantaneous active and reactive powers, directly controlled by selecting the optimum state of the converter, are used as the PWM control variables instead of the phase line currents being used. The proposed fuzzy logic controller presents the advantage that is based on linguistic description and does not require a mathematical model of the system. The controller ensures a good regulation of the output voltage, and guarantees the power factor close to one. The simulation and experimental results show that the designed fuzzy controller has a good dynamic behavior, a good rejection of impact load disturbance, and is very robust.
Notes: Bouafia, Abdelouahab Krim, Fateh Gaubert, Jean-Paul IEEE International Symposium on Industrial Electronics Jun 30-Jul 02, 2008 Cambridge, ENGLAND IEEE
URL: <Go to ISI>://WOS:000266702100010
In this paper, a novel method for the parameterization of the Hadamard matrices is proposed. The resulting parametric Hadamard matrix of order N has N/2-1 independent parameters. It is a normalized matrix and its inverse can easily be obtained by taking the reciprocal of each of the N/2-1 independent parameters in the forward matrix and transposing the resulting matrix. The corresponding transform reduces to a new parametric integer transform when the independent parameters in the proposed matrix operator are all from the set \{+/− 2(m), +/− 2(n) j, 2(l) (+/− 1 +/− j)\}, where m, n and l are chosen positive or negative integers. Other interesting special cases of the proposed transform can also be obtained. In addition, the proposed parametric transform can be computed using an algorithm having a very simple structure. This transform can be used in many transform-based applications. For example, it can be employed in watermarking and encryption where its independent parameters can be used as an additional secret key.
In this paper, we propose an efficient 8x8 multiplication-free transform operator for image compression by appropriately introducing some zeros in the 8x8 signed DCT matrix. We also develop fast algorithms for the computation of the proposed transform as well as for its inverse. Compared to the existing 8x8 approximated DCT matrices, it is shown that savings of 12.5\% in the number of additions can easily be achieved using the proposed transform operator without noticeable degradations in the reconstructed images. We also present simulations on some standard test images to show the efficiency of the proposed transform in image compression.
Several schemes and control techniques have been proposed in active power filtering these last years, often assuming that all the components are well sized, or at least the, do not affect the control algorithm performance. The first step in designing an active filter is to select suitable values. This allows to reduce costs and avoids a lot of control problems. This paper deals with design, simulation and experimentation of a Shunt Active Power Filter (SAPF) to improve power quality. After recalling and comparing some methods already published in this area, a design procedure of a 20 KVA SAPF is presented. Afterwards, the study of the impact of parameters on signals quality is discussed. In order to control capacitor DC voltage and mains current with fixed carrier PWM in d-q frame, simulated and experimental results are provided to prove parameters choice and demonstrate the effectiveness of the proposed approach.
The Arabic language is one of the most important languages because it is the sacred and liturgical language of Islam, one of the influential monotheistic religions of our times. In the post-9/11 aftermath, Islam suddenly dominated western actuality for the remaining years of the present decade. Al-Qur'an- The Reading par Excellence - and "Hadith " - Saying - represent the two fundamental scriptural sources of Islamic Legislation. Specifically, "Hadith ", or Prophetic Traditions, are sayings and doings of the Prophet of Islam (Peace and Blessings be upon Him). Researchers need automatic search tools within large "Hadith " databases to access one of the original sources of Islam. For this purpose, we describe the development of AuthenTique, an updated automatic text mining search tool, based on the vector space model (VSM). The aim is to allow the provision of a list of "Hadiths" classified according to their degrees of similarity based on a given user's query.
PRODUCTION SCIENTIFIQUE ANNEE 2009
The current study evaluates the impact of low or moderate levels of lead acetate (PbAc) on sperm parameters, gonadotropins (FSH, LH) and testosterone. Adult albino wistar male rats were allocated to five groups and given 0%, 0.025%, 0.05%, 0.1% and 0.3% PbAc in distilled drinking water for 24 weeks. There was no change in body weight gain and in absolute or relative weight of testes, epididymides and seminal vesicles. The ventral prostate weight was decreased in groups exposed to 0.05%, 0.1% and 0.3% PbAc without statistically significant differences. Sperm velocity was decreased in all treated groups while reduction of sperm motility was observed in rats exposed to 0.05%, 0.1% and 0.3% PbAc without statistically significant differences compared to the control group. However, there was a significant increase greater than 100% in the total percentage of abnormal sperm in groups treated with 0.1% (p<0.01) and 0.3% PbAc (p<0.05). The frequency of dead sperm was significantly increased only in the 0.3% PbAc group (p<0.01). Significant increases in frequencies of amorphous head sperm (p<0.01) and abnormal tails (p<0.01) were found in the group exposed to 0.1% PbAc, while the frequency of neck abnormalities was increased in the high-lead-exposed group (p<0.01). The levels of LH and FSH were not significantly affected after lead treatment and significant increase in serum testosterone level was noted only in animals administered 0.05% PbAc (p<0.01). In conclusion, our results reveal that some sperm parameters were altered at low or moderate lead concentrations with no obvious alteration of hypothalamic-pituitary function. The increase of testosterone level observed suggests that lead may target testicular function. (C) 2008 Elsevier GmbH. All rights reserved.

Notes: Allouche, Lynda Hamadouche, Mohamed Touabti, Abderrezek

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The thermal degradation of rigid and plasticized poly(vinyl chloride) (PVC)/poly(methyl methacrylate) (PMMA) blends was investigated by means of isothermal and dynamic thermogravimetric analysis in a flowing atmosphere of air. For that purpose, blends of variable composition from 0 to 100wt% were prepared in the presence (15, 30 and 50wt%) and in the absence of di-(2-ethyl hexyl) phthalate (DEHP) as plasticizer. The thermal degradation of the blends was investigated by isothermal thermogravimetry at 180°C during 120min. It was found that the main processes are the dehydrochlorination of PVC and depolymerization of PMMA. The dynamic thermogravimetric experiments were carried out in the temperature range of 30-550°C. The results showed that the thermal degradation of rigid and plasticized PVC/PMMA blends in this broad range of temperatures is a three-step process and that PMMA exerted a stabilizing effect on the thermal degradation of PVC during the first step by reducing the dehydrochlorination.
The crystalline structure, grain morphology, electrical and electrochemical properties of Sr$_2$-$x$La$_x$FeMoO$_6$ ($x = 0, 0.25, 0.5$ and $1$) double perovskite has been investigated by means of X-ray powder diffraction, scanning electron micrography, electrical and electrochemical measurements. It was found that the grain morphology, the resistivity and the electrochemical activity are strongly influenced by La doping. While the surface area as the determining factor in the oxygen reaction rate was excluded, the electrical resistivity was found to have a great effect on the electrochemical activity of the compounds. (C) 2009 Elsevier B.V. All rights reserved.

On the basis of the biospecific molecular recognition between complementary chemical groups of xanthine oxidase (XO) and their ligands particularly sulphated glycoaminoglycans and heparin, Poly (styrene chlorosulfonyl) particles modified by sulfonate sodium groups was synthesized and its adsorption property towards cow's milk XO was established. The adsorption of XO) onto this functional polymer was performed in batch at 4 degrees C and at pH 6.0 during 30 min. of incubation. The adsorbed XO content at the interface allows establishing the chemisorption isotherm curve. The affinity association estimated from this adsorption isotherm according to the Langmuir equation was found to be significantly high in the magnitude of 1.25 x 10(6) M(-1). Affinity chromatography on column using this functional polymer as a stationary phase confirms its high ability to adsorb XO at low ionic strength. In fact, the xanthine oxidase of the crude extract is strongly adsorbed onto the sorbent and is eluted at high ionic strength with out any significant loss of its biological activity. The purified enzyme possesses a protein flavin ratio (PFR) of 6.05 with a specific activity of 1.78 Ul/mg. On the other hand, the electrophoresis of XO fraction showed a single band with a molecular weight of about 150 kDa. Thus, the synthesized beads functionalized by sulfonate group could be used efficiently and advantageously in the purification of XO instead of other conventional chromatographic methods which need several steps. (C) 2008 Elsevier B.V. All rights reserved.
This paper proposes an important improvement of the hysteresis band current control (HBCC) technique for three-phase shunt active power filter (APF) to eliminate harmonics and to compensate the reactive power generated by three-phase rectifier. In this technique, a simple and quick prediction of the hysteresis band is added to a phase-locked-loop (PLL) control to ensure constant switching frequency and synchronization of modulation pulses independently on system parameters. This allows the advantages of quick response, good current tracking accuracy and minimal ripple in three-phase systems. This technique is robust and it is characterized by the simplicity, this aspect is very significant for a practical realization because it constitutes the factors which determine the cost and the reliability of industrial assembly. The proposed technique determines the switching signals of the three-phase shunt APF and the algorithm which is based on the dc bus capacitors voltage regulation using proportional-integral (PI) controller is used to determine the suitable current reference signals. The behavior of the proposed technique has been fully verified by digital simulation, where the obtained results show that the proposed technique can improve shunt APF performances noticeably. (C) 2009 Elsevier B.V. All rights reserved.

Notes: Belhaouchet, N. Rahmani, L. Begag, S.
URL: <Go to ISI>://WOS:000265898200012
Abstract: Three-phase AC choppers are widely used to obtain a variable alternative voltage from a fixed alternative source for the control of alternative motors at variable speeds. The hysteresis current control is one of the simplest techniques used to control the magnitude and phase angle of three-phase motor currents for high-speed drive systems, primarily because of its implementation simplicity, fast current control response, and inherent peak current limiting capability. However, conventional fixed hysteresis-band current control has a variable switching frequency throughout the fundamental period, and consequently, the load current harmonic ripple is not optimum. In this article, a simple, novel adaptive hysteresis-band current control technique is proposed, where the hysteresis band is controlled as variation of input voltage, output voltage, and slope of the current error to achieve constant switching frequency at any operating condition. The high performances of this novel technique are verified by digital simulation.

Notes: Belhaouchet, N. Rahmani, L.

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In this study we prepared mullite-zirconia composites by reactive sintering of gibbsite and boehmite as alumina sources and zircon powder. All raw materials have been ball milled and isostatically pressed followed by sintering in the temperature range of 1400-1600 degrees C during 2 h of soaking. Then the sintered samples have been characterized by X-ray diffraction, ATD/TG analysis and microstructural observation. X-ray diffraction peaks showed the formation of mullite-zirconia composites in both mixtures. The microstructure of all composites was composed of irregularly shaped mullite grains and round-shaped zirconia grains, which are distributed intragranularly and intergranularly. These microstructures had microcracks in the samples prepared from gibbsite and zircon, contrary to the samples prepared from boehmite and zircon where no microcracks were present. These microcracks are caused by evaporation of structure water at 300 degrees C. So the preparation of mullite-zirconia composites with the substitution of the alpha-alumina by the boehmite is feasible.
The rheological behavior of ceramic oxide hydroxide alumina pastes with high solid loading is investigated. In order to enable an adequate and experimentally rheological characterization, the measurements are carried out with a Rheostress viscometer under isothermal conditions. Various compositions of a commercial AlOOH powder and binder mixture are investigated. We discuss the variation of loss modulus G, storage modulus G”, apparent and complex viscosities eta, eta* as function of frequency and shear rate. The solid phase used here is the boehmite; the most important precursor for the gamma-Al(2)O(3) phase for several applications such as catalysts or functional layers of ceramics. Solid phase compositions used are justified by the applications of boehmite in the manufacturing of catalytic materials. A transition zone that appears at a concentration Of 55%wt of the solid phase (Pural) and at which the rheological behavior changes from viscoelastic to elastic is observed. This transition is of a importance as far as ceramic manufacturing is concerned.
In this work the wear behavior of cerium oxide abrasive grains during the glass polishing was studied. Polishing tests have been done by different types of cerium oxide abrasive grains. The grains have been recovered and examined during the operation. The morphology, the granulometric distribution, the chemical composition and the agglomeration phenomenon of recovered grains have been studied. The results showed that the fracture is the main cause of the abrasive grain wear of the cerium oxide abrasive grains, which permitted to the abrasive grains to preserve their initial morphology for a long time during the process. The cerium oxide abrasive grains undergo a partial wear during their use in polishing and it is closely related to the process parameters. The granular agglomeration phenomenon of the abrasive powder is very much present in the polishing process and generates bigger grains being able to influence the product quality. (C) 2009 Elsevier B.V. All rights reserved.
In this study, the surface behavior during its contact with the abrasive grain in the glass lapping process was studied using practical simulation which is the scratch test and the real contact between glass surfaces and alpha-alumina abrasive grains during lapping process. Formations and dimensions of the produced scratches were investigated to explain the grain action on the surface and the glass material removal rate. It has been found that humid environment created by the use of the slurry of loose abrasives causes more significant damages than the dry one. The use of slurry produces higher glass material removal rate in this environment and proves its utility in the lapping process. The shape of abrasive grains influences the nature of their action. Indeed, the worn grains produce scratches and chippings less than the sharp grains. During lapping, the number of scratches and their dimensions depend on the contact time and the abrasive grain size. It was concluded that the glass material removal rate during lapping depends on the cumulative actions of individual grains which produce scratches and chippings. (C) 2009 Elsevier B. V. All rights reserved.
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Author: Belkhir, N. Bouzid, D. Herold, V.
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ISSN: 1023-8883
DOI: 10.1007/s11249-008-9391-5
Accession Number: WOS:000261577700007
Abstract: In this paper, the friction coefficient was measured using a computer-controlled electrical system. The obtained results of the friction behavior during the polishing process indicate that the friction coefficient increases in the first minutes of polishing and then tends to be stable. The effect of some polishing parameters such as velocity and polishing pad nature was studied. It was found that these parameters have an important influence on the friction behavior. Indeed, it was found that the increase of the velocity reduces the friction coefficient. However, the nature of the polishing pads produces enormous variation of the friction coefficient.
Notes: Belkhir, N. Bouzid, D. Herold, V.
URL: <Go to ISI>://WOS:000261577700007
CuInSe2 films of 2 μm thickness were electrodeposited potentiostatically, from aqueous solution containing thiocyanate as a complexing agent, on Mo substrates. For all the experiments, the potential of the potentiostatic deposition of the materials was chosen to be -1 V, whereas the bath temperature of electrolyte was varied from 20 to 80 degrees C. It was found that the electrodeposited CuInSe2 was characterized by an amorphous layer and densely-packed nanometric grains with a good homogeneity. After vacuum annealing at 200 degrees C, glancing angle X-ray diffraction revealed the presence of the CuInSe2 phase whereas annealing under selenium atmosphere lead to the growth of molybdenum selenide compound MoSe2, in addition to a better crystallization of the copper indium diselenide compound. Scanning electron microscopic revealed that despite an increase in the grains dimensions, there was no significant change in the films surface morphology when the bath temperature was varied from 20 to 80 degrees C. At the same time, the composition of the electrodeposited Cu-In-Se layers becomes richer in copper. This increase in copper concentration is mainly compensated by a deficit in selenium atoms. (C) 2008 Published by Elsevier B.V.
In this work we extend Brosamler's formula (see A probabilistic solution to the Neumann problem, Math. Scand. 1976, 38:137-147) and give a probabilistic solution of a non degenerate Poisson type equation with Neumann boundary condition in a bounded domain of the Euclidean space.
The work we present in this article is an investigation of the optimal dielectric behavior of a ternary composite based on a mixture of epoxy resin, titanates and oxides. Titanates are known by their capacity to provide high dielectric constant values that make their use very important in system of telecommunication, transmission microwaves, and in integrated circuit technology. A comparative study is established on two types of oxides added to titanates of either calcium, barium, or magnesium following different proportions. The protocol used to characterise different mixtures is the Time Domain Reflectometry (TDR). The acquired results show a good concordance between the experimental values of the ternary mixture dielectric constant and the theoretical models deduced from the Lichtenecker modified law. The copper oxide (CuO) is revealed to be more influential than the magnesium oxide (MgO) on the added titanate because of an insignificant dielectric behaviour that the latter presents. On the other hand, the linear behaviour of epsilon(s) appeared with a CuO concentration round about 15% in a RE.BT.CuO mixture. For a fixed barium titanate fraction (27%) this linear evolution is located between the upper and the lower limits derivative from direct and inverse Wiener laws.
Reactions of CuCl(2) with different CN complexes in presence of a neutral ancillary ligand lead to two novel mixed-valence Cu complexes \([\text{Cu(II)}(\text{bpy})\text{Cu(I)}(\text{CN})(3)](n), 1 (\text{bpy} = 2,2'\text{-bipyridine})\) and \([\text{Cu(II)}(\text{tn})(2)][\text{Cu(4)}(\text{CN})(6)](n)\), 2 (\text{tn} = 1,3\text{-diaminopropane}). For compound 1, the asymmetric unit involves two Cu ions Cu1 and Cu2 (Cu(I) and Cu(II) centres, respectively) which strongly differ in their environments. The Cu1 ion presents a CuC(4) pseudo-tetrahedral geometry, while the Cu2 ion presents a CuN(5) slightly distorted square-pyramidal geometry. The extended structure of 1 is generated by three cyano ligands which differ in their coordination modes. One CN group has a \(\mu(3)\) coordination mode and bridges two Cu(I) and one Cu(II) ion, while the two other CN groups act as 12 bridges leading to a sophisticated 3-D structure. As for 1, the asymmetric unit of 2 involves three crystallographically different Cu ions (Cu1A and Cu1B, presumably Cu1 centres, and Cu2 presumably Cu(II) centres). The Cu2 ion presents centrosymmetric CuN(4) coordination environments involving four nitrogen atoms from two bidentate tn ligands; while the Cu1A and Cu1B ions are three coordinated to cyano groups. The structure can be described as formed by 18-membered "[Cu(I)(CN)](6)" planar metallocycles that are connected to their six neighbors to generate 2-D sheets; these sheets stack forming infinite hexagonal channels in which the \([\text{Cu}(\text{tn})(2)](2+)\) units are located. Magnetic measurements show an unexpected weak ferromagnetic coupling (\(\theta = 0.239(1)\) K) of the Cu(II) ions through the long and "a priori diamagnetic" NC-Cu(I)-CN bridges in compound 1 and an essentially paramagnetic behavior in compound 2. (C) 2009 Elsevier Ltd. All rights reserved.

Notes: Benmansour, Samia Setifi, Fatima Triki, Smail Thetiot, Franck Sala-Pala, Jean Gomez-Garcia, Carlos J. Colacio, Enrique

URL: <Go to ISI>://WOS:000266136300016
The association of cereal growing and livestock rearing, with fallow grazing (by sheep and by cattle), which is observed on the farms of the upper semi-arid plains of Eastern Algeria, may be considered as resulting from strategies to ensure the sustainability of the farms that are worth analysing. The analysis of the diversity of production systems on the farms of this region identifies several types in relation to the structural and environmental factors. The study of the choice of enterprise, of the forage system, of the livestock-rearing system, and of the production goals throws light on the orientations of these production systems, which are largely dependent on the climatic storey and the availability of irrigation water. When the working of the whole system is considered, the cropping system (fallow included) and the rearing of livestock are found to be mutually serviceable. The form and the organization of the livestock farming and of the forage systems, together with the adjustments of stock numbers and of the management of flocks and herds relatively to the resources and their variability (especially through the use of fallows) are thus able to meet various goals.
In this work, we have conducted a comparative study between the transport of electrons and positrons in aluminum and gold solid thin films, in the examined primary energy range (0-4 keV), by using the Monte Carlo method. This comparative study has been used for three transport phenomena: transmission, absorption and backscattering and it will be useful for experimenters to choose between electron or positron beams for thin film characterizations. Here, we have calculated quantities such as absorption probability, mean penetration depth, transmission probability, transmission energy distributions and backscattering coefficient, for both electron and positron. The agreement between our results and the available experimental data is found to be good within the limits of the statistical accuracy. (C) 2009 Elsevier B.V. All rights reserved.
Diabetes mellitus is associated with vascular complications including an impairment of vascular function and alterations in the reactivity of blood vessels to vasoactive hormones. However, the signaling mechanisms leading to vascular dysfunction in diabetes are not fully understood. This microarray-based study was designed to identify differential gene expression between the normal and diabetic mesenteric vasculature and to investigate the effect of inhibiting epidermal growth factor receptor (EGFR) signaling on global gene expression in the mesenteric bed of streptozotocin (STZ)-induced diabetic rats. Transcriptome analysis was performed in triplicate using oligonucleotide microarrays housing 10,000 rat genes on the mesenteric bed of normal, diabetic, and diabetic rats treated with AG1478, a selective inhibitor of EGFR. Four weeks of diabetes led to a profound alteration in gene expression within the mesenteric bed with 1167 of the 3074 annotated genes being up-regulated and 141 genes down-regulated by at least 2-fold. The up-regulated gene ontologies included receptor tyrosine kinases, G-protein coupled receptors, and ion channel activity. In particular, significant overexpressions of colipase, phospholipase A2, carboxypeptidases, and receptor tyrosine kinases such as EGFR, erbB2 and fibroblast growth factor receptor were observed in diabetes mesenteric vasculature. A 4 week intraperitoneal treatment of diabetic animals with AG1478 (1.2 mg/kg/alt diem) beginning on the same day as STZ injection prevented up-regulation of the majority (similar to 95%) of the genes associated with STZ diabetes including those apparently "unrelated" to the known EGFR pathway without correction of hyperglycemia. These results suggest that activation of EGFR signaling is a key initiating step that leads to induction of multiple signaling pathways in the development of diabetes-induced vascular dysfunction. Thus, therapeutic targeting of EGFR may represent a novel strategy for the prevention and/or treatment of vascular dysfunction in diabetes. (C) 2009 Elsevier Inc. All rights reserved.
Abstract: This paper proposes a novel and simple direct power control (DPC) scheme of a three-phase pulsewidth-modulated rectifier without the use of a predefined switching table. The converter switching state selection is based on fuzzy logic rules, using the instantaneous active and reactive power tracking errors as fuzzy logic variables. The basic idea of fuzzy rules synthesis is based on the knowledge of the instantaneous variation of active and reactive power. According to the input fuzzy variables and in a specific moment, the best switching state of the converter is chosen to restrict the instantaneous active and reactive power tracking errors simultaneously, for maintaining the dc-bus voltage close to the reference value and guaranteeing the unity-power-factor operation. The main advantages of the proposed DPC scheme, compared to the classical one, are that it is not necessary to use hysteresis comparators, and smooth control of active and reactive power is obtained during all sectors. Finally, the developed DPC was tested both in simulations and experimentally, and illustrative results are presented here. Results have proven excellent performance, and verify the validity of the proposed DPC scheme which is much better than the classical DPC.
Design and implementation of high performance direct power control of three-phase PWM rectifier, via fuzzy and PI controller for output voltage regulation

Abstract: This paper proposes direct power control (DPC) for three-phase PWM rectifiers using a new switching table, without line voltage sensors. The instantaneous active and reactive powers, directly controlled by selecting the optimum state of the converter, are used as the PWM control variables instead of the phase line currents being used. The main goal of the control system is to maintain the dc-bus voltage at the required level, while input currents drawn from the power supply should be sinusoidal and in phase with respective phase voltages to satisfy the unity power factor (UPF) operation. Conventional PI and a designed fuzzy logic-based controller, in the dc-bus voltage control loop, have been used to provide active power command. A dSPACE based experimental system was developed to verify the validity of the proposed DPC. The steady-state, and dynamic results illustrating the operation and performance of the proposed control scheme are presented. As a result, it was confirmed that the novel DPC is much better than the classical one. Line currents very close to sinusoidal waveforms (THD < 2%) and good regulation of dc-bus voltage are achieved using PI or fuzzy controller. Moreover, fuzzy logic controller gives excellent performance in transient state, a good rejection of impact load disturbance, and a good robustness. (C) 2008 Elsevier Ltd. All rights reserved.

Notes: Bouafia, Abdelouahab Krim, Fateh Gaubert, Jean-Paul

URL: <Go to ISI>://WOS:000262890100002
The lattice dynamics and elastic properties of the ternary AgBr$_{1-x}$Cl$_x$ alloy have been studied using first-principles calculations. These are done using the density-functional perturbation theory (DFPT) and employing the virtual-crystal approximation (VCA). We study the variation of the optical phonon frequencies ($\omega_{\text{TO}}$ and $\omega_{\text{LO}}$) and of the acoustical phonon frequencies ($\omega_{\text{TA}}$ and $\omega_{\text{LA}}$), the high-frequency dielectric coefficient ($\epsilon_{\infty}$), the dynamic effective charge ($Z^*$) and the elastic constants ($C_{11}$, $C_{12}$, $C_{44}$) as a function of the composition ($x$). We find that the phonon frequencies as well as the elastic constants follow a quadratic law in $x$ and agree well with the available experimental results. The elastic constant tensors for simple cubic 8-atom supercells with $x = 0.25$, 0.5 and 0.75 have been computed and are in good agreement with those obtained from VCA and experiments. (C) 2009 Elsevier B.V. All rights reserved.

Notes: Bouamama, Kh Djemia, P. Daoud, K. Cherif, S. M.

URL: <Go to ISI>://WOS:000273115500003
The lattice dynamics of the ternary ZnSe$_{1-x}$Tex alloy have been studied using first principles calculations. These are done using the density-functional perturbation theory (DFPT) within the local density approximation (LDA) and employing the virtual-crystal approximation (VCA). We study the variation of the optical phonon frequencies ($\omega$(TO) and $\omega$(LO)), the high-frequency dielectric coefficient ($\varepsilon$(\infty)) and the dynamic effective charge ($Z^*$) as a function of the composition ($x$). We found that the $\omega$(TO) and $\omega$(LO) follow a quadratic law in $x$ and agree well with the experiment which proves that the VCA is a reliable method for mixed modes determination (2 bonds-1 mode). The obtained $\varepsilon$(\infty) and $Z^*$ have a quadratic form with $x$. We have also predicted the behavior of the optical and acoustical phonons with $x$ at the high symmetry point X and L.

Notes: Bouamama, K. Djemia, P. Lebga, N. Kassali, K.
URL: <Go to ISI>://WOS:000272249100002
The lattice dynamics and elastic properties of the ternary ZnxCd1-xSe alloy have been studied using first-principle calculations. These are done using the density-functional perturbation theory (DFPT) within local density approximation (LDA) and employing virtual-crystal approximation (VCA). We study the variation of the optical phonon frequencies (omega(TO) and omega(LO)), the high-frequency dielectric coefficient (epsilon(infinity)), the dynamic effective charge (Z*) and the elastic constants (C_{11}, C_{12}, C_{44}) as a function of the composition (x). We found that the omega(TO) and omega(LO) follow a quadratic law in x and agree well with the experiment. The obtained epsilon(infinity), Z*, C_{11}, C_{12} and C_{44} have a quadratic form with x. The elastic constant tensors for simple cubic eight-atom supercells with x = 0.25, 0.5 and 0.75 have been computed and are in good agreement with those obtained from VCA.
Healthcare information systems (HCIS) are complex, heterogeneous, and spread out over multiple locations making their management and exploitation very onerous and lacking efficiency. Integration of these sub-systems seems necessary and needs a judicious choice of technologies and an adapted architecture. Significant benefits in terms of better economic costs and higher quality of care can be obtained by adopting good integration strategies and suitable technologies. This paper studies the importance of HCIS integration and proposes the design of MOBIFLEX, a generic architecture well suited for integrating HCIS. The architecture is a combination of mobile agents, static agents and agents-services. The aim of the combination of these new technologies is to ease flexible integration and exploitation of disparate HCIS sub-systems. As mobility is inherent to healthcare environments, the architecture is managed by mobile workflows and empowered by fault-tolerance mechanisms. Finally, technical solutions are proposed to implement the architecture in JADE platform enhanced with LEAP and JADEX.
In this paper, distorted and unbalanced three-phase bus voltages (DUTBV) of distribution systems are analyzed by means of symmetrical harmonic components (SHCs). A new method which characterizes the dual behavior of unbalance and harmonics on steady state distribution system operations is presented. The SHCs of DUTBV are deduced for a whole range of harmonic orders of interest by the use of three matrices' transformations. Each matrix is applied to a sub-set of harmonic orders of which the corresponding balanced three-phase quantities rotate in the same sequence. The unbalanced voltage phasors abc at each h(th) harmonic order are then transformed to three new phasors called balanced, first unbalanced, and second unbalanced. Their representation in Fourier series allows us to identify a harmonic signature of DUTBV in analytical or graphical ways. The method is applied to typical three-phase distribution systems. The obtained results confirm the efficiency of the proposed method for power quality monitoring and reporting and it can be used as a powerful diagnosis tool.
During lactic acid fermentation, seed culture is usually carried out without pH control, while culture is carried out at pH controlled at the optimal value to overcome inhibitory effects. The Luedeking-Piret expression was therefore previously modified by introducing additional terms involving the undissociated form of the lactic acid, the main inhibitory species, in case of batch cultures without pH control or involving the residual lactose concentration to account for the carbon substrate limitation, responsible for cessation of production during batch cultures of Lactobacillus helveticus at controlled pH. Both expressions were also merged to deduce a generalized model. Both models, as well as the Luedeking-Piret model, were developed to describe continuous two-stage culture of L helveticus. By considering the parameter values obtained from the fitting of batch culture data, both modified Luedeking-Piret models showed interesting predictive potential. Indeed, some rather reliable predictive calculated values were recorded in both stages; the residual standard deviations were 0.5 and less than 8.8 for the biomass and the product concentrations at steady-state in the culture stage (second stage). The optimization of the parameters for growth- and non-growth-associated parameters improved the fitting in the culture stage, leading to residual standard deviations below 2.6 for lactic acid concentrations at steady-state. (C) 2009 Elsevier Ltd. All rights reserved.
In this paper, a new class of reciprocal-orthogonal parametric (ROP) transforms having $3N/2$ independent parameters for a sequence length $N$ that is a power of two is proposed. The basic idea behind the proposed transforms is to appropriately combine a new parametric kernel with that of the well-known Walsh-Hadamard transform that results in a square parametric matrix operator of order $N$ with some very interesting properties. It is shown that the inverse matrix operator of the proposed class of transforms can be easily obtained by taking the reciprocal of each of the entries of the forward matrix and then transposing the resulting matrix. In addition, a simple method is introduced in order to facilitate the generation of the matrix operator of the proposed ROP transforms. This method is then used specifically to construct new classes of unitary and multiplication-free transforms. Many other new transforms, as well some of the existing ones, can be derived from these proposed ROP transforms. An efficient algorithm is developed for a fast computation of the proposed transforms. In view of the availability of this fast algorithm and the property of easily computable inverse transform, the proposed ROP transforms can be used in many transform-based applications, with their independent parameters providing more degrees of freedom such as affording an additional secret key in watermarking and encryption applications.
Using First-principle calculations, we have studied the structural, electronic and elastic properties of M2TlC, with M = Ti, Zr and Hf. Geometrical optimization of the unit cell is in good agreement with the available experimental data. The effect of high pressures, up to 20 GPa, on the lattice constants shows that the contractions are higher along the c-axis than along the a axis. We have observed a quadratic dependence of the lattice parameters versus the applied pressure. The band structures show that all three materials are electrical conductors. The analysis of the site and momentum projected densities shows that bonding is due to M d-C p and M d-Tl p hybridizations. The M d-C p bonds are lower in energy and stiffer than M d-Tl p bonds. The elastic constants are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's modulus and Poisson's ratio for ideal polycrystalline M2TlC aggregates. We estimated the Debye temperature of M2TlC from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of Ti2TlC, Zr2TlC, and Hf2TlC compounds that requires experimental confirmation.
Based on first-principles total energy calculations, we have investigated the systematic trends for structural, electronic and elastic properties of the MAX phases M2GaN depending on the type of M transition metal (M are Ti, V and Cr). The optimized zero pressure geometrical parameters: the two unit cell lengths (a, c), the internal coordinate z and the bulk modulus are calculated. The results for the lattice constants are in agreement with the available experimental data. The band structures show that all studied materials are electrical conductors. The analysis of the site-projected l-decomposed density of states shows that bonding is due to M d-N p and M d-Ga p hybridizations. The elastic constants are calculated using the static finite strain technique. The shear modulus C44, which is directly related to the hardness, reaches its maximum when the valence electron concentration is in the range 10.5-11.0. The isotropic elastic moduli, namely, bulk modulus (B), shear modulus (G), Young's modulus (E) and Poisson's ratio (sigma) are calculated in framework of the Voigt-Reuss-Hill approximation for ideal polycrystalline M2GaN aggregates. We estimated the Debye temperature Of M2GaN from the average sound velocity. This is the first quantitative theoretical prediction of the electronic structures, and elastic constants and related properties for Ti2GaN, V2GaN and Cr2GaN compounds that require experimental confirmation. (C) 2009 Elsevier Masson SAS. All rights reserved.
Elastic properties of mono- and polycrystalline RCRh3 (R = Sc, Y, La and Lu) under pressure effect

Structural and elastic properties of perovskite-type RCRh₃, with R = Sc, Y, La and Lu, under pressure effects have been investigated using the pseudo-potential plane-wave method based on the density functional theory within the generalized gradient approximation. For monocrystalline RCRh₃, the optimized lattice constants, elastic constants and directional elastic wave velocities are calculated and analyzed in comparison with the available experimental and theoretical data. An increase in the lattice constant has been found with increasing atomic size of the R element and a corresponding decrease in the hardness. The anisotropic elastic constants and directional elastic wave velocities increase linearly with increasing pressure. A set of elastic parameters and related properties, namely bulk and shear moduli, Young's modulus, Poisson's ratio, Lame's coefficients, average sound velocity and Debye temperature are predicted in the framework of the Voigt-Reuss-Hill approximation for polycrystalline RCRh₃. We have found that the toughness of RCRh₃ compounds can be improved at high pressure. (C) 2009 Elsevier Ltd. All rights reserved.
Using ab initio calculations, we have studied the structural, electronic and elastic properties of M2GeC (M=Ti, V, Cr, Zr, Nb, Mo, Hf, Ta and W). Geometrical optimizations of the unit cell are in agreement with the available experimental data. The band structures show that all studied materials are electrical conductors. The analysis of the site and momentum projected densities shows that bonding is due to M d-C p and M d-Ge p hybridizations. The elastic constants are calculated using the static finite strain technique. The shear modulus C (44), which is directly related to the hardness, reaches its maximum when the valence electron concentration is in the range 8.41-8.50. We derived the bulk and shear moduli, Young's moduli and Poisson's ratio for ideal polycrystalline M2GeC aggregates. We estimated the Debye temperature of M2GeC from the average sound velocity. This is the first quantitative theoretical prediction of the elastic constants of Ti2GeC, V2GeC, Cr2GeC, Zr2GeC, Nb2GeC, Mo2GeC, Hf2GeC, Ta2GeC and W2GeC compounds, and it still awaits experimental confirmation.
We have investigated the elastic, electronic and optical properties of the Nowotny-Juza filled tetrahedral semiconductor alpha-LiCdAs using the pseudo-potential plane-wave within the density functional theory. A numerical first-principles calculation of the elastic constants was used to calculate C(11), C(12) and C(44). The values of the sound velocities in different directions have been calculated. The isotropic elastic moduli, namely bulk modulus, shear modulus, Young’s modulus, Poisson’s ratio and Lame’s constants are calculated in framework of the Voigt-Reuss-Hill approximation for ideal polycrystalline alpha-LiCdAs aggregate. We estimated the Debye temperature of alpha-LiCdAs from the average sound velocity. The analysis of the site and momentum projected densities and charge density reveals strongly covalent Cd-As and strongly ionic Li-As bonds. Band structures show that alpha-LiCdAs is a narrow direct band gap. The variation of the fundamental band gap versus pressure is well fitted to a quadratic function and a direct to an indirect band gap transition occurs at 15.30 GPa. Furthermore, the dielectric function, optical reflectivity, refractive index, extinction coefficient and electron energy loss are calculated for radiation up to 20 eV. The results are compared with the available experimental and theoretical results. (C) 2009 Elsevier Ltd. All rights reserved.
We have investigated the structural, elastic, electronic, optical and thermal properties of c-SiGe\textsubscript{2}N\textsubscript{4} by using the ultrasoft pseudopotential density functional method within the generalized gradient approximation. The calculated structural parameters, including the lattice constant, the internal free parameter, the bulk modulus and its pressure derivative are in agreement with the available data. The independent elastic constants and their pressure dependence, calculated using the static finite strain technique, satisfy the requirement of mechanical stability, indicating that c-SiGe\textsubscript{2}N\textsubscript{4} compound could be stable. We derive the shear modulus, Young's modulus, Poisson's ratio and Lame's coefficients for ideal polycrystalline c-SiGe\textsubscript{2}N\textsubscript{4} aggregate in the framework of the Voigt-Reuss-Hill approximation. We estimate the Debye temperature of this compound from the average sound velocity. Band structure, density of states, Mulliken charge populations and pressure coefficients of energy band gaps are investigated. Furthermore, in order to understand the optical properties of c-SiGe\textsubscript{2}N\textsubscript{4}, the dielectric function, refractive index, extinction coefficient, optical reflectivity and electron energy loss are calculated for radiation up to 40 eV. Thermal effects on some macroscopic properties of c-SiGe\textsubscript{2}N\textsubscript{4} are predicted using the quasi-harmonic Debye model in which the lattice vibrations are taken into account. We have obtained successfully the variations of the primitive cell volume, volume expansion coefficient, heat capacities and Debye temperature with pressure and temperature in the ranges of 0-40 GPa and 0-2000 K. For the first time, the numerical estimates of the elastic constants and related parameters, and the thermal properties are performed for c-SiGe\textsubscript{2}N\textsubscript{4}.
The structural and elastic properties of the cubic perovskite-type BiAlO3 are studied using the pseudopotential plane wave method within the local density approximation. The calculated structural parameters are in good agreement with previous calculations. The elastic constants are calculated using the static finite strain technique. Thermal effects on some macroscopic properties of BiAlO3 are predicted using the quasi-harmonic Debye model, in which the lattice vibrations are taken into account. We have obtained successfully the variations of the lattice constant, volume expansion coefficient, heat capacities and Debye temperature with pressure and temperature in the ranges of 0-30GPa and 0-1000K. (C) 2009 Elsevier B.V. All rights reserved.
The effect of high-pressures on the structural and elastic properties of XP zinc-blende compounds, with X = B, Al, Ga and In, has been investigated using the full-potential augmented plane wave plus local orbitals method within density functional theory. The bulk properties, including lattice constant, bulk modulus and its pressure derivative are obtained. The elastic constants and their pressure dependence are calculated using total energy variation with strain technique. We derived the bulk modulus, shear modulus, Young's modulus and Poisson's ratio for ideal polycrystalline XP aggregates. We estimated the Debye temperature of XP compounds from the average sound velocity. Our results are in reasonable agreement with the available theoretical and experimental data. (C) 2008 Elsevier B.V. All rights reserved.
We report first-principles study of structural, elastic, electronic and optical properties of the cubic perovskite BiAlO3 using the pseudopotential plane waves method within the local density approximation. The calculated structural parameters are in good agreement with previous calculations. The elastic constants and their pressure dependence are calculated using the static finite strain technique. A linear pressure dependence of the elastic stiffness is found. Band structures show that BiAlO3 has an indirect band gap between the occupied O 2p and unoccupied Bi 6p states. The density of states and Mulliken charge populations analysis shows that Al-O and Bi-O bonds are covalent with a strong hybridization. The variation of the gap versus pressure is well fitted to a quadratic function and an indirect to direct band gap transition occurs at 15.5 GPa. Furthermore, in order to understand the optical properties of BiAlO3, the dielectric function, absorption coefficient, refractive index, extinction coefficient, optical reflectivity and electron energy loss are calculated for radiation up to 30 eV. (c) 2008 Elsevier Masson SAS. All rights reserved.
Polycrystalline thin films CuGa0.3In0.7Se2 (CIGS) were deposited onto coated soda-lime glass and transparent conducting oxide (SnO2) substrates at 480 degrees C substrate temperature with a low cost and potentially large area deposition method by using close-spaced vapor transport technique (CSVT) designed in our laboratory (LAMPS). Morphological, structural and compositional properties were determined using X-ray diffraction (XRD), scanning electron microscopy (SEM) and energy dispersive spectroscopy (EDS), respectively. Optical transmission spectra were used to determine absorption coefficient and gap energy of the sample. Using photoacoustic spectroscopy, we report the activation energies of shallow and deep levels. Finally, we discuss the results obtained. (C) 2009 Published by Elsevier Ltd.

The discontinuous precipitation kinetics in Al-30% wt. Zn alloy have been investigated at temperatures ranging from 348 to 503 K (75 to 230 degrees C) by using an optical microscopy, X-ray diffraction, differential dilatometer, differential scanning calorimetry and microhardness measurement. We have found that at all temperatures less than 180 degrees C the supersaturated solid solution of quenched alloy was observed to decompose completely by a cellular precipitation reaction. Quantitative metallography methods have been applied to measure the corresponding transformed volume fractions at different temperatures and times of precipitation. The variation of the heating rate and the application of different methods have allowed us to calculate two kinetic parameters of precipitation: the activation energy of the process and the Avrami exponent. (C) 2008 Elsevier Inc. All rights reserved.
Abstract: Some works take into account the shearing deformation of frictional material, but its effect on the transient response has not yet been considered. In this paper, optimal deformation angle and resonance frequency of frictional material are investigated. Force expressions in the stator/rotor interface are developed. Mechanical characteristics taking into account the effect of shearing deformation are deduced and presented. It is shown that the shearing deformation affects the initial state as well as on the steady state. Also, the fast time response of the motor is deduced. Results of the simulation are validated using the measurements made by other researchers on traveling wave piezoelectric motor AWM90-X, Daimler-Benz type, and a prototype USM(AWM-90). (C) 2008 Elsevier B.V. All rights reserved
The polymorphic mutation 677 C-T in the methylenetetrahydrofolate reductase (MTHFR) gene presents a heterogeneous worldwide distribution and is associated with different disorders such as cardiovascular disease. Its frequency shows great ethnic and geographic variations. The aim of this work is to determine the frequency of MTHFR 677 C-T and coexistence of MTHFR 677 C-T with 2 other common, hereditary thrombophilia causes-namely, factor V 1691 G-A and prothrombin (PT) 20210 G-A mutation-in the Setif region of Algeria.

The study involved 147 apparently healthy participants (82 men and 65 women). Genotyping was carried out by a real-time polymerase chain reaction. The MTHFR 677T carrier frequency was found to be 54.4% (80/147); 59 individuals were heterozygous (40.1%), and 21 were homozygous (14.3%). The frequency of MTHFR 677T was found to be 34.3%. Among the 147 individuals, 3 (2.0%) had factor V Leiden, and 5 (3.4%) had PT 202 10 A mutation. Of the 80 participants with MTHFR 677T mutation, 2 had heterozygote factor V 1691 G-A gene mutation, and 4 had heterozygote PT 202 10 G-A gene mutation. The results showed that MTHFR 677T prevalence is quite high: an allelic frequency of 34.3% with a genotype frequency of 14.3%. Factor V 1691 G-A and PT 20210 G-A gene Mutations are rare in the healthy population of the Setif region of Algeria.

Notes: Bourouba, Romyla Houcher, Bakhouche Djabi, Farida Egin, Yonca Akar, Nejat
This document is both a synthesis of current notions about complex systems and a practical approach description. A disambiguation is proposed and exposes possible reasons for controversies related to causation and emergence. Theoretical considerations about simulations are presented. A justification is then given for the development of practical tools and techniques for the investigation of complex systems. A methodology for the usage of these tools is finally suggested, illustrated by application examples. (C) 2008 Wiley Periodicals, Inc. Complexity 15: 36-60, 2009
Influence of some metal ions on the structure and properties of doped beta-PbO(2)

Chahmana, N. Matrakova, M. Zerroual, L. Pavlov, D.

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Abstract: The lead dioxide active mass of positive lead-acid battery plates is a gel-crystal system with proton and electron conductivity of the hydrated gel zones. This paper discusses the influence of Sn(2+), Sb(3+), Co(2+), Mg(2+) and Al(3+) ions, added to the formation electrolyte, upon the stoichiometry, structure and phase composition of the PbO(2) positive active material (PAM) of lead-acid batteries. PAM samples doped with the above metal ions are characterized by: X-ray diffraction (XRD), thermal gravimetric analysis (TGA), scanning electron microscopy (SEM), inductively coupled plasma atomic emission spectroscopy (ICP-AES) and chemical analysis. The obtained results show that different metal ions are incorporated in different quantities in the PbO(2) particles. Under the influence of dopants, the stoichiometric coefficient of lead dioxide decreases, i.e. dopants increase the non-stoichiometry of PbO(2). The foreign ions in the formation electrolyte exert strong influence on the microstructure of PAM and change the proportion between crystal and hydrated gel zones in the particles. (C) 2008 Elsevier B.V. All rights reserved.

Notes: Chahmana, N. Matrakova, M. Zerroual, L. Pavlov, D.
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Influence of Mg(2+), Al(3+), Co(2+), Sn(2+) and Sb(3+) on the electrical performance of doped beta-lead dioxide

Abstract: The relationship between the hydrogen content of the crystal lattice of PbO(2) and the capacity of PAM is still a subject of interest. The present paper concerns the effect of the doping of beta-lead dioxide on the composition of PAM gel zones and its relationship to battery performance. Differential scanning calorimetry (DSC) and thermogravimetry (TG) as well as X-ray diffraction analysis were used as techniques of investigation in this study. The results showed that the quantity of water present in the gel zones and PAM discharge capacity are mainly dependant of the nature of the dopant. (C) 2008 Elsevier B.V. All rights reserved.
Nanocomposites polypropylene and modified montmorillonite were prepared by
mixture in the melted state using an internal mixer. The effect of the PP-g-MA/Mmt-C18 ratio on
the quality of clay dispersion was examined. Results obtained showed that clay is mainly
intercalated. The mixture whose PP-g-MA/Mmt-C(18) ratio is 3/1 presents the best dispersion of
clay. The microstructure and scaling of rheological properties of polypropylene/montmorillonite
nanocomposite have been investigated. The dynamic modulus follows a power law of the type
$G' \sim m(p)(s)$. This evolution show tow zone with different values of the critical exponent
$s$, which can give information about dominant forces in the formed structure.
In order to simulate the energy deposited of low energy electrons in a solid state silicon detector, a detailed Monte Carlo technique has been applied to describe electron scattering processes from silicon in the keV and sub-keV electron energy range. However, the precision on the energy deposited depends strongly on the accuracy of the energy of the total backscattered electrons. Thus, accurate models are needed to simulate the energy spectra of primary, secondary and Auger electron yields. In the present Letter, we show that the inclusion of ionizations, excitations, secondary electron generation, relaxations and Auger emissions provide a better description of the experimental measurements. (c) 2009 Elsevier B.V. All rights reserved.
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Abstract: Thin TiO(2) films obtained by cathodic electrosynthesis from an acidic aqueous bath containing TiOSO(4), H(2)O(2) and KNO(3) on conductive glass indium tin oxide have been physically and electrochemically characterised. Secondary ion mass spectroscopy profile of the crystallised gel after heat treatment at 400 A degrees C shows the presence of TiO(2) with traces of TiO and oxygen. X-ray patterns confirm the presence of anatase nanocrystallites for the annealed film and an amorphous structure for the non-annealed gel. Scattering electron microscopy surface micrographies reveal an opened porous nanostructure of the deposits. Cyclic voltammetry and impedance spectroscopic measurements reveal the different behaviour of the films obtained before and after the annealing, showing an important electrical activity of the non-annealed films. The dependence of capacitance values with potential in the anodic domain of depletion is obviously remarked from impedance plots for both gel and crystal forms of the film, which confirmed the fact that films obtained in this way have n-type properties. The potential of flat band equals -0.6 V/Ag/AgCl in pH range of 6.5 has been estimated according to Mott-Shottky curves for the crystallised oxide; meanwhile, the Mott-Shottky curve for the hydrated gel was nonlinear.
Notes: Chettah, H. Abdi, D. Amardjia, H. Haffar, H.
URL: <Go to ISI>://WOS:000264836200006
By means of density-functional theory with the generalized gradient approximation and using the virtual-crystal approximation, we report first-principles calculation results on the structural and elastic properties of Ti1-xZrxN alloy. In order to gain some further information on the mechanical properties of Ti0.5Zr0.5N compound, we also calculated the Young modulus, Poisson ratio, and anisotropy factor. The variation of calculated unit cell parameter for Ti1-xZrxN structure increases with Zr content x. A linear dependence of the elastic constants and the bulk modulus over a range of composition x is found. All the C-ij of Ti0.5Zr0.5N increase linearly with increasing pressure. The same behaviour is observed for the other compounds with Zr compositions x.
The quantum states for a time-dependent charged oscillator are investigated by an invariant operator method and a unitary transformation approach. The wave functions are derived precisely in both cases of discrete and continuous quantum spectra. By choosing time functions of the Hamiltonian in different forms, our theory can be applied to diverse types of quantum dynamical systems. In the limit of a simple case, we confirmed that our result associated with a discrete spectrum recovers to that of Storchak.
The methanolic and aqueous extracts of Pituranthos scoparius (Coss. & Dur.) Benth. & Hook. (Apiaceae) have been analyzed and fifteen metabolites were identified: two cinnamic acids (5-O-caffeoyl quinic acid and 5-feruloyl quinic acid), and thirteen known flavonoids (vicenin-2, six quercetin and six isorhamnetin O-glycosylated derivatives). 5-O-caffeoylquinic acid was the main component, while, of the flavonoids, the isorhamnetin derivatives were present to a greater extent.
Nanobodies - the new concept in antibody engineering

Nanobodies are antibody-derived therapeutic proteins that contain the unique structural and functional properties of naturally occurring heavy-chain antibodies. The Nanobody technology was originally developed following the discovery that camelidae (camels and llamas) possess fully functional antibodies that lack light chains. These heavy-chain antibodies contain a single variable domain (VHH) and two constant domains (CH2 and CH3). Importantly, the cloned and isolated VHH domain is a perfectly stable polypeptide harboring the full antigen-binding capacity of the original heavy-chain antibody. These newly discovered VHH domains with their unique structural and functional properties form the basis of a new generation of therapeutic antibodies which were named Nanobodies. The aim of this paper is to show the properties of Nanobodies, their production and expression, applications and their clinical status.

Notes: Deffar, Khalissa Shi, Hengliang Li, Liang Wang, Xingzhi Zhu, Xiaojuan

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We present in this paper, M-shell ionization cross sections and M X-ray production cross sections calculated within the Energy loss, Coulomb deflection, Perturbed Stationary State and Relativistic effects (ECPSSR) theory for elements with 72 \( \leq Z \leq 90 \) for protons with 0.1-4.0 MeV energy. Our results are compared to the plane wave Born approximation (PWBA) predictions, the relativistic plane-wave Born approximation including corrections for binding and Coulomb deflection effect (RPWBA-BC) results and the ECPSSR calculations from earlier works. On the other hand, semiempirical and empirical M X-ray production cross sections are deduced from the polynomial fitting of the available experimental data collected from different sources. A comparison is made between the different sets of results. The differences between the above calculations and the experimental results are pointed out and discussed. Copyright (C) 2009 John Wiley & Sons, Ltd.
In the title compound, [Ni(C(8)H(7)O(4))(2){(CH(3))(2)SO}(2)], the Ni(II) atom is located on a crystallographic centre of symmetry and has a distorted octahedral coordination geometry of type MO(6). The bidentate dehydroacetic acid (DHA) ligands occupy the equatorial plane of the complex in a trans configuration, and the dimethyl sulfoxide (DMSO) ligands are weakly coordinated through their O atoms in the axial positions.
Blends of low density polyethylene with two types of starch, wheat starch and soluble starch, were prepared and submitted to biodegradation in natural environment. Films of PE/starch blends of different composition (starch content range from 0 to 15% w/w PE) were buried in the soil of public dump. The extent of biodegradation of these films was evaluated by the examination of their mass loss and the changes in their percentage of elongation at break, crystallinity and infrared spectra after soil burial. Films with soluble starch undergo weight losses greater than those of films with wheat starch. The evaluation of crystallinity rate reveals more important amorphous fraction destruction for films with soluble starch. The biodegradation is then more considerable for PE/soluble starch films than for PE/wheat starch films.
Bithiophene (BiTh) was galvanostatically polymerized in the presence of gallium arsenide (GaAs) particles at different concentration. The properties of the composite layers were studied by electrochemical method (cyclic voltammetry), UV-vis spectroscopy and photocurrent measurements. From UV-vis spectroscopy studies, the absorbance of the composites is larger than the polybithiophene absorbance in the UV region. The p-type semiconducting behaviour of the reduced polybithiophene was studied by photocurrent measurements. It was observed that the photocurrents of the composites was higher than that of the PBiTh without GaAs, and increased with GaAs concentration. Crown Copyright (C) 2009 Published by Elsevier B.V. All rights reserved.
BACKGROUND: The lifestyle risk factors for nasopharyngeal carcinoma (NPC) in North Africa are not known. METHODS: From 2002 to 2005, we interviewed 636 patients and 615 controls from Algeria, Morocco and Tunisia, frequency-matched by centre, age, sex, and childhood household type (urban/rural). Conditional logistic regression was used to evaluate the association of lifestyles with NPC risk, controlling for socioeconomic status and dietary risk factors. RESULTS: Cigarette smoking and snuff (tobacco powder with additives) intake were significantly associated with differentiated NPC but not with undifferentiated carcinoma (UCNT), which is the major histological type of NPC in these populations. As demonstrated by a stratified permutation test and by conditional logistic regression, marijuana smoking significantly elevated NPC risk independently of cigarette smoking, suggesting dissimilar carcinogenic mechanisms between cannabis and tobacco. Domestic cooking fumes intake by using kanoun (compact charcoal oven) during childhood increased NPC risk, whereas exposure during adulthood had less effect. Neither alcohol nor shisha (water pipe) was associated with risk. CONCLUSION: Tobacco, cannabis and domestic cooking fumes intake are risk factors for NPC in western North Africa. British Journal of Cancer (2009) 101, 1207-1212. doi:10.1038/sj.bjc.6605281 www.bjcancer.com Published online 1 September 2009 (C) 2009 Cancer Research UK


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In order to enhance the electrochemical performance of solid oxide fuel cells (SOFCs), La$_2$Ni$_{0.99}$Cu$_{0.01}$O$_{4+\delta}$ materials were prepared following the modified Pechini method. The microstructure and morphology of the samples were analyzed by XRD and SEM. The electrochemical performance was followed by impedance spectroscopy. La$_2$Ni$_{0.99}$Cu$_{0.01}$O$_{4+\delta}$ samples showed good electrochemical and physicochemical properties with respect to the undoped material and is potentially a promising cathode. Indeed, doping with such small amounts of copper (1%) into the nickel site led to the formation of pure phases and stabilized the material before and after use at high temperature under air. In contrast, doping with higher amounts of copper (2%, 5% and 10%) led, after heating at 1000 degrees C for 48 h, to the formation of another phase resulting from the diffusion of copper into the YSZ electrolyte, limiting the interest to these materials as SOFC cathodes. (c) 2009 Elsevier Ltd. All rights reserved.
In the present work, we studied the behaviour of 3BS and lead oxide paste as a function of soaking time in two sulfuric acid solutions respectively with 1.05 and 1.20 g cm$^{-3}$ specific gravity. The study was based on X-ray diffraction analysis (XRD), thermogravimetry (TG), differential scanning calorimetry (DSC) and chemical analysis. The results showed that during plates soaking, 3BS and PbO are converted to monobasic lead sulphate (1BS) and lead sulphate (PbSO$_4$). During plate formation in 1.05 s.g. H$_2$SO$_4$ solution, these compounds are oxidized to PbO(2), the XRD patterns showed that the longer is the time of plates soaking prior formation the lower is alpha-PbO(2) content in positive active material. On forming, PbSO$_4$ crystals convert to beta-PbO(2) whereas alpha-PbO(2) is a result of 3BS oxidation. The capacity and cycle life of PAM decrease with soaking time, the concentration of the H$_2$SO$_4$ Solution during soaking exerts stronger influence than the duration of soaking. (C) 2008 Elsevier B.V. All rights reserved.
We present structural, elastic, electronic and optical properties of the perovskites SrMO3 (M = Ti, and Sn) for different pressure. The computational method is based on the pseudo-potential plane wave method (PP-PW). The exchange-correlation energy is described in the generalized gradient approximation (GGA). The calculated equilibrium lattice parameters are in reasonable agreement with the available experimental data. This work shows that the perovskites SrTiO3, and SrSnO3 are mechanically stable and present an indirect band gaps at the Fermi level. Applied pressure does not change the shape of the total valence electronic charge density and most of the electronic charge density is shifted toward O atom. Furthermore, in order to understand the optical properties of SrMO3, the dielectric function, absorption coefficient, optical reflectivity, refractive index, extinction coefficient and electron energy-loss are calculated for radiation up to 80 eV. The enhancement of pressure decreases the dielectric function and refractive indices of SMO3 and SrSnO3. Crown Copyright (C) 2009 Published by Elsevier Ltd. All rights reserved.
Electrical and magnetic properties were studied for evaporated Fe thin films on glass and Si substrates. These properties were investigated by means of the four point probe and the magneto-optical Kerr effect techniques. Rutherford backscattering (RBS) and scanning electron microscopy (SEM) experiments show no interdiffusion at the interface Fe/Si for these samples. The electrical resistivity $\rho$ is found to be larger in Fe/glass than in Fe/Si for the same thickness. Diffusion at the grain boundaries seems to be the dominant factor in the $\rho$ values in this 6 to 110 nm thickness range; the reflection coefficient is smaller in Fe/glass ($R \approx 0.40$) than in Fe/Si(100) ($R \approx 0.65$). Saturation field and strain values confirm that Fe films have a stress induced magnetic anisotropy. Coercive field $H(C)$ values range from 2.45 Oe for Fe/Si(100) to 17.65 Oe for Fe/Si(111) for the same Fe thickness (45 nm).
Abstract: The behavior of a heat exchanger in variable regime can be described by a two parameter model with a time lag and a time constant. In many studies, the analytical calculation based on the energy balance permitted to express the time constant in various configurations of the device operating. However, the time lag is only experimentally determined. We propose in this paper an empirical method for the prediction of this parameter when a double pipe heat exchanger is submitted to a flow rate step at the entrance. Experimental data are used for developing correlations of both hot and cold fluids. (c) 2008 Elsevier Ltd. All rights reserved.
A perturbation method is used to solve an unsteady one-dimensional heat conduction problem in a cylinder. A simple second order explicit solution is obtained. It is shown that this solution is accurate even for high values of the Biot number in a region surrounding the center of the cylinder.
In order to predict the long-term durability of polymer matrix composite materials submitted to humid environments, the moisture diffusion behavior has to be investigated. The knowledge of the effective diffusivity is actually required, for estimating the moisture content of polymer-based fiber-reinforced materials, even when a basic behavior such as Fick's law is assumed to occur. The original contribution of the present work is to provide new analytical solutions for the effective diffusivities from the solving of unit cell problems on representative volume elements by means of several multi-scale approaches. Composite materials with impermeable or permeable fibers are extensively investigated. The proposed approaches are extended to the practical case of composite materials containing realistic voids volume fractions.
Using a full-relativistic version of the full-potential augmented plane wave plus local orbitals (FP-APW + lo) method within the local density approximation (LDA), we have studied the elastic, electronic and optical properties of the filled skutterudites CeFe4As12 and CeFe4Sb12. Structural parameters, including lattice constant, internal free parameters and, bulk modulus and its pressure derivative were calculated. We have determined the full set of first-order elastic constants, Young’s modulus, Poisson’s ratio and the Debye temperature of these compounds. Band structures, density of states, pressure coefficients of energy band gaps are also given. It is found that both CeFe4As12 and CeFe4Sb12 are indirect band gap semiconductors. The valence band maximum (VBM) is located at Gamma point, whereas the conduction band minimum (CBM) is located at N point. Optical constants, including the dielectric function, optical reflectivity, refractive index and electron energy loss were calculated for radiation up to 30 eV. This is the first quantitative theoretical prediction of the elastic and optical properties for these compounds, and it still awaits experimental confirmation. (C) 2009 Elsevier Ltd. All rights reserved.
A study of the high-pressure anisotropy of MgO was conducted using first-principles calculations based on density functional theory within the generalized gradient approximations. The pressure dependence of the elastic stiffness coefficients and the anisotropy parameters, in both B1 and B2 phases, shows that for high-hydrostatic compression the easiest deformation is the shear along (100) plane and the material's response to deformation and to shearing strains is quite the same. According to the calculations of the velocities of propagation of elastic waves, we deduced that MgO develop an elastic anisotropy, especially, in the B1 phase. We present the B2 phase elastic properties which are not already studied under high pressure.
Based on first-principles total energy calculations, we predict the elastic and electronic properties of the anti-perovskites AsNSr3, SbNSr3 and BiNSr3 Compounds. The calculated lattice constants are in good agreement with the available results. The independent elastic constants (C11, C12 and C44) and their pressure dependence are calculated using the static finite strain technique. The isotropic elastic moduli, namely, bulk modulus (B), shear modulus (G), Young’s modulus (E), Poisson's ratio (sigma) and Lame's constants (lambda and mu) are calculated in framework of the Voigt-Reuss-Hill approximation for ideal polycrystalline ANSr(3) aggregates. By analysing the ratio between the bulk and shear moduli, we conclude that ANSr(3) compounds are brittle in nature. We estimated the Debye temperature of ANSr(3) from the average sound velocity. The band structures show that all studied materials are semiconductors. The analysis of the site and momentum projected densities, charge transfer and charge densities show that bonding is of covalent-ionic nature. This is the first quantitative theoretical prediction of the elastic and electronic properties of AsNSr3, SbNSr3 and BiNSr3 compounds that requires experimental confirmation. (C) 2009 Elsevier B.V. All rights reserved.
Using first-principles density functional calculations, the effect of high pressures, up to 40 GPa, on the structural and elastic properties of ANCa(3), with A = P, As, Sb, and Bi, were studied by means of the pseudo-potential plane-waves method. Calculations were performed within the local density approximation and the generalized gradient approximation for exchange-correlation effects. The lattice constants are in good agreement with the available results. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's modulus, Poisson's ratio and Lame's constants for ideal polycrystalline ANCa3 aggregates. By analysing the ratio between the bulk and shear moduli, we conclude that ANCa3 compounds are brittle in nature. We estimated the Debye temperature of ANCa3 from the average sound velocity. This is the first quantitative theoretical prediction of the elastic properties of PNCa3, AsNCa3, SbNCa3, and BiNCa3 compounds, and it still awaits experimental confirmation. (C) 2009 Elsevier B.V. All rights reserved.
Using ab initio calculations, we have studied the structural, elastic and electronic properties of XNCa3 (X = Ge, Sn and Pb) compounds. Geometrical optimization of the unit cell are in agreement with the available experimental data. The band structures show that all studied materials are electrical conductors. The analysis of the site and momentum projected densities, charge transfer and total valence charge density shows that the chemical bonding in XNCa3 compounds is of covalent-ionic nature with the presence of metallic character. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk, shear and Young's moduli for ideal polycrystalline XNCa3 aggregates. By analysing the ratio between the bulk and shear moduli, we conclude that: XNCa3 compounds are brittle in nature. We estimated the Debye temperature of XNCa3 from the average sound velocity. (C) 2009 Elsevier Ltd. All rights reserved.
We present first-principle calculations on the structural, elastic, and high-pressure properties of rubidium halides compounds, using the pseudo-potential plane-waves approach based on density functional theory, within the generalized gradient approximation. Results are given for lattice constant, bulk modulus and its pressure derivative. The pressure transition at which these compounds undergo structural phase transition from NaCl-type to CsCl-type structure are calculated and compared with previous calculations and available experimental data. The elastic constants and their pressure dependence are calculated using the static finite strain technique. We derived the bulk and shear moduli, Young's modulus and Poisson's ratio for ideal polycrystalline RbF, RbCl, RbBr, and RbI aggregates. We estimated the Debye temperature of these compounds from the average sound velocity.
Based on a three-level rate equations model, we analyze through numerical simulations the population and photon number dynamics present within the cavity of a midinfrared quantum cascade laser. We find in particular that the injection current influences significantly the electron number dynamics trajectory. In addition, the equations that allow for the determination of the turn-on delay (t(th)) and buildup (Delta t) times are derived within the premises of our model in the most general case. The effects of the spontaneous emission factor beta on Delta t are also explored. (C) 2009 American Institute of Physics. [DOI: 10.1063/1.3124379]
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Abstract: The k(0)-standardization method of NAA is known as one of the most remarkable progress of NAA with its many advantages. Recently, our laboratory is highly involved in various areas of application of k(0)-NAA. This paper focuses on the application of the k(0)-NAA method in Nutritional and Health-Related Environmental field. Tobacco holds a leading position among different commodities of human consumption. The adverse health effects of toxic and trace elements in tobacco smoke on smokers and non-smokers are a special concern. In the present study, the concentration of 24 trace elements in cigarette tobacco of five different brands of Algerian and American cigarettes have been determined by k(0)-based INAA method. The results were compared with those obtained for samples from Iranian, Turkish, Brazilian and Mexican cigarettes tobacco. To evaluate the accurate of the results the SRM IAEA-140/TM was executed. The analytical results showed that the relative error of most of the elements was less than 10%.

Notes: Hamidatou, L. A. Khaled, S. Akhal, T. Ramdhane, M.

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Objectives: To search whether xanthine oxidoreductase (XOR) present in the synovium is also liberated, to determine its activity in synovial fluid and to establish a possible relationship between XOR levels in rheumatoid arthritis (RA) and non-RA patients. Methods: This study was carried out in the Laboratory of Immunology, University Ferhat Abbas, Setif, Algeria from 2001-2008. This study is a retrospective controlled study matching cases with RA to non-rheumatoid joint inflammations. Synovial fluid (SF) samples were collected with consent of the patients, at Setif University Hospital, from adults suffering from RA (n=36) or only with joint inflammations (n=52). After its detection in SF with indirect enzyme-linked immunosorbent assay (ELISA) and dot-immunobinding, using anti-bovine XOR as first antibodies, XOR was assayed with capture ELISA. Results: Xanthine oxidoreductase is found in all studied SF. Capture ELISA showed levels up to 0.762 and 0.143 mg/mL in SF of RA and other joint inflammations patients, respectively. In most cases, more than 50% of synovial XOR is present as oxidase form. Positive correlation was observed between enzyme level and the disease severity since RA patients had a significantly high enzyme amount compared to patients with other less severe arthritic pathologies. Conclusion: These results suggest that the enzyme could well be involved in joint inflammation probably by producing reactive oxygen species.

Notes: Hanachi, Nadjet Charef, Noureddine Baghiani, Abderrahmane Khennouf, Seddik Derradji, Yacine Boumerfeg, Sabah Harzallah, Daoud Arrar, Lekhmici

URL: <Go to ISI>://WOS:000273458400008
Theoretical investigations of the electronic, optical and elastic properties of cadmium and zinc chalcogenides in the zinc-blende structure are performed using a pseudopotential formalism. Our results are in reasonable agreement with the available experimental data. Polynomial expressions are obtained for the electron effective mass and the static dielectric constant as a function of the fundamental energy band-gap. Relations of elastic constants ratio to the ionicity are also examined and discussed. (C) 2009 Elsevier B.V. All rights reserved.
TiO$_2$ thin films were prepared by sol-gel method. The structural investigations performed by means of X-ray diffraction (XRD) technique and scanning electron microscopy (SEM) showed the shape structure at T = 600 degrees C. The optical constants of the deposited film were obtained from the analysis of the experimentally recorded transmittance spectral data in the wavelength of 200-3000 nm range. The values of some important parameters of the studied films are determined, such as refractive index n and thickness d. In this work, using the transmission spectra, we have calculated the dielectric constant (epsilon(infinity)) for four layered TiO$_2$ films; a simple relation is suggested to estimate the third-order optical nonlinear susceptibility chi((3)), it has been found that the dispersion data obeyed the single oscillator of the Wemple-DiDomenico model, from which the dispersion parameters and high-frequency dielectric constant were determined. The estimations of the corresponding band gap Eg, chi((3)) and epsilon(infinity) are 2.57 eV, 0.021 - 10(-10) esu and 5.20, respectively. (c) 2008 Elsevier B.V. All rights reserved.
The single capture total cross section (TCS) for scattering of high energy protons from some noble gases and small molecules is calculated by using the full plane wave first Born approximation (PWFBA). It is shown that even deep subshells have a noticeable contribution to the resulting TCS. We also find that the exchange mechanism which can also be incorporated in the PWFBA gives rise to a small effect on TCS for all the investigated targets. (C) 2009 Elsevier B.V. All rights reserved.
Abstract: The electron capture process induced by fast protons impinging upon water has been theoretically studied for very small scattering angles. Singly differential and total cross sections have been calculated for scattering angles ranging from 0 to 0.5 mrad and compared to the existing experimental data. For the sake of comparison, we have also presented the theoretical charge transfer cross sections for proton-helium collisions. (C) 2009 Elsevier B.V. All rights reserved.
Background: Neural tube defects (NTD) are severe congenital malformations due to a failure in neural tube formation at the beginning of pregnancy. The etiology of NTD is multifactorial, with environmental and genetic determinants. We suggest a study of gene-gene interactions regarding the possible association of NTD with specific mutations of 5,10-methylenetetrahydrofolate reductase (MTHFR) and cystathionine beta-synthase (CBS) genes.

Patients and Methods: The genetic analysis of the MTHFR C677T polymorphism was performed by real-time polymerase chain reaction (PCR) on a Light Cycler, the CBS genotype was analyzed by PCR in a thermal cycler. Ninety-two mothers who had conceived NTD children and 48 fathers were investigated. A group of 147 adults, including 82 apparently healthy women, was used as control. Results: Among control mothers, 35 (43%) were heterozygous for the C677T variant and 14 (17%) were TT homozygous. Among the cases, 25 (52%) out of 48 mothers and 22 (46%) out of 48 fathers carried the T allele; 9 mothers (19%) and 5 fathers (10%) had the TT genotype. A homozygous C677T mutation was not an NTD risk factor in this preliminary study in an Algerian population; a possible gene-gene interaction between the MTHFR C677T polymorphism and the CBS 844ins68 has also been examined in relation to NTD, but no such association has been shown. There was a statistically significant difference between the heterozygosity genotype frequency of CBS polymorphisms in mothers with a previous child with NTD compared with the mother controls (odds ratio: 3.72; 95% CI: 1.59-8.73). Conclusion: Our results with Algerian NTD mothers did not show a significant association for any group, suggesting that the thermolabile variant C677T in the MTHFR gene is not a risk factor for a mother to have NTD offspring; rather, folic acid supplementation or fortification should become mandatory for all women of reproductive age in Algeria. Copyright (C) 2010 S. Karger AG, Basel

Notes: Houcher, Bakhouche Bourouba, Romyla Djabi, Farida Yilmaz, Erkan Egin, Yonca Akar, Nejat

URL: <Go to ISI>://WOS:000274593300015
This study was aimed to investigate the effect of essential oil on human neutrophil (HN) functions. The neutrophils were isolated on percoll gradients, counted, and tested for viability using the trypan blue exclusion method. The chemotactic response was based on a multiple blind well assay system. The control movement and chemotactic response of neutrophils to 0.1 mu M fMLP were reduced at a dose-dependent manner. The essential oil significantly inhibited neutrophil chemotaxis from 0.05 to 0.5 mg mL\(^{-1}\). The inhibitory concentrations (IC50) showing 50% inhibition to induced neutrophil chemotaxis, and control movement were 0.08 and 0.07 mg mL\(^{-1}\), respectively. The human neutrophil elastase secretion was inhibited by essential oil at a concentration dependent manner from 0.5 to 2.5 mg mL\(^{-1}\). The components of essential oil are potent inhibitors for polymorpho nuclear leukocytes functions. The observed inhibition of neutrophil functions occurred via intracellular pathway. Active serine protease could be essential for neutrophil responding process and/or signal transduction pathways.
We carry out a theoretical analysis of the double ionization of the water molecule by fast electrons. The analysis is based on a perturbative approach. For the final state we employ the well-known 3C wavefunction which has the correct asymptotic behaviour when all interparticle distances are large. The initial state of the target is described by an accurate molecular wavefunction proposed by Moccia (1964 J. Chem. Phys. A 40 2186). We present five-fold differential cross sections for a wide variety of kinematical conditions. We show that a simple summation over four indices is able to avoid a time-consuming triple numerical integration required to take account of the orientation of the molecule in space. The mechanisms of the double ionization of the water molecule are identified and discussed.
We present results on the effect of the partial pressure of oxygen (ppo) on the structural and optical properties of tin-doped indium oxide, In2O3:Sn (ITO), thin films deposited on glass substrates by reactive dc diode sputtering. The deposition rate decreases with increasing ppo. The ppo, did not affect the chemical composition of the ITO films as inferred from X-ray photoemission spectroscopy (XPS). From X-ray diffraction, we find out that the samples have crystalline structure in the ppo range 2 x 10^-4 to 6 x 10^-4 mbar and are amorphous outside this range. These samples have a (1 0 0) preferred orientation for ppo, between 2 x 10^-4 and 4.5 x 10^-4 mbar, but as the ppo increased beyond 4.7 x 10^-4 mbar, the (1 1 1) texture dominates. This change occurs for the same substrate temperature (about 130 degrees C). The grain size decreases as the ppo increases Atomic Force Microscopy (AFM) and Scanning Electron Microscopy (SEM) have been used to investigate the surface roughness and the morphology of these samples. The optical transmission is greater than 90% in the visible region and does depend on the ppo. The refractive index n values are found to be in the 1.68-1.86 range. The energy gap values are between 3.1 and 3.5 eV. (C) 2009 Elsevier B.V. All rights reserved.
The electronic and optical properties of M$_2$S (M = Li, Na, K and Rb) compounds in the cubic antifluorite structure have been calculated, using a full relativistic version of the full-potential augmented plane-wave plus local orbitals method based on density functional theory, within both the local density approximation (LDA) and the generalized gradient approximation (GGA). Moreover, the Engel-Vosko GGA formalism (EV-GGA) is applied so as to optimize the corresponding potential for band structure calculations. The calculated equilibrium lattices and bulk moduli are in good agreement with the available data. Band structure, density of states, electron charge density and pressure coefficients of energy gaps are given. Results obtained for band structure using EV-GGA are larger than those with LDA and GGA. It is found that the spin-orbit coupling lifts the triple degeneracy at the Gamma point and the double degeneracy at the X point. The analysis of the electron charge density shows that the M-S bonds have a significant ionic character. The complex dielectric functions $\epsilon(2)(\omega)$ for alkali metal sulfides were calculated for radiation up to 30 eV and the assignment of the critical points to the band structure energy differences at various points of the Brillouin zone was made. The pressure and volume dependence of the static dielectric constant and the refractive index are calculated.

Notes: Khachai, H. Khenata, R. Bouhemadou, A. Haddou, A. Reshak, Ali H. Amrani, B. Rached, D. Soudini, B.

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Series of CoxCr₁₋ₓ thin films have been evaporated under vacuum onto Si(100) and glass substrates. Thickness ranges from 17 to 220 nm, and x from 0.80 to 0.88. Alternating gradient field magnetometer (AGFM) measurements provided saturation magnetization values ranging from 220 to 1200 emu/cm³. Values of squareness exceeding 0.8 have been measured. Coercive field may reach values up to 700 Oe, depending on the percentage of chromium, as well as the substrate nature and the direction of the applied magnetic field. The saturation magnetization value decreases as the Cr content increases. In order to study their dynamical magnetic properties, Brillouin Light Scattering (BLS) measurements have been performed on these samples. Stiffness constant value and anisotropy magnetic field were adjusted to fit the experimental BLS spectra. These results are analyzed and correlated. (C) 2009 Elsevier B. V. All rights reserved.

Notes: Kharmouche, A. Cherif, S. -M. Roussigne, Y. Schmerber, G.

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Abstract: The initial stages of Cu electrodeposition onto fluor-tin-oxide (FTO) coated glass and n-Si(1 0 0) substrates from sulfate solutions containing respectively 5 x 10(-3) M CuSO(4), 1 M Na(2)SO(4) and 0.5 M H(3) BO(3) are studied using cyclic voltammetry and chronoamperometry and the Scharifker-Hills model is used to analyse the current transients. For electrodeposited Cu on both FTO and n-Si(1 0 0) electrodes, the nucleation is in good agreement with the instantaneous nucleation and three-dimensional (3D) diffusion-limited growth. The values of kinetic parameters, number density of active sites N(o), and diffusion coefficient D for Cu(2+) ions are also calculated. (C) 2008 Elsevier B.V. All rights reserved.
Our objective in this work is to study the HF etching chemical treatment effect on the mechanical and optical properties of soda-lime glass eroded with 200 g fixed sand mass. We followed the evolution of these properties in relation to the chemical attack duration. The results show a clear improvement of the measured properties. The strength of the eroded samples is 44.23 ± 0.91 Mpa. It increases up to 57.73 ± 1.76 MPa after 15 min of treatment and reaches 181.43 ± 23.69 MPa after 1 h. This last value is much higher than the as receive glass strength (117.5 ± 10.48 MPa). During the first 2 min of the chemical treatment, an important drop of the optical transmission (12%) was observed. However, improvement of the transmission was achieved for longer chemical treatment durations. After 8 h of treatment, the optical transmission increases up to 57%. Microscopic observations show that the HF attack causes the opening and the blunting of the surface cracks. In general, the surface state is improved during the chemical treatment. (C) 2009 Elsevier Ltd. All rights reserved.
We derive, with an invariant operator method and unitary transformation approach, that the Schrödinger equation with a time-dependent linear potential possesses an infinite string of shape-preserving wave-packet states $|\phi(\alpha,\lambda)(t)\rangle$ having classical motion. The qualitative properties of the invariant eigenvalue spectrum (discrete or continuous) are described separately for the different values of the frequency of a harmonic oscillator. It is also shown that, for a discrete eigenvalue spectrum, the states $|\phi(\alpha,n)(t)\rangle$ could be obtained from the coherent state $|\phi(\alpha,0)(T)\rangle$. 

Notes: Krache, L. Maamache, M. Saadi, Y. Beniaiche, A.

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Year: 2009
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Short Title: Dynamics of electron impact ionization of the outer and inner valence \(1t(2)\) and \(2a(1)\) molecular orbitals of CH\(_4\) at intermediate and large ion recoil momentum
ISSN: 0953-4075
DOI: 10.1088/0953-4075/42/16/165201
Article Number: 165201
Accession Number: WOS:000268696400019
Abstract: The triply differential cross section has been measured for electron-impact ionization of the outer valence \(1t(2)\) and the inner valence \(2a(1)\) orbitals of methane using the \(e,2e\) technique with coplanar asymmetric kinematics. The measurements are performed at scattered electron energy of 500 eV, ejected electron energy of 12, 37 and 74 eV and for scattering angle of the fast outgoing electron of 6 degrees. This kinematics is characterized by a target ion recoil momentum ranging from moderate (0.25 au) to very large (3.2 au) values. The results are compared with theoretical cross sections calculated using the \(1CW\) and the \(BBK\) models recently extended to molecules. The experimental cross sections exhibit a very large recoil scattering, especially for the inner \(2a(1)\) molecular orbital, which is not predicted by the theory. The differences between experiment and theory are attributed to the very strong scattering from the ion, not properly accounted for by theory. This indicates the need for further theoretical developments as well as experimental investigations in order to correctly model the process of molecular ionization.
URL: <Go to ISI>://WOS:000268696400019
The Green function for a Dirac particle subject to a plane wave field is constructed according to the path integral approach and the Barut's electron model. Then it is exactly determined after having fixed a matrix $U$ chosen so that the equations of motion are those of a free particle, and by using the properties of the plane wave and also with some shifts.
A Virtual Prototype of Proton Exchange Membrane Fuel Cell Using VHDL-AMS

Laouamri, A. Djahl, F. Rabhi, A. Benhamadouche, A. Ballouti, A. Bendjadou, A.
Year: 2009
Title: A Virtual Prototype of Proton Exchange Membrane Fuel Cell Using VHDL-AMS
Language
Journal: Journal of Fuel Cell Science and Technology
Volume: 6
Issue: 2
Date: May
Short Title: A Virtual Prototype of Proton Exchange Membrane Fuel Cell Using VHDL-AMS
Language
ISSN: 1550-624X
DOI: 10.1115/1.2971056
Article Number: 024502
Accession Number: WOS:000264024900025

Abstract: The aim of this paper is to introduce a novel modeling method for the Proton exchange membrane full cell (PEMFC) based on the novel concept of "virtual prototyping" and to present a simple and accurate model of the cell performance by using the mixed-technology modeling language VHDL-AMS. This model describes the steady state and the dynamic behavior of a PEM fuel cell using its characteristic equations. The phenomenon of a charge double layer and the electrochemical parameters such as resistivity of membrane, concentration of hydrogen (oxygen) in catalytic interface of anode (cathode), and current density are considered in this modeling method. These parameters are adjustable and present a good solution to predict output voltage, efficiency, and output power of the PEMFC.

URL: <Go to ISI>://WOS:000264024900025
We investigated the chemical composition and the antibacterial activity of the essential oils of two populations of Thymus numidicus Poiret differentiated by the color of the flowers. Forty-two compounds were identified by gas chromatography (GC) and gas chromatography/mass spectrometry (GC/MS), representing more than 97% of the oil. The main components of both oils were thymol (59.0%, 68.0%), gamma-terpinene (8.5%, 4.2%), p-cymene (5.8%, 4.5%), carvacrol (3.7%, 4.2%) and alpha-pinene (5.3%, 3.5%) (purplish-white and violet varieties, respectively). The oils exhibited promising activity in the disc diffusion antibacterial assay.
The hydrodistilled oils from the aerial parts of Bupleurum montanum and B. plantagineum, which are endemic to North Africa, including Algeria, were analyzed by gas chromatography-mass spectrometry (GC-MS). Ninety-eight compounds were detected in the oil of B. montanum, representing 98.6% of the total oil, and 68 in the oil of B. plantagineum, representing 99.8% of the total. Megastigma-4,6-(E),8(2)-triene was the major constituent of B. montana oil (25.3%). Other important compounds were myrcene, caryophyllene and benzyl tiglate. Conversely, the major constituents of the oil of B. plantagineum were alpha-pinene (31.9%), cis-chrysanthanenyl acetate (28.2%), and myrcene (24.8%), followed by the monoterpene hydrocarbon limonene (5.1%). The mutagenic, antiplasmodial and antimicrobial activities of the essential oils were individually evaluated against eleven microorganisms, using the agar diffusion method, by determination of MIC values. The investigated oils exhibited moderate antimicrobial activity. Maximum activity of the oils was observed against Nocardia asteroides, Staphylococcus aureus and Enterococcus faecalis. Fungicidal activity against Candida albicans was also found for both oils.
The volatile constituents of the aerial parts of Carum montanum (Coss. et Dur.) Benth. et Hook. were analysed by GC-FID and GC-MS, and the main component was isolated and identified as nothoapiole. The antibacterial and antifungal activities of this compound and of the total oil were investigated against Gram-negative (P. aeruginosa, E. coli), Gram-positive (E. faecalis, S. aureus, S. epidermitis, S. saprophyticus, S. simulans, S. lugdunensis) bacteria and on one strain of fungus (C. tropicalis). Copyright (C) 2009 John Wiley & Sons, Ltd.
The essential oil from aerial part of Marrubium deserti De Noe (Lamiaceae), obtained by hydrodistillation was analyzed by gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS), and evaluated for in vitro antimicrobial activity. The antioxidant activity was determined using three in vitro assays: scavenging effect on DPPH, the ABTS test and the phosphomolybdenum method. Thirty-seven compounds were identified in the oil, with germacrene D as the major component (45.7%). This oil was characterized by an important hydrocarbon fraction (78.1%) and by the predominance of sesquiterpenes (67.4%). M. deserti essential oil had no activity on the tested microorganisms (Staphylococcus aureus ATCC 25923, Echerichia coli ATCC 25922, Pseudomonas aeruginosa ATCC 27853, Candida albicans and Aspergillus flavus). However the oil presented an antioxidant activity.
The present study was carried out to estimate the evolution of olive oil biophenols during the ripening process. The work was focused on four Algerian olive varieties (Chemlal, Boughenfous, Blanquette and Takesrit). For the analysis, colorimetric and HPLC methods were used. The results showed that both maturation and cultivars influenced significantly the quantity and the quality of olive oil phenolic fraction. During olive maturation, all varieties registered a decrease of total biophenols, however it is very important to underline that this decrease differed in the amount from one cultivar to another. Cv. Chemlal had the least important diminution.
Theoretical study of the torque curves in some magnetic multilayer systems

Analytical expressions involving features from torque curves are derived for an exchange coupled [(AF)/(F)] bilayer, a coupled trilayer [(F)/(N-M)/(F)], and a magnetic tunnel junction (MTJ)-like [(AF)/(F)/(N-M)/(F)] system. Included in the model are the exchange anisotropy field $H(E)$, the off-alignment angle $\beta$, the bilinear $J(1)$, and the biquadratic $J(2)$ coupling strengths and the in-plane magnetocrystalline anisotropy fields of the two layers whose easy axes make an angle $\delta$. It will be shown how these parameters can be analytically derived from the torque curve. For the strong coupling case the MTJ-like system behaves as (AF)/(F) bilayer; for arbitrary $\delta$ value, the magnetic anisotropy field of the resulting system has a nonlinear relationship with the individual layer anisotropy fields.
This study focuses on the relationship between land degradation and human activities in a semi-desert region, the area of Sefiane in Algeria, whose inhabitants are typically rural farmers and agro-pastoralists depending almost exclusively on their natural environment for subsistence. The study aimed at determining Sefiane community's perceptions of the impact of desertification and land degradation on their community and to identify how this affects their way of life and means of survival. The study has shown that the population have a strong desire to be assisted in the development of guidelines for environmental education initiatives that would enable them as a community to deal with desertification and land degradation in an attempt to relieve poverty and develop a more sustainable lifestyle. The proposed environmental education program should not be limited to the development of biophysical resources, but must include also the support of societal and personal resources and capacities that are inherent to the community.
A time-dependent 2D harmonic oscillator in the presence of the Aharonov-Bohm effect with a time-dependent flux radius

Abstract: The quantum states of the 2D time-dependent harmonic oscillator with the Aharonov-Bohm (AB) effect are investigated by employing the invariant operator method and the unitary transformation approach. The time-dependent radius case of a solenoid is treated. The qualitative properties of the invariant operator spectrum are described separately for the different values of the parameter C appearing in the nonlinear auxiliary equation, i.e. C > 0, C = 0 and C < 0. Following the C values, the spectrum of the invariant operator is discrete (C > 0) or continuous (C <= 0). The time-dependent cross section for a free particle scattered by the AB potential is obtained.
Invariant operator method for discrete or continuous spectrum eigenvalue and unitary transformation approach are employed to study the two-dimensional time-dependent Pauli equation in presence of the Aharonov-Bohm effect (AB) and external scalar potential. For the spin particles the problem with the magnetic field is that it introduces a singularity into wave equation at the origin. A physical motivation is to replace the zero radius flux tube by one of radius R, with the additional condition that the magnetic field be confined to the surface of the tube, and then taking the limit R -> 0 at the end of the computations. We point that the invariant operator must contain the step function theta(r - R). Consequently, the problem becomes more complicated. In order to avoid this difficulty, we replace the radius R by rho(t)R, where rho(t) is a positive time-dependent function. Then at the end of calculations we take the limit R -> 0. The qualitative properties for the invariant operator spectrum are described separately for the different values of the parameter C appearing in the nonlinear auxiliary equation satisfied by rho(t), i.e., C > 0, C = 0, and C < 0. Following the C's values the spectrum of quantum states is discrete (C > 0) or continuous (C <= 0).

Notes: Maamache, M. Lahoulou, C. Saadi, Y.
URL: <Go to ISI>://WOS:000266219300009
The objective of this study was to determine the effects of progestagen treatment administrated alone or coupled to an injection of eCG to synchronize oestrus on sheep reproductive traits during the anoestrus season under extensive management conditions of Algeria. Two flocks differing by level of body condition score were used. Fertility rates of treated groups, when compared to control groups, were higher for ewes mated at lean body condition (0.45-0.47 versus 0.10), whereas ewes mated at moderate body condition recorded higher performance during first estrus (0.37-0.45 versus 0.10) and comparable fertility rate for all mating period. Higher prolificacy rates were performed in synchronized groups of poor body condition (1.38 versus 1.00) when compared to control group. For moderate body condition flock, if progesterone and eCG treated ewes performed higher level of litter size than do control ewes (1.54 versus 1.20) for first estrus, prolificacy rate was similar between all groups for all mating period. Extra lambs weaned were significant for lean body condition synchronized groups (0.45) and for moderate body condition progestagen-gonadotropin treated group (0.33). Results indicated that it is possible to increase extra lambs weaned in anoestrous Ouled Djellal ewes after artificially induced oestrus.
Reference Type: Journal Article
Record Number: 100
Author: Mansouri, A. Dal Cappello, C. Kada, I. Champion, C. Roy, A. C.
Year: 2009
Title: (e, 3e) and (e, 3-1e) differential cross sections for the double ionization of water molecule
Journal: Physics Letters A
Volume: 373
Issue: 35
Pages: 3151-3157
Date: Aug
Short Title: (e, 3e) and (e, 3-1e) differential cross sections for the double ionization of water molecule
ISSN: 0375-9601
DOI: 10.1016/j.physleta.2009.06.062
Accession Number: WOS:000269295800010
Abstract: We report new results for differential cross sections for the double ionization of water molecule by 1 keV electron impact. The present calculation is based on the first Born approximation. We describe the water molecule by a single centre wave function of Moccia. For the final state, an approximation of the well-known 3C wave function is used. An extensive study has been made by varying the angles of detection and the energies of each ejected electron. We have investigated the double ionization of each molecular state (1b(1), 3a(1), 1b(2) and 2a(1)) and identified the mechanisms of this process. (C) 2009 Elsevier B.V. All rights reserved.
Notes: Mansouri, A. Dal Cappello, C. Kada, I. Champion, C. Roy, A. C.
URL: <Go to ISI>:://WOS:000269295800010
We present a 3D numerical model to assess the quick condition (the onset of the boiling phenomenon) in a saturated polydisperse granular material. We use the Discrete Element Method (DEM) to study the evolution of the vertical intergranular stress in a granular sample subjected to an increasing hydraulic gradient. The hydrodynamic forces on the grains of the sample are computed using the Lattice Boltzmann Method (LBM). The principal assumption used is that grains remain at rest until the boiling onset. We show that the obtained critical hydraulic gradient is close to that defined in classical soil mechanics. To cite this article: M. Mansouri et al., C R. Mecanique 337 (2009). (C) 2009 Academie des sciences. Published by Elsevier Masson SAS. All rights reserved.
We present an ab initio study of the structural, elastic and electronic properties of the antiperovskite compounds AlCSc3 and AlNSc3. The calculated lattice parameters and equilibrium volumes are in good agreement with the available experimental data. Single-crystal elastic constants were calculated and the polycrystalline elastic moduli were estimated according to Voigt, Reuss and Hill's approximations. The band structure shows a metallic character of both compounds; strong hybridization between Sc d-C p (or N p) and Sc d-Al p states was observed from the partial density of states. A significant charge transfer from Al to C (or N) atoms was observed. Moreover, these compounds are bonded by a mixture of ionic-covalent bonding. © 2009 Elsevier Ltd. All rights reserved.
Reference Type: Journal Article
Record Number: 103
Author: Medkour, Y. Roumili, A. Boudissa, M. Maouche, D.
Year: 2009
Title: Structural, elastic and electronic properties of ACTi(3) (A = Al, In and Tl) antiperovskite
Journal: Solid State Communications
Volume: 149
Issue: 23-24
Pages: 919-922
Date: Jun
Short Title: Structural, elastic and electronic properties of ACTi(3) (A = Al, In and Tl) antiperovskite
ISSN: 0038-1098
DOI: 10.1016/j.ssc.2009.03.028
Accession Number: WOS:000266747400006
Abstract: First principle calculations were performed to investigate the structural, elastic and electronic properties of unexplored antiperovskite ACTi(3), with A = Al, In and Tl. The calculated structural parameters were found to be in good agreement with the available experimental data, with deviations being less than 2.7%. The bulk modulus was found to be equal to 155 GPa for AlCTi3 and to a value 5% lower, 147 GPa, for TlCTi3. For values of applied pressures up to 40 GPa, elastic moduli were calculated and the mechanical stability criteria were verified. The band structure of these compounds has been found to display a metallic character, with strong ionic-covalent bonds between Ti and C atoms, and ionic bonds along A and Ti atoms. The overlap population analysis showed that the stiffness decreases with an increase in the antibonding state between Ti and A atoms. (c) 2009 Elsevier Ltd. All rights reserved.
Notes: Medkour, Y. Roumili, A. Boudissa, M. Maouche, D.
URL: <Go to ISI>://WOS:000266747400006
This study predicts the structural behaviour of selected M2SbP compounds with the same structure as MAX phases. Zero pressure results of the lattice parameters, equilibrium volume, and the internal parameter Z(M) are calculated with an error less than 3%. Band structure, total and partial density of states were calculated and show the metallic character of these phases. Moreover we observed strong hybridising states; M d-P p, and M d-Sb p. The pressure dependence of the volume, and the lattice parameters were studied. The stiffness of M-P, and M-Sb bonds was discussed in term of relative length change under hydrostatic pressure. Hf2SbP present the highest bulk modulus and the unidirectional elastic modulus C-33 is slightly greater than C-11.
Reference Type: Journal Article
Record Number: 105
Author: Mekideche, F. Mekideche, F. Z. Chermat, R. Malek, R.
Year: 2009
Title: Microalbuminuria and metabolic syndrome
Journal: Diabetes & Metabolism
Volume: 35
Pages: A43-A43
Date: Mar
Short Title: Microalbuminuria and metabolic syndrome
ISSN: 1262-3636
Accession Number: WOS:000264586100171
Notes: Mekideche, F. Mekideche, F. Z. Chermat, R. Malek, R.
URL: <Go to ISI>://WOS:000264586100171
Reference Type: Journal Article
Record Number: 106
Author: Melki, T.  Zouaoui, A.  Bendemagh, B.  de Oliveira, I. M. F.  de Oliveira, G. F.  Lepretre, J. C.  Bucher, C.  Moutet, J. C.
Year: 2009
Title: Electrosynthesis and Catalytic Activity of Polymer-Nickel Particles Composite Electrode Materials
Journal: Journal of the Brazilian Chemical Society
Volume: 20
Issue: 8
Pages: 1523-1534
Short Title: Electrosynthesis and Catalytic Activity of Polymer-Nickel Particles Composite Electrode Materials
ISSN: 0103-5053
Accession Number: WOS:000271226900020
Abstract: Nickel-polymer composite electrode materials have been synthesized using various strategies, all comprising the electrochemical reduction of nickel(II) cations or complexes, incorporated by either ion-exchange or complexation into various poly(pyrrole-carboxylate) thin films coated by oxidative electropolymerization onto carbon electrodes. The electrocatalytic activity and the stability of the different composites have been then evaluated in the course of the electrocatalytic hydrogenation of ketones and enones in aqueous electrolytes. The best results were obtained using nickel-polymer composites synthesized by electoreduction of nickel(II) ions complexed into polycarboxylate films, which are characterized by a high catalytic activity and a good operational stability.
Notes: Melki, Tahar Zouaoui, Ahmed Bendemagh, Barkahoum de Oliveira, Ione M. F. de Oliveira, Gilver F. Lepretre, Jean-Claude Bucher, Christophe Moutet, Jean-Claude
URL: <Go to ISI>:://WOS:000271226900020
The performance of a continuous electrocoagulation (EC) process was investigated for decolorization and chemical oxygen demand (COD) abatement of a synthetic textile wastewater using aluminum electrodes. The effects of the relevant wastewater characteristics such as conductivity, influent pH and inlet dye concentration, but also of the key operating conditions such as current density and residence time were studied in order to optimize process performance. The results showed that color induced by a red dye was effectively removed (with a removal yield higher than 85%) for wastewater with a COD of 2500 mg/L and a dye concentration lower than 200 mg/L when pH ranged from 6 to 9, residence time was 14 min, current density was 31.25 mA/cm(2) and water conductivity was 2.4 mS/cm for an inter-electrode distance of 1 cm. Under these conditions, the COD abatement was also higher than 80%. (C) 2008 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 108
Author: Mezache, N. Akkal, S. Laouar, H. Seguin, E.
Year: 2009
Title: Flavonoids from Chrysanthemum myconis and their antibacterial activity
Journal: Chemistry of Natural Compounds
Volume: 45
Issue: 5
Pages: 715-716
Date: Sep
Short Title: Flavonoids from Chrysanthemum myconis and their antibacterial activity
ISSN: 0009-3130
DOI: 10.1007/s10600-009-9421-z
Accession Number: WOS:000272158100027
Notes: Mezache, Nadjet Akkal, Salah Laouar, Hocine Seguin, Elisabeth
URL: <Go to ISI>://WOS:000272158100027
Phenolic derivatives such as quinones, acid-phenols and flavonoids were successfully isolated from a n-butanol fraction of Senecio giganteus Desf. (Asteraceae) flowers, namely jacaranone (1), 3a-hydroxy-3,3a,7,7a-tetrahydrobenzofuran-2,6-dione (2), chlorogenic acid (3), hyperoside (4), quercetin 3-O-beta-D-robinobioside (5), isorhamnetin-3-O-beta-D-glucuronide (6), quercetin-3-O-beta-D-glucuronide (7), and isorhamnetin-3-O-beta-D-glucuronide-6"-methyl ester (8). These compounds were purified through either classical polyamide filtration followed by fractionation on Si gel, or through fast centrifugal partition chromatography (FCPC). Using FCPC, the major compounds could be readily isolated from the crude n-butanol fraction. Compounds 1-8 were identified by means of spectroscopic and spectrometric analysis (UV, (1)H, (13) C and 2D NMR, and MS). This work described for the first time the phytochemical composition of this endemic Algerian plant.
Elastic, electronic and optical properties of cubic antiperovskites SbNCa$_3$ and BiNCa$_3$

Abstract: The structural, elastic, electronic and optical properties of ANCa(3) (A = Sb and Bi) compounds with the cubic antiperovskite structure have been investigated using a full relativistic version of the full-potential augmented plane-wave plus local orbitals method based on the density functional theory, in conjunction with both the local density approximation and the generalized gradient approximation (GGA). For reliable description of energy band gap values, another form of GGA developed by Engel and Vosko (GGA-EV) has been applied. The calculated structural properties, namely equilibrium lattice constant, bulk modulus and its first-order pressure derivative, are in good agreement with the available theoretical and experimental results. We have determined the full set of first-order elastic constants, shear modulus, Young's modulus, Poisson's ratio and Debye temperature of these compounds. Band structures reveal that these compounds are direct energy band gap semiconductors. The analysis of the site and momentum projected densities shows that bonding is of covalent-ionic nature. The obtained energy band gap values using GGA-EV are larger than those obtained within LDA and GGA. The optical constants, including the dielectric function, optical reflectivity, refractive index and electron energy loss, are calculated for radiation up to 15 eV. This is the first quantitative theoretical prediction of the optical properties for these compounds that requires experimental confirmation. (C) 2009 Elsevier B.V. All rights reserved.
Using first-principles density functional calculations, the structural, electronic, elastic and optical properties of cubic spinel SiGe2N4 were studied by means of the full-relativistic version of the full-potential augmented plane wave plus local orbitals. We employed both the generalized-gradient approximation (GGA), which is based on exchange-correlation energy optimization to calculate the total energy, and the Engel-Vosko formalism, which optimizes the corresponding potential for band structure calculations. The calculated bulk properties, including lattice parameters, bulk modulus and their pressure derivatives, are in reasonable agreement with the available data. We have determined the full set of first-order elastic constants and their pressure dependence, which have not been calculated and measured yet. Band structure, density of states and pressure coefficients of energy band gaps are given. The obtained results for band structure using EV-GGA are larger than that of GGA. We calculated the frequency dependent complex dielectric function $\varepsilon(\omega)$ for radiation up to 30 eV. The assignment of the critical points to the band structure difference at various points of the Brillouin zone was made. The pressure and volume dependence of the static dielectric constant and the refractive index were calculated. (C) 2009 Elsevier B.V. All rights reserved.
Reference Type: Journal Article
Record Number: 112
Author: Mokeddem, D. Khellaf, A.
Year: 2009
Title: Optimal Solutions of Multiproduct Batch Chemical Process Using Multiobjective Genetic Algorithm with Expert Decision System
Journal: Journal of Automated Methods & Management in Chemistry
Short Title: Optimal Solutions of Multiproduct Batch Chemical Process Using Multiobjective Genetic Algorithm with Expert Decision System
ISSN: 1463-9246
DOI: 10.1155/2009/927426
Article Number: 927426
Accession Number: WOS:000267549800001
Abstract: Optimal design problem are widely known by their multiple performance measures that are often competing with each other. In this paper, an optimal multiproduct batch chemical plant design is presented. The design is firstly formulated as a multiobjective optimization problem, to be solved using the well suited non dominating sorting genetic algorithm (NSGA-II). The NSGA-II have capability to achieve fine tuning of variables in determining a set of non dominating solutions distributed along the Pareto front in a single run of the algorithm. The NSGA-II ability to identify a set of optimal solutions provides the decision-maker DM with a complete picture of the optimal solution space to gain better and appropriate choices. Then an outranking with PROMETHEE II helps the decision-maker to finalize the selection of a best compromise. The effectiveness of NSGA-II method with multiojective optimization problem is illustrated through two carefully referenced examples. Copyright (C) 2009 D. Mokeddem and A. Khellaf.
Notes: Mokeddem, Diab Khellaf, Abdelhafid
URL: <Go to ISI>://WOS:000267549800001
The production of lactic acid from date juice extract by single and mixed cultures of Lactobacillus casei and Lactococcus lactis was investigated. In the present conditions, the highest concentration of lactic acid (60.3 g l\(^{-1}\)) was obtained in the mixed culture system while in single culture fermentations of Lactobacillus casei or Lactococcus lactis, the maximum concentration of lactic acid was 53 and 46 g l\(^{-1}\), respectively. In the case of single Lactobacillus casei or Lactococcus lactis, the total percentage of glucose and fructose utilized were 82.2; 94.4% and 93.8; 60.3%, respectively, whereas in the case of mixed culture, the total percentage of glucose and fructose were 96 and 100%, respectively. These results showed that the mixed culture system gave better results than single cultures regarding lactic acid concentration, and sugar consumption.
This paper presents the influence of Spartium junceum (SJ) fiber content, surface treatment and temperature on the water uptake of polypropylene/Spartium junceum fiber (PP/SJ) composites. Composites specimens were dried at 70 degrees C to reach a constant weight and then were submerged in distilled water at different temperatures, 23 degrees C and 85 degrees C. Water uptake of PP/SJ fiber composites was found to increase with fiber content. Impact strength properties are dramatically affected by the water absorption. Water-saturated samples present poor impact strength. The SEM micrograph of Spartium junceum fiber untreated and treated with silane (Z-6020) illustrate the reduction of roughness via surface treatment of fiber.
Electrochemical impedance spectroscopic (EIS) measurements of sexithiophene (6T) were carried out according to the Pt/6T/M sandwich structure configuration, for various electrode materials (M = GC, ITO, Ag, Cu, Al) and for different doping levels of copper chloride (CuCl2). The results demonstrate that two types of charge transport are involved in the redox process at the electrode/6T interface and inside the bulk oligomer. The complex-plane impedance plots obtained for various doping levels of CuCl2 exhibit arc shapes. The charge-transfer resistance measured from the diagrams decreases systematically with the addition of the salt, leading to an increase of the oligothiophene conductivity.
The nucleophilic aromatic substitution under ultrasound irradiation of a dichlorobenzene iron eta(6)-complex with various secondary amines is reported. The reaction time at moderate temperatures is considerably shortened (15 min) compared to non sonicated reaction conditions at room temperature (several days) or at solvent refluxing temperature (12-48 h). Controlled mono- or di-substitution was achieved by the tuning of the amine nucleophilicity and the solvent polarity. The method was successfully applied to the synthesis of differently substituted phenylenediamines. (C) 2009 Elsevier Ltd. All rights reserved.
We report theoretical calculations of the band structure and density of states for orthorhombic LiGaS$_2$ (LGS) and LiGaSe$_2$ (LGSe). These calculations are based on the full potential linear augmented plane wave (FP-LAPW) method within a framework of density functional theory. Our calculations show that these crystals have similar band structures. The valence band maximum (VBM) and the conduction band minimum (CBM) are located at Gamma, resulting in a direct energy band gap. The VBM is dominated by S/Se-p and Li-p states, while the CBM is dominated by Ga-s, S/Se-p and small contributions of Li-p and Ga-p. From the partial density of states we find that Li-p hybridizes with Li-s below the Fermi energy (EF), while Li-s/p hybridizes with Ga-p below and above EF. Also, we note that S/Se-p hybridizes with Ga-s below and above EF.
Reference Type: Journal Article
Record Number: 118
Author: Rouabah, Z. Bouarissa, N. Champion, C. Bouaouadja, N.
Year: 2009
Title: Study on electron scattering in solid targets using accurate transport cross-sections
Journal: Applied Surface Science
Volume: 255
Issue: 12
Pages: 6217-6220
Date: Apr
Short Title: Study on electron scattering in solid targets using accurate transport cross-sections
ISSN: 0169-4332
DOI: 10.1016/j.apsusc.2009.01.074
Accession Number: WOS:000264408000031
Abstract: The Vicanek and Urbassek theory [M. Vicanek, H. M. Urbassek, Phys. Rev. B 44 (1991) 7234] combined with a Monte Carlo simulation are used to investigate the transport of 0.5–4 keV electrons in solid targets. The cross-sections used to describe the electron transport have been calculated via a new improved version of the approximate analytical expression given by Jablonski [A. Jablonski, Phys. Rev. B 58 (1998) 16470]. Some applications are presented here for the calculation of electron backscattering coefficient in semi-infinite Al and Cu targets. The obtained results accord with success with the experiment and clearly represent an improvement with respect to previous theoretical calculations. (C) 2009 Elsevier B.V. All rights reserved.
Notes: Rouabah, Z. Bouarissa, N. Champion, C. Bouaouadja, N.
URL: <Go to ISI>:WOS:000264408000031
Epidemiologic studies have suggested a relation between hepatitis C virus (HCV) infection and diabetes mellitus. HCV infection is emerging as a metabolic disease, and diabetes mellitus as a risk factor for HCV infection. However, some data on the prevalence of antibodies to HCV in patients with diabetes are conflicting. These seroprevalence data should be interpreted with caution. Some potential bias may occur in those clinic-based studies that target a specific disease group. In this letter we explain some reasons for these conflicting studies. (C) 2009 The WJG Press and Baishideng. All rights reserved.
Using plane wave pseudopotential calculations and the generalized gradient approximation, we have studied the structural, elastic, and electronic properties of Hf$_2$SnC and Hf$_2$SnN. Lattice parameters and equilibrium volume are in satisfactory agreement with the experimental values. Electronic properties show a metallic character of both compounds. Bonds are originally made from hybridized Hf d C p (or N p) states, and Hf d-Sn p states, confirmed by strong coupling between Hf-C (or N), and Hf-Sn bonding from the charge density distribution.
Phosphine Addition to Pyruvoyl Ligands of Iron Complexes: Formation of Zwitterionic Metallalactones

Salauen, J. Y. Rumin, R. Setifi, F. Triki, S. Jaffres, P. A.

Year: 2009
Title: Phosphine Addition to Pyruvoyl Ligands of Iron Complexes: Formation of Zwitterionic Metallalactones
Journal: Organometallics
Volume: 28
Issue: 1
Pages: 216-224
Date: Jan
Short Title: Phosphine Addition to Pyruvoyl Ligands of Iron Complexes: Formation of Zwitterionic Metallalactones
ISSN: 0276-7333
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Abstract: Tertiary phosphines react, at -80 degrees C, with the pyruvoyl-substituted iron complex (CO)(4)Fe[C(O)C(O)CH(3)](CO(2)CH(3)) (1) to give rise to phosphonium-substituted metallalactones fac-(CO)(3)Fe[C(O)C(CH(3))(PR(3))OC(O)](CO(2)CH(3)) (2). These zwitterionic compounds are formed by an initial addition of the phosphine to the noncoordinated carbonyl of the pyruvoyl unit followed by the addition of the oxygen of this C=O on a terminal carbonyl. They display an anionic metal center substituted by three organic ligands and a positive charge located on a phosphonium group. Attempts to extend the reaction to the related cationic pentacarbonyl pyruvoyl-substituted iron complex failed, as no reaction was observed with the same reagents. However, the expected products of these reactions, cationic phosphonium metallalactones {(CO)(4)Fe[C(O)C(CH(3))(PR(3))OC(O)]}(+), were obtained by acidic dissociation of the alkoxycarbonyl ligand of the relevant zwitterionic metallalactones.

Notes: Salauen, J. Y. Rumin, R. Setifi, F. Triki, S. Jaffres, P. A.
URL: <Go to ISI>://WOS:000262177200027
This work provides a comparative study between two approaches in solving inverse heat conduction problems. The conjugate gradient method is employed in both approaches, and the adjoint state equations are used to build analytically the gradient of the objective functional. One of the two approaches consists of using, as additional information, temperature data in the objective functional, while the other uses the heat flux records, for the same inverse problem. In both approaches, the nature of the additional data has its own advantages and drawbacks in handling inverse heat conduction problems. Using the heat flux data as additional information to solve inverse heat conduction problems was and is still rarely employed either for design problems or for identification of parameters or functions problems. The difference between the two approaches is highlighted through two basic inverse heat conduction engineering examples and represents the aim of this research. The results from this study show the feasibility of solving various inverse problems using heat flux data. All the observations in terms of convergence rate, computation time, and accuracy of the results give the advantage to the heat flux data over the temperature data.

Notes: Samai, Mustapha Loulou, Tahar

URL: <Go to ISI>://WOS:000267918400005
We consider two mathematical models which describe the antiplane shear deformation of a piezoelectric cylinder in adhesive contact with a rigid foundation. The material is assumed to be electro-viscoelastic in the first model and electro-elastic in the second one. In both models the process is quasistatic, the foundation is electrically conductive and the adhesion is described with a surface variable, the bonding field. We derive a variational formulation of the models which is given by a system coupling two variational equations for the displacement and the electric potential fields, respectively, and a differential equation for the bonding field. Then we prove the existence of a unique weak solution to each model. We also investigate the behavior of the solution of the electro-viscoelastic problem as the viscosity converges to zero and prove that it converges to the solution of the corresponding electro-elastic problem.
Under semi and cropping conditions, soil degradation is a rapid process, which could be alleviated through sewage sludge application, as continuous production of these wastes increased the awareness of their safe disposal. A field experiment was conducted to study the effects of sewage sludge application on the growth and yield components of durum wheat (Triticum durum Desf.). Treatments were mineral fertilization with 33 kg ha(-1) N as urea, 20, 30 and 40 tons dry sludge ha(-1), applied at the tillering stage and an un-amended control. The results showed an increase in grain yield and yield components, mainly spike fertility and straw yield. 30 tons ha(-1) of sewage sludge dry matter were as efficient as 66 kg ha(-1) of mineral nitrogen. Results suggested that sewage sludge application could be used as a mean to increase and stabilize durum wheat yield under semi conditions and as a safe disposal mean of these wastes.

Notes: Tamrabet, Lahbib Bouzerzour, Hamena Kribaa, Mohamed Makhlouf, Mahfoud

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The Gaussian distribution model have been used to analyze the anomalies observed in tungsten (W)/4H-SiC current voltage characteristics due to the barrier inhomogeneities that prevail at the metal-semiconductor interface. From the analysis of the forward I-V characteristics measured at elevated temperatures within the range of 303-448 K and by the assumption of a Gaussian distribution (GD) of barrier heights (BHs), a mean barrier height (\( \phi_{0} \)) over bar of 1.277 eV, a zero-bias standard deviation \( \sigma_{0} = 0.092 \) V and a factor T-0 of 21.69 K have been obtained. Furthermore the modified Richardson plot according to the Gaussian distribution model resulted in a mean barrier height (\( \phi_{0} \)) over bar of 1.276 eV and a Richardson constant (A*) of 145 A/cm(2) K-2, respectively. The A* value obtained from this plot is in very close agreement with the theoretical value of 146 A/cm(2) K-2 for n-type 4H-SiC. Therefore, it has been concluded that the temperature dependence of the forward I-V characteristics of the W/4H-SiC contacts can be successfully explained on the basis of a thermionic emission conduction mechanism with Gaussian distributed barriers. In addition, a comparison is made between the present results and those obtained previously assuming the pinch-off model. (C) 2008 Elsevier B.V. All rights reserved.
In this study three types of dressings in the form of thin films were prepared from a mixture of two natural biopolymers, namely gelatin and pectin. The protein and the polysaccharide were chosen because of their hydrosolubility and interactivity, respectively. Glutaraldehyde was also used to crosslink the films. The physical properties of the resulting films were evaluated through measurements of absorption capacity and water vapor permeability. FTIR and UV spectroscopy were also used to characterize the films. It was found that crosslinking much increased the absorption capacity, reflecting the strong interactions that developed between gelatin and pectin. It was also found that the water vapor permeability depends greatly on the film thickness and evolves linearly with time. The FTIR analysis also allowed us to identify the different functional groups through which gelatin and pectin chemically interacted. The quantitative analysis of the residue by means of UV spectroscopy indicated that the films were biodegradable and therefore can be used for biomedical applications.
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Record Number: 127
Author: Zerroug, S. Sahraoui, F. A. Bouarissa, N.
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Short Title: Ab initio calculations of yttrium nitride: structural and electronic properties
ISSN: 0947-8396
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Accession Number: WOS:000269844400013
Abstract: Using first principles total energy calculations within the full-potential linearized augmented plane wave method, we have studied the structural and electronic properties of yttrium nitride (YN) in the three phases, namely wurtzite, caesium chloride and rocksalt structures. The calculations are performed at zero and under hydrostatic pressure. In agreement with previous findings, it is found that the favored phase for YN is the rocksalt-like structure. We predict that at zero pressure YN in the rocksalt structure is a semiconductor with an indirect bandgap of 0.8 eV. A phase transition from a rocksalt to a caesium chloride structure is found to occur at similar to 134 GPa. Besides, a transition from an indirect (I"-X) bandgap semiconductor to a direct (X-X) one is predicted at pressure of similar to 84 GPa. For the electron effective mass of rocksalt YN, these are the first results, to our knowledge. The information derived from the present study may be useful for the use of YN as an active layer in electronic devices such as diodes and transistors.
Notes: Zerroug, S. Sahraoui, F. Ali Bouarissa, N.
URL: <Go to ISI>://WOS:000269844400013
The results are presented of an ab initio total energy study of the high-pressure phases of GaN_xAs_1-x dilute alloys calculated within the full-potential linearized augmented plane wave method in the generalized gradient approximation. Three candidate structures, namely zinc-blende, rocksalt and CsCl, have been considered. In each case, the structural parameters and transition pressures of dilute alloys of interest are calculated. In agreement with earlier calculations of Stenuit and Fahy [Phys. Rev. B 76 (2007) 035201], the deviation of the lattice constants from Vegard's law for zinc-blende GaN_xAs_1-x alloys is found to be negligible.
Auger Electron spectroscopy (AES) has been used to study lithium segregation on Al-3.49wt%-Li alloy surface. In this work, the surface atomic composition as a function of temperature was followed. In our previous works, the activation energy of Li segregation has been determined experimentally being in agreement with the resulted theoretical value. In this paper, one showed that the segregation energy of Li on the surface depends of the crystalline structure and of the Li content in the Al-Li alloy matrix. beta-AlLi phase on the alloy surface, used in the power sources for the propulsion of electrical vehicles and for stocking energy, is obtained by progressive heating. We showed that the segregated lithium on the alloy surface is reversible as a function of decreasing temperature and consequently beta-AlLi phase is converted in alpha-AlLi phase. On the other hand, the brutal heating of the sample drives to the conversion of the beta-AlLi phase to beta-AlLi phase and stabilizes the surface towards other segregation; therefore the conversion of beta-AlLi phase to beta-AlLi phase is irreversible. (C) 2009 Elsevier B.V. All rights reserved
Laser beam quality is related to the aberration effect. Quartic phase aberration, more commonly known as spherical aberration, can result from aberrated optical components such as beam expanding telescopes, focusing or collimating lenses, or other conventional optical elements; from thermal focusing or thermal blooming in high power laser windows, lenses, amplifier rods, optical isolators, and other absorbing media. In general any kind of quartic aberration will lead to increased far field beam spread, degraded laser beam focusability and increased values of the beam quality. Currently, a well established quality parameter for laser beams is the $M(2)$ factor. This paper presents a new mathematical set for the spherical aberration coefficient $C(4)$ of Gaussian beams. The main idea comes from the estimation of the laser beam quality factor $M(2)$ given by Siegman. We show that this coefficient concerns only the case of geometrical optics.

Notes: Bencheikh, A. Bouafia, M. Boubetra, Dj. 7th International Conference on Laser Applications May 17-21, 2009 Cairo, EGYPT Natl Inst Laser Enhanced Sci, African LaserCtr, Photon Sci, Pfizer Middle E

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The aim of this work is to improve the optical transmission of a soda lime glass eroded by sandblasting by using polyvinyl butyrate (PVB) and polyester (PES) coatings. Various damage states were obtained in laboratory by varying the projected erodent sand mass (Mp = 10-200 g). Transparent layers of PVB and PES were deposited on damaged surfaces. Uncoated eroded glass samples have their optical transmission T strongly deteriorated with the increase of sand mass. It decreases to 27% for a mass of 200 g. The use of the PVB and PES coatings on damaged surface ameliorate substantially the optical transmission. For the extreme case (Mp = 200 g), the two deposited layers improve respectively to 87% and 81% with the PVB and the PES films. After a subsequent sandblasting damage on the covered glasses, the evaluation of the optical transmission shows that it only decreases to intermediate values (57% for PVB and 50% for PES). (C) 2009 Elsevier B.V. All rights reserved
The aim of this work is to characterize thermally (dilatometric analysis) and mechanically a Pyrex type borosilicate glass. The mechanical tests (Vickers indentations, mechanical strength and fracture toughness) were made on the glass in an annealed state and after a chemical strengthening treatment by ionic exchange. The indentations imprints morphologies and details were observed by optical and scanning electron microscopy. The dilatometric analysis shows that the thermal expansion variation with temperature is essentially non-linear, increasing rapidly up to 200 degrees C and slowing down beyond. The optimal glass chemical strengthening was obtained for a bath duration of 15 hours. This corresponds to a relatively moderate increase of the mechanical strength (similar to 70%). The fracture toughness measured by indentation was appreciably improved by the chemical treatment. It seems also to increase with the applied indentation load. (C) 2009 Elsevier B.V. All rights reserved.
In the present work, we describe the damage of a vehicle windshield caused by sandblasting erosion in Saharan climate conditions. In order to evaluate this damage, we carried out a survey on samples taken from a windshield that was used during two years in the region of Ouargla in the south of Algeria. The survey concerns primarily a description of the damage flaws (morphology, flaw size distribution and density) and an evaluation of the roughness and the optical transmission. The results show that the samples average flaw density (number of flaws per cm(2) surface) is 316 +/- 65. The mean size based on a large number of flaws from all samples is 245 +/- 128 mu m. Microscopic observations reveal that the flaws vary also in their morphologies. The main flaw types (micro-cracks, flakes and pits) extend differently in length and depth. The evaluation of the optical transmission reveals a decrease from 92% down to 58% using a light flux normal to the glass samples surface. (c) 2009 Elsevier B.V. All rights reserved


URL: <Go to ISI>://WOS:000282008100072
This paper focuses on the estimation of the nonmeasurable physical states of wastewater systems when nonlinear models with uncertainties describe the processes. The Activated Sludge Process (ASP), as the most commonly applied biological wastewater purification technique, attracts a great deal of attention from the research community. We developed for this class of processes a State Dependent Differential Riccati Filter (SDDRF) for state estimation of nonlinear model describing the system. The resulting software sensor is simple to implement and has a relatively low computational cost. The results are compared with the Extended Kalman Filter (EKF) in order to demonstrate the better performance of the SDDRF filter. The filter allows the on-line tracking of process variables, which are not directly measurable. The simulation results point out to the advantage of using this approach.
We have evaporated a series of Co(x)Cr(1-x) thin films under vacuum onto Si (100) and glass substrates, with a perpendicular incidence. The thickness of the magnetic layer ranged from 17 to 220 nm, and the content chromium, from 0.12 to 0.20, values determined by means of Rutherford Backscattering Spectrometry (R.B.S.) spectra using SIMNRA programme. Microscopic characterizations of the films were done with X-ray diffraction (XRD) measurements and infer that all the samples were polycrystalline, with an hcp structure and show a < 0001 > preferred orientation, and with the grain size increasing with the chromium content decrease. Atomic force microscopy (A.F.M.) observations reveal very smooth film surfaces. The static and dynamic magnetic properties have been investigated by means of Alternating Gradient Field Magnetometer (A.G.F.M.), and Brillouin Light Scattering (B.L.S.) measurements. The saturation magnetization M(s) was found to decrease from 1200 emu/cm(3) to 220 emu/cm(3) as the chromium content increases from 12% at. to 20% at., whatever the thickness is. From the fit of the B.L.S. spectra, we have computed effective magnetic anisotropy factors, as well. All the results are discussed and correlated.
Complexations of polyoligothiophenes films with transition metals, and their use for electrocatalysis of ascorbic acid

Maouche, N. Chelli, S. Nessark, B. Aeiyach, S.

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Abstract: Chemically modified electrodes prepared by electropolymerization of oligothiophenes such as: 2,2'-bithiophene (BT), 2,2'-bithiophene-5-carboxylic acid (BTCA) and terthiophene aldehyde (TTCHO) on platinum (Pt) electrodes, in acetonitrile solution containing 0.1 M tetrabutylammonium perchlorate (TBAP) and 0.01 M of monomer, are characterized by cyclic voltammetry (CV), and X-ray photoelectron spectroscopy (XPS) measurements. By immersing the prepared modified electrodes in transition metals (Cu(2+), Co(2+) and Ag(+) solutions, the metal ions were complexed with films. The electrochemical response shows clearly, the presence of oxidation and reduction peaks corresponding to metallic couple redox. XPS technique reveal that the films complexed with metal ions and determine the mode of the connection with film's atoms. The obtained polyoligothiophenes-metal modified electrodes exhibited good electrocatalytic properties towards ascorbic acid (AA) oxidation after their complexation with metallic ions. The electrocatalytic response was evaluated by cyclic voltammetry with regard to the film nature, the metallic ion nature, immersion time, ascorbic acid concentration, and other variables. The results reveal that the catalytic activity of Ag(+) complexed with BTCA thin-film is the best toward AA oxidation and it can be detected a very low concentration (similar to 1 μM), of AA in a solution which can be utilized as an efficient electrochemical sensor. (C) 2009 Elsevier B.V. All rights reserved

Notes: Maouche, N. Chelli, S. Nessark, B. Aeiyach, S. 11th Maghreb Days Conference on Materials Science/JMSM 2008 Nov 04-08, 2008 Mahdia, TUNISIA

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We address the problem of camera motion from points and line correspondences across multiple views. We investigate firstly the mathematical formula between slopes of lines in the different images acquired after rotation motion of camera. Assuming that lines in successive images are tracked, this relation is used for estimating rotation angles of the camera. Experiments are conducted over real images and the obtained results are presented and discussed.
Abstract: The major disadvantages of the conventional direct torque control (DTC) drive is the steady state ripples in torque and flux. Using space vector control (SVM) method reduce the torque and stator flux ripples. In this paper, the use of SVM technique, a torque fuzzy controller is proposed to improve DTC performance and reduce significantly torque ripple. Simulation results will be presented and discussed to prove the effective new of the proposed method.
This paper deals with shunt active power filtering for power quality improvement under unfavourable non-linear load and source conditions. A simple hybrid control strategy is used, based on a numerical Integrator Proportional (IP) DC bus controller combined with a Phase-locked loop (P.L.L.) output to generate reference currents. A second analogue current controller is developed to insure three phase sinusoidal synchronised waveforms of the main currents. The experimental evaluation of the robustness control is verified using 20 KVA Shunt Active Power Filter (SAPF) not only for transient conditions (step load, switch-on of SAPF) but also for the worst case of unbalanced loads (break phase) and source voltages. Several experimental results are presented and discussed to prove the robustness and the excellent performance of the proposed technique.
In this paper, we study the effects of the uniaxial permittivity anisotropy of the substrate, on the resonant frequency and the bandwidth of a rectangular microstrip antenna of the structure as: substrate; patch; superstrate. The problem is rigorously formulated by using the integral equation based on the dyadic spectral Green's function. To obtain the complex resonant frequency of mode TM01, the method of Galerkin have been used to solve the integral equation, by choosing sinusoidal basis functions. The results obtained are compared with the isotropic substrate case.
Abstract: This work is in line with the framework of the development of a 3D interactive environment to make it easy for university students to do their distant practical works (PW). This environment allows several learners to share a 3D workspace. Therefore, this is a multi-user environment, distributed over a network and uses virtual reality which allows the performance of many activities. We propose in this paper the description of a PW generic classroom which has all the necessary virtual objects to accomplish the different experiments. The interaction with this work is done through a Java Applet, shared between learners, that allows the manipulation of these objects to attain the expected objective of the experiment.

Notes: Douar, Amel Harous, Saad Djoudi, Mahieddine Mechta, Djamila International Conference on Innovations in Information Technology Dec 15-17, 2009 Al Ain, U ARAB EMIRATES Ieee

URL: <Go to ISI>://WOS:000283476800016
This paper proposes the application of Artificial Neural Network for the classification of Arabic language documents. The automatic classification of Arabic documents using ANN has not been explored in detail so far. In this paper, an Arabic corpus is used to construct and test the ANN model. Methods of document representation, assigning weights that reflect the importance of each term are discussed. Each Arabic document is represented by the term-weighting scheme. As the number of unique words in the collection set is big, the Singular Value Decomposition (SVD) has been used to select the most relevant features for the classification. The experimental results show that ANN model using SVD achieves 88.33% which is better than the performance of basic ANN which yields 85.75% on Arabic document classification.
Abstract: This paper presents the results of classifying Arabic text documents using a decision tree algorithm. Experiments are performed over two self-collected data corpus and the results show that the suggested hybrid approach of Document Frequency Thresholding using an embedded information gain criterion of the decision tree algorithm is the preferable feature selection criterion. The study concluded that the effectiveness of the improved classifier is very good and gives generalization accuracy about 0.93 for the scientific corpus and 0.91 for the literary corpus and we also conclude that the effectiveness of the decision tree classifier was increased as we increase the training size, and the nature of the corpus has such an influence on the classifier performance.


URL: <Go to ISI>://WOS:000279656200021
Applying Topic Segmentation Algorithms on Arabic Language

Abstract: The need of having a topic segmentation system for Arabic text is to improve the functionalities of Arabic Information Retrieval (AIR). Topic segmentation of texts has been used to improve the accuracy of the subsequent processes such as question answering and information retrieval. In this paper, we present the assessment of two algorithms for Arabic text segmentation which are TextTilling and C99. We evaluate the performance of these algorithms using the classical Recall/Precision metrics and the Reader Judgment method.

Notes: Harrag, Fouzi Hamdi-Cherif, Aboubekeur Al-Salman, Abdul Malik S. 7th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA-09) May 10-oct 13, 2009 Rabat, MOROCCO Acs, ieee

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