

Abstracta

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Trabalhos Publicados

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P001-11 à P029 -11

Trabalhos Aceitos para Publicação

A001-11

Trabalhos Publicados

[P001-11] “Adsorption configuration effects on the surface diffusion of large organic molecules: The case of Violet Lander”

Sato, F., Legoas, S. B., Otero, R., Hummelink, F., Thostrup, P., Laegsgaard, E., Stensgaard, I., Besenbacher, F., and Galvao, D. S.

Violet Lander (C108H104) is a large organic molecule that when deposited on Cu(110) surface exhibits lock-and-key like behavior [Otero et al., *Nature Mater.* 3, 779 (2004)]. In this work, we report a detailed fully atomistic molecular mechanics and molecular dynamics study of this phenomenon. Our results show that it has its physical basis on the interplay of the molecular hydrogens and the Cu(110) atomic spacing, which is a direct consequence of the matching between molecule and surface dimensions. This information could be used to find new molecules capable of displaying lock-and-key behavior with new potential applications in nanotechnology. (C) 2010 American Institute of Physics. [doi:10.1063/1.3512623]

Journal of Chemical Physics 133[22]. 224702. 2010.

[P002-11] “Alignment of the ALICE Inner Tracking System with cosmic-ray tracks”

Aamodt, K., Abel, N., Abeyssekara, U., Quintana, A. A., Adamova, D., Aggarwal, M., Rinella, G. A., et al

ALICE (A Large Ion Collider Experiment) is the LHC (Large Hadron Collider) experiment devoted to investigating the strongly interacting matter created in nucleus-nucleus collisions at the LHC energies. The ALICE ITS, Inner Tracking System, consists of six cylindrical layers of silicon detectors with three different technologies; in the outward direction: two layers of pixel detectors, two layers each of drift, and strip detectors. The number of parameters to be determined in the spatial alignment of the 2198 sensor modules of the ITS is about 13,000. The target alignment precision is well below 10 μ m in some cases (pixels). The sources of alignment information include survey measurements, and the reconstructed tracks from cosmic rays and from proton-proton collisions. The main track-based alignment method uses the Millepede global approach. An iterative local method was developed and used as well. We present the results obtained for the ITS alignment using about 10(5) charged tracks from cosmic rays that have been collected during summer 2008, with the ALICE solenoidal magnet switched off

Journal of Instrumentation 5. P03003. 2010.

[P003-11] “Application of the scaled quasi-free scattering model absorption potential to electron scattering by CH_x (x=1,2,3,4)”

Castro, E. A. Y., Souza, G. L. C., Brescansin, L. M., Machado, L. E., dos Santos, A. S., and Lee, M. T.

In this work the newly derived scaling quasi-free scattering model (SQFSM) absorption potential is applied to electron-CH_x (x=1-4) collisions in the intermediate energy range More specifically elastic differential integral grand-total (elastic plus inelastic) and total absorption cross sections are reported in the 15-500eV energy range A complex optical potential composed of static exchange correlation-polarization and our absorption potential contributions is used to represent the electron-molecule interaction dynamics whereas the iterative Schwinger variational method combined with the distorted-wave approximation is used to solve the scattering equations The comparison between our calculated results and the existing experimental and theoretical data in the literature is encouraging (C) 2010 Elsevier B V All rights reserved

Journal of Electron Spectroscopy and Related Phenomena 182[1-2], 4-10. 2010.

[P004-11] “beta-Carotene encapsulation into single-walled carbon nanotubes: a theoretical study”

Moreira, E., Lemos, V., Galvao, D. S., and Azevedo, D. L.

Recently, the encapsulation of β -carotene molecules into carbon nanotubes has been achieved. In this work, we report molecular dynamics simulations and tight-binding density functional-based results for a theoretical study of the encapsulation processes. Our results show that the molecules undergo geometrical deformations when encapsulated with significant changes in their electronic structure. Based on these results, we propose a new interpretation to the changes associated with the β -carotene absorption bands experimentally observed

Molecular Simulation 36[13], 1031-1034. 2010.

[P005-11] “Buoyancy organic Rankine cycle”

Schoenmaker, J., Rey, J. F. Q., and Pirota, K. R

In the scope of renewable energy, we draw attention to a little known technique to harness solar and geothermal energy. The design here proposed and analyzed is a conceptual hybrid of several patents. By means of a modified organic Rankine cycle, energy is obtained utilizing buoyancy force of a working fluid. Based on thermodynamic properties we propose and compare the performance of Pentane and Dichloromethane as working fluids. Theoretical efficiencies up to 0.26 are estimated for a 51 m (Pentane) and 71.5 m (Dichloromethane) high column of water in a regime below 100 degrees C operation temperature. These findings are especially relevant in the scope of distributed energy systems, combined cycle plants, and low-temperature Rankine cycles. (C) 2010 Elsevier Ltd. All rights reserved

Renewable Energy 36[3], 999-1002. 2011.

[P006-11] “Characterization of hNek6 Interactome Reveals an Important Role for Its Short N-Terminal Domain and Colocalization with Proteins at the Centrosome”

Meirelles, G. V., Lanza, D. C. F., da Silva, J. C., Bernachi, J. S., Leme, A. F. P., and Kobarg, J.

Physical protein protein interactions are fundamental to all biological processes and are organized in complex networks One branch of the kinome network is the evolutionarily conserved NIMA-related serine/threonine kinases (Neks) Most of the 11 mammalian Neks studied so far are related to cell cycle regulation and due to association with diverse human pathologies, Neks are promising chemotherapeutic targets Human Nek6 was associated to carcinogenesis but its interacting partners and signaling pathways remain elusive Here we introduce hNek6 as a highly connected member in the human kinase interactome In a more global context, we performed a broad data bank comparison based on degree distribution analysis and found that the human kinome is enriched in hubs Our networks include a broad set of novel hNek6 interactors as identified by our yeast two hybrid screens classified into 18 functional categories All of the tested interactions were confirmed and the majority of tested substrates were phosphorylated in vitro by hNek6 Notably, we found that hNek6 N-terminal is important to mediate the interactions with its partners Some novel interactors also colocalized with hNek6 and gamma-tubulin in human cells, pointing to a possible centrosomal interaction The interacting proteins link hNek6 to novel pathways, for example, Notch signaling and actin cytoskeleton regulation, or give new insights on how hNek6 may regulate previously proposed pathways such as cell cycle regulation, DNA repair response, and NF-kappa B signaling Our findings open new perspectives in the study of hNek6 role in cancer by analyzing its novel interactions in specific pathways in tumor cells which may provide important implications for drug design and cancer therapy

Journal of Proteome Research 9[12], 6298-6316. 2010.

[P007-11] "Comparative electron temperature measurements of Thomson scattering and electron cyclotron emission diagnostics in TCABR plasmas"

Alonso, M. P., Figueiredo, A. C. A., Borges, F. O., Elizondo, J. I., Galvao, R. M. O., Severo, J. H. F., Usuriaga, O. C., Berni, L. A., and Machida, M.

We present the first simultaneous measurements of the Thomson scattering and electron cyclotron emission radiometer diagnostics performed at TCABR tokamak with Alfvén wave heating. The Thomson scattering diagnostic is an upgraded version of the one previously installed at the ISTTOK tokamak, while the electron cyclotron emission radiometer employs a heterodyne sweeping radiometer. For purely Ohmic discharges, the electron temperature measurements from both diagnostics are in good agreement. Additional Alfvén wave heating does not affect the capability of the Thomson scattering diagnostic to measure the instantaneous electron temperature, whereas measurements from the electron cyclotron emission radiometer become underestimates of the actual temperature values. (C) 2010 American Institute of Physics. [doi:10.1063/1.3494379]

Review of Scientific Instruments 81[10], 10D529.2010.

[P008-11] "Comparative metabolic profiling of paediatric ependymoma, medulloblastoma and pilocytic astrocytoma"

Cuellar-Baena, S., Morales, J. M., Martinetto, H., Calvar, J., Sevlever, G., Castellano, G., Cerda-Nicolas, M., Celda, B., and Monleon, D.

Brain tumours are the most common solid tumours in children and a major cause of childhood mortality. The most common paediatric brain tumours include ependymomas, cerebellar astrocytomas and medulloblastomas. These brain tumours are highly heterogeneous regarding their histology, prognosis and therapeutic response. Subtle biochemical changes can be detected in intact tissues by High-Resolution Proton Magnetic Angle Spinning Spectroscopy (HR-MAS) revealing the status of tumour microheterogeneity and metabolic alterations before they are morphologically detectable. In this study, we present metabolic profiles by HR-MAS of 20 intact tissue samples from paediatric brain tumours. Tumour types include ependymoma, medulloblastoma and pilocytic astrocytoma. The metabolic characterization of paediatric brain tumour tissue by HR-MAS spectroscopy provided differential patterns for these tumours. The metabolic composition of the tumour tissue was highly consistent with previous *in vivo* and *ex vivo* studies. Some resonances detected in this work and not previously observed by *in vivo* spectroscopy also show potential in determining tumour type and grade (fatty acids, phenylalanine, glutamate). Overall, this work suggests that the additional information obtained by NMR metabolic profiling applied to tissue from paediatric brain tumours may be useful for assessing tumour grade and determining optimum treatment strategies

International Journal of Molecular Medicine 26[6], 941-948. 2010.

[P009-11] "Construction of restricted field of view holographic screens"

Magalhaes, D. S. F., Lunazzi, J. J., and Serra, R. L.

Two different configurations employed in the recording of restricted field of view holographic screens are analyzed. The characteristics of the screens, including focal lengths, sizes and diffraction efficiencies, are characterized. Screens of size of up to 420 cm² and with diffraction efficiencies of up to 34% are produced. (C) 2010 Elsevier Ltd All rights reserved

Optics and Laser Technology 43[1], 119-123. 2011.

[P010-11] "Cylindrical magnetization model for glass-coated microwires with circular anisotropy: Statics"

Torrejón, J., Thiaville, A., Adenot-Engelvin, A. L., Vazquez, M., and Acher, O.

The static magnetization profile of glass-coated microwires with effective circular anisotropy is investigated using micromagnetics. In this family of microwires, the ferromagnetic nucleus with an amorphous character presents a magnetic structure composed of an inner region with axial domains and an outer region with circular domains, due to magnetoelastic anisotropy. A one-dimensional micromagnetic model is developed, taking into account both the exchange and magnetoelastic anisotropy energies, and solved quasi-analytically. The total energy, magnetization profiles and magnetization curves are investigated as a function of radius and anisotropy constant of the nucleus. This work represents a fundamental study of the magnetization process in these amorphous microwires and provides guidelines for the production of microwires with tailored magnetic properties. *En passant*, the nucleation problem in an infinite cylinder, introduced by W. F. Brown, is revisited. (C) 2010 Elsevier B.V. All rights reserved

Journal of Magnetism and Magnetic Materials 323[3-4], 283-289. 2011.

[P011-11] "Evidence for photon anti-bunching in acoustically pumped dots"

Couto, O. D. D., Lazic, S., Iikawa, F., Stotz, J. A. H., Jahn, U., Hey, R., and Santos, P. V.

We demonstrate the controlled transfer of photoexcited carriers by a surface acoustic wave (SAW) between coupled quantum wells, wires, and dots grown on a semiconductor surface. The quantum wires and dots used in the experiments are embedded at photolithographically defined positions within an (Al,Ga)As/GaAs (311)A-oriented quantum well grown by molecular beam epitaxy. We give experimental evidence for the anti-bunching of photons emitted in a quantum dot pumped by electrons and holes transported from the quantum well by a surface acoustic wave. (C) 2009 Elsevier B.V. All rights reserved

Physica E-Low-Dimensional Systems & Nanostructures 42[10], 2497-2500. 2010.

[P012-11] "Identification of Microcystin Lr at the Molecular Level Using Atomic Force Microscopy"

Etchegaray, A., Bueno, C. D., and Teschke, O.

Identification of microcystin Lr at the molecular level using atomic force microscopy. Microcystins are non-ribosomal peptides that must be detected for its health concern. Here, microcystin Lr and its specific antibody were respectively tethered to the substrate and to the tip of an atomic force microscope, after surface functionalization using 3-aminopropyltriethoxysilane and glutaraldehyde. Functionalization was confirmed comparing topographic images taken on bare and modified tips. Force versus distance curves were successfully used to measure the specific antibody-antigen interactions comparing with a control in which microcystin was initially blocked by incubation with free antibodies. The results showed unequivocally the specific recognition of mlr, suggesting that this method could be useful for biosensor development

Quimica Nova 33[9], 1843-1848. 2010.

[P013-11] "Imaging Ice-Like Structures Formed on HOPG at Room Temperature"

Teschke, O.

In this work, ice was viewed at the nanoscale by scanning in atomic force microscopy tip over a highly oriented pyrolytic graphite (HOPG) surface in air. At low scan velocities, the tip

exhibited stick slip motion with a period of 0.13 nm corresponding to the scanner step; at higher velocities, the HOPG lattice and the periodicity of the ice were visible. A hexagonal structure with a 0.45 +/- 0.04 nm periodicity was observed in which the distance between the second neighbors of the HOPG coincided with the distance of the first neighbors for the ice-like arrangement. Small water clusters were also nucleated with an ice-Ic structure (0.34 +/- 0.03 nm), and thus, the ice layers consisted of extensive sets composed of arrangements of hexamers and tetramers

Langmuir 26[22], 16986-16990. 2010.

[P014-11] "Investigation of the first-order metamagnetic transitions and the colossal magnetocaloric effect using a Landau expansion applied to MnAs compound (vol 68, pg 67, 2009)"

Carvalho, A. M. G., Coelho, A. A., Gama, S., Gandra, F. C. G., von Ranke, P. J., and de Oliveira, N. A.

European Physical Journal B 78[1], 137. 2010.

[P015-11] "Investigation on the magnetocaloric effect in (Gd,Pr)Al₂ solid solutions"

de Sousa, V. S. R., Carvalho, A. M. G., Plaza, E. J. R., Alho, B. P., Tedesco, J. C. G., Coelho, A. A., de Oliveira, N. A., and von Ranke, P. J.

A theoretical and experimental investigation on the magnetocaloric properties of the rare earth pseudobinary compounds Gd_{1-n}Pr_nAl₂ is presented. The calculated isothermal entropy and adiabatic temperature changes under magnetic field variations from 0 to 2 T and from 0 to 5 T are in good agreement with the experimental data. For the Pr-concentrations n = 0.25, 0.5 and 0.75 the experimental data present an inverse magnetocaloric effect which was theoretically predicted and associated with the competition between the opposite magnetizations of the Gd and Pr sublattices. The two-sublattice Hamiltonian used in the calculations takes into account the crystal field, exchange and Zeeman interactions. (C) 2010 Elsevier B.V. All rights reserved

Journal of Magnetism and Magnetic Materials 323[6], 794-798. 2011.

[P016-11] "Large-Area Fabrication of Periodic Arrays of Nanoholes in Metal Films and Their Application in Biosensing and Plasmonic-Enhanced Photovoltaics" Menezes, J. W., Ferreira, J., Santos, M. J. L., Cescato, L., and Brolo, A. G.

Plasmonics is a fast developing research area with a great potential for practical applications. However, the implementation of plasmonic devices requires low cost methodologies for the fabrication of organized metallic nanostructures that covers a relative large area (similar to 1 cm²). Here the patterning of periodic arrays of nanoholes (PANHs) in gold films by using a combination of interference lithography, metal deposition, and lift off is reported. The setup allows the fabrication of periodic nanostructures with hole diameters ranging from 110 to 1000 nm, for 450 and 1800 nm of periodicity, respectively. The large area plasmonic substrates consist of 2 cm x 2 cm gold films homogeneously covered by nanoholes and gold films patterned with a regular microarray of 200 nm diameter circular patches of PANHs. The microarray format is used for surface plasmon resonance (SPR) imaging and its potential for applications in multiplex biosensing is demonstrated. The gold films homogeneously covered by nanoholes are useful as electrodes in a thin layer organic photovoltaic. This is first example of a large area plasmonic solar cell with organized nanostructures. The fabrication approach reported here is a good candidate for the industrial-scale production of metallic substrates for plasmonic applications in photovoltaics and biosensing

Advanced Functional Materials 20[22], 3918-3924. 2010.

[P017-11] "Luminescence of PbS quantum dots spread on the core surface of a silica microstructured optical fiber"

Chillcce, E. F., Ramos-Gonzales, R. E., Cordeiro, C. M. B., Gutierrez-Rivera, L., Fragnito, H. L., Cruz, C. H. D., Bordonalli, A. C., Hernandez-Figueroa, H. E., Braga, R. L., and Barbosa, L. C.

The broadband luminescence spectra, in the region from around 1000 to 1650 nm, of lead sulphide (PbS) quantum dots (QDs) spread onto the dual core surfaces of silica microstructured optical fibers (MOFs) (core diameters of similar to 2.5 and similar to 5.0 μm) are reported. For this purpose, colloidal solutions of PbS QDs of different sizes with luminescence bands around 877 (PbS877), 1160 (PbS1160), and 1474 nm (PbS1474) were injected and then spread onto the dual core surfaces of silica MOFs using a nitrogen gas pressure system. The PbS QDs were excited (via evanescent field effect) by the light of a continuum wave semiconductor laser or a Ti:sapphire laser (at 785 nm) guided through the MOF cores. As an important result, blue-shift and the band broadening behaviors in the luminescence spectra of these PbS QDs were observed. (C) 2010 Elsevier B.V. All rights reserved

Journal of Non-Crystalline Solids 356[44-49], 2397-2401. 2010.

[P018-11] "Magnetization studies of binary and ternary Co-rich phases of the Co-Si-B system"

Bormio-Nunes, C., Nunes, C. A., Coelho, A. A., Faria, M. I. S. T., Suzuki, P. A., and Coelho, G. C.

CoB, CO₂B, CoSi, Co₂Si and CO₅Si₂B phases can be formed during heat-treatment of amorphous co-Si-B soft magnetic materials. Thus, it is important to determine their magnetic behavior as a function of applied field and temperature. In this study, polycrystalline single-phase samples of the above phases were produced via arc melting and heat-treatment under argon. The single-phase nature of the samples was confirmed via X-ray diffraction experiments. AC and DC magnetization measurements showed that Co₂Si and CO₅Si₂B phases are paramagnetic. Minor amounts of either Co₂Si or CoSi₂ in the CoSi-phase sample suggested a paramagnetic behavior of the CoSi-phase, however, it should be diamagnetic as shown in the literature. The diamagnetic behavior of the CoB phase was also confirmed. The paramagnetic behavior of CO₅Si₂B is for the first time reported. The magnetization results of the phase CO₂B have a ferromagnetic signature already verified on previous NMR studies. A detailed set of magnetization measurements of this phase showed a change of the easy magnetization axis starting at 70K, with a temperature interval of about 13K at a very small field of 1 mT. As the strength of the field is increased the temperature interval is enlarged. The strength of field at which the magnetization saturates increases almost linearly as the temperature is increased above 70K. The room temperature total magnetostriction of the CO₂B phase was determined to be 8 ppm at a field of 1T. (C) 2010 Elsevier B.V. All rights reserved

Journal of Alloys and Compounds 508[1], 5-8. 2010.

[P019-11] "New material for low-dose brachytherapy seeds Xe-doped amorphous carbon films with post-growth neutron activated I-125"

Goncalves, R. G. F., Pinheiro, M. V. B., Lacerda, R. G., Ferlauto, A. S., Ladeira, L. O., Krambrock, K., Leal, A. S., Viana, G. A., and Marques, F. C.

We report a novel material for use in I-125 brachytherapy that consists of amorphous carbon films grown by ion-beam-assisted deposition and doped with Xe (5 at%) by implantation. Samples of these films grown on Si substrates were irradiated with neutrons in a TRIGA-I nuclear reactor for the production of Xe-125 and later characterized by gamma spectroscopy. The results indicate that the Xe-124 was efficiently converted into Xe-125

the precursor of I-125 and support the activity calculations for a model brachytherapy seed (C) 2010 Elsevier Ltd All rights reserved

Applied Radiation and Isotopes 69[1], 118-121. 2011.

[P020-11] “Nickel nanoparticles decoration of ordered mesoporous silica thin films for carbon nanotubes growth”

Acuna, J. J. S., Marchi, M. C., and Alvarez, F.

We report in situ successive depositions of nickel nanoparticles and carbon nanotubes (CNTs) on ordered mesoporous silica films used as template for the catalyst particles. The mesoporous films are synthesized by the evaporation-induced self-assembly process from tetraethyl orthosilicate derived oligomers and a di-block copolymer from dip-coating deposition method. The substrates are decorated with Ni nanoparticles through Ion Beam Deposition and posterior annealing to induce metal coalescence in the mesoporous cavities. CNTs were then grown by Chemical Vapor Deposition in the presence of an electric field. These techniques provide a simple control method producing ordered arrangements of catalyst nanoparticles and ordered nanostructures for large area applications. (C) 2010 Elsevier B.V. All rights reserved

Thin Solid Films 519[1], 214-217. 2010.

[P021-11] “Niobium oxide dispersed on a carbon-ceramic matrix, SiO₂/C/Nb₂O₅, used as an electrochemical ascorbic acid sensor” Arenas, L. T., Villis, P. C. M., Arguello, J., Landers, R., Benvenuti, E. V., and Gushikem, Y.

A film of niobium oxide was immobilized on a SiO₂/C carbon-ceramic matrix (specific surface area 270 m² g⁻¹) and characterized by N₂ adsorption-desorption isotherms scanning electron microscopy X-ray photoelectron spectroscopy and atomic force microscopy This new carbon-ceramic material SiO₂/C/Nb₂O₅ was used for construction of electrodes and it shows ability to improve the electron-transfer between the electrode surface and ascorbic acid The electrocatalytic oxidation of ascorbic acid was made by differential pulse and cyclic voltammetry techniques making it potentially useful for developing a new ascorbic acid sensor (C) 2010 Elsevier B V All rights reserved

Talanta 83[1], 241-248. 2010.

[P022-11] “Residual superconducting phases in the disordered Ce₂Rh_{1-x}Ir_xIn₈ alloys” Hering, E. N., Borges, H. A., Ramos, S. M., Fontes, M. B., Baggio-Saitovich, E., Continentino, M. A., Bittar, E. M., et al

We report evidence of two superconducting phases in the Ce₂Rh_{1-x}Ir_xIn₈ heavy fermion systems. One of these phases is pressure induced and occurs for a range of compositions situated near the Rh-rich extreme, consistent with the behavior observed for the pure Ce₂RhIn₈ compound. This superconducting region is expanded to higher critical temperatures and lower Rh concentrations with increasing pressure. It has a clear interplay with the established antiferromagnetic state, T_N similar to 2.8 K, suggesting that magnetic fluctuations are important for its realization. The second superconducting phase appears already at ambient pressure and it is characterized by a dome centered around x similar to 0.6 which, in sharp contrast with the first transition, is progressively eliminated by the application of pressure. These strikingly opposite behaviors under the same tuning parameter indicate the two transitions may have different natures. We compare these findings in the Ce₂Rh_{1-x}Ir_xIn₈ alloys to its related CeRh_{1-x}Ir_xIn₅, arguing that the occurrence of the superconducting phases become unfavorable for the bilayers alloys due to higher dimensionality and stronger disorder. Further, we discuss whether the present results warrant similar claims with respect to the CeRh_{1-x}Ir_xIn₅ phase diagram and the possible nature of the superconducting phases

Physical Review B 82[18]. 184517. 2010.

[P023-11] “Room temperature ferromagnetism in Fe-doped CeO₂ thin films grown on LaAlO₃ (001)”

Sharma, S. K., Thakur, P., Kumar, S., Shukla, D. K., Brookes, N. B., Lee, C. G., Pirota, K. R., Koo, B. H., and Knobel, M.

Ce_{1-x}Fe_xO_{2-δ}/LaAlO₃(001) thin films (x = 0.01 and 0.03) have been prepared by pulsed laser deposition method and thoroughly characterized using X-ray diffraction (XRD), dc magnetization, near edge X-ray absorption fine structure (NEXAFS), and X-ray magnetic circular dichroism (XMCD). XRD data reveal a single-phase cubic structure with a strong crystallographic orientation along the (200) plane. Room temperature ferromagnetism is confirmed through isothermal hysteresis as well as temperature dependent magnetization measurements, which clearly show the ferromagnetic Curie temperature occurring at least above 350 K. The Fe L-3.2 edge NEXAFS spectra for both Fe-doped thin films exhibit mixed valent Fe²⁺/Fe³⁺ states, whereas Ce M-5.4 edge shows the 4+ state of Ce, throughout the doping. With the increase in Fe doping, Fe²⁺ state increases and a simultaneous decrease in magnetization value is also observed. The XMCD signal of both samples reveals the ferromagnetic ordering of substituted Fe ions in the ceria matrix. Our results indicate that to any secondary magnetic impurity. (C) 2010 Elsevier B.V. All rights reserved

Thin Solid Films 519[1], 410-413. 2010.

[P024-11] “Solid-Liquid Equilibrium of Tristearin with Refined Rice Bran and Palm Oils” Costa, M. C., Rolemberg, M. P., dos Santos, A. O., Cardoso, L. P., Krahenbuhl, M. A., and Meirelles, A. J. A.

In the present study, phase diagrams of two systems, formed by tristearin (1,3-di(octadecanoyloxy)propan-2-yl octadecanoate) with refined rice bran oil or refined palm oil, were obtained by Differential Scanning Calorimetry (DSC) and reported in the literature for the first time. The X-ray diffraction technique was employed to verify the crystallization behavior of the individual components and for the mixture tristearin plus refined palm oil. The UNIFAC model was successfully used to predict the liquidus line of these systems, with a root-mean-square deviation between the experimental and calculated melting temperatures below 1.3%

Journal of Chemical and Engineering Data 55[11], 5078-5082. 2010.

[P025-11] “Spatial carrier distribution in InP/GaAs type II quantum dots and quantum posts” Iikawa, F., Donchev, V., Ivanov, T., Dias, G. O., Tizei, L. H. G., Lang, R., Heredia, E., Gomes, P. F., Brasil, M. J. S. P., Cotta, M. A., et al

We performed a detailed investigation of the structural and optical properties of multi-layers of InP/GaAs quantum dots, which present a type II interface arrangement. Transmission electronic microscopy analysis has revealed relatively large dots that coalesce forming so-called quantum posts when the GaAs layer between the InP layers is thin. We observed that the structural properties and morphology affect the resulting radiative lifetime of the carriers in our systems. The carrier lifetimes are relatively long, as expected for type II systems, as compared to those observed for single layer InP/GaAs quantum dots. The interface intermixing effect has been pointed out as a limiting factor for obtaining an effective spatial separation of electrons and holes in the case of single layer InP/GaAs quantum-dot samples. In the present case this effect seems to be less critical due to the particular carrier wavefunction distribution along the structures

Nanotechnology 22[6]. 065703. 2011.

[P026-11] “Study of the magnetocaloric properties of the antiferromagnetic compounds R₂Ga₂ (R = Ce, Pr, Nd, Dy, Ho an Er)”

dos Reis, R. D., da Silva, L. M., dos Santos, A. O., Medina, A. M. N., Cardoso, L. P., and Gandra, F. G.

Magnetocaloric properties of antiferromagnetic RGa_2 ($R = \text{Ce}, \text{Pr}, \text{Nd}, \text{Dy}, \text{Ho}$ and Er) compounds have been reported. These systems present an antiferromagnetic transition below 15 K and a field induced metamagnetic transition from the antiferromagnetic to ferromagnetic state. Our results show that the character of the magnetic field induced transition along the series affects the magnetocaloric properties. For the compounds with $R = \text{Ho}, \text{Dy}$ and Er both negative and positive magnetocaloric effect (MCE) were observed above $\mu(0)\Delta H = 2 \text{ T}$ where the rate between negative and positive MCE contributions depends on how the magnetic transitions occur in these compounds. The evaluated values of maximum magnetocaloric properties of RGa_2 compounds are similar to other potential magnetic refrigerant materials reported in the literature

Journal of Physics-Condensed Matter 22[48]. 486002.2010.

[P027-11] "Swift heavy ion irradiation induced magnetism in magnetically frustrated BiMn_2O_5 thin films" Shukla, D. K., Kumar, R., Mollah, S., Choudhary, R. J., Thakur, P., Sharma, S. K., Brookes, N. B., and Knobel, M.

The swift heavy ion (SHI) irradiation induces weak ferrimagnetism (FM) in magnetically frustrated polycrystalline BiMn_2O_5 thin films. This is manifested from irradiation induced higher energetic configuration that accounts for evolution of the Mn^{2+} state in the $\text{Mn}^{3+}/\text{Mn}^{4+}$ network. Basically, this is the root of large magnetic moment in the irradiated samples. X-ray diffraction and Raman-scattering data of the samples indicate considerable modifications in the crystal structure after the SHI irradiation. FM in the irradiated samples and magnetically frustrated behavior of the pristine sample is apparent from dc magnetization measurements. Element specific characterizations such as near-edge x-ray absorption fine structure spectroscopy at O K and Mn L-3, L-2 edges along with x-ray magnetic circular dichroism at Mn L-3, L-2 edge show the evolution of the Mn^{2+} at disbursement of the Mn^{4+} . The microscopic origin behind the induced weak FM is found to be the increased orbital moment in the irradiated thin films

Physical Review B 82[17]. 174432. 2010.

[P028-11] "Synthesis, characterization and electroanalytical application of a new $\text{SiO}_2/\text{SnO}_2$ carbon ceramic electrode" Arguello, J., Magosso, H. A., Landers, R., Pimentel, V. L., and Gushikem, Y.

A new $\text{SiO}_2/\text{SnO}_2$ carbon ceramic composite was prepared by the sol-gel method, and its potential application in electrochemistry as a novel electrode material has been studied. The prepared xerogel was structurally and electrochemically characterized by scanning electron microscopy coupled to energy dispersive spectroscopy, X-ray photoelectron spectroscopy. X-ray diffraction and cyclic voltammetry. The composite was pressed in a rigid disk-shape and used as a conductive substrate to immobilize a water-soluble organic-inorganic hybrid polymer, 3-n-propyl-4-picolinium chloride silsesquioxane. The oxidation of nitrite was

studied on this polymer film coated electrode in aqueous solution using cyclic voltammetry and differential pulse voltammetry. This modified electrode exhibited a better defined voltammetric peak shifted negatively about 60 mV. The linear detection limit found for nitrite was from 1.3×10^{-5} to 1.3×10^{-3} mol(-1) and the detection limit was 3.3×10^{-6} mol(-1). (C) 2010 Elsevier Ltd. All rights reserved

Electrochimica Acta 56[1], 340-345. 2010.

[P029-11] "Update on the correlation of the highest energy cosmic rays with nearby extragalactic matter"

Abreu, P., Aglietta, M., Ahn, E. J., Allard, D., Allekotte, I., Allen, J., Castillo, J. A., Alvarez-Muniz, J., Ambrosio, et al

Data collected by the Pierre Auger Observatory through 31 August 2007 showed evidence for anisotropy in the arrival directions of cosmic rays above the Greisen-Zatsepin-Kuz'min energy threshold, 6×10^{19} eV. The anisotropy was measured by the fraction of arrival directions that are less than 3.1 degrees from the position of an active galactic nucleus within 75 Mpc (using the Veron-Cetty and Veron 12th catalog). An updated measurement of this fraction is reported here using the arrival directions of cosmic rays recorded above the same energy threshold through 31 December 2009. The number of arrival directions has increased from 27 to 69, allowing a more precise measurement. The correlating fraction is $(38(-6)(+7))\%$, compared with 21% expected for isotropic cosmic rays. This is down from the early estimate of $(69(+11)(13))\%$. The enlarged set of arrival directions is examined also in relation to other populations of nearby extragalactic objects: galaxies in the 2 Microns All Sky Survey and active galactic nuclei detected in hard X-rays by the Swift Burst Alert Telescope. A celestial region around the position of the radiogalaxy Cen A has the largest excess of arrival directions relative to isotropic expectations. The 2-point autocorrelation function is shown for the enlarged set of arrival directions and compared to the isotropic expectation. (C) 2010 Elsevier B.V. All rights reserved

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Trabalhos Aceitos para Publicação

[A001-11] "Temperature Effects on the Occurrence of Long Interatomic Distances in Atomic Chains Formed from Stretched Gold Nanowires" M. J. Lagos, P. A. S. Autreto, S. B. Legoas, F. Sato, V. Rodrigues, D. S. Galvao, D. Ugarte

The origin of long interatomic distances in suspended gold atomic chains, formed from stretched nanowires, remains object of debate despite the large amount of theoretical and experimental work. Here, we report new atomic resolution electron microscopy observations acquired at room and liquid nitrogen temperatures and theoretical results from ab initio quantum molecular dynamics for chain formation and stability. These new data are suggestive that the long distances are due to contamination by carbon atoms originated from the decomposition of adsorbed hydrocarbon molecules.

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Abstracta

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