IV Brazilian MRS Meeting

Organized by

SBPMat – Sociedade Brasileira de Pesquisa em Materiais

Supported by

Department of Physics – Universidade Federal de Pernambuco
CNPq – Conselho Nacional de Desenvolvimento Cientifico e Tecnológico / MCT
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CENPES – Centro de Pesquisas da Petrobrás
PROPESQ – Pró-Reitoria de Pesquisa e Desenvolvimento / UFPE

Conference Venue

Mar Hotel, Barão de Souza Leão Street, 451
Boa Viagem, ZIP CODE: 51.030-300, Recife PE, Brazil

Conference Secretariat

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Welcome Address by IV Brazilian MRS Meeting National and Local Chairs

Anderson S. L. Gomes
Local Chair
Physics Department
Universidade Federal
de Pernambuco

Celso P. de Melo
National Chair
Physics Department
Universidade Federal
de Pernambuco

Dear IV Brazilian MRS Meeting Participant,

It is with great pleasure that we would like to give you a warm welcome to the IV Brazilian MRS Meeting, (IV SBPMat) in Recife from 16th-19th October 2005.

The first SBPMat was held in Rio de Janeiro in 2002, and, although still a young meeting, it has steadily grown since that date. Accordingly to the already well-established tradition observed in previous annual SBPMat reunions, this IV Meeting provides a very stimulating environment for the discussion of themes of multidisciplinary interest in materials research and applications, in the form of symposia and plenary lectures. One important roundtable is included in this year's program, aiming at discussing the perspectives of the materials science area in Brazil.

The Brazilian MRS Meetings emphasize high quality technical papers chosen through a screening process undertaken by several national experts in the field. This year meeting will have a very dense technical program, an industry exhibition and social events. The opening session will have as the Keynote Speaker Prof. Sérgio Rezende, the Brazilian Minister of Science and Technology, a world renowned materials scientist himself. Four Plenary Lectures will be delivered by international experts in different themes of materials research. The technical program will compose the eight symposia including 37 invited talks by national and international scientists, 157 oral and 599 posters presentations, providing a total of 793 technical contributions.

We would like to use this opportunity to thank all committees members, symposia coordinators, anonymous referees and our support secretariat staff for all the help in making this Meeting a success.

Again, a very warm welcome to Recife to all of you.

Anderson S. L. Gomes and Celso P. de Melo
Physics Department
Universidade Federal de Pernambuco
IV MRS Meeting Local and National Chairs

IV Brazilian MRS Meeting Committees

Meeting National Chair

Prof. Celso P. de Melo (Depto. Física - UFPE)

Meeting Local Chair

Prof. Anderson S L Gomes (Depto. Física - UFPE)

National Organizing Committee

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Local Organizing Committee

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Prof. Josué Mendes (Depto Física - UFC)
Prof. Dulce Maria Melo (Depto. de Química - UFRN)
Prof. Severino Jackson Guedes de Lima (UFPB)
Prof. Mário Ernesto Valério (Depto. Física - UFS)

Simposia	**Symposia Chairs and Co-Chairs**
A - Synthesis and Characterization of Nanoparticles and Nanocomposites	Chair: Ana Maria Rocco - IQ - UFRJ Co-Chair: Miguel Jafelicci Junior – IQ - UNESP
B - Supramolecular Materials and Organic Devices	Chair: Henrique Toma - IQ - USP Co-Chair: Koiti Araki – IQ – USP
C - Biocompatible Materials	Chair: Alexandre Rossi - CBPF Co-Chair: Cecilia A. C. Zavaglia – UNICAMP
D - Structural Materials: Processing, Properties and Applications	Chair: Carlos Alberto Paskocimas - UFRN Co-Chair: Antonio Eduardo Martinelli - UFRN
E - Advances in Photonics Materials and Applications	Chair: Younes Messaddeq - IQ - UNESP Co-Chair: Anderson Gomes - DF - UFPE
F - Magnetic Materials: Preparation, Characterization and Applications	Chair: Antonio Azevedo - DF-UFPE Co-Chair: João Schmidt - IF - UFRGS
G - Superconducting Materials	Chair: Elisa Saitovich - CBPF Co-Chair: Paulo Pureur - UFRGS
H - Sol-Gel Materials	Chair: Celso Santilli - IQ - UNESP Co-Chair: Aldo Craievich - IF - USP

SYMPOSIA TECHNICAL SCOPE

SYMPOSIUM A

SYNTHESIS, CHARACTERIZATION AND APPLICATION OF NANOPARTICLES AND NANOCOMPOSITES

This symposium is oriented to the synthesis, characterization and theory of nanostructured materials, with special focus on nanoparticles processing, as well as their application as building units on electronic and optical devices and on biology, chemistry and biophysics.

Topics considered:

- Synthesis and processing of metallic and oxide nanoparticles;
- Synthesis of semiconductor nanoparticles (Quantum dots);
- Electronic and spectroscopic characterization of nanoparticles and nanocomposites;
- Synthesis of carbon nanotubes, nanowires and nanobelts of semiconductor;
- Impact of nanostructured materials in energy conversion and storage devices;
- Nanostructured materials for energy conversion and storage devices: synthesis, characterization and application;
- Simulation of structure and properties of nanostructured materials.

SYMPOSIUM B

SUPRAMOLECULAR MATERIALS AND ORGANIC DEVICES

Supramolecular materials organized in solid state, particularly organic, have allowed, according to their physical and chemical properties, applications in electromechaminal, electronics, optoelectronics and photonics devices. Several thin films and ultrathin films processing techniques have been successfully applied in the construction of diodes and transistors structures, among them the self-assembly, spin coating and Langmuir-Blodgett. The semiconducting properties of supramolecular materials, either from single material or composites, related to the mechanisms of charge injection (Tunnel Effect), transport (extended bands or hopping), carriers dissociation-recombination, are among the phenomena of interest to electronic and optoelectronic devices.

In the case of photonics devices, the nonlinear optical properties, birefringence and photoluminescence are among those of major importance. The study and applications of surface relief gratings is one of the most studied subjects in the present days. Ferroelectricity phenomena and their derivatives piezoelectricity and piroelectricity are also themes of interest in this research area. This symposium will also include work on synthesis of new organic and polymer compounds, composites, blends as well as architecture of ordered molecular materials.

Besides the electrical and optical properties, of importance are the studies of structural and morphological analysis of organic thin films and their thermodynamics properties, such as phase and vitreous transitions, in the case of polymers.

Topics considered:

- Synthesis and fabrication of organic and supramolecular systems;
- Structural, conformational and phase transition studies of thins films;
- Supramolecular systems applied to electronics and optoelectronics;
- Supramolecular systems applied to photonics;
- Advances in liquid crystal and applications;
- Electroactive polymers and applications;
- Ferroelectrics films: properties and applications;
- Metal/organic interfaces and physical properties;
- Surface modification of molecular structures;
- Organic interfaces and thin films;
- Plastic electronics;
- Molecular electronics.

SYMPOSIUM C

BIOCOMPATIBLE MATERIALS

The research in biocompatible materials is one of the most active in materials science. As a consequence, a large diversity of new materials based on metals and alloys, advanced ceramics, polymers and composites have been developed to replace parts of living body and to reconstruct vital functions. More recently, a new generation of intelligent biomaterials has also been proposed and designed for applications in tissue engineering as well as drug delivery system.

The aim of this symposium is to present recent advances in the development of biomaterials, their interaction with living tissue and their uses in clinical applications. This symposium invites scientists and students from different areas such as engineering, chemistry, physics, biology, medicine and dentistry to present and discuss their findings in areas related to biomaterials science and technology.

Topics considered:

- Synthesis, processing and characterization of biomaterials;
- Ceramics, metals, polymers and composites;
- Mechanical and chemical properties;
- Surfaces, interfaces and coatings;
- Biomaterials modeling and prototyping;
- Biomechanics; biomimetic biomaterials;
- Protein and growth factors adhesion and cell response;
- Biomaterials interaction with cells and tissues;
- In vitro and in vivo behavior;
- Nanostructured biomaterials;
- Biomaterials for drug delivery;
- Scaffolds for tissue regeneration and tissue engineering;
- Clinical applications.

SYMPOSIUM D

STRUCTURAL MATERIALS: PROCESSING, PROPERTIES AND APPLICATIONS

The materials nowadays available are the result of a huge effort of research and technological and scientific development. However, the challenges are not ended, better performance materials, able to face new applications and meet more rigid operational requirements continue to be claimed by the society. A fundamental feature to meet these constant needs is to continue to advance towards the understanding of the relationships between structure and properties and enhancing the scientific component of the materials processing technologies.

Therefore, structural materials that present higher resistance and better correlations between properties and density are being investigated in polymers, metals, ceramics and composites. This symposium is devoted to the processing of materials – metals, ceramics, polymers and composites and applications of materials.

Topics considered:

- Metals, ceramics, and polymers for optimized mechanical performance;
- High temperature ceramics;
- High performance composites;
- Advanced metallic alloys;
- Mechanic behavior of metallic alloys;
- Layered, multifunctional surfaces;
- Grain boundary engineering;
- Engineering surfaces and Interfaces;
- Structure-property relationships of ceramics/metals/polymers and composites;
- Innovation in building materials;
- Advanced structural materials;
- Mechanic behavior of biomaterials;
- Light alloys;
- Intermetallic compounds.

SYMPOSIUM E

ADVANCES IN PHOTONICS MATERIALS AND APPLICATIONS

Photonics is an enabling cross-disciplinary technology, defined as the technology of generating and harnessing light and other forms of radiant energy whose quantum unit is the photon. The science includes light emission, transmission, deflection, amplification and detection by optical components and instruments, lasers and other light sources, fibre optics, electro-optical instrumentation, related hardware and electronics, and sophisticated systems. The range of applications of photonics extends from energy generation to detection to communications and information processing.

The development of materials as photonics media has led to innumerous applications with social and economic impact worldwide. There is a flourishing community of physicists, chemists, biologists and materials engineers and scientists in Brazil dealing with several aspects of photonics materials and applications, and this meeting is a very appropriate venue for exchange of knowledge and information.

Technical Scope

This symposium is oriented to preparation, characterization and applications of photonics materials, including theoretical developments, encompassing several important research topics.

Topics considered:

- Device oriented synthesis and characterization of glasses and crystals;
- Spectroscopic characterization and applications of rare earth doped materials;
- Simulation of optical properties of nanostructured materials;
- Photonics crystal and microstructured fibers: from modeling to applications;
- Nanocomposite as photonic media;
- Biophotonics materials: characterization and device oriented applications;
- Novel developments and applications of optical methods for materials characterization;
- Optical imaging as a tool for photonics materials applications;
- Optical waveguides: fabrication, characterization and applications of passive and active waveguide devices.

SYMPOSIUM F

MAGNETIC MATERIALS: PREPARATION, CHARACTERIZATION AND APPLICATIONS

The outcomes of magnetism and magnetic materials for society are enormous, ranging from audio, video and, tele-communications, automotive sensors, electric motors at all scales, medical imaging, energy supply and transportation, as well as the multibillion industry of data storage.

Rapid improvement in this area has been possible thanks to a constant feedback between processing, characterization and applications efforts. The development of new magnetic materials and the understanding of their properties motivate much of the today's materials science accomplishments.

Increasingly sophisticated applications, driven by advances in the synthesis of complex structures, often with nanometer-scale dimensions, require increasingly sophisticated experimental techniques that can directly probe the electronic and spin states, as well as the magnitudes of atomic magnetic moments and the magnetic microstructures responsible for the remarkably useful properties of these materials. One of the emerging fields in advanced microelectronics so called magnetoelectronics, (spin-based electronics) or spintronics, is based on magnetic materials such as magnetic metals, oxides and salts.

This symposium intends to bring together researchers engaged in the preparation, characterization and application of magnetic materials to share experimental results and new ideas in this area of fast growth.

Topics considered:

- Advanced nanostructured magnetic materials;
- Spintronic materials - phenomena and advanced characterization;
- Preparation of high performance permanent magnets;
- Magnetic thin films and multilayers;
- Magnetic fluids;
- Advanced magnetic materials sensors;
- Mechanically milled magnetic materials and structural applications;
- High performance magnetic ceramics;
- Soft magnetic materials.

SYMPOSIUM G

SUPERCONDUCTING MATERIALS

Just after the discovery of superconductivity by Kamerlingh Onnes in 1911, scientists have searched for applications of the new phenomenon. Until 1986 the applications were mainly concentrated in the conception and production of superconducting magnets to generate high magnetic fields for laboratory use. More recently, superconducting magnets become widely used in systems for diagnosis with nuclear magnetic resonance. Small superconducting devices also find application at that time, as in the SQUID magnetometers.

The discovery of high temperature superconductors (HTSC) was extremely important both for the opening of enormous possibilities for practical applications as well as for the understanding of the basic mechanisms of superconductivity. These reasons strongly motivated the Physics Nobel prizes that were given in 1987 to K. Alexander Muller e J. Georg Bednorz and in 2003 to Alexei Abrikosov and Vitaly Ginzburg.

In a world concerned with clean and economical sources of energy, as well as with its efficient storage and long distance transmission, the study of superconductivity becomes more and more relevant. Important applications of HTSC in electronic devices also become available. Among these are filters for wireless communication, Josephson junctions for magnetic field detection and quantum computation and many others. Not to forget the glamorous use of superconductivity in levitators, as in the Maglev high-speed train. Almost a hundred years passed since the original Kamerling Onnes discovery, superconductivity remains as an exciting and extremely active research field. New materials are discovered frequently. Unanticipated and surprising applications enter in the market place. All these happens in part due to the development of new materials and to new routes for preparing, processing and handling the HTSC, which ranges along the more complex systems ever employed in practical applications.

The symposium will focus on new methods related to the synthesis and characterization of low and high temperature superconducting materials, as well as on their practical applications.

Topics considered:

- Preparation methods aimed to improve the material's superconducting properties.
- State of the art and practical applications;
- Characterization of the fundamental properties;
- Superconducting materials: Metals and intermetalics;
- Superconducting materials: Copper-oxide ceramics, melt-textured, single-crystals, thin films;
- Superconducting materials: Other oxides;
- Superconducting materials: Carbon-based systems;
- Superconducting materials: Borocarbides, nitrites, heavy fermions;
- Superconducting materials: MgB 2 and other borates;
- Superconducting materials: Nanostructured systems;
- Superconducting materials: Granular systems.

SYMPOSIUM H

SOL-GEL MATERIALS

The sol-gel science has undergone a spectacular development in the last thirty years. The various stages of the sol-gel process have been scrutinized in considerable detail and a solid basis for technological development established. The studies, mainly centered on silica and silicate glasses in the beginning, were progressively extended to many ceramics, polymers and composites. A turning point was reached in the early of 1980's with the emergence of organic-inorganic nanocomposites. This opened the gateway to whole classes of new materials with tailored properties in any imaginable form (thin and thick films, fibers, membranes, nanopowders, bulk porous or dense ceramics), composition, morphology and structure. The present studies show a definite tendency towards very specialized high-tech applications in many diverse fields such as separation techniques, catalysis, smart coatings, sensors, photonics, biomedical implants, drug delivery, and electronic components. The average number of paper published in sol-gel by Brazilian groups (ISI indexation, key words: sol-gel, Brazil) has grown from 6 up to 82 paper/year between the 90's first years to today.

This symposium will address both fundamental and applied aspects of design and construction of functional sol-gel materials. Properties and applications of functional sol gel materials as well as the development of advanced characterization methods will also be included.

Topics considered:

- Sol-Gel precursor chemistry;
- Routes to nanostructured materials;
- Organic-inorganic hybrids;
- Colloids and aqueous processing routes;
- Thin films, coatings and membranes;
- Nano, Meso-structured and supramolecular materials;
- Optical, electrical, magnetic and electrochemical properties;
- Biomaterials and bio-inorganic hybrids;
- Advanced characterization techniques, modeling, and simulation.

Opening Session

Sunday, 16 October

Room Manuel Bandeira I, II, III and IV

Chairs: **Celso P. de Melo,** Universidade Federal de Pernambuco

Anderson S. L. Gomes, Universidade Federal de Pernambuco

Welcome Address 07:30 – 07:50pm

Anderson S. L. Gomes and Celso P. de Melo, Meeting Chairs

SBPMat President Address 07:50 – 08:00pm

Elson Longo

Keynote Speaker Address 08:00pm

Dr. Sérgio M. Rezende, Brazilian Minister of Science and Technology

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Closing Remarks and Welcome Cocktail

Plenary Sessions

Plenary Sessions		Room Manuel Bandeira I, II, III and IV
Monday	**2:15/3:15pm**	**Plenary I: (To be announced)**
Oct. 17		Dr. Barry Carter - Department of Chemical Engineering and Materials Science University of Minnesota
	6:00/7:00pm	**Plenary II: Construction of Molecular Nano-Structures and Electronic Properties**
		Dr. Takuji Ogawa - Center for Molecular-Scale Nanoscience, Institute of Molecular Science – IMS/Okazaki
Tuesday	**2:15/3:15pm**	**Plenary III: Multifunctional Organic/Inorganic Hybrids**
Oct. 18		Dr. Luis A. Ferreira M. Dias Carlos - Departamento de Física da Universidade de Aveiro.
	6:00/7:00pm	**Plenary IV: From High-Temperature Supeconductivity to Complex Electron Systems Science**
		Dr. H. Takagi - Magnetic Materials Laboratory, RIKEN'S Discovery Research Institute.

Symposia Timetable

Room	Time	Monday Oct. 17	Tuesday Oct. 18	Wednesday Oct. 19
Manuel Bandeira I	8:00am/12:30pm	Symposium A	Symposium A	Symposium A
Manuel Bandeira II and III	8:00am/12:30pm	Symposium D	Symposium D	Symposium D
Manuel Bandeira IV	8:00am/12:30pm	Symposium F	Symposium F (8:00/10:15am) Symposium G (10:30am/12:30pm)	
Carlos Pena I	8:00am/12:30pm		Symposium H	Symposium H
Carlos Pena II	8:00am/12:30pm	Symposium B	Symposium B	Symposium G
Carlos Pena III	8:00am/12:30pm	Symposium E	Symposium E	
Carlos Pena IV	8:00am/12:30pm		Symposium C	Symposium C
Hall (Ground level) and Mezzanine ("PB" level)	3:30/6:00pm	Posters	Posters	
Manuel Bandeira I-II-III-IV	2:15/3:15pm 6:00/7:00pm	Plenary I Plenary II	Plenary III Plenary IV	

Lunch Time - Lunch will be served from 12:30pm to 02:00pm

Coffee Breaks – Coffee breaks will be served from 10:15am to 10:30am, Monday to Wednesday and 03:15pm to 03:30pm Monday and Tuesday.

Roundtable

Monday, 17 October

Room Manuel Bandeira I, II, III and IV 07:15pm

Chair: Celso P. de Melo, Universidade Federal de Pernambuco

"Perspectives for the Materials Science Area in Brazil"

The Materials Science research area has been growing quite substantially in Brazil in the last few years. Being a multidisciplinary subject, it has benefited from the requirements for a new and broader scope in scientific education, the requirement of new approaches to tackle scientific problems, the perception that the role played by the scientific understanding and development of novel materials is of paramount importance for further technological development, among other aspects that could be listed here which can have societal impact.

The aim of this roundtable, which shall have the presence of senior representatives from several Brazilian scientific and technological societies related to materials, as well as major policy and decision makers from Brazilian government agencies, is to discuss possible ways which, in a concerted manner, the area of materials science and engineering could be further boosted, thus decreasing the required time for scientific results to be transformed in technological processes leading to innovation.

A list of speakers will be provided and distributed on Monday 17 before 12 noon.

Monday October 17th
1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira I

MoSA - Synthesis and Characterization of Nanocomposites

MoSA-I-1 8:00/9:00
NANOPARTICLES SINGULARITIES: ADHESION EFFECTS IN NANOCOMPOSITES INTERFACES
Fernando Galembeck,UNICAMP/SP

MoSA-638 9:00/9:15
A KINETIC MODEL TO DESCRIBE NANOCRYSTAL GROWTH BY ORIENTED ATTACHMENT MECHANISM
Ribeiro, Caue;Lee, Eduardo J. H.;Longo, Elson;Leite, Edson R.;
The classical model of particles coagulation on colloids is revisited to evaluate its applicability on the oriented attachment of nanoparticles. The proposed model describes well the growth behavior of dispersed nanoparticles on the initial stages of nanoparticle synthesis and on growth induced by hydrothermal treatments.

MoSA-695 9:15/9:30
CHARACTERIZATION OF AG/PVA NANOCOMPOSITES USING IMPEDANCE SPECTROSCOPY
Andrade, César A. S.;dos Santos, Clécio G.;de Melo, Celso P.;
We discuss the hydrothermal synthesis of silver and polyvinyl alcohol nanocomposites, which result in "doughnut"-shaped structures. These structures were characterized by the measurement of particle size, UV-Vis spectroscopy, scanning electron microscopy and impedance spectroscopy. Impedance spectroscopy measurements show that such "wires" are more resistive than silver nanoparticles.

MoSA-642 9:30/9:45
CHARACTERIZATION OF CARBON NANOTUBE SYNTHESIS AND PROCESSING WITH RESONANCE RAMAN SPECTROSCOPY
Jorio, Ado;Pimenta, Marcos Assunção;Fantini, Cristiano;Ribeiro, Henrique Bucker;Araújo, Paulo Antônio Trindade;
The use of resonance Raman spectroscopy to characterize carbon nanotube growth and processing is discussed. With a quasi-continuous set of excitation laser lines from 1.6 to 2.7eV, we analyze nanotubes grown by the HiPco, CoMoCAT and Alcohol methods, bundled or dispersed in solution, and wrapped by different dispersion agents.

MoSA-595 9:45/10:00
CHARGE TRANSFER SATURATION IN LI-SWNT
Lemos, Vólia;Guerini, Silvete;Mendes Filho, Josué;
Lithium insertion in the channels of a single-wall carbon nanotube bundle is investigated using an ab initio calculation. The structures are let to relax and the electronic properties are studied for several insertion level. The results allowed us to postulate that the charge transfer from lithium to bundle is limited.

MoSA-536 10:00/10:15
COMBINED EFFECT OF MGF2 AND FE ON THE IMPROVEMENT OF H-SORPTION PROPERTIES OF MG-BASED NANOCOMPOSITES
Leiva. D.R.;Botta F., W.J.;Botta F., W.J.;Castro, J.F.R.;Jorge Jr., A.M.;Ishikawa, T.T.;
MgH2-based nanocomposites were obtained trough reactive milling under hydrogen of Mg, with additions of MgF2, Fe or FeF3. A combined catalytic effect of MgF2 and Fe for the conversion of Mg into MgH2 was observed. FeF3 also acts as catalyst, and a fluorine transfer reaction from FeF3 to Mg occurs.

Room Carlos Pena II

MoSB - Supramolecular Materials and Organic Devices

MoSB-I-1 8:00/9:00
ORGANIC LIGHT EMITTING DIODES BASED ON RARE EARTH COMPLEXES
Marco Cremona, IF-PUC/RJ

MoSB-528 9:00/9:15
FORMATION OF NANOMETRIC BLOCK COPOLYMER REGULAR ORDERED STRUCTURES
Block copolymer patterns of parallel aligned ribbons and hexagonally arranged dots were produced by self assembly of a block copolymer. The phenomenon was rationalized in terms of a combination of effects, such as thermocapillary flow (Marangoni effect), dewetting and receding meniscus during drying. The ribbons width and the dot diameter vary from 200 to 600 nm.

MoSB-554 9:15/9:30
ELECTRICAL IMPEDANCE SPECTROSCOPY APPLIED TO RETINOIC ACID MICELLES
de Melo, Celso P.; de Lima, Elisangela G.; de Oliveira, Helinando P.;
We use Electrical Impedance Spectroscopy (EIS) techniques to examine the dielectric response of cis and trans retinoic acid microparticles prepared by the incorporation of the retinal chomophore in the interior of surfactant micelles, and show how these systems could be used in photoelectronic memory devices.

MoSB-523 9:30/9:45
ELECTRIC AND MAGNETIC HYPERFINE INTERACTIONS IN AZURIN
Caldas,Marilia Junqueira;Petrilli, Helena Maria; Di Felice, Rosa; Corni, Stefano;
We use a state of the art DFT electronic structure method to study local electronic and magnetic properties of the Blue Copper protein Azurin. This is the first time that the nuclear quadrupole interactions at the N sites are calculated and compared with measurements in the literature.

MoSB-I-2 9:45/10:15

CONDUCTING POLYMERS, SURFACTANTS, COLLOIDS
Celso P. de Melo, DF-UFPE/PE

Room Manuel Bandeira II and III

MoSD - Structural materials: Processing Properties and Applications

MoSD-I-1 8:00/9:00
MATERIALS FOR THERMAL PROTECTION OF SPACE VEHICLES
Carlos Alberto Alves Cairo, IAE-CTA/SP

MoSD-530 9:00/9:15
57FE MÖSSBAUER AND RAMAN SPECTROSCOPY STUDIES OF LIXMFEPO4 (M=CR, CU, AL, TI) COMPOUNDS
De Paiva, José Airton;Gouveia, Daniel Xavier;Lemos, Volia;Souza Filho, A. Gomes;Mendes Filho, J.;Lala, Stela;Montoro, L.A.;Rosolen, J.M.;
Abstract – The 57Fe Mössbauer and Raman measurements for LixMFePO4 (M=Cr, Ti, Cu, Al) were performed. The results suggests that a disordered structure is present when the delithiation process occurs. Results for LixMFePO4 (M=Cr,Ti) submitted to electrochemical cycles are presented and discussed.

MoSD-568 9:15/9:30
ANALYSIS OF MICROSTRUCTURE OF STAINLESS STEEL 444 BY EBSD TECHNIQUE
Bruno, Antonia Daniele Souza;Sheyla Carvalho;Tavares, Sergio Souto Maior;Torres, Jose Airton Lima;
Heat treatment in ferritic stainless steel do not increase the hardness or refine grains. However, there is a thermo-mechanical treatment to refine the grain, like cold rolling and annealing. The purpose of this work is to verify through EBSD technique the resulting microstructure after thermo-mechanical treatment.

MoSD-634 9:30/9:45
ATOMIC PARTITIONING IN WELD-HEAT AFFECTED ZONE MICROSTRUCTURES OF DUPLEX STAINLESS STEEL
C.M. Garzón;J. Gomes;S.D. Brandi;A.J. Ramirez;
The phase transformations that take place in the heat affected zone welding microstructure of duplex stainless steels were numerically assessed by using a Calphad-based algorithm. Welding strongly modified atomic partitioning in microstructure, being established different alloying content profiles as a function of the peak temperature during the welding thermal cycle

MoSD-597 9:45/10:00
CORROSION RESISTANCE EVALUATION OF THE AISI 316L STAINLESS STEEL WELDED PLATES
Silva, Cleiton Carvalho;Ramos Jr., José Mathias de Brito;Sant'Ana, Hosiberto Batista;Farias, Jesualdo Pereira;
this study presents the results about AISI 316L stainless steel corrosion resistance caused by heavy petroleum. The results indicated that the weld thermal cycle is sufficient to cause the AISI 316L austenitic stainless steel HAZ susceptible to corrosion caused by heavy crude oil.

MoSD-753 10:00/10:15
EFFECTS OF HYDROGEN ON THE MECHANICAL PROPERTIES OF A 2,25CR-1MO STEEL
Siquara, Paula Cristina;Eckstein, Carlos Bruno;Almeida, Luiz Henrique;dos Santos, Dilson;
The influence of hydrogen on the mechanical properties of a 2,25Cr-1Mo was investigated. The results indicated a important loss ductility, but the yield and ultimate tensile strength was unaltered. The fractographs analyses revealed that the fracture mode was mixed being ductile and quasi-cleavage in the sample electrochemically hydrogenated.

Monday October 17th
1st Sessions (08:00 – 10:15am)

Room Carlos Pena III

MoSE - Advances in Photonics Materials and applications

MoSE-I-1 8:00/9:00
SUPRAMOLECULAR NANOMATERIALS: NOVEL DESIGN AND UNORTHODOX APPROACHES
Kurt E. Geckeler, CIST - South Corea

MoSE-536 9:00/9:15
CONDUCTIVITY OF BLOCK COPOLYMERS OF N-VINYLCARBAZOLE POLYMERIZED BY "LIVING" FREE-RADICAL PROCESS
Possidonio, Shirley;Onmori, Roberto K.;Peres, Laura O.;Wang, Hui S;
The "living" free radical polymerization of styrene and N-vinylcarbazole has been carried out using "living" free-radical process. The block copolymer has been prepared using TEMPO-terminated homopolymer as a macroinitiator. The copolymers have been doped at room temperature with LiClO4 and conductivity data have been obtained.

MoSE-542 9:15/9:30
ER3+-TM3+ CO-DOPED TELLURITE PHOTONIC CRYSTAL FIBER FOR BROADBAND OPTICAL AMPLIFIER AROUND 1550NM BAND
Cordeiro C. M. B;Chillcce E. F.;Brito Cruz C. H.;Cesar C. L.;Barbosa L. C.;
Er3+-Tm3+ co-doped tellurite photonic crystal fiber is produced by using stack-and-draw procedure and 187nm bandwidth of amplified spontaneous emission intensity around 1550nm band using a 790nm Ti: Sapphire pump laser and 15cm length fiber are demonstrated for the first time.

MoSE-555 9:30/9:45
HOLOGRAPHIC TECHNIQUES TO STUDY PHOTOSENSITIVE MATERIALS
Cescato L;Cordeiro CMB;Carvalho EJ;Nalin M;
A phase sensitive holographic technique is described that allows the measurement of real time optical modulations, induced by light in photosensitive materials, as small as 10–5. We apply this technique to study the solid-state kinetic reactions in photopolymers.

MoSE-557 9:45/10:00
KINETICS OF THE INTERNAL ELECTRIC FIELD IN CONGRUENT LITHIUM NIOBATE
Yazdani, Farshad; Sundheimer, Michael; Gomes, Anderson; Floridia, Claudio;
We report measurements of the kinetics of the fast component of the internal electric field in congruent lithium niobate, with a magnitude of ~35 kV/cm and time constant of ~50 ms. We qualitatively explain the results using a defect dipole model

MoSE-549 10:00/10:15
NEW DEVELOPMENT OF NANOSILICA-BASED PHOTONIC MATERIALS BY FLAME AEROSOL METHOD
Carlos K. Suzuki, Eduardo Ono, Juliana S. Santos, Edmilton Gusken, and Raul F. Cuevas
The present research reports a series of novel developments in terms of properties improvement of silica-based materials for photonics. It is based on the synthesis of nanoparticles and control of nanoporosity and particle size distributions, and defects closely related to non-linearity effects through the processing parameters.

Room Manuel Bandeira IV

MoSF - Magnetic Materials: Preparation, Characterization and Applications

MoSF-I-1 8:00/9:00
PERMANENT MAGNETS - RECENT DEVELOPMENTS
Frank P. Missell Universidade de Caxias do Sul, RS

MoSF-504 9:00/9:15
ELECTRONIC STRUCTURE OF THE SRFEO3 AND SR2FEO4 COMPOUNDS
C. Gusso and M. Abbate
We studied the electronic structure of the SrFeO3 and Sr2FeO4 compounds using band structure calculations. The calculations show that the width of the Fe 3d bands at the Fermi level are larger for SrFeO3 than for Sr2FeO4. The larger width for SrFeO3 is due to the 3D character, whereas the 2D character produces a smaller width for Sr2FeO4. In turn, the width of the Fe 3d bands can be related to the electrical properties of these materials. For instance, the SrFeO3 compound has a relatively large Fe 3d band width and is metallic, whereas the Sr2FeO4 compound has a smaller Fe 3d band width and is an insulator

MoSF-501 9:15/9:30
ELECTRONIC STRUCTURE AND PRESSURE DEPENDENCE OF MAGNETIC PROPERTIES OF FE/N/FE MULTILAYERS
Antonio vanderlei dos santos;dos Santos, A. V.;Krause, J. C.;Kuhnen, C. A.;
The electronic structure and magnetic properties of the Fe/N/Fe multilayers were obtained by means of self-consistent band structure calculations employing the Linear Muffin-Tin Orbital method (LMTO). Calculations were carried out for several lattice parameters in order to obtain ground-state properties such as equilibrium lattice parameters and the critical pressure.

MoSF-546 9:30/9:45
ENHANCED TMOKE RESPONSE OF CO THIN FILMS AT ATR CONFIGURATION
Melo1, L.G.C., Santos1, A.D., and Souche2 Y.
Here, we present a study of transverse magneto-optical Kerr effect (TMOKE) on thin films of Co. The effect was investigated at the attenuated total reflection configuration (ATR), where we have observed an enhancement of a factor of 3 of the above effect. We discuss the conditions yielding this enhancement

MoSF-517 9:45/10:00
TEXTURE ANALYSIS AND MAGNETIC PROPERTIES OF MARAGING STEEL AGED AND OVERAGED
Bruno, Antonia Daniele Souza;Abreu, Hamilton Ferreira Gomes;Silva, Jean Jefferson Moraes;Tavares, Sergio Souto Maior;
Maraging steels are a family of metallic materials with extremely high mechanical strength and good toughness. This work investigates magnetic properties and the possibility of using them in hysteresis motors. The results showed that maraging could be an option for ultra high speed hysteresis motors.

MoSF-508 10:00/10:15
INTERACTION OF MAGNETIC FIELDS GENERATED BY MAGNETS OF NEODYMIUN-IRON-BORON WITH THE BUCAL MEDIUM
Sobrinho,I.S*; Mohallem,N.D.S; Meira-Bello,L.C; Lana, L.B.S
Abstract not available

Symposia, Monday October 17th

Monday October 17th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira I

MoSA - Synthesis and Characterization of Nanocomposites

MoSA- 555 10:30/10:45
EFFECT OF HIGH ENERGY MILLING ON THE CRYSTAL STRUCTURE OF A TA-20WT%CU COMPOSITE POWDER
Franciné Alves da Costa;Laurenildo Marques de Oliveira; Uílame Umbelino Gomes; Angelus Giuseppe Pereira da Silva;
Abstract – This work investigates the crystal structure of a Ta-20wt%Cu composite powder high energy milled. The powder was wet milled for up to 50 hours in a planetary mill. DRX analysis detected amorphization of both Ta and Cu after 50 hours milling.

MoSA-503 10:45/11:00
CVD-DIAMOND GROWTH ON POROUS TITANIUM
Braga, N. A. ; Ferreira, N. G.;
Deposition of CVD-diamond on pure titanium substrates prepared by power metallurgy has been studied. The particle size and shape control of titanium has demonstrated to be very important for growing diamond films on such substrates. Diamond/Ti films characterization was made by using Raman spectroscopy and Scanning Electron Microscopy.

MoSA-646 11:00/11:15
ELECTRICAL AND ELECTROCHEMICAL CHARACTERIZATION OF DIFFERENT SILVER NANOPARTICLES/POLYANILINE NANOCOMPOSITES
Zarbin, Aldo J. G.;Castro, Eryza G.;Oliveira, Marcela M.;Canestraro, Carla;Ugarte, Daniel;Zanchet, Daniela;Roman, Lucimara S.;
Novel dodecanethiol-capped silver nanoparticles (NP)/polyaniline (PANI) nanocomposites were prepared via the in situ polymerization of aniline in a two phases method. According the experimental setup used, different structures of these nanocomposites were formed, with reflects in their electrical and electrochemical behavior.

MoSA-694 11:15/11:30
EXPERIMENTAL MICROMAGNETISM BY NEAR-FIELD MAGNETO-OPTICAL MICROSCOPY
Pojar, Mariana;Schoenmaker, Jeroen;Santos, Antonio Domingues;Seabra, Antonio Carlos;
Using Magneto-Optical Near-Field Microscopy, local hysteresis loops and magneto-optical differential susceptibility images can be measured at micro and nanometric scale. These methodologies permit a new experimental dynamical micromagnetic approach to the study of (sub-) microscopic objets.

MoSA-711 11:30/11:45
FABRICATION AND CHARACTERIZATION OF GE NANOCRYSTALLINE GROWN BY ION IMPLANTATION IN SIO2 MATRIX
Mestanza Muñoz Segundo Nilo;Diaz Guilherme Osvaldo;Hayashi Marcelo;Behar Moni;Doi Ioshiaki;Swart Jacobus Willibrordus;Frateschi Newton Cesário;
Semiconductor nanocrystals have been extensively studied, due to the strong room-temperature photoluminescence observed for Si and Ge nanocrystals embedded in SiO2. These results, related to quantum confined excitons in nanocrystals, have opened extremely interesting perspectives for the development of a Si and Ge based optoelectronic technology.1

Room Carlos Pena II

MoSB - Supramolecular Materials and Organic Devices

MoSB-I-3 10:30/11:00
ORGANIC LIGHT EMITTIND DIODES: TECHNOLOGICAL CHALLENGES AND APPLICATIONS
Roberto Faria, USP/São Carlos

MoSB-556 11:00/11:15
MOLECULAR DYNAMICS SIMULATIONS OF AL DEPOSITION ON PPV FILMS
Giro, Ronaldo;Caldas, Marilia J.;
The organic/metal interface plays an important role in device efficiency for polymeric light-emitting diodes. We present our study of aluminum (Al) deposition over different polyphenylene vinylene (PPV) surfaces, performed with classical molecular dynamics, with a new force field specially parameterized to treat metal films. We detail the

MoSB-509 11:15/11:30
RESONANCE RAMAN CHARACTERIZATION OF POLYANILINE DOPED WITH CU(II), FE(III) AND ZN(II)
Izumi, Celly M. S.;Constantino, Vera R. L.;Temperini, Marcia L. A.;
This work presents the resonance Raman and UV-Vis-NIR characterization of emeraldine base with Fe(III), Cu(II) and Zn(II) solutions in 1-methyl-2-pyrrolidinone (NMP). It is demonstrated that the species formed through the interaction of metal cations and polyaniline is strongly dependent on the concentration and on the nature of the metal ion.

MoSB-535 11:30/11:45
SAXS, QCM AND FTIR SPECTROSCOPY STUDY OF PHOSPHOLIPIDS BILAYERS OBTAINED BY LANGMUIR-BLODGETT METHOD
Oliveira,Juliano;Mansur,Herman;
The objetive of this study was to develop and characterize phospholipid bilayers deposited through Langmuir-Blodgett (LB) method using Fourier Transform Infrared Spectroscopy (FTIR), Quartz Crystal Microbalance (QCM) sensor, and Small-angle X-ray scattering (SAXS) and surface pressure isotherms. Phosphatidylcholines (DMPC, DPPC and DAPC) and hybrids (DMPC/CHOL, DPPC/CHOL, DAPC/CHOL) bilayers were investigated.

Room Manuel Bandeira II and III

MoSD - Structural materials: Processing Properties and Applications

MoSD- 516 10:30/10:45
EMBRITTELMENT BY HYDROGEN IN WELDED SUPERAUSTENITIC STAINLESS STEEL
Oliveira, A.M.C.1 ; Paredes, R.S.C.1 ; Vaz, A . P.1
The austenitic stainless steel embrittlement is usually present on sulphureous medium due to the hydrogen presence, resulting on cracks and corrosion on acid medium. Several researches carried out on the behavior of hydronized stainless steel structures, had shown that the hydrogen induces superficial phase transformation during hydronization period and cracks formation after this period.

MoSD-514 10:45/11:00
EVIDENCE OF THE MINIBAND FORMATION IN INGAAS/INP SUPERLATTICES
Pusep Yuri;de Giovanni Rodrigues A.;Galzerani, J.C.;Comedi D.;LaPierre R.R.;
The frequencies of the plasmon-LO phonon modes measured in the InGaAs-InP short-period superlattices reveal a significant blue shift with decreasing barrier thicknesses caused by the decrease of the minidand effective mass. An additional evidence of the miniband formation was obtained by the Shubnikov-de Haas oscillations measured with different orientations of the magnetic field.

MoSD-724 11:00/11:15
HYDROGEN PERMEATION THROUGH INTERNALLY OXIDIZED PD ALLOYS
Azambuja, Viviane and dos Santos, Dilson;
This paper show results of electrochemical hydrogen permeation tests in the samples of Pd-Al, Pd-Ce and Pd-Pt-Al in the conditions: as received and internally oxidized which result of nanosized precipitate oxides in the Pd matrix. It was verified that the presence of oxides increase the hydrogen solubility but the diffusibility decrease. The nature, size and distribution of the precipitates in the hydrogen permeation parameters are discussed in this paper.

MoSD-720 11:15/11:30
IMAGE PROCESSING TECHNIQUES FOR ASSESSMENT OF SENSITIZATION ON AUSTENITIC STAINLESS STEEL USED IN OIL PLANTS
Ramalho, Geraldo;Medeiros, Fátima;Costa, Rodrigo;Albuquerque, Darby;Torres, J.;Bruno, A.;
This paper aims to estimate the degree of sensitization according to ASTM 262-02a norm and the respective type of stainless steel by applying digital image processing and pattern recognition algorithms. The availability of this materials science virtual laboratory provides a training environment for inspector skills with regard to intergranular corrosion

MoSD-682 11:30/11:45
INFLUENCE OF ANNELING ON THE DESESTABILIZATION TREATMENT OF HIGH CROMIUM CAST IRONS CLASS IID AND IIIA
Patricia Ortega Cubillos;Luis Augusto Torres;Pedro Bernardini;
Rollers of coal grinding of thermoelectric power plant are made of high chromium cast iron from class II D (ASTM A 5321). These rollers are heat treated (austenite desestabilization) from the as cast state or from the annealed state to increase the hardness and wear resistance,. Time and temperature of desestabilization are some of the key factors in reaching maximum hardness and literature data applies to the as cast condition. Unfortunately we have no data (time and temperature) about heat treating this material in the annealed condition2 some industries apply the same heat treatment cycle regardless of the previous state. The main goal of the present work was to establish the effect of the initial state (as cast versus annealed) on the optimal time and temperature of the desestabilization treatment to reach the maximum hardness value from two class (II D and III A)

Monday October 17th
2nd Sessions (10:30am – 12:30pm)

Room Carlos Pena III

MoSE - Advances in Photonics Materials and applications

MoSE-I-2 10:30/11:30
HOLOGRAPHIC TECHNIQUES TO STUDY PHOTOSENSITIVE MATERIALS
Lucila Cescato, UNICAMP, SP

MoSE- 538 11:30/11:45
NOVEL TM3+-DOPED GAIN MEDIA FOR OPTICAL COMMUNICATION AMPLIFIERS
Lüthi, S. R.;Morais Filho, C. A. B.;Gomes, A. S. L.;Nascimento, E.;Ribeiro, S. J. L.;Messaddeq, Y.;
The spectroscopic properties of a novel Tm3+-doped germanate bulk glass are investigated and compared to those of the commonly used ZBLAN host matrix. Oscillator strengths, radiative transition rates, and branching ratios are calculated and evaluated with respect to application of the material in optical fiber and waveguide amplifiers

MoSE-547 11:45/12:00
ON-LINE CONTROL OF THE REFRACTIVE INDEX PROFILE OF PREFORMS DEPOSITION FOR OPTICAL FIBER
Santos, Juliana S.;Ono, Eduardo;Suzuki, Carlos K.;
In this research, it is presented an on-line method to control the refractive index profile of VAD (Vapor-phase Axial Deposition) preforms for optical fiber through the parameterization of the preform deposition surface. As a result, graded and special index profile as well as their reproducibility and axial uniformity were obtained.

MoSE-I-3 12:00/12:30
RARE EARTH DOPED TRANSPARENT FERROELECTRIC CERAMICS FOR PHOTONIC APPLICATIONS.
Andrea Simone Stucchi de Camargo, IF-USP, São Carlos

Room Manuel Bandeira IV

MoSF - Magnetic Materials: Preparation, Characterization and Applications

MoSF-I-2 10:30/11:30
NANOSCALE PROPERTIES OF MAGNETIC COLLOIDS
Jérôme Depeyrot UnB, DF

MoSF-515 11:30/11:45
SYNTHESIS AND MAGNETIC PROPERTIES OF MONODISPERSE SELF-ASSEMBLED FEXPT(100-X) (48 iÜ X iÜ 62) NANOPARTICLES
Varanda, L. C.;Imaizumi, M.;Jafelicci Jr., M.;
Synthesis of 4iÅ0.1nm FeXPt(100-X) (48iÜxiÜ 62) nanoparticles by a modified polyol process is reported. As synthesized this material is superparamagnetic, self-assembled into nanoparticles superlattice and presents disordered fcc structure. Thermal annealing converts the fcc to the fct phase and transforms the superlattice into ferromagnetic nanocrystal assemblies with HC > 1T.

MoSF-516 11:45/12:00
FERROMAGNETIC BEHAVIOR IN DOPED PELLETS OF POLY(3-METHYLTHIOPHENE)
Walmsley, Lygia;deOliveira, Adilson;Pereira, Ernesto C.;Pockrifka, Leandro;Correa, Alessandra A.;Bulhões, Luís Otavio S.;Nascimento, Otaciro R.;
We discuss the magnetic characteristics of conducting polymers and the ferromagnetic behavior with the increase of the pressure used to make the pellets. Magnetic measurements and esr illustrate the variety of magnetic behavior. The magnetic character of the conducting polymer matrix suggests applications in conducting polymers/ magnetic nanoparticles spintronics devices.

MoSF-536 12:00/12:15
TOWARD CORE-SHELL COATING OF MAGNETIC NANOPARTICLES
Vono, Lucas L. R.;Rossi, Liane M.;Machado, Giovanna;
Preparation of magnetite silica core-shell particles with controlled morphology and size is our goal. Coating of magnetic particles with silica shells can enhance the stability and dispersibility of the magnetic core and also increase the functionality and reactivity of particles surfaces.

MoSF-507 12:15/12:30
PREPARATION AND CHARACTERIZATION OF CROSSLINKED RESINS CONTAINING MNFE2O4, NIFE2O4 AND COFE2O4
de Santa Maria; Luiz Claudio;Hui; Wang S.;Costa; Marcos A.S.;Barbosa; Aline L.F.A.;Soares; Jomara G.M.;da Silva; Manoel Ribeiro;
The preparation and characterization of magnetic composites based on microbeads of sulphonated poly(styrene-co-divinylbenzene) containing Ni, Co or Mn ferrites particles obtained by coprecipitation were described. The ferrites development within the polymeric structure was evaluated by scanning electron microscopy (SEM) with EDS. The morphological features of the composite particles have depended on the ferrite type. All the spherical beads presented dispersed and agglomerated submicro particles of ferrites located on their surface and inner part as well. Magnetization data of the microbeads showed good ferromagnetic behavior.

Symposia, Monday October 17th

Monday October 17th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira I

MoSA - Synthesis and Characterization of Nanocomposites

MoSA-620 11:45/12:00
FLAVONOID PROTECTION BY LAYER-BY-LAYER TECHNIQUE AND GEL FORMATION USING KAPPA-2-CARRAGEENAN.
Zaniquelli, M.Elisabete D.;Ramos, Ana Paula;Gonçalves, Rogeria R.;Wong, Kenneth;
This work reports the preparation and characterization of two systems that can be used for flavonoid protection. A carrageenan hydrogel and layer-by-layer flavonoid covered particles using a quitosan-carrageenan deposition sequence. The gel shows a higher transparence compared to pure carrageenan gels. Both systems were characterized relative to their emission properties.

MoSA-546 12:00/12:15
FORMATION OF BURIED AMORPHOUS LAYERS BY ION IMPLANTATION
E. Oliviero;P.F.P Fichtner;A. Gandy;S.E. Donnelly;J.F. Barbot;M.F. Beaufort;
We report here on the formation of buried amorphous layer in silicon by implantation of diverse ions at room temperature, elevated temperature and liquid nitrogen temperature and on the evolution of such structure after annealing at high temperature.

MoSA-721 12:15/12:30
FORMATION OF SN AND PB ISLANDS AT SIO2/SI(001) INTERFACES BY ION IMPLANTATION
Tolley, Alfredo J.;Lovey, Francisco C.;Condo, Adriana M.;Zawislak, Fernando C.; Fichtner, Paulo F. P.;Lopes, João M. J.;Kremer, Felipe;
the formation of dense arrays of epitaxial Sn and Pb nanocrystals at the interface of SiO2/Si structures is investigated via transmission electron microscopy (TEM) and Rutherford Backscattering Spectrometry (RBS). The results are discussed in terms of the diffusion and solution properties of the atomic species.

Room Carlos Pena II

MoSB - Supramolecular Materials and Organic Devices

Room Manuel Bandeira II and III

MoSD - Structural materials: Processing Properties and Applications

MoSD-717 11:45/12:00
MAGNETIC PHASE QUANTIFICATION METHOD APPLIED TO WELD JOINTS OF DUPLEX AND SUPERDUPLEX STAINLESS STEELS
Lima, Leandro Dias;Tavares, Sérgio Souto Maior;de Souza, José Adaílson;Pardal, Juan Manuel;da Silva, Manoel Ribeiro;Neto, Júlio Maria;
Duplex and superduplex stainless steels are corrosion resistant materials used in the petrochemical industries. Pipe welding of these materials is a critical operation, where the success depends on the austenite/ferrite proportions obtained. In this work a phase quantification method based on the magnetization saturation measurement is tested and discussed.

MoSD-601 12:00/12:15
MECHANICAL PROPERTIES AS A FUNCTION OF AS-CAST MICROSTRUCTURE AND SOLIDIFICATION THERMAL VARIABLES OF AL-SI HYPOEUTECTIC ALLOYS
Goulart, P. R.;Spinelli, J.E.;Osório, W.R.;Garcia, A.;
The purpose of the present work is to investigate the influence of solidification thermal variables on the as-cast microstructure of Al-Si alloys and to establish correlations between microstructural parameters and mechanical properties. Experimental results include transient metal/mould heat transfer coefficients, secondary dendrite arm spacings and ultimate and yield strengths as a function of solidification conditions.

MoSD-572 12:15/12:30
NUMERICAL MODELING OF MICROPOROSITY FORMATION IN UNIDIRECTIONALLY SOLIDIFIED AL-CU INGOTS
Ferreira, Ivaldo;Boeira, Alexandre Pitol;Spinelli, Jose Eduardo;Garcia, Amauri;
The aim of this paper is to develop and validate a numerical solution which accordingly describes microporosity evolution and formation. Numerical results will be compared with those experimentally provided during upward unidirectionally solidified Al- 6.2 wt. pct Cu ingots.

Monday October 17th

Poster Sessions (3:30 – 6:00pm)

Symposium A - Synthesis and Characterization of Nanocomposites

MOPSA-508

NANO CRYSTALLIZATION OF FRESNOITE GLASS

CABRAL, ALUISIO;

We determined the internal nucleation, crystal growth and overall crystallization kinetics of fresnoite crystal (2BaO·TiO2·2SiO2) in an almost stoichiometric fresnoite glass. Due to the extremely high nucleation rates (~1017 m-3s-1) that limits the maximum crystal size to ~ 700 nm the nucleation densities and crystal sizes were estimated by scanning electron microscopy (SEM). The volume fraction crystallized was measured by x-ray diffraction. The nucleation rates obtained directly from SEM measurements reasonably agree with those calculated from the combination of overall crystallization with crystal growth kinetics. The activation enthalpies for viscous flow, transport of structural units across the nucleus/melt interface (nucleation) and crystal growth: Dhh, Dht and Dhu respectively, follow a similar trend to that observed for other stoichiometric silicate glasses that nucleate internally: Dhh= 294 > Dht= 87 > Dhu = 61 kj/mole. Fresnoite glass displays the highest internal nucleation rates so far measured in inorganic glasses. These rates are comparable to some metallic glasses and can lead to nanostructured glass-ceramics.

MOPSA-510

THE MAGNETIC AND ELECTRONIC PROPERTIES OF FE-AL-NB INTERMETALLIC COMPOUNDS

M. Imaizumi1, P.N. Lisboa1, M.Jafelicci Jr2., L.C. Varanda2, S.Gama3, A.A. Coelho3, A.de Campos3

Self-consistent spin polarized energy band calculations with the general gradient approximation for the C14 Laves phase of the $(Fe-Al)_2$-Nb intermettalic compound are presented. Magnetic susceptibility experimental measurements were performed as a function of temperature by using a Squid magnetometer.

MOPSA-511

GROWING BINORMAL NANOSPRINGS

da Fonseca, Alexandre F;Galvão, D. S.;Malta, C. P.;

Helical structures formed by asymmetric rods can be normal or binormal helices. We investigate the geometric features of several nanosprings verifying the non-existence of normal nanohelices. In this work we explain not only the absence of normal nanosprings but also the growing process of binormal nanosprings.

MOPSA-512

ELECTRONIC AND STRUCTURAL PROPERTIES OF CO2MNX X(AS,BI,P,SB)HEUSERL INTERMETALLIC COMPOUND AT PRESSURE OF ZERO AND 0.25GPA

M. Imaizumi, P.N. Lisboa, M.Jafelicci Jr., S.Gama, A.A. Coelho, A.de Campos, J.R.Sambrano , Élson Longo

Electronic and structural properties of Co2MnX (X=As, Bi, P and Sb) were calculated by the self- consistently by the full potential linearized augmented plane wave method (FP -LAPW) at pressure of zero and 0.25GPa. These materials present the half- metallic behavior and change in structural properties at 0.25Gpa

MOPSA-513

MATERIALS FOR PRODUCTION OF LITHIUM BEAMS

da Silva; Manoel Ribeiro;Santos; Wilma; M. S.;Luiz; Adir Moises;

Methods applied to produce lithium cathodes used as targets in sputtering ion sources are described. The following compounds have been synthesized: LiOH + W, LiF + W and LiOH + Al. Best currents were obtained with LiOH + Al submitted to a heat treatment during 24 h at 400oC.

MOPSA-518

THE EXCITATION POWER DENSITY EFFECT ON PHOTOLUMINESCENCE SILICON NANOCRYSTAL EMBEDDED IN SIO2

E.C. Moreira a , M. Behar b, H. Boudinov b, L. Amaral b, U.S.Sias

In this contribution we present a study on the influence of the excitation power density on the photoluminescence of Si nanocrystals (NC) embedded in a SiO2 matrix, produced by hot implantation of Si and further thermal annealing.

MOPSA-521

SYNTHESIS AND SINTERING OF CEO2 – 10% MOL Y2O3 NANOPOWDERS

de Souza, Dulcina M. P. F.;Lapa, Camila Maria;

Yttria doped ceria are attractive electrolytes for SOFCs due to its high electrical conductivity. However, powders prepared by conventional methods shows poor sinterability. To preparer dense and fine microstructure at low temperature, powders were prepared by modified citrate process and bodies were sintered using different sintering programs.

MOPSA-524

PREPARATION OF PET/BENTONITE NANOCOMPOSITES BY MELT INTERCALATION

Raposo, C. M. O.;Leite, I. F.;Silva, S. M. L.;

Poly(ethylene terephthalate)/natural bentonite (PET/NB) and PET/organo-modified bentonite (PET/ORGB) nanocomposites were prepared by melt intercalation on a counter-rotating twin screw extruder and injection molded. Hereafter, the compounds obtained PET/NB and PET/ORBG compounds with 1 - 3 wt% of clay were characterized by X-rays diffraction (DRX) and impact strength.

MOPSA-525

CHARACTERIZATION OF SEMICONDUCTING FILMS OF SE, PBSE E CDSE

Cabral, M.F.;Calegaro, M.L.;Tanimoto, S.T.;Machado, S.A.S;

The underpotential deposition (UPD) of lead and cadmium were studied in acid medium on selenium thin films and the chemical, morphologic and topologic characterization of such semi-conducting electrodeposits were carried out. The doped films were analyzed by Cyclic Voltammetry, Chronoamperometry, Electrochemical Impedance Spectroscopy, Scanning Electron Microscopy, Electron Dispersive X-ray and Atomic Force Microscopy

MOPSA-529

UV-OZONE AND OXYGEN PLASMA TREATMENTS ON INDIUM TIN OXIDE SURFACE USED IN ELECTROLUMINESCENT DEVICES

Gerson S., Alexandre M. N., Emerson R. S., João C. B. S., Fernando J. F., Ely A. T. D., Adnei M. A.

Indium tin oxide (ITO) films are very used as electrodes (anode) in electroluminescent devices due has good conductivity and transparency properties. To improves the performance of electroluminescent devices we studied treatments with UV-ozone and Oxygen Plasma on the surface of films.

MOPSA-530

FILMS PRODUCED BY ELECTRON BEAM VACUUM DEPOSITION FROM NANOMETRIC TIO2 AND AL2O3 PIGMENT POWDERS OBTAINED BY PECHINI'S METHOD

M. I. B. Bernardi, F. S. De Vicente and A.C. Hernandes;

Nanoscience is currently enabling revolutionary changes in several technology areas but new paradigms will eventually have a much wider and innovative impact. In the area of coatings and pigments, new approaches through nanoscale effects can be used to create coating with significantly optimized or enhanced properties.

MOPSA-531

PROPAGATION OF TERAHERTS AND INFRARED ELECTROMAGNETIC WAVES IN CARBON NANOTUBES: NUMERICAL ANALYSIS

We present in this paper some results of numerical analysis of electromagnetic wave propagation in single-wall carbon nanotubes. Considering these nanotubes as waveguides with surface waves, we discuss the dependence of the properties of guiding waves on the geometry (zigzag, armchair, chiral) and on the dimensions (m, n indexes) of the nanotubes. The temperature dependence of the electromagnetic wave parameters is also analyzed.

MOPSA-533

FLUORESCENT SEMICONDUCTOR QUANTUM DOTS: SURFACE FUNCTIONALIZATION FOR BIOLOGICAL APPLICATIONS PURPOSES

Lima, L. B.; Menezes F. D.; Mariano, E. A. L.; Brasil Jr., A. G.; Santos, B. S.; Farias, P. M. A.;

Semiconductor quantum dots (QDs) present special and unique features. Many of these are concerned with the fact that the most part of their forming atoms are at the particle surface. Here we present and discuss aspects of surface functionalization of semiconductor QDs obtained for biological labeling.

MOPSA-534

A SIMPLE METHOD FOR THE SYNTHESIS OF BLACK G-AL2O3 NANOPARTICLES

R. C. Limaa, J. S. Vasconcelosb, V. C. Albaricia, N. S. L. S. Vasconcelosb, P. A. P. Nascentec, E. R. Leitea, E. Longod

It is the first time that black g-Al2O3 nanoparticles were obtained using a microwave irradiation as a simple and fast method of preparation. The synthesis was promoted in a domestic microwave oven and due to the presence of carbon inside the alumina structure, the samples presented a black color. The powders were characterized by XRD, IR spectroscopy, XPS and TEM.

MOPSA-537

SYNTHESIS OF CEO2 NANOSTRUCTURED POWDERS VIA ORGANIC PHASE PRECURSORS FOR CATALYTIC APPLICATION

Gomes, Luciano Ferroni;Pires, Ana Maria;Neri, Cláudio Roberto;Serra, Osvaldo Antonio;

This work reports on the development of a process for the preparation of nanostructured ceria powders from organic phase precursors. Some organic acids combined with cerium hydroxide were reacted in biodiesel media and then calcinated, yielding nanoparticles. The morphology and structure of these particles were investigated by XRD and SEM.

MOPSA-538

LAYER-BY-LAYER DEPOSITION OF ULTRA THIN FILMS SNO2:SB BY SPIN-COATING

Tiago G. Conti;Tania R. Giraldi;Caue Ribeiro;José A. Varela;Elson Longo;Edson R. Leite;

This work reports the combined use of nanocrystal water-based colloidal suspensions with spin coating deposition in order to obtain ultrathin ceramic films of SnO2:Sb. The films obtained in several conditions were characterized by elipsometry and atomic force microscopy.

MOPSA-539
STRUCTURAL CHARACTERIZATION OF BA(1-X)CAXTIO3 FILMS PRODUCED BY ELECTROPHORETIC DEPOSITION OF NANOMETRIC POWDERS PREPARED BY PECHINI'S METHOD
De Vicente, F. S.;Antonelli, E.;Hernandes, A. C.;
Films of Ba1-xCaxTiO3 were prepared by eletrophoretic deposition (EPD) from suspensions of nanometric powders produced by pechini´s method. Roughness, thickness, porosity, and crystalline structure were studied for the as-deposited and sintered films. The characterizations were carried out using Scanning Electronic Microscopy (SEM), X-ray diffraction (XRD), and Atomic Force Microscopy (AFM).

MOPSA-540
WOLFRAMITE, ZNWO4, SYNTHESIS BY THE POLYMERIC PRECURSOR METHOD
Souza, Antonio G;Ferreira, Jailson M;Santos, Ieda M G;Oliveira, Andre L M;Silva, Marcia R S;Xavier, Camila S;Maurera, Maria A M A;Longo, Elson;
ZnWO4 synthesis was done using the polymeric precursor method. The powder precursor was evaluated by thermal analysis (TG/DTA). The material characterization was done by X ray diffraction (XRD) and infrared spectroscopy (IR).

MOPSA-543
NANO-STRUCTURATION OF DLC FILMS DEPOSITED BY HIGH DENSITY PLASMA CHEMICAL VAPOR DEPOSITION
Mousinho, Ana Paula;Mansano, Ronaldo;
We study the influence of the surface topography in the structuration of the DLC films deposited by HDPCVD. The roughness of the surface substrate and deposited layer was observed by AFM and SEM. The hybridization of the DLC films was analyzed by Raman Spectroscopy.

MOPSA-547
BATIO3 NANOISLANDS OBTAINED BY THE POLYMERIC PRECURSOR METHOD
G.P. Mambrini, V.C. Albarici, M.T. Escote, E. Longo, J.A. Varela, E.R. Leite
Some modifications were made in the polymeric precursor method to obtain nanoislands of BaTiO3 instead of thin films. X-ray diffraction showed the formation of single phase material. Scanning Electron Microscopy allows the evaluation of the average island size. Typical values of the formed structures were 1mm and 70nm

MOPSA-549
OBTAINING OF ORGANOCLAYS FOR PRODUCING OF NYLON 6 NANOCOMPOSITES
GOUVEIA, TACIANA;ARAUJO, KASSELYNE;Araújo, Edcleide;ARAUJO, HOMARA;MELO, TOMAS;
Nanocomposites were obtained using bentonites clays with and without treatment in nylon 6 polymer matrix. The clay was modified with quaternary salt of ammonium such as bromide. The influence of the presence clay (3 and 6%) in the nylon 6 matrix was evaluated by Wide X-Ray Diffraction (WXRD).

MOPSA-551
PREPARATION OF HDPE/ORGANOCLAY NANOCOMPOSITES: EVALUATION OF MECHANICAL PROPERTIES
Araújo, Edcleide;MELO, TOMAS;BARBOSA, RENATA;
In this work polyethylene/organoclay nanocomposites were prepared by melt intercalation. The clay was modified with four different types of quaternary salts of ammonium. The treated and untreated clays with the salts were incorporated in the polyethylene matrix with 1 and 3 wt.%.

MOPSA-554
INFLUENCE OF THE ADDITIVES IN THE DLC FILMS COMPOSITION DEPOSITED BY HDPCVD
Mansano, Ronaldo;Mousinho, Ana Paula;Mansano, Ronaldo;
We study the influence of the additives (nitrogen, hydrogen and carbon tetrMoPSA-fluorine) in the composition and the hybridization of the DLC films deposited by HDPCVD. The incorporation of nitrogen promotes the nano-structuration , the hydrogen increases the sp3 hybridization and carbon tetrafluorine decreases the roughness of these films.

MOPSA-556
SYNTHESIS AND CHARACTERIZATION OF WC-CO COMPOSITE POWDERS BY BALL MILLING PROCESS
Oliveira, Leiliane;Pinto, Gislâine;Soares, Sérgio;Gomes, Umbelino;
In this work, present a high energy ball milling process at various milling time in order to explore the manufacturing nanocrystalline WC-Co composite powders. The results show that process could used to produce nanocrystalline WC-Co. Moreover, the grain size and presented phases had varied with milling time.

MOPSA-559
INFLUENCE OF PROCESS PARAMETERS IN MECHANICAL CHARACTERISTICS OF DLC FILMS DEPOSITED BY REACTIVE PUTTERING
Ordonez, Nelson;Mansano, Ronaldo;Mousinho, Ana Paula;Lubomir, Peter Polak;Massi, Marcos;
In this work was studied the influence of plasma parameters in the mechanical characteristics of diamond like carbon films deposited by reactive sputtering. The addition of argon or nitrogen in methane plasma promote the nano-structuration and increase the hardness, the RF power increase the roughness and sp3 hybridization.

MOPSA-560
MICROESTRUCTURAL CHARACTERIZATION OF TANTALUM CARBIDE
Soares, Sérgio;Souza, Carlson;Oliveira, Leiliane;Gomes, Umbelino;
In this paper, present the microstructural characterization of TaC powders synthesized in our laboratories (UFRN) and supplied by Sigma Aldrich. The powders were characterized for X-ray diffraction and scattering eletrons microscopy. The preliminary results suggest that the carbide synthesized by UFRN is finer than those produced by the other manufacturer.

MOPSA-561
SYNTHESIS OF TUNGSTATES ZNXNI1-XWO4 USING THE POLYMERIC PRECURSOR METHOD
Oliveira, Andre L M;Santos, Ieda M G;Ferreira, Jailson M;Silva, Marcia R S;Souza, Marcos A F;Souza, Antonio G;Longo, Elson;Lima, Severino J G;
Tungstates ZnxNi(1-x)WO4 (x = 0; 0.2; 0.4; 0.6; 0.8 and 1.0) were obtained at low temperatures, with nanometric particles, using the polymeric precursor method. XRD, TG/DTA and IR spectroscopy were used to evaluate the material, in relation to the precursor decomposition and infrared vibration bands, and crystalline structure after calcinations.

MOPSA-563
THERMAL BEHAVIOR OF NY 6,6/ORGANOCLAY NANOCOMPOSITES
ARAUJO, KASSELYNE;GOUVEIA, TACIANA;Araújo, Edcleide;MELO, TOMAS;
The nanocomposites were obtained using montmorillonite clay modified organically with quaternary salts of ammonium in a nylon 6,6 (Ny 6,6) matrix 6,6. The thermal stability of the mixture was evaluated through Differential Scanning Calorimeter (DSC).

MOPSA-565
STATIC STRAIN AGING IN AISI 304 STAINLESS STEEL CONTAINING STRAIN INDUCED MARTENSITE
Gonzalez, Berenice Mendonça;Castro, Cynthia Serra Batista;Sales, Luciana Spíndola;
Static strain aging are observed in AISI 304 stainless steel after pre-straining at –15ºC in the range of 25-200ºC and is associated with increase in strength properties. The a´-martensite content remained unaffected by the aging heat treatment. The presence of strain-induced martensite is necessary for the manifestation of this phenomenon.
OPSA-566
NANOCRYSTALINE DIAMOND FILMS ON SILICON AND POROUS SILICON SUBSTRATE
Ferreira, N.G.;Azevedo, A.F.;
Nanocrystalline diamond (NCD) films grown on silicon and micrometric porous silicon (PS) substrates have been investigated to use as work electrode material. It was studied the argon/hydrogen ratio in the gas phase as the goal to evaluate the quality and morphology of these films associated with their electrochemical response.

MOPSA-567
ORGANIC COMPOSITE POLYMER CARBON NANOTUBE AS ACTIVE LAYER OF MEMORY CELLS
Roman, L. S.;Zarbin, A. J. G.;Cava, Carlos;Possagno, R.;Schnitzler, M. C.;Oliveira, M. M.;
Memory cells have an important role in electronic circuits and their construction has been a challenge to science. This work has the objective of investigating the properties of organic composites such as P3HT carbon nanotube and MEH-PPV
carbon nanotube on the construction of memory cells.

MOPSA-569
INEXPENSIVE ANNULAR DARK FIELD STEM SYSTEM FOR A FEG-SEM
Paulo C. Silva;Maureen Lagos;Daniel Ugarte;
We describe the fabrication of a low-cost ADF device, which can be used to obtain STEM images from a FEG-SEM without microscope modification. The developed device allows the generation of high contrast ADF STEM images of nanoparticles with subnanometric resolution and at high magnifications (x500 000).

MOPSA-570
TWO-PROBE-TIP NANOMANIPULATOR FOR IN-SITU EXPERIMENTS IN A FEG-SEM
Paulo C. Silva;Denise Nakabayashi;Daniel Ugarte;Monica A. Cotta;We have developed and built a nanomanipulator with two probe tips, which have precise movements in three independent axes each one. The system has been applied to position semiconductor nanowires between two gold contacts, what represent the bottom-up construction of electronic nanodevices.

MOPSA-571
THE ELECTRON MICROSCOPY FACILITY AT THE LNLS
Daniel Ugarte;Antonio Ramirez;Paulo C. Silva;Sidnei R. de Aráujo;Jefferson Bettini;
The electron microscopy facility attached to the LN LSwill receive two new TEMs: a) 200 kV FEG-TEM oriented for EELS, b) 200 kV TEM

oriented for materials science studies. We expect that the microscopes will be installed in 2006 in a building especially designed for requirements of modern electron microscopes.

MOPSA-572
POLYANILINE-MONTMORILLONITE CLAY NANOCOMPOSITE FORMED BY HEATING TREATMENT
Do Nascimento, Gustavo M;Constantino, Vera R L;Temperini, Marcia L A;
For the first time the PANI-MMT nanocomposites were synthesized by heating the aniline-MMT material. The intercalated PANI obtained through this route does not have Janus green-like moieties that were observed for PANI-MMT material prepared by in situ polymerization, but has a cross-linked structure.

MOPSA-575
METALLIC CARBON NANOTUBES INTERACTING WITH AMINO ACIDS
Fagan, Solange B.;Santos, E. J. G.;Guerini, S.;Filho, J. Mendes;Azevedo, D. L.;
First-principles calculations based on density functional theory is used to investigate the interactions between metallic carbon nanotubes and amino acids. The involved binding

MOPSA-576
SNO2 ULTRATHIN FILMS PROCESSED BY COLLOIDAL SUSPENSION
Tania R. Giraldi, Cauê Ribeiro, Frank N. Crespilho, Maria T. Fabbro, Edson R. Leite, Elson Longo, and J. A. Varela
This work describes two methods to preparation of SnO2 ultrathin films. At first proposed deposition method, SnO2 nanoparticles were incorporated into nanostructured polymeric films using layer-by-layer technique. At second method, the SnO2 layers were deposited by spin-coating. In both methods, the films showed good homogeneity and potential for several applications

MOPSA-577
NANOMETRIC CERAMIC PIGMENTS BASED ON COO DOPED CEO2
Graziela P. Casali , Alessandra Zenatti , Edson R. Leite , José A. Varela and Elson Longo
Co-doped CeO2 ceramic pigment was synthesized by polymeric precursor method. The formation of nanometric pigments occurred when the precursor was heat-treating at temperatures ranging from 500 to 1000oC/2h. The obtained powders were characterized using thermogravimetric techniques, X ray diffraction, scanning and transmission electron microscopy, UV-visible spectroscopy and colorimetric coordinates
Symposia, Monday October 17th

MOPSA-579
SATURABLE SIO2/PBTE QUNTUM DOTS WAVEGUIDES FOR THE 1.3-1.5 ÌM REGION
Rodriguez, Eugenio;Lenz, C. Carlos;Jimenez, Ernesto;Barbosa, Luiz Carlos;
Waveguides of PbTe quantum dots embedded in SiO2 were fabricated by alternatively use of Plasma Enhanced Chemical Vapor deposition and Laser Ablation techniques. The optimal growing parameters for both the SiO2 films and the PbTe Quantum dots were obtained. Optical absorption and refractive index of the sample were studied

MOPSA-580
SYNTHESIS OF MN(III)PORPHYRINS ENCAPSULATED IN THE ZEOLITE X
Lôvo, Luciana P. Baggini;Martins, Patricia R.;Gandini, Maria Elisa Furlan;Iamamoto, Yassuko;Rosa, Ieda L. V.;
NaX zeolite was synthesized around MnPs: manganese(III) 5,10,15,20-tetrakis (4-N-methylpyridil) porphyrin (1-NaX) and manganese(III) 5,10,15,20-tetrakis[tetrafluoro-4-(trimethylammonium)phenyl]porphyrin (2-NaX). The synthesis yielded pure MnP-NaXs without any by-products blocking the zeolite nanopores. The solids were characterized by various techniques such as UV-Visible and XRD. Preliminary studies were carried out in hydrocarbon oxyfuncionalization with PhIO.

MOPSA-581
TI-B-N NANOCOMPOSITE FILMS DEPOSITED ON (100) SI BY REACTIVE MAGNETRON SPUTTERING
F.L.Freire Jr.;C.M.T. Sanchez;
Due to their properties, wear and corrosion resistant, hardness and excellent refractory properties, TiB2 and Ti-B-N films have been studied for several applications as protective coatings. However, a good adhesion is sometimes difficult to obtain due to high internal stress of the films. A correlation between deposition parameters and film properties are obtained, with special emphasis on the internal stress reduction

MOPSA-583
SYNTHESIS OF FERROELECTRIC NANOISLANDS PRODUCED BY POLYMERIC PRECURSOR METHOD
V.C. Albarici, G.P. Mambrini, M.T. Escote, M.T. Fabbro, E. Longo, J.A. Varela, E.R. Leite
In this work, we have synthesized PbZr0.3Ti0.7O3 continuous and discontinuous thin films by complex polymerization method in order to obtain ferroelectric nanoislands. Analyses of microstructure revealed that diluted resins allowed the production of films with isolated nanometric grains in some regions. Accurate studies are necessary to obtain only ferroelectric islands

MOPSA-584
INVESTIGATION ON SNO2 NANORODS ARRAYS AT DIFFERENT REACTION TIMES AND SEVERAL SUBSTRATES
Kírian P. Lopes, Marcelo O. Orlandi, Márcia T. Escote, Tânia R. Giraldi, Elson Longo+ and Edson R. Leite
SnO2 nanorods have been synthesized through a controlled aqueous growth, using aqueous solution of SnCl4.5H2O, urea ((NH2) 2CO) and HCl (37%). Some different substrates were put into the bottle with this solution and placed in a regular laboratory oven at low temperature (95ºC) for several hours. To investigate the coatings, the methods of high-resolution field emission scanning electron microscopy (FE-SEM) and X-Ray diffraction (XRD) were selected. The SnO2 nanorods showed the presence of rutile fase with preferential growth along the c direction.

MOPSA-587
□□SYNTHESIS AND CHARACTERIZATION OF LA1-XSRXMNO3 PEROVSKITE OXIDE FUELL CELLS
Borges, Filipe .M.M.;Silva Júnior, Carlos N da;Alves, Yury C. de A.;Melo, Dulce M. de A.;Melo, Marcus A.de F.;Pimentel, Patrícia M.;
Series of perovskite oxide catalyst com composition La1-xSrxMnO3±d has been synthesized by a modification of Pechini Method. This material has been characterized by powder XRD, BET measurements, TGA, SEM and FTIR. The Oxide was calcinated at 300oC to 700oC temperatures.
The Perovskite phase was obtained at 700oC, for 4 h.

MOPSA-588
SYNTHESIS AND CHARACTERIZATION OF GOLDEN NANOISLANDS PRODUCED BY EVAPORATION METHOD
M. T. Fabbro, M. T. Escote, L. P. S. Santos, V. C. Albarici, E. Longo, E. R. Leite, J. A. Varela
Nanoisland gold had been grown in substrate of silicon (100) and glass, with different thicknesses. The microstructural and optic analysis had shown to the variation of the form and grain size with the variation at the thickness of the film

MOPSA-589
PREPARATION AND CHARACTERIZATION OF PEROVSKITE TYPE LA1-XSRXCOO3
Borges, Filipe .M.M.;Melo, Dulce M. de A.;Melo, Marcus A.de F.;Silva Júnior, Carlos N da;Alves, Yury C. de A.;
This work show the synthesis method and characterization of La1-XSrxCoO3. The perovskite phase was obtained at 700oC. The perovskite presents defects and distortion.

MOPSA-590
LA0.8SR0.2COO3 PEROVSKITE OBTAINED BY THE COMBUSTION METHOD
Alves, Yury C. de A.;Borges, Filipe .M.M.;Melo, Marcus A.de F.;Melo, Dulce M. de A.;Marinho, Érika P.;Martinelli, Antônio E.;
The perovskite-type La0.8Sr0.2CoO3 was obtained by the combustion method. The synthesized compounds were heat-treated at 500, 700 and 900 °C and characterized. The results revealed differences according to the thermal treatment temperature and amount of fuel used.

MOPSA-591
INFLUENCE OF SOME SYNTHETIC PARAMETERS ON THE PRODUCTION OF CARBON NANOTUBES USING FERROCENE SOLUTION AS PRECURSOR
Schnitzler, Mariane;Zarbin, Aldo J. G.;
This work shows the influence of synthetic parameters on the production of carbon nanotubes using ferrocene solution as precursor. The effect of temperature, concentration and kind of solvent was studied, and the results showed that these parameters have significant importance on the size, crystallinity and alignment of the former CNT.

MOPSA-593
MORPHOLOGIC CHARACTERISTICS OF NI-ZN FERRITE POWDERS OBTAINED BY COMBUSTION REACTION USING TWO SYNTHESIZATION ROUTES
Diniz, Ana Paula;Costa, Ana Cristina;Costa, Ana Cristina;Kiminami, Ruth;Gama, Lucianna;
The Ni-Zn ferrite powders were synthesized by combustion reaction using two different routes. The morphologic characteristics such as surface area, particle size, agglomerated size and shape of resulting product has been determined. The results show formation of powders with nanoparticle, high surface area and soft agglomerate for two routes evaluated.

MOPSA-596
STUDY OF THE UREA/NITRATES RATIO AND OF THE ATMOSPHERE IN THE SYNTHESIS OF THE LA0.8CA0.2COO3 BY COMBUSTION ETHOD
Marinho, Érika P.;Souza, Antônio G. de;Santos, Ieda M. G. dos;Melo, Dulce M. de A.;Borges, Filipe .M.M.;Silva, Walquíria J. da;
We studied a combustion method in order to obtain perovskite type structure. The fuel was used in three different stoichiometries. The compounds synthesized were treated at 900°C in air and oxygen atmosphere and then characterized. The results show differences according to the thermal treatment and amount of fuel used.

MOPSA-597
ZNO NANOPOWDERS PREPARED BY COMBUSTION REACTION FOR PRODUCTION OF SOLAR PROTECTOR
Alves-Jr, Severino;Ramalho, Melânea;Costa, Ana Cristina;Barros, Braulio;Gama, Lucianna;Kiminami, Ruth;SantMoPSA-Cruz, Petrus;
ZnO nanopowders were obtained by Pechini

method aiming obtained particle size 25-30nm for production of solar protector. The effect of the relation citric acid/metalic cations in proportions of 2:1, 3:1 and 4:1 was investigated. The results show that relation 4:1 favors the formation of the ZnO crystalline with size particule of the 23.67 nm.

MOPSA-599
COMBUSTION REACTION AND CHARACTERIZATION OF ZRO2/AL2O3 CATALYTIC SUPPORTS
Costa, Ana Cristina;Leite, Raquel;Barros, Braulio;Gama, Lucianna;Kiminami, Ruth;Andrade, Heloysa;
Nanoparticles of ZrxAl2-xO3 powders with x = 0.01 mol of Zr4+ were prepared by combustion reaction. The powders were characterized by XRD and nitrogen adsorption (BET). The results show the formation of -Al2O3 crystalline phase with the incorporation of Zr4+ ions in the lattice and with nanosize particles by the four synthesization routes studied here. The route using a heating plate resulted in the largest superficial area and, hence, the smallest particle size.

MOPSA-600
SOLID- STATE SINTERING OF ZIRCONIA NANOCOATED WITH ALUMINA
Gonçalves, R.F., Maciel, A.P., Leite, E.R.., Longo, E., Varela, J.A.
We report a new approach to control the superficial mass transport mechanism during the sintering of zirconia powder nanocoated with Al2O3. A core shell-like structure can be seen by high-resolution transmission electron microscopy (HRTEM). This layer modifies the sintering process and retards the maximum shrinkage temperature of the pure zirconia

MOPSA-601
UPCONVERSION IN THE ZNAL2O4 CODOPED WITH YB/ER OBTAINED FOR REACTION COMBUSTION
Costa, Ana Cristina;Silva, Joábio;Barros, Braulio;Gama, Lucianna;Alves-Jr, Severino;Kiminami, Ruth;Eduardo, Wagner;Silva, J.;
Combustion reaction method was used to prepare the ZnAl2O4:Yb:Er codoped with nanometric characteristics. The effect and the mechanisms of emission upcorversion had been determined for 5:1 proportion of the Yb:Er. The diffraction of ray-X (DRX) showed the formation of the majority crystalline phase of ZnAl2O4:Yb:Er and lines of the secondary phases ZnO and Yb2O3 . The dependence of the emission signal as a function of the excitation intensity was determined for the 4F9/2 – 4I15/2 transition (~655nm) with the contribution of the two photons.

MOPSA-602
SERS STUDY OF THE ADSORPTION BEHAVIOR OF 5 FLUOROURACIL ON SILVER NANOPARTICLES AND ELECTRODES: A DRUG DELIVERY STRATEGY
Andrade Jose Elisandro;Aguiar, Hilton Barbosa;Sant Anna , Antonio Carlos;Temperini, Marcia Laudelina de Arruda;Corio, Paola;Nart, Francisco Carlos;Cunha, Frederico;
The adsorption behavior of 5 Fluorouracil on silver nanoparticles as a function of pH and on silver electrodes as a function of surface potential is studied by means of SERS and UV-Vis absorption spectroscopy. Our data indicate that both surface charge and pH determine the molecular positioning of the molecules

MOPSA-605
HRSEM AND RAMAN ANALYSIS OF NANOESTRUCTURED P-TYPE POROUS SILICON
Porous silicon (PS) samples were obtained by stain etching process on heavily doped p+-type (100) silicon wafers. HRSEM images have revealed a PS surface that change as the etching time increase. This behavior is attributed to a competitive process between the nanocrystallites stability and the destructive etch, characteristics of this chemical method.C.

MOPSA-606
INFLUENCE OF FABRICATION PARAMETERS ON THE NATURAL RUBBER ANGIOGENIC ACTIVITY
Ferreira, Mariselma;Coutinho-Netto, Joaquim;Graeff, Carlos, F. O.;Bernardes, Marcos;Mulato, Marcelo;
We investigate the influence of heating time and sulphur addition on the angiogenic behavior of Natural Rubber membranes. The chorioallantoic method (CAM) was used for angiogenesis test. The results showed a favorable activity at temperatures ranging from 75-85°C and NR/sulphur membranes demonstrated an inflammatory response destroying the CAM tissue.

MOPSA-607
NANOSTRUCTURED TIO2 THICK FILMS BY DECOMPOSITION OF TI-PEROXY COMPOUNDS
D.G. Stroppa, C. Vila, E. Longo and E.R. Leite
This work reports a simple, low-cost and environmental clean method to obtain transparent anatase TiO2 thick films. The characteristics of the films were studied by varying the parameters of deposition. The films obtained were characterized by XRD, UV Spectroscopy, AFM and SEM.

MOPSA-608
CERIUM EXTRACTION FROM CERITE MINERAL USING LEACHING AND SELECTIVE PRECIPITATION PROCESSES
Cunha Gomes, José Cosme;Umbelino Gomes, Umbelino;Pereira de Souza, Carlson;
Cerium hydroxide is prepared from the solution by filtration and then dried in an oven at 338K. Samples with different granulometries (80-200, 200-250 and 250-400 mesh) were prepared and submitted to leaching between five and ten hours at 353K. The parameters as acid used, temperature, leaching time, oxidizing agent and pH will be optimized.

MOPSA-609
THERMAL ANALYSIS OF METALLOCENE POLYPROPYLENE REACTOR BLEND
Conte, Anunciata;FVM, Maria;
Metallocene isotactic and syndiotactic polypropylene reactor blends prepared at 20º and 60ºC of polymerization temperature, employing SiMe2(2-Me,4-,Ind)2ZrCl2 and Ph2C(Flu)(Cp)ZrCl2 supported on silica/MAO, were investigated by Dynamic Mechanical Thermal Analysis. The DMTA curves showed that both the reactor blends prepared in this study presented a single value of glass transition temperature.

MOPSA-610
NIOBIUM CARBIDE SYNTHESIS FROM AMMONIUM NIOBATE TARTARATE PRECURSOR IN ROTARY CYLINDER REACTOR
Pegado de Medeiros, Francisca de Fatima;Umbelino Gomes, Uilame;Rocha de Carvalho, Ricardo Henrique;Souza Santiago, Brunno Henrique;Oliveira Fontes, Francisco de Assis;Pereira de Souza, Carlson;
This paper presents the synthesis and characterization of NbC from ammonium tartrate precursor by gas-solid reaction using rotating cylinder reactor. The precursor was synthesized by fusion of the niobium pentoxide with potassium hydrogenosulphate followed by complexation with ammonium oxalate and tartaric acid. After precipitation the precursor was dried in a oven at 70ºC. This precursor was used as starting material for carboreductio reaction to obtain NbC, which was characterized by DRX, Laser granulometry and SEM.

MOPSA-611
ALFMOPSA-AL2O3 PREPARED BY CHEMICAL SYNTHESIS
Lira, Hélio;Kiminami, Ruth;Costa, Ana Cristina;Freitas, Normanda;
Among ceramic materials, the alumina has high importance because of its characteristics of resistance and refractory, being utilized since much time. Although still it has possibility to improve the characteristics of this material, opening possibilities for its usus.Therefore, the aim is to synthesize -Al2O3 powder by combustion reaction.

MOPSA-614
CATALYTIC ACTIVITY OF NANOSTRUCTURED NIZN FERRITE
Albuquerque, Adriana;Brito, Císsara;Alves, Núbia;Bergo, Rafael;Ardisson, José;Macedo, Waldemar;
In this work, the structural and hyperfine properties of nanostructured NiZn ferrite and the effect of this material on the oxidation of methylene blue in aqueous medium have been studied. Our results show a clear influence of particle size on the activity of NiZn ferrite for oxidation of methylene blue.

MOPSA-615
LAMNO3 DOPED WITH STRONTIUM: SYNTHESIS AND CHARACTERIZATION
Macedo, Marfran Cardoso;Rabelo, Adriano Alves;Melo, Dulce Maria de Araújo;Nascimento, Rubens Maribondo;Martinelli, Antonio Eduardo;Paskocimas, Carlos Alberto;
LaSrMnO3 were synthesized and characterized by absorption in the region of the infrMoPSA-red, crystallite size, formation of phases, morphologic analysis, thermal analysis, specific surface area and particles size distribution. It was concluded that to lesser amount of Sr+2, the LSM decreased the crystalline size and increased the specific superficial area.

MOPSA-616
STUDY OF THE SYNTHESIS OF SOLID SOLUTION BA0.8CA0.2TIO3 BY THE POLYMERIC PRECURSOR ROUTE
Fabiana V. Motta, Ana Paula A. Marques, Márcia T. Escote, Dulce M. A. Melo, Edson R. Leite, Elson Longo and José A. Varela
In this work, Ba0.8Ca0.2TiO3 powders were produced by polymeric precursor method. A comparison between the uses of two different precursors materials to formation polymeric resin was made. We verified that the both precursors powders promoted the production of single-phase samples with similar thermal evolution behavior

MOPSA-618
ISOLATED AND CO-FORMED NICKEL AND COBALT NANOSCALE OXIDES PARTICLES: CHEMICAL BASED SYNTHESIS AND TEM CHARACTERIZATION
Macedo, Daniela;Solórzano, Guillermo;Brocchi, Eduardo;Vander Sande, John;
A new route to obtain nanoscale oxides was suggested. The methodology is based in the facility that some compounds, as nitrates, have to dissociate in nanometric size particles. Transmission electron microscopy studies have shown nanoscale structures with different morphology and size distribution.

MOPSA-619
RHEOLOGICAL PROPERTIES OF RUBBER CLAY NANOCOMPOSITES
Bragança, Fábio;Carvalho, Urcélia;Galembeck, Fernando;Figueiredo, Eduardo;Pallavidino, Eurizio;
Natural rubber-clay aqueous dispersions and nanocomposites have shear-dependent viscosities that are probably due to clay particle alignment upon shearing. This may be specially useful in melt processing of the nanocomposites and their blends with other polymers.

MOPSA-621
RHEOLOGICAL AND THERMAL PROPERTIES OF PE/ORGANOCLAY NANOCOMPOSITES
Amanda D. de Oliveira;Edcleide M. Araújo;Tomás J. de Mélo;
Polyethylene (PE)/organoclay nanocomposites were produced by melt intercalation. This work has studied the influence of bentonite clay exfoliation on rheological and crystallization properties of PE/organoclay nanocomposites and has compared with properties of the matrix and PE/unmodified clay nanocomposites.

MOPSA-622
RESONANCE RAMAN SPECTROSCOPIC STUDY OF A NEW NANOCOMPOSITE BUILT BY POLYANILINE AND H2K2NB6O17 NANOSCROLLS
Silva, Claudio H. B.;Nascimento, Gustavo M.;Bizeto, Marcos A.;Constantino, Vera R. L.;Temperini, Marcia L. A.;
This study reports the first results about the synthesis of a new nanocomposite prepared via aniline polymerization into the open channels of a
tubular niobate obtained through the exfoliated H2K2Nb6O17 layered niobate. Resonance Raman spectra showed that polymer is the PANI emeraldine salt form (PANI-ES) partially deprotonated.

MOPSA-623
PHOTOLUMINESCENCE STUDY ON CE DOPED SRTIO3
Costa, Maria G. S.;Jesus, Mírzia M.;Campos, Adaci B.;Longo, Elson;Paiva Santos, Carlos O.;
Amorphous and crystalline strontium titanate powders, pure and Ce3+-doped, have been prepared by the polymeric precursor method. This powders were calcined at different temperatures and X-ray diffraction (XRD) studies on these oven-dried powders showed a pattern of crystalline material for the samples treated up 500°C. The samples were also analyzed by infrared spectroscopy and thermogravimetric analysis. Photoluminescence (PL) properties of pure and doped samples were investigated at room temperature and were performed to verify the influence of the ion Ce3+ in the PL emission of the matrix titanate.

MOPSA-625
PROPERTIES OF SNTE EPITAXIAL LAYERS GROWN ON (111) BAF2 SUBSTRATES
U.A.
Mengui;P.H.O.Rappl;P.Motisuke;E.Abramof;A. Y. Ueta;
In this work we study the growth of SnTe layers on BaF2 substrates using MBE technique. The structural, electrical and optical properties of the films were characterized by HRXRD, AFM, FTIR, resistivity and Hall effect measurements.

MOPSA-626
EVALUATION OF THE THERMAL STABILITY OF ILMENITE MGTIO3
Espinosa, J W M;Severino, J G;Eliziario, S Andrade;Souza, S C;Santos, I M G;Souza, A G;Longo, E;
Ilmenite, MgTiO3, is a compound derived from corundum structure, being the most stable phase of the system MgO–TiO2[1]. In spite of this, a phase change with thermal evolution and doping was observed. After synthesis, samples doped with Co2+ and Ni2+ were characterized by TG/DTA, XRD and Raman spectroscopy.

MOPSA 627
BULK AND ELECTRONIC PROPERTIES OF BAZRO3: PERIODIC DENSITY FUNCTIONAL STUDY
Sambrano, J. R.;Tonelli, M. C.;Buzolin, P. G. C.;Souza, A. R.;Vasconcellos, L. A.;
Bulk and electronic properties of cubic BaZrO3 was investigated by means of periodic simulations based on DFT theory. The band structure shows that the fundamental energy gap is direct. The contributions of the different bands was analyzed from the DOS. The results are in good agreement with the experimental data.

MOPSA 628
ELECTROCHEMISTRY OF TETRAPYRIDYLPORPHYRIN/AU NANOPARTICLES THIN FILMS
Furtado, Luis;Mayer, Ildemar;Araki, Koiti;Toma, Henrique;
Highly transparent and homogeneous ultrathin films of a hybrid nanomaterial were prepared on fluorinated SnO2 conductive glass by layer-by-layer coordinative assembly of protected reactive gold nanoparticles and meso-tetra(4-pyridyl)porphyrin. The film build-up was followed by UV-Vis spectroscopy, the morphology evaluated by SEM and the electrochemical properties investigated aiming the analysis of highly diluted nitrite solutions.

MOPSA -629
PHTHALOCYANINE - POROUS SILICON THIN FILMS APPLIED FOR GAS SENSOR DEVICES
Adriana B. Stelet, Daniel S. Raimundo, Francisco J. R. Fernandez and Walter J. Salcedo
The present work reports the fabrication and electrical response analyses of a device obtained by the hybrid porous silicon structure and phthalocyanine thin film for sensing application when exposured to specific types of gases and vapors.

MOPSA 631
THE CONTROLLING OF RELATIVE HUMIDITY (RH) IN THE SELF-ASSEMBLED POLYSTYRENE MICRO-SPHERES
STRUCTURES FORMATION
Raimundo, Daniel;Stelet, Adriana;Fernandez, Francisco;Salcedo, Walter;
The present work reports the fabrication and characterization of self-assembled polystyrene micro-sphere structures obtained by the controlling of relative humidity (RH) during the growth of sphere films on vertical configuration deposition.

Symposium B - Supramolecular Materials and Organic Devices

MOPSB501
RECTIFYING PROPERTIES OF SUPRAMOLECULAR NANOSTRUCTURED FILMS
Araki, Koiti;Nakamura, Marcelo;Toma, Henrique E.;Mayer, Ildemar;
Electrostatically assembled supramolecular films formed by cationic metalloporphyrins and anionic phthalocyanines generated highly homogeneous and stable nanomaterials. The supramolecular films presents a rectifying properties as observed in the presence of [Fe(CN)6]4-, showing a diffusion hindering of the electroactive species and acting as a redox conductor.

MOPSB502
RESONANCE RAMAN AND NK XANES SPECTROSCOPIES OF 2-AMINO-5-NITROPYRIDINIUM DIHYDROGENPHOSPHATE AND HYDROGENSQUARATE
Ando, Rômulo Augusto;do Nascimento, Gustavo Morari;Santos, Paulo Sérgio;
Abstract – The nitropyridinium salts containing dihydrogenphosphate and hydrogensquarate as counterions were investigated as crystalline solids by Raman and NK XANES spectroscopies. Such materials are potentially optically nonlinear and the inclusion of organic materials in inorganic lattices represents an important strategy for the optimization of such optical property.

MOPSB503
CONTACT RESISTIVITY AND REVERSE CURRENT DENSITY FOR AL/N+P, AL/TISI2/N+P AND AL/TI/NI(PT)SI/N+P STRUCTURES
Pestana, Ricardo;dos Santos Filho, Sebastião Gomes;
In this work, it was investigated the contact resistivity for silicided and non-silicided contacts, besides analysis of the reverse current density for the structures Al/N+P, Al/TiSi2/N+P and Al/Ti/Ni(Pt)Si/N+P.

MOPSB505
ELECTRONIC ABSORPTION SPECTRUM AND POLARIZATION OF POPOP MOLECULE
Sheila Cristina Santos Costa;Jordan Del Nero;
Quantum mechanics calculations of the dipole moment (DM) are performed on statistically uncorrelated structures of liquid (POPOP + 13 water molecules on first solvatation shell) generated by MC simulation resulting 16.8±0.59 Debye. This result corresponds an almost 5 Debye increase of DM from the gas to the liquid state.

MOPSB506a
OPTICAL MODES IN A MEH-PPV POLYMERIC PLANAR MICROCAVITY
Gonçalves, Breno;Matinaga, Franklin;Gomes, Livia;Almeida, Ive;Cury, Luiz;
A polymeric planar microcavity was fabricated by spin-coating deposition of thin conjugated polymer films (~1500 Å) on dielectric mirrors. Optical characterization shows very thin modes (32 Å) around 700 nm (cavity Q = 225)

separated by 140 Å, corresponding to a cavity length of 11 mm.

MOPSB506b
DESIGN OF A MOLECULAR-PI BRIDGE FIELD EFFECT TRANSISTOR (MBFET)
Aldilene Saraiva-Souza;Marcos A. L. Reis;Jordan Del Nero;
We study charge transfer in donor-bridge-acceptor of a molecular transistor using ab initio DFT/B3LYP. I-V curves and frontier molecular orbital were derived. We find unusual behavior of this material strongly affected by size of the molecule bridge and we suggest that this system (medium/large bridges) could be used as MBFET.

MOPSB507
ADDITIVE INFLUENCE ON PROPERTIES OF CASSAVA STARCH FOAM
Laura G. Carr1, Patrícia Ponce2, Duclerc F. Parra2, Ademar B. Lugão2 and Pedro M. Büchler1;
Starch foam can be used as biodegradable packaging and normally is used PVA as additive to improve their mechanical properties. In this study were used another additive (PEG 300, 1500, 6000) and compare with PVA. Foams with PEG 300 presented no significance difference in mechanical characteristics compared with PVA foams.

MOPSB508
POLY(2,7-9,9′-DI-HEXYLFLUORENEDIYLVINYLENE) (PDHFV) AND POLY(9,9-DI-HEXYLFLUORENEDIIL-VINYLENE-ALT-1,4-PHENYLENEVINYLENE) (PDHFPPHV) : SYNTHESIS, CHARACTERIZATION AND OPTICAL/ELECTROLUMINESCENT PROPERTIES
Ribas, Marcos Roberto;Nowacki, Bruno;Assaka, Andressa;Akcelrud, Leni;
The synthesis of poly(2,7-9,9-di-hexylfluorenediylvinylene) PDHFV, by the Gilch route, and of poly(9,9-di-hexylfluorenediil-vinylene-alt-1,4-phenylenevinylene) PDHFPPHV ,by the Wittig condensation was performed. The structures can be viewed in terms of the replacement of the phenylene groups in PPV by the alkyl substituted fluorene moiety in each repetitive unit of PDHFV, and in each other repetitive unit of PDHFPPHV. The modification in the prototype PPV structure should impart better optical and thermal resistance characteristics, apart from solubility.

MOPSB510
ELECTROLUMINESCENT DEVICES USING SULFONATE POLYANILINE AS HOLE TRANSPORT LAYER AND FLUORINE-DOPED TIN OXIDE AS ANODE
J. P. M. Serbena;A. R. V. Benvenho;I. A. Hümmelgen;R. M. Q. Mello;R. Lessmann;R. M. Q. Mello;L. H. J. M. C. Aguiar;R W. C. Li;J. Gruber;R W. C. Li;
We report the electrical and optical characteristics of organic light-emitting diodes with sulfonated polyaniline (SPAN) as hole transport layer and fluorine-doped tin oxide as anode. The devices were constructed in sandwich structure. Different SPAN thicknesses values were used and compared to similar ones in which SPAN was substituted by poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate)

MOPSB512
PHOTOLUMINESCENCE IN LANGMUIR-BLODGETT FILMS OF POLYFLUORENE DERIVATIVES
Machado, Angelita M.;Olivati, Clarissa A.;Ferreira, Marystela;Assaka, Andressa M.;Giacometti, José A.;Akcelrud, Leni;Oliveira Jr., Osvaldo N.;
The photoluminescence of polyfluorenes derivatives has been studied for films fabricated using casting and LB techniques. For these polymers there is a small red shift in the spectra of the films in comparison to the solution. This shift is consistent with the reduced difference in energy between the HOMO and LUMO levels in the solid state, resulting from interchain interactions.

MOPSB513
PREPARATION, CHARACTERIZATION AND CHROMIC PROPERTIES OF AN AZO-SUBSTITUTED POLYTHIOPHENE
Gonçalves, Vanessa C.;Balogh, Débora T.;
Azobenzene-substituted polythiophene was prepared via FeCl3 oxidative polymerization. The polymer soluble fraction was characterized by FTIR and RMN spectroscopy, elemental analysis, DSC and HPSEC. Thermo- and solvatochromic properties of the polymer in solution were analyzed. The influence of hydrochloric acid concentration in the polymer solution was characterized by UV-vis.

MOPSB514
PHOTON ASSISTED CONDUCTING POLYMER POLYMERIZATION PROCESS DEVELOPMENT FOR STORAGE INFORMATION AND MICROELECTRONIC DEVICE APPLICATIONS
de Barros R. A.;de Azevedo W. M.;da Silva Jr E. F.;
In this work we present a new polymerization process to prepare conducting polymer memory device (CPROM) and pattern. For the CPROM process, PVA is used doped with monomer and transition metals. For the patterns, the ink of a DeskJet printer is substituted for a solution of transition metal and the pattern is impressed on substrates previously soaked in a solution of conducting polymer monomer.

MOPSB515
ELECTRICAL MEASUREMENTS OF SULFONATED POLYSTYRENE
Rubinger, C.P.L.;Rubinger, R.M.;Martins, C.R.;
Sulfonated polystyrene has been demonstrated to be effective as humidity sensors. A.C. measurements give an impedance of about 4MÙ at RH% of 11% and 1.4kÙ at RH% 90%. Such variation indicates that PS-SO3H is suitable to the development of inexpensive humidity sensors, which could substitute the expensive commercially available sensors.

MOPSB516
ELECTROCHEMICAL CHARACTERIZATION OF SELF-ASSEMBLED THIN FILMS OF ZIRCONIUM PHOSPHONATE/AROMATIC IMIDES ON GOLD SUBSTRATES
Marcon, Rodrigo de Oliveira;Brochsztain, Sérgio;
Self-assembled thin films containing different aromatic imides were grown on phosphonate-primed gold substrates by the zirconium phosphonate method. Film growth was monitored by cyclic voltammetry. The films obtained were highly thermally and solvolitically stable for all the imides, making them excellent candidates for applications in nanotechnological devices.

MOPSB517
NEAR INFRARED EMISSION FROM A NEW D-F METALLIC EDIFICE BASED ON THE DITOPIC LIGAND PHENHDO3A FOR IMAGING APPLICATIONS
Gameiro,Cristiana;Alves-Jr., Severino;Paris, Jérôme;Desreux,Jean-François;
In this communication, we will report the synthesis and photophysical characterization of a new dinuclear supramolecule which contains a transition-metal complex appended to a macrocyclic cage, where the f-center is conveniently accommodated. The d-core works as a chromophore which transfers energy to the lanthanide that will emit in near-infrared region.

MOPSB518
CATHODES METALS EFFECT ON THE PHOTOCURRENT BEHAVIOR OF POLYMERIC LIGHT-EMITTING DEVICES.
Cazati, Thiago;Santos, Lucas;Toledo, Françoise;Faria, Roberto;
In this work, we show the photoconductivity and current-voltage curves observed in ITO/polymer/metal structures using poly(p-phenylene vinylene) (PPV) derivatives as the active layer with different cathode metals (Al, Mg, Cu ,Au).

MOPSB519
ANNEALING INVESTIGATION OF ZINC PHTHALOCYANINE EVAPORATED AND LB FILMS
Gaffo, Luciana;Zucolotto, Valtencir;Cordeiro, Márcia R;Moreira, Wânia C.;Oliveira Jr, Osvaldo N.;Brasil, Maria J. S. P.;
Langmuir-Blodgett (LB) and evaporated films of zinc phthalocyanine (ZnPc) were prepared and the influence of annealing on the optical properties of the films was investigated via UV-Vis spectroscopy.

MOPSB521
STRUCTURAL CHARACTERIZATION OF BLENDS CONTAINING LATEX OF NATURAL RUBBER AND PVDF IN DIFFERENT CRYSTALLINE PHASES
Alves, Neri;Grande, Rafael;Job, Aldo E.;Kitagawa, Igor L.;Simoes, Rebeca D.;Constantino, Carlos J. L.;Giacometti, Jose A.;
Films of natural rubber latex and poly(vinyledene fluoride) fabricated by compressing/annealing were characterized by thermal analysis, vibrational spectroscopy and microscopy. The results showed that the materials form a polymeric blend where the PVDF can be found in both phases alpha and beta depending on the temperature and time compression.

MOPSB522
SYNTHESIS AND CHARACTERIZATION OF A FUNCTIONALIZABLE POLYTHIOPHENE
dos Santos, Maria Virgínia;Souto-Maior, Rosa Maria;
We present the inicial results of work on the synthesis and characterization of a new polythiophene obtained through the copolymerization of 3-hexadecylthiophene and 3-ethanolthiophene. The polymer was characterized by infrared, uv-vis and NMR spectroscopy. The results indicate that a polythiophene containing both hexadecyl and hydroxyethyl substituents has been obtained.

MOPSB524
SILVER HEXACYANOFERRATE CONDUCTING POLYMER CHITOSAN COMPOSITE
walter mendes de azevedo;Ivanildo Luiz de Mattos;Marcelo Navarro;
In this work we present the synthesis and characterization of Silver hexacyanoferrates(II) polyaniline composite in powders and thin films form using Chitosan as a Self-Sustained solid membrane. The conducting polymer composite remains optical active and highly conductive. The X-rays analysis shows that the composite is composed of a amorphous structure due to the conducting polymer and a crystalline structure assigned to the Ag4 Fe (CN)6

MOPSB525
INVESTIGATION OF THE OPTICAL AND ELECTRICAL PROPERTIES OF POLARIZED LIGHT ORGANIC PHOTODETECTOR
Patyk Rodolfo Luiz;Thomazi Fabiano;Roman Lucimara Stolz;
In this work we investigate the optical and electrical properties of organic photodetector constructed with oriented active layer². We have used neat polymer and blends of polymer C60 as the active layer. The devices presented preferential detection, so higher efficiency, for

polarized light parallel to the aligned polymer chains.

MOPSB526
ELECTRICAL AND OPTICAL CHARACTERIZATION OF LANGMUIR-BLODGETT FILMS OF A PPV-RELATED ALTERNATING BLOCK POLYMER CONTAINING CHLORINE (CL-COP)
Olivati, C.A.;Péres, L.O.;Wang, S.H.;Giacometti, J.A.;Balogh, D.T.;Oliveira Jr., O.N.;
The properties of Langmuir-Blodgett (LB) films from a block copolymer with polyethylene oxide and phenylene-vinylene moieties are reported. The LB films were transferred onto several types of substrate and characterized using UV-VIS. spectroscopy and electrical measurements. The photoluminescence and electroluminescence spectra were recorded, featuring an emission at ca. 475 nm

MOPSB527
SOLVENT INFLUENCE ON MEH-PPV SOLUTIONS OPTICAL PROPERTIES AFTER IRRADIATION WITH GAMMA RAYS
Borin, João Francisco;Alves, Marcelo Caetano Oliveira;Nicolucci, Patrícia;Graeff, Carlos Frederico de Oliveira;
We have studied the changes in the UV-VIS absorption spectra of poly[2-methoxy-5-(2'-ethylhexoxy)-p-phenylenevinylene] (MEH-PPV) solutions when irradiated with 60Co gamma rays. The influence of the solvent and concentration were evaluated, and the results showed the importance of the heavy atoms of the solvent in the optical properties changes of the system

MOPSB529
LANGMUIR AND LANGMUIR-BLODGETT FILMS OF A POLY (STYRENE-CO-METHYL METHACRYLATE) IONOMER
Teixeira, Kelly de C.;Carvalho, Antonio J. F.;Oliveira Jr, Osvaldo N.;Balogh, Débora T.;
Poly (styrene-co-methyl methacrylate) ionomers with 3% of ionic groups were synthesized and characterized by elemental analysis, differential scanning calorimetry, FTIR and UV-Vis spectroscopies and HPSEC. Langmuir films were produced, and the influence of some parameters investigated. Stable Langmuir films could be obtained, and transferred onto substrates to produce LB films.

MOPSB530
SYNTHESIS AND CHARACTERIZATION OF A PPV DERIVATIVE CONTAINING FLUORENYL GROUPS ORTHOGONALLY PLACED IN THE MAIN CHAIN
Grova, Isabel R.;Assaka, Andressa M.;Akcelrud, Leni C.;
Abstract – The synthesis and characterization of a novel emissive polymer, poly(phenylenevinylene)2,5fluorene is described, along with the preparation of intermediaries and corresponding monomer. The structure consists of a PPV backbone containing two orthogonally placed
fluorenyl groups in each repetitive unit. The syntheses included Suzuki coupling and Gilch condensation pathways

MOPSB531
POLY(2,7-9,9'-DI-HEXYLFLUORENEDIYLVINYLENE) (PDHFV) AND POLY(9,9-DI-HEXYLFLUORENEDIIL-VINYLENE-ALT-1,4-PHENYLENEVINYLENE) (PDHFPPHV) : SYNTHESIS, CHARACTERIZATION AND OPTICAL/ELECTROLUMINESCENT PROPERTIES
Ribas, Marcos Roberto;Nowacki, Bruno;Assaka, Andressa;Akcelrud, Leni;
The synthesis of poly(2,7-9,9-di-hexylfluorenediylvinylene) PDHFV, by the Gilch route, and of poly(9,9-di-hexylfluorenediil-vinylene-alt-1,4-phenylenevinylene) PDHFPPHV ,by the Wittig condensation was performed. The structures can be viewed in terms of the replacement of the phenylene groups in PPV by the alkyl substituted fluorene moiety in each repetitive unit of PDHFV, and in each other repetitive unit of PDHFPPHV. The modification in the prototype PPV structure should impart better optical and thermal resistance characteristics, apart from solubility

MOPSB532
CALCULATION OF SHIELDING EFFICIENCY ON POLYANILINE FILM
Rodrigo Bíscaro Nogueira , Luís Otávio de Sousa Bulhões and Sérgio H. B. S. Leal
In this work, the dielectric properties of Polyaniline (PANI) were measured in order to evaluate its capacity of attenuation of electromagnetic radiation. For this, it was necessary to get homogeneous films of PANI (without dispersed particles), with thickness uniform and high conductivity. The shielding effectiveness was calculated from found parameters

MOPSB533
FINE CONTROL OVER ENERGY TRANSFER IN NANOSTRUCTURED PPV/PHTHALOCYANINE PHOTOLUMINESCENT FILMS
Bruna B. Postacchini;Valtencir Zucolotto;Osvaldo N. Oliveira Jr;
A fine control over photoluminescence (PL) emission was achieved upon controlling the resonant energy transfer between PPV (donor) and nickel Phthalocyanine (acceptor) layers in nanostructured layer-by-layer films.

MOPSB534
ELECTRICAL ANALYSIS OF DIODES HAVING PPV DERIVATES AS ACTIVE LAYERS
E. Queiróz2 , G. Gonçalves1, R. Bianchi2, E. Fortunato1, R. Faria2 and R. Martins1
Abstract not available

MOPSB536
ELECTROCHEMICAL STUDY OF THE AU-PYS INTERFACE
de Lima Neto, Pedro;Parente, Marcelo M.V;Diógenes, Izaura. C. N.;Moreira, Icaro. S.;
The adsorption of Pys molecule on gold surface is study by differential pulse voltammetry and electrochemical impedance spectroscopy, using [Fe(CN)6]3-/4-as probe molecules. The results suggest This result suggests that the gold surface is partially blockade and an oxidative cleavage of the C-S bond for adsorption time higher than 10 min

Symposium C - Biocompatible Materials

MOPSC-500
MICROSTRUCTURAL AND BIOLOGICAL CHARACTERIZATION OF TI-35NB-7ZR-5TA ALLOY PRODUCED BY POWDER METALLURGY
Taddei, E.B;Henriques,V.A.R.;Silva, C.R.M;Cairo,C.A.A.; Bottino, M.C.;Higa, O.Z;
Ti-35Nb-7Zr-5Ta alloy is considered an attractive material for implants manufacture due to an excellent combination of properties, including high mechanical and corrosion resistance, and also the lowest elastic modulus among the titanium alloys. The alloy processing by P/M eases the obtainment of parts with near-net shape forming and low production costs.

MOPSC-501
EFFECT OF THE AL2O3 ADDITION ON THE PROPERTIES OF ZIRCONIA-ALUMINA COMPOSITES FOR DENTAL IMPLANT PROSTHESES
Teixeira, L.H.P.;Daguano, J.K.M.F.;Santos, C.;Balestra, R.M.;Chad, V.M.;Elias, C.N.;
Zirconia and alumina are bioceramics with good mechanical properties. In this work, the influence of the sintering temperature and addition of Al2O3 on the mechanical properties have been investigated. It has been detected that the addition of Al2O3 amount increase of hardness without considerable reductions of fracture toughness.

MOPSC-502
EFFECT OF THE ISOTHERMAL SINTERING TIME ON THE MICROSTRUCTURE OF BIOCOMPATIBLE ZRO2-AL2O3 COMPOSITE
Daguano, J.K.M.F.;Santos, C.;Teixeira, L.H.P.;Balestra, R.M.;Chad, V.M.;Elias, C.N.;
In this work, the influence of the different isothermal holding times on the microstructure of the ZrO2-Al2O3 composite, have been investigated. A considerable grain growth of the two-phases has been observed in ceramics sintered with longer sintering times.

MOPSC-505
MC/ QM INVESTIGATION OF TRIPHENYLMETHANE IN AQUEOUS ENVIRONMENT
Rodrigo Gester;Sheila C. S. Costa;Jordan Del Nero;
Monte Carlo(MC)/ Quantum Mechanical(QM) calculations are performed to study solvent effects on absorption spectrum of dyes in water. INDO/S-CI calculations are performed in the supermolecular structures generated by MC. The largest calculation involves the ensemble average of 50 statistically uncorrelated QM results. We found p-p* red shifted transition upon solvation.

MOPSC-507
STUDY OF THE INFLUENCE OF THE EXPOSITION OF COMPOSITE RESINS UNDER DIFFERENT TIMES OF POLYMERIZATION BY INCANDESCENT LIGHT AND LED (LIGHT EMITTING DIODE)
Ulhoa, M.P.M;Cruz, C.E.D;Santana, L.R.;Bianchi, E.C.;Freitas, C.A.;Aguiar, P.R.;
This work consists of analyzing and comparing the abrasive wear of some composed resins, used in odontological doctor's offices for dental restorations after the exposition to different times to the polimerized light emitted by LED (Light Emitting Diode) and by devices of Incandescent Light bulb. It was possible to determine through calculations, the resistance to the consuming of each material.

MOPSC-508
EVALUATION OF THE ABRASIVE WEAR OF DIFFERENT CONVENTIONAL OF GLASS IONOMER CEMENT
Ulhoa, M.P.M.;Cintra, M.B.;Cruz, C.E.D.;Santana, L.R.S.;Bianchi, E.C.;Freitas, C.A.;Aguiar, P.R.;
Summary: The purpose of this work is to evaluate the abrasive resistance of 3 conventional type restoring glass to ionomer cement (CIV) marks, using the study of the aggressiveness. The results show that this material is sensible to the humidity of the

environment that involves it, influencing the results in the resistance to the abrasive consuming of the material.

MOPSC-512
CALCIUM PHOSPHATE CEMENTS (CPC): INFLUENCE OF THE PHYSICO-CHEMICAL AND MICROSTRUCTURAL CHARACTERISTICS ON THE BIODEGRADABLE BEHAVIOR
Luciana M.C. Moreira;Viviane V. Silva;
Calcium phosphate cements were prepared in order to investigate the influence of their physico-chemical and microstructural properties on the biodegradable behavior in physiological serum. The results revealed significant differences on the biodegradable behavior of the cements, which is associated to the composition and morphological characteristics under the conditions studied.

MOPSC-513
ALGINATE-HYDROXYAPATITE COMPOSITE BEADS FOR LEAD UPTAKE IN PHYSIOLOGICAL MEDIUM
Mavropoulos, Elena;Rocha-Leão, Maria Helena; Rocha, Nilce C. C.;Rossi, Alexandre M.;
Lead is toxic to humans, particularly children causing several damages to health. Ingestion is the most common exposure route. New intelligent drugs act as carriers in an attempt to trap the metal ions in the early stage of contamination. In the present study, alginate, a natural polysaccharide is used in association to hydroxyapatite to produce a composite able to immobilize ingested lead.

MOPSC-514
SOME TRIBOLOGICAL CONSIDERATIONS ABOUT POLYURETHANE SLIDING AGAINST CARBON STEEL
Lima da Silva;Santana;Medeiros, J. T. N.;
Polyurethane used in human or animal joint replacement or other tribological applications requires a good abrasion resistance. An approach is presented to study the wear mechanisms of coupons of commercial polyurethane thermoplastic, 86 Shore A Hardness, sliding against a heat treated carbon steel. An association of the thermal response to failure modes is discussed based on experimental results and Scanning Electron Microscopy.

MOPSC-515
XPS CHARACTERIZATION OF THE SURFACE MODIFICATION OF PHBV BY PLASMA
Ferreira, Betina;Nascente, Pedro;Pinheiro, Larissa;Ferreira, Marcelo;Duek, Eliana;
Modifications on chemical surface properties of the poly (hydroxybutyrate-co-hydroxyvalerate) (PHBV) membranes were obtained by using nitrogen and oxygen plasma with different treatment parameters. The plasma-treated samples were characterized by X-ray photoelectron spectroscopy (XPS). The analyses indicated that the plasma treatment increased and introduced polar groups on the surface of PHBV.

MOPSC-519
BIOMIMETIC COATINGS WITH SODIUM SILICATE SOLUTION: A NUCLEATION APPROACH
Carraro, Bruno Dutra;Rigo, Eliana Cristina da Silva;Boschi, Anselmo Ortega;
Difusional transformations, processed by nucleation and growth, have nucleation as their most important step. Reactions of this nature are involved in hydroxyapatite layer attainment on metallic substrates by biomimetic method, influencing final characteristics of the layer.

MOPSC-520
THE EFFECT OF PROCESS VARIABLES OF BIOMIMETIC COATING IN STAINLESS STEELS
Zanin, Marcelo S.;Orozco, Claudia P.O.;Tschiptschin, André Paulo;Rigo, Eliana Cristina da Silva;Boschi, Anselmo Ortega;
The present work studied the effect of process variables of precipitation mechanism and apatite growth by biomimetic method on three different kinds of stainless steel, ASTM F138 (ISO 5832-1), ASTM F1586 (ISO 5832-9) and Bohler P558 steel.

OPSC-522
DYE RELEASE FROM CHITOSAN BEADS AND FILMS: KINETICS STUDIES
Souza, Ana Paula;Anjos, Fernanda;Galembeck, André;
Rhodamine B (RB) and crystal violet (CV) were incorporated within chitosan films and chitosan-triphosphate beads. The kinetics of dye release was studied spectrophotometrically in aqueous and phosphate buffer saline (PBS) solutions. Fickian diffusion mechanism predominates. RB release is, in average, four times faster than CV in chitosan films.

MOPSC-523
THE CALCINATION TEMPERATURE EFFECT IN PREPARATION OF CALCIUM PHOSPHATES WITH CA/P RATIO 1.0 AND 1.67
Boschi, Anselmo Ortega;Melo, Mônica Cobra;Rigo, Eliana Cristina da Silva;
Calcium phosphate powders were synthesized using wet method by addition of acid phosphoric solution and calcium hydroxide suspension. Reactants were mixed according to Ca/P ratio 1.0 and 1.67, the samples were dried and calcined at 800ºC and 1000°C.

MOPSC-525
MODIFIED ELECTRODES INCORPORATING PHYTASE FOR AMPEROMETRIC BIOSENSORS
Moraes, Marli L.;Zucolotto, Valtencir;Oliveira Jr.,Osvaldo N.;Rodrigues Filho, Ubirajara P.;Ferreira, Marystela;
Phytase has been immobilized in Layer-by-Layer (LbL) films, adsorbed alternately with poly(allylamine) hydrochloride (PAH) layers, onto an ITO
substrate to detect phytic acid using amperometric measurements.

MOPSC-526
EVALUATION OF A COMPOSITE SKIN SUBSTITUTE IN TREATMENT OF VENOUS STASIS ULCERS: A PILOT STUDY
Franco, Talita;Dadalti, Paula;Silva, Márcia Ramos;Martucci, Renata Brum;Borojevic, Radovan;Pascarelli, Bernardo M.O.;Leiros, Marco Aurélio;Takiya, Cristina Maeda;
Many advances have been made in development and application of biological skin substitutes, showing that they could be beneficial for patients with burns, leg ulcers and other skin lesions. We present a pilot trial of leg ulcer treatment using composite skin grafts of human acellular dermis and autologous keratinocyte culture.

MOPSC-527
BONE CEMENT PREPARATION USING PRECIPITATED â-TCP
Juncioni, Bruno de Carvalho;Melo, Mônica Cobra;Rigo, Eliana Cristina da Silva;Boschi, Anselmo Ortega;
In calcium phosphate cement (CFC) are combined biocompatibility, bioactivity and osteoconductivity of calcium phosphate bioceramics with typical properties of cement-like materials. CFC was obtained using precipitated â-TCP powder. Final phase and setting time were characterized.

MOPSC-530
ENCAPSULATION OF A METALLOPORPHYRIN IN DEXTRIN MICROSPHERES BY SPRAY-DRYING
Paiva Luz, Priscilla;Pires, Ana Maria;Serra, Osvaldo Antonio;
This work reports on the spray-drying technique for the encapsulation of a metalloporphyrin in dextrin microspheres. Metalloporphyrin-loaded microspheres were prepared by spray-drying using aqueous solution containing metalloporphyrin and dextrin. The morphology and structure of these particles were characterized by SEM, TEM, EDS, TGA, and DSC.

MOPSC-531
THE RESPONSE TO THE INTRAMUSCULAR IMPLANTATION OF DIAMOND-LIKE CARBON COATINGS PRODUCED BY PLASMA IMMERSION ON TI-13NB-13ZR ALLOY
Uzumaki, E. T.;Lambert, C. S.;Batista, N. A.;Belangero, W. D.;Zavaglia, C. A. C.;
Cylinders of diamond-like carbon (DLC)-coated Ti-13Nb-13Zr have been implanted intramuscularly in rats and the tissue response observed histologically at 4 and 12 weeks. Analysis of specimens retrieved showed that the DLMOPSC-coated specimens were well tolerated, and indicates that DLC coatings produced by plasma immersion are biocompatible in vivo

MOPSC-532
COMPOSITES OF BACTERIAL CELLULOSE/SODIUM POLYPHOSPHATE.
Barud, H.S;Martines, M.A.U;Hisano, C;Messaddeq,Y.;Ribeiro, S.J.L;
Bacterial cellulose- NaPO3 composites were prepared and characterized by X-ray diffraction, thermal analysis, infrared spectroscopy and Scanning electron microscopy. Polyphosphate particles are seen attached to the cellulose microfibrils. The polyphohphate-cellulose intereaction is monitored by infrared spectroscopy. Decomposition temperatures dramatically change in conmparison with the initial precursors.

MOPSC-534
CALCIUM PHOSPHATE COATING OVER CHITOSAN FILM BY BIOMIMETIC METHOD
Rigo, Eliana Cristina da Silva;Pezzin, Sérgio Henrique;Rosa, Derval dos Santos;
In the present work, chitosan films soaked in sodium silicate solution were immersed in 1.5 simulated body fluid and examined for the calcium phosphate growth over their surfaces at different points in nucleating and growing time by scanning electron microscopy energy dispersive X ray and diffuse reflectance infrared Fourier transformed.

MOPSC-535
SPECTROSCOPIC INVESTIGATION OF SESELINE CRYSTAL AT LOW TEMPERATURES
Mafezoli, J.;Bento, R.R.F.;Freire, P.T.C.;Oliveira, M.C.F.;Melo, F.E.A.;Neto, M.A.;Guerini, S.;Lemos, V.;Mendes Filho, J.;
Seseline Raman spectrum was obtained at room temperature and at low temperatures. FT-Raman measurements were obtained at room temperature. Comparison of the data allowed us to assign most of the observed features.

MOPSC-536
ANALYSIS AND COMPARISON OF FRACTURE CHARACTERISTICS OF Â-TI ALLOYS FOR BIOMEDICAL APPLICATIONS.
Schneider, Sandra Giacomin;Elias, Luciane Monteiro;Barboza, Miguel Justino Ribeiro;Silva, Helena Marques;
Fractures of tensile tested β Ti alloys were analysed, by using the SEM, to identify the main micromechanisms of fracture in order to understand the behavior of the materials and to avoid the failure when they are in service.

MOPSC-537
PDMS-PMMA COMPATIBILIZATION WITH ORGANOSILANE: NEW POLYMER BLENDS
Anjos, Débora S.C.;Galembeck, André;Revôredo, Eliane Cristina Viana;
PDMS-PMMA blends were prepared using an organosilane (MAPTMS) as a compatibilization agent, leading to homogeneous samples with a decreased contact angle with water. A higher thermal stability was detected when the organosilane was allowed to react with PMMA for greater reaction times.

MOPSC-538
INFLUENCE OF SULPHUR, SODIUM CHLORIDE AND SUCROSE ON THE ELASTIC PROPERTIES OF NATURAL RUBBER MEMBRANES
Barros, Angelica;Simone, Z. Sansavino;Ferreira, Mariselma;Bernardes, Marcos;Coutinho-Netto, Joaquim;Mulato, Marcelo;
This work reports on the fabrication of latex membranes and the investigation of the resulting elastic properties. We investigated centrifuged latex (Hevea brasiliensis), mixed with varied concentrations of sulphur (1-3 %), sodium chloride (1-8%) and sucrose (1-4%). The influence of these elements on the final elastic behavior of the membranes is discussed.

MOPSC-539
FABRICATION OF POROUS NATURAL RUBBER MEMBRANES USING THE THERMALLY INDUCED PHASE SEPARATION TECHNIQUE
dos Santos, Thais Cavalheri;Coutinho-Netto, Joaquim;Bernardes, Marcos Silveira;Ferreira, Mariselma;Mulato, Marcelo;
We study the pores formation mechanism on natural latex membranes using the thermally induced phase separation technique. The resulting craters and voids connectivity are investigated by scanning electron microscopy Pores larger than 5 m-diameter can be obtained for cooling temperatures close to the freezing point of water.

MOPSC-541
SYNTHESIS AND CHARACTERIZATION OF A HYDROTALCITE RELATED MATERIAL
C.R. Gordijo, V.R.L. Constantino, D. de Oliveira Silva
A new hydrotalcite like-material containing intercalated formate ions was obtained and characterized by elemental analyses, ICP-AES, FTIR and Raman spectroscopies, XRD and TGA. Products isolated by three synthetic methods were investigated: co-precipitation from the metal nitrate solutions, ion exchange employing the chloride precursor and re-precipitation from the hydrotalcite precursor.

MOPSC-542
STRUCTURAL, MAGNETIC AND MORPHOLOGICAL CHARACTERIZATION OF NANOPARTICLES OF IRON OXIDE COATED WITH DEXTRAN – AMI 25 -, USED AS CONTRASTING AGENT FOR MAGNETIC RESONANCE IMAGING (MRI)
Gamarra L.F.;Brito G.E.S.;Amaro Jr. E;Carneiro S.M.;Goya G.F.;Pontuschka W. M.;
The characterization of the iron oxide nanoparticles coated with dextran has confirmed the structure of magnetite (Fe3O4) by XRD and Mössbauer spectroscopy (MS), of the mean size of 9 nm determined by small angle X-ray scattering (SAXS) and corroborated by transmission electron microscopy (TEM). Measurements of MS and EPR have indicated that they are consisted of single domine superparamagnetic particles. Among the drying methods, the lyophilization has proved to be the most adequate because maintains the original particle structure, necessary for a good characterization.

MOPSC-545
THE INFLUENCE OF APPLIED ELECTRIC FIELD ON THE CRYSTALLIZATION OF POLY(VINYLIDENE FLUORIDE) FILMS

Chinaglia, Dante L.;Avansi, Guilherme D.;Santos, Osmar de Sousa;Contantino, Carlos J.;Job, Aldo E.;Zucoloto, Valtencir;
A study was made on the effects of a static electric field applied during the crystallization process of poly(vinylidene fluoride), PVDF, samples prepared by solution. The crystallization temperature used was 60oC and 120oC, which was expected to produce films purely in  and  phase, respectively. Spectroscopy experiment shows that the applied field induces the  phase for the samples prepared at 120oC.

MOPSC-545
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Chinaglia, Dante L.;Avansi, Guilherme D.;Santos, Osmar de Sousa;Contantino, Carlos J.;Job, Aldo E.;Zucoloto, Valtencir;
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MOPSC-547
NEW BIOCOMPATIBLE NANOMATERIALS FOR CONTROLLED SILVER DELIVERY
Paula, Lisandra;Santa-Cruz, Petrus;
A biocompatible material is proposed, as active material for implants, since a controlled delivery of silver may present in this material an antimicrobial activity. We have analyzed the surface of the silver-content bioactive glass, to associate the nanostructure formed by thermal treatment with the silver delivery in simulated body fluids.

MOPSC-549
IN VIVO AGING OF GUTTA-PERCHA DENTAL CONE: TRANS-POLYISOPRENE DEGRADATION AND ZINC OXIDE RELEASE
Ferreira, Cláudio Maniglia;Paula, Regina Célia Monteiro;Feitosa, Judith Pessoa Andrade;
Aged cones from 2 to 30 years of root canal filling were extracted from different patients. Decrease in polyisoprene molar mass with aging time was observed. This decrease is higher in infected tooth. The process is oxidative, even in closed teeth. ZnO was released after 13 years of aging.

MOPSC-550
IPN HYDROGELS OF CASHEW GUM AND POLYACRYLAMIDE
Magalhães, Antonio S.G.;Paula, Regina Célia Monteiro;Feitosa, Judith Pessoa Andrade;
IPN hydrogels of polyacrylamide/cashew gum were obtained and characterized. The equilibrium swelling degree in water increases with crosslinking agent concentration. In salt solution the Weq decreases(NaCl and CaCl2). Repetitive cycle of swelling and dryness decrease the Weq. Superabsorbent hydrogels were obtained by hydrolysis of hydrogel with NaOH.

MOPSC-552
CHARACTERIZATION OF ALFA-TOCOFEROL MICROCAPSULES PRODUCED BY SPRAY DRYING
Pierucci, Anna Paola Trindade Rocha;Andrade, Leonardo Resende;Farina, Marco;Rocha-Leão, Maria Helena Migues;
Microcapsules containing á-tocopherol were produced by spray drying technique using pea protein, carboxymethylcellulose and mixtures with maltodextrin as wall materials; and were characterized as regards the core retention (HPLC), the morphology (SEM) and size distribution (LD). Microcapsules had high core retention, spherical shape, rough surface and size below 7 µm.

MOPSC-554
SEMICONDUCTOR/POLY(ETHYLENE-GLYCOL) NANOPARTICLES FOR BIOLOGICAL LABELLING
Chaves, Claudilene;Galembeck, André;Menezes, Frederico;Farias, Patrícia;Santos, Beate;Amaral, Jane;Moura-Neto, Vivaldo;Fontes, Adriana;Cesar, Carlos;
This work describes the use of CdS/Cd(OH)2 quantum dots (QDs) funcionalized with poly(ethylene-glycol) (PEG, MW 1450) in order to target biological samples. The QD emission is not changed by pegylation and these nanoparticles were able to label samples like co-cultures of neurons and glioblastoma non-specifically.

Symposium D - Structural materials: Processing Properties and Applications

MOPSD-503
RUPTURE LOAD AND MAXIMUM ELONGATION OF NATURAL FIBERS: EXPERIMENTAL MEASURES FOR COCONUT, CURAUÁ AND PALHA-DA-COSTA
Silva, A. F. B.;Fujiyama, R. T.;
This work presents the properties of rupture load and maximum elongation of natural fibers and found in the Amazon region. The mechanical properties were obtained experimentally obtained tension test. The studied fibers were the one of curauá, coconut and palha-da-costa. Comparisons are presented of the properties of those fibers and discussed the viability of the use the natural fiber to production of composites materials.

MOPSD-505
REGENERATION OF BUTADIENE-STYRENE COPOLYMER VULCANIZED COMPOUNDS
Neto, Ribeiro;Pacheco, Elen;Visconte, Leila;Furtado, Cristina;
In this work, a chemomechanical regenerating system was used for recycling scrap SBR based vulcanized compounds. The regeneration agent consisted of mixture of accelerators, activators and cure agents, as sulfur. Rheometrics and mechanical properties of the vulcanized residues showed that the proposed system has constituted an interesting technique for recycling.

MOPSD-508
NATURE OF POTENTIAL BARRIER IN CACU3TI4O12 POLYCRYSTALLINE PEROVISKITE
Marques, V.P.B;Cilense.M;Bueno, P.R;Varela, J.A;Longo, E;
In the present paper we used impedance spectroscopy technique to study (Ca1/4 Cu3/4)TiO3 peroviskite ceramics presenting low nonohmic properties. The study was conducted in two different conditions: for ceramics as-sintered and after thermal treatment at oxygen-rich atmosphere. The results confirm that the thermal treatment at rich oxygen atmospheres influences the nonohmic properties in according to what was discussed in previous work in a generalized way for typical metal oxide nonohmic materials.

MOPSD-511
GRAY CAST IRON MACHINING BY CERAMIC CUTTING TOOLS
J. V.C. Souza, S. J. Crnkovic, C. A. Kelly, M. R. V. Moreira, M. V. Ribeiro, C. Santos
This work had as objective to produce and use Si3N4 cutting tools in gray cast iron machining. Therefore, a powder mixture composed by alpha-Si3N4, AlN and Y2O3 was milled, dry, compacted and sintered at 1850 oC for 1.5 h. Then, cutting tools were characterized and submitted to different machining conditions.

MOPSD-512
COMPACTED GRAPHITE IRON MACHINING BY CERAMIC CUTTING TOOLS
J. V.C. Souza, S. J. Crnkovic, C. A. Kelly, M. R. V. Moreira, M. V. Ribeiro, C. Santos
This work had as objective to produce and use SiAlONs cutting tools in compacted graphite iron machining. Therefore, a powder mixture composed by alpha-Si3N4, AlN, Al2O3 and Y2O3 was milled, dry, compacted and sintered at 1900 oC for 1h. Then, cutting tools were characterized and submitted to different machining conditions.

MOPSD-513
TI-6AL-4V MACHINING BY CERAMIC CUTTING TOOLS
J. V.C. Souza, S. J. Crnkovic, C. A. Kelly, M. R. V. Moreira, M. V. Ribeiro, C. Santos
This work had as objective to produce and use Si3N4 cutting tools in compacted graphite iron machining. Therefore, a powder mixture composed by alpha-Si3N4, AlN, Al2O3 and Y2O3 was milled, dry, compacted and sintered at 1900 oC for 1h. Then, cutting tools were characterized and submitted to different machining conditions.

MOPSD-515
OXYGEN PLASMA AND AQUAREGIA TREATMENTS ON INDIUM TIN OXIDE FILMS USED IN POLYMER LIGHT EMITTING DIODES
Emerson R. S., João C. B. S., Gerson S., Fernando J. F., Ely A. T. D., Adnei M. A.
Indium tin oxide are transparent and conductive films that have good electrical and optical characteristics. They are very used in polymer or organic light emitting diodes (P/OLEDs) devices. Treatments with oxygen plasma and aquaregia chemical solution on surface of ITO films improve the performance of these devices.

MOPSD-517
DEVELOPMENT OF A CERAMIC COMPOSITE BARRIER FOR PROTECTION AGAINST SALINE FLOW WEAR AND CORROSION PRESENT IN PIPES AND PARTS USED IN OFF-SHORE OIL PRODUCTION
Dias, Polyana Borges;Carvalho, Eduardo Atem;Sant´Anna, Paula Ambrozini S.;
In this work an epoxi-based paint mixed with powdered porcelain and alumina will be employed as surface coating in carbon steel. The abrasion and saline moist test will evaluate the resistance to erosion-corrosion of this new material.

MOPSD-521
LOW SURFACE ENERGY MATERIALS BASED ON PARTIALLY FLUORINATED EPOXY NETWORKS
E. Penoff, G. Papagni, P. Montemartini, And P. Oyanguren
In order to combine the properties of epoxy networks and fluorinated polymers, a thermoplastic containing trifluoromethyl (-CF3) groups was synthesized and used as modifier of an epoxy-aromatic diamine matrix. The electrical, thermal and mechanical properties of the modified materials are discussed.

MOPSD-522
COMPARISON BETWEEN THE ELASTIC MODULUS VALUES OBTAINED BY FREE VIBRATION AND TENSILE TESTS FOR CARAL MATERIAL
Rezende, Mirabel Cerqueira;Botelho, Edson Cocchieri;Pardini, Luiz Claudio;Almeida, Rogério Silva;
This article presents the comparison of tensile and free vibration damping experiments of Caral laminates and compare the observed behavior with the results find for the conventional composite materials. Two cases were evaluated: dry specimens and specimens submitted to hygrothermal conditioning.

MOPSD-523
PHASE EVALUATION ACCOMPANIMENT OF A CERAMIC PASTE WHITE FOR STRUCTURAL MATERIALS
Mendes de Freitas,José Jorge and Guitián,Francisco;
The present work aimed at studying the phase evaluation accompaniment of ceramic paste white, using raw materials from the Bahia state. The results showed that the sintered microstructure was evaluated by X-ray diffraction, containing the constituent mineral mullita, cristobalite and quartz, and resulting in good were achieved the flexural strength.

MOPSD-524
TREATMENT OF THE COCONUT FIBER: COMPARATIVE STUDY ON STRUCTURAL AND MORPHOLOGIC MODIFICATION BY SURFACE TREATMENT OF FIBER
Vaithianathan, Pagandai Pannir Selvam;Henrique, Brunno Souza Santiago;
In this work, a comparative study of the hot water and detergent treatments used for the superficial modification of the fiber of the coconut. The results show that with the considered treatment is possible to modify the superficial layer of the fiber of the coconut.

MOPSD-525
MICROSTRUCTURAL EVOLUTION DURING MECHANICAL ALLOYING OF NI-20% CR
Moreira, J. P.;Graça, M.L.A;Cairo, C.A.A.;
In this study we investigate the microstructural evolution during mechanical alloying of Ni and Cr powders, milled in a SPEX mixer-mill. The milling was performed under ambient atmosphere and vacuum, employing two different ball-to-powder ratios (BPR): 10:1 and 20:1. NiCr powders containing 20% Cr were prepared for various milling times.

MOPSD-526
CORRELATION BETWEEN CHEMICAL VAPOR DEPOSITED DIAMOND AND CARBON FIBERS SUBSTRATES
Rosolen, J. M;Ferreira, N. G.;Trava-Airoldi, V. J.;Almeida, E. C;
Diamond formation was studied on carbon fibers substrates produced from polyacrylonitrile organic polymer precursor at different heat treatment temperatures. Carbon fibers structural properties knowledge and control have demonstrated to be very important for growing diamond films on such substrates

MOPSD-527
CHARACTERIZATION OF METAKAOLIN AIMING THE UTILIZATION AS MINERAL ADMIXTURE IN CONCRETES
Oliveira, Carlos A. S.;Gumieri, Adriana G.;Vasconcelos, Wander L.;
Thermal activation enhances pozzolanic reactivity of kaolinitic clays with the products of hydration of the Portland cement. The knowledge of the physical, chemical and mineralogical characteristics of this cementitious materials is important aiming its use in the manufacture of concrete.

MOPSD-529
AL-GAS INFILTRATION IN SISAL FIBERS TO PRODUCE AL2O3-BIOMORPHICS
Rambo, Carlos R.;Andrade Jr., Tarcisio Elói;Martinelli, Antônio E.;Melo, Dulce M.A.;Nascimento, Rubens M.;Greil, Peter;
Sisal fibers are widely used natural resources. Low-cost and biodegradable lignocellulosic fibers are extracted from sisal. Alternatively, addeMoPSD-value products can be industrialized using alumina fibers produced from sisal by biotemplating. The objective of this work was to study the conditions of Al-gas infiltrations to produce alumina fibers from sisal.

MOPSD-531
POLYANILINE DEPOSITED BY SELF-ASSEMBLY AS A HOLE TRANSPORT LAYER FOR POLYMER LIGHT EMITTING DIODES
J. C. B. Santos, G. Santos, E. R. Santos, R. F. Bianchi, F. J. Fonseca, E. A. T. Dirani, A. M. Andrade
A combination of PAni and PVS bilayers deposited by self-assembly on ITO as a transparent electrode (anode) for PLEDs was studied. The operation voltage is significantly reduced. Impedance Spectroscopy measurement and I-V curves were performed to understand the hole transport layer effect

MOPSD-532
DESENHO INOVADOR DE SECADOR PLÁSTICO TÚNEL DE ALTA PRODUTIVIDADE USANDO HÍBRIDO DE ENERGIA DE BIOGÁS E SOLAR.
Moura, Johnson;Guimarães, Alexandre;Figueiredo, Emmanuel;Santiago, Brunno;Selvam, Pannir;
Os sistemas de secagem industrial no Brasil são baseados no uso de combustíveis não renováveis, portanto cresce a necessidade juntamente com os recursos já existentes novas fonte energética de biomassa e energia solar, como fonte de energia.

MOPSD-533
EFFECT OF COATING ON THE CREEP BEHAVIOR OF THE TI-6AL-4V ALLOY
Silva, C.R.M.;Reis, D.A.P.;Nono, M.C.A.;Barboza, M.J.R.;Piorino, F.;Taddei, E.B.;
The titanium affinity by oxygen is one of main factors that limit the application of their alloys as structural materials at high temperatures. Notables advances have been obeserved in the development of titanium alloys with the objective of improving the specific high temperature strength and creep-resistance properties. However, the surface oxidation limits the use of these alloys in temperatures up to 600ºC [1-4]. The objective of this work was study the influence of the plasma-sprayed coatings for oxidation protection and the atmosphere on creep of the Ti-6Al-4V alloy, focusing on the determination of the experimental parameters related to the primary and secondary creep states.

MOPSD-535
STUDY OF OXIDE ETCH-STOP FOR THICKNESS CONTROL OF SILICON MICRODIAPHRAGMS
Koberstein, Leandro;Fraga, Mariana;Rasia, Luiz;
In this work, the oxide layer of the SOI (Silicon-On-Insulator) wafer was used for thickness control of silicon microdiaphragms. The SOI samples were obtained by Wafer

Bonding. The anisotropic etching of silicon in alkaline solutions was used for fabrication of the diaphragms.

MOPSD-537
STUDIES ON ELECTRODEPOSITION OF CORROSION RESISTANT NI-FE-MO ALLOY
Santana, R.A.C.;Moura, E.S;Campos, A.R.N.;Prasad, S.;Silva, G.P.;Lima-Neto, Pedro;Almeida-Neto, A.F.;
Electrodeposition of Ni-Fe-Mo alloy was studied. The operational conditions for getting the deposit with good corrosion resistance were 120mA/cm2 current density, 30ºC temperature, 20rpm cathode rotation and 9.0 pH. The deposit showed presence of coarse nodular structure and an average composition 62wt% Ni, 19wt% Fe, 21wt% Mo.

MOPSD-538
NITRIDES B4N AND FE3BN BAND'S STRUCTURE AND BULK MODULUS THEORICAL DETERMINATION
Antonio Vanderlei;Rodrigo;
Summary: With technological evolution came the need of new alloys, in diverse Knowledgment's areas. In this way, we're studying boron nitrides band's structure, in two different stechiometry Fe3BN and B4N, we chose these compounds to understand B4N properties take into consideration, Fe introduction, in its crystal structure.

MOPSD-540
DAMPING CAPACITY OF TI-13NB-13ZR ALLOY BY INTERNAL FRICTION MEASUREMENTS
Niemeyer, Terlize;Grandini, Carlos Roberto;Schneider, Sandra Giacomin;Florêncio, Odila;
The Ti-13Nb-13Zr alloy has been very studied and has characteristics as low values of the elasticity modulus however; these values are about 2 times higher than to the bone. When these alloys are used as orthopaedic prosthesis it is of fundamental importance to absorb impacts, being a high damping material.

MOPSD-542
MICROSTRUCTURAL BEHAVIOR OF CARBON BASED MATERIALS UNDER ABLATIVE CONDITIONS
Marotta, Aruy;Essiptchouk, A.M;Otani, C;Barros, E.A.;Maciel, H.S.;
This work presents a stationary experiment performed to study the degradation of carbon-based materials by its immersion in a reactive air plasma torch. In the experiment, graphite and C/C composite are chosen as the target materials. For macroscopic aspect evaluation of the material degradation, the mass losses are measured against the exposure time by changing the material surface temperature. From the microscopic aspect, the eroded surfaces of materials by reactive air plasma are observed with a scanning electron microscope (SEM). The experiments show that the mass loss per unit area is approximately proportional to the exposure time and depends strongly on the temperature of material surface. The erosion rate of graphite is slightly higher than the C/C composite on the basis of weight lost. In C/C composite, the erosion rate of the matrix region is slightly higher than the fiber region according to its structural ordering characteristics. The plasma torch testing indicates that this composite has ablation resistance and is reliable material for rocket nozzles and heat shielding construction.

MOPSD-543
INVESTIGATIONS IN REACTIVE PLASMA GENERATED IN PLANAR HOLLOW CATHODE DISCHARGE
Pessoa, R.S.;Petraconi, G.;Maciel, H.S.;Otani, C.;
The aim of the present studies was to obtain experimental observations about the main features of a d.c. hollow cathode discharge (HCD) in order to evaluate its capability of generating compounds in the plasma medium, by reaction between sputtered species from the cathode and radicals from the gas discharge. The HCD was operating with argon, oxygen and nitrogen gases within the pressure range of (9 -50) Pa and flow rate in the range of (1-100) sccm. The self-sustained cathode-anode voltage (during operation) was in the range of (300-900) V corresponding to discharge current in the range of (10-1000) mA. A Helmholtz coil was used to produce a low intensity and uniform B-field along the axis of the discharge, within the range of (0 – 10).10-3 T. The effects of these parameters and cathode materials (Al, C, Ti), were investigated in order to enhance the ionization efficiency of the discharge and consequently, to produce high-dense reactive plasmas. Plasma parameters were inferred from the current-voltage characteristic of a single cylindrical probe (movable Langmuir probe) positioned at the inter-cathode space taking into account the influence of the inter-cathode distance and the magnetic field. Typical values are in the range of (1016 - 1017)m-3 and (2 – 5)eV , for the electron density and electron temperature, respectively. Through mass spectrometry technique some species in the plasma gas phase could be monitored for various operating conditions of the discharge. This mass analysis together with the probe measurement gives guidance for optimization of compounds generations in the discharge, consequently for deposition of thin films of these materials. Especial interest was focused on carbon (C), aluminum nitride (AlN), titanium dioxide (TiO2), titanium oxide (TiO) and titanium nitride (TiN) formation in the discharge.

MOPSD-544
MICROSTRUCTURE OF UNDERCOOLED PB-SB EUTECTIC ALLOY
Neto, José Costa;Albuquerque, Siderley;Batista, Wilton;Castro, Walman;
The aim of this paper is to study the influence of the undercooling level on microstructures of Pb-Sb eutectic alloy by using the fluxing technique. Increasing undercooling of the molten Pb-Sb eutectic alloy, in range of 8 degree, lead to a refinement of the eutectic constituent.

MOPSD-545
CONTINUOUS BINDER-POWDER COATING: A NEW FABRICATION ROUTE FOR TITANIUM MATRIX COMPOSITES
Sanguinetti Ferreira, Ricardo;Prasad Yadava, Yogendra;Arvieu, Corinne;Quenisset, Jean-Michel;
Continuous binder-powder coating is a new fabrication route for titanium metal matrix composites reinforced with continuous SiC filaments. Results showed that the titanium metal matrix composites produced by this process present a good matrix consolidation, without porosity and a weak interaction between matrix and fiber.

MOPSD-546
PHYSICO-CHEMICAL INTERACTION ON THE CERAMIC / METAL INTERFACES OF THE TI/SIC/C COMPOSITES
Sanguinetti Ferreira, Ricardo Artur;Prasad Yadava, Yogendra;Arvieu, Corrine;Quenisset, Jean-Michel;
The physico-chemical interactions on the ceramic / metal interface has been the greater problem for fabrication of the TMC composites reinforced with continuous SiC filaments. TMC composites processed by Continuous Binder-Powder Coating present simultaneously good matrix densification and weak interaction between matrix and fibers, particularly in the hot pressing conditions.

MOPSD-547
FABRICATION AND CHARACTERIZATION OF AL-5,0SI-1,0CU/AL2O3 COMPOSITES, PRODUCED BY RHEOCASTING.
Sanguinetti Ferreira, Ricardo Artur;Prasad Yadava, Yogendra;Gonçalves da Silva, Nelson;Gomes Barbosa, Salomão;
Aluminum matrix composites reinforced with Al2O3 fine particles, were produced by rheocasting in different volume fraction contents. The matrix alloy was molten in HF furnace, while the Al2O3 particles were incorporated during cooling with stirring speed of 220 rpm. Results showed that the reinforcement was dispersed mainly around alpha-primary and beta phases.

MOPSD-549
SECONDARY DENDRITE ARM SPACING EFFECTS UPON MECHANICAL PROPERTIES OF ZN-27WT% AL ALLOY
Givanildo Alves dos Santos, Carlos de Moura Neto, Wislei R. Osório and Amauri Garcia
The imposition of a wide range of operational conditions in foundry and castings process generates, as a direct consequence, a diversity of solidification structures.1-3 It is well known that mechanical properties depend on solidification structures. The literature presents relationships between yield strenght and grain size, such as the Hall-Petch`s equation, or ultimate tensile strenght and secondary dendrite arm spacings.1-2 A low carbon steel mold was used to promote a unidirectional heat flow during solidification and to obtain the microstructural arrangement. The aim of the present work is to investigate the influence of microstructure of ZA27 alloy (Zn- 27wt% Al) on mechanical properties. Experimental results include transient metal/mould heat transfer coefficients (hi), secondary dendrite arm spacings (l2), ultimate tensile strenght (sUTS) and yield strenght (sy) as a function of solidification conditions imposed by the metal/mold system. The figure 1 shows that in both cases (sUTS and sy = 0.2%), the dendrite fineness upon mechanical properties

MOPSD-550
EFFECTS OF B CATIONS SUBSTITUITION ON PMN RELAXOR CERAMIC PROPERTIES
Paula, Amauri Jardim de;Cavalheiro, Alberto Adriano;Bruno, Juliana Catarina;Zaghete, Maria Aparecida;Varela, José Arana;
The PbMg1/3Nb2/3O3 (PMN) is classified as a great realaxor ceramic material. In order to improve the PMN ceramic properties such as Km , Tm, a
roposal of dopant pair Li/Sc addition was taken. The results confirm the influence of the dopants on the high purity perovskite phase formation. Also the microstructure of samples presents variations by the dopants.

MOPSD-551
PREPARATION AND CHARACTERIZATION OF THIOL FUNCTIONALIZED BENTONITE FOR HEAVY METAL IONS ADSORPTION
Guimarães, Angela de Mello Ferreira;Ciminelli, Virgínia Sampaio Teixeira;Vasconcelos, Wander Luiz;
Abstract- A natural bentonite from Campina Grande, Paraíba, Brazil was modified by acid treatment and subsequently intercalation through the covalent grafting of organic ligands containing thiol (-SH) metal-chelating to the external surface and interlayer silanol groups. Studies of adsorption kinetics and uptake capacity were carried out for cadmium ions from aqueous solution on natural and modified clays.

MOPSD-552
FRACTOGRAPHY OF CARBON FIBER/EPOXY COMPOSITES AFTER TENSILE TEST
Franco, Leandro A. L.;Cândido, Geraldo M.;Botelho, Edson C;Rezende, Mirabel C;
The mechanical properties of the fiber/resin interphase affect both the macroscopic mechanical properties of composite material and those of individual components - fiber and resin. In this paper, tensile tests were carried out involving carbon fiber/epoxy composite

materials and the fracture was examined by scanning electron microscopy.

MOPSD-553
FRACTOGRAPHIC ANALYSIS OF CONTINUOUS FIBERS/EPOXY COMPOSITES AFTER COMPRESSION TEST
Botelho, Edson C.;Franco, Leandro A. L.;Rezende, Mirabel C;Cândido, Geraldo M.;
A fractographic study of delamination failures in a range of continuous carbon fiber, glass fiber and aramid fiber reinforced epoxy resin laminates was performed. In this paper, compressive tests were carried out and the fracture was examined by scanning electron microscopy.

MOPSD-554
MECHANICAL AND ION EXCHANGE PROPERTIES OF CHEMICALLY STRENGTHENED GLASS
Petroni, Sergio;
The chemical strengthening of a commercial glass was performed by using ion exchange technique. Mechanical properties of untreated and ion exchanged specimens were determined and correlated to K+ ions concentration determined by neutron activation analysis.

MOPSD-556
ELECTRICAL PROPERTIES OF BISMUTH TITANATE THIN FILMS GROWN BY SOFT CHEMICAL SOLUTION AND MICROWAVE ANNEALING
Simões, A;Ramesh, R;Longo, E;Varela, J;Gonzalez, A;Gil, M;
Bismuth titanate films were grown by the polymeric precursor method on different bottom electrodes at 700¢XC for 10 minutes. The domain structure was investigated by PFM. Although the converse piezoelectric coefficient, d33, regardless of bottom electrode is around (~40pm/V), those over RuO2 and LNO exhibit better ferroelectric properties.

MOPSD-558
SYNTHESIS AND CARACTERIZATION OF COMPLEX MAGNETIC OXIDES OF TRANSITION METALS
Gouveia, D.X.;Rocha, H.H.B.;Freire, F.N.A.;Sombra, A.S.B.;
The complex magnetic oxides Fe2Cu3Ti3O12 and Cr3Fe5O12 were sythesized by solid state reaction. We determined that it was possible to obtain a contínuos composites from (x) Fe2Cu3Ti3O12:(1-x)Cr3Fe5O12 (x = 0.17, 0.34, 0.50, 0.66, 0.83). The structures of these compounds were investigated by Mössbauer spectrocopy and X-ray powder diffraction.

MOPSD-559
THE USE OF A RAPIDLY SOLIDIFIED MELT SPUN NI-CR-P ALLOY AS FILLER METAL IN BRAZING OF AL2O3
Maciel, Theophilo;Chang, Isaac;Strangwood, Martin;
Melt spun Ni-Cr-P alloy ribbons were used as filler metal to join Al2O3 using a vacuum brazing process. The influence of the brazing temperature and time on the shear resistance of brazed joints was evaluated. The experimental results showed that the holding time was the most important parameter.

MOPSD-565
PREPARATION OF HETEROGENEOUS CATALYSTS FOR (Z)-CYCLOOCTENE OXIDATION
Vinhado, Fábio Silva;Gandini, Maria Elisa Furlan;Iamamoto, Yassuko;Lôvo, Luciana Baggini;
Novel Mn(III)chlorins were prepared and immobilized on modified silicas. The supported catalysts were characterized by UV-VIS spetroscopy, which indicated a mixture of Mn(II) and Mn(III). The catalysts were submitted to recycling experiments and reactions under conversion conditions in the (Z)-cyclooctene epoxidation with PhIO and H2O2 showing satisfactory performance.

MOPSD-567
PREPARATION OF POROUS CERAMIC FILTERS TO SEPARATION PROCESS
Vieira, Lucianna G. F.;Costa, Ana Cristina F. M.;Lira, Hélio de Lucena;Kiminami, Ruth H. G. A.;Maia, Divanira F.;
The aim of this work is to prepare alumina ceramic filters by extrusion to use in separation process, in which the selectivity mechanism is by size in the range of microfiltration.

MOPSD-570
INFLUENCE OF CO-PRECIPITATION, MECHANICAL MIXING AND SEEDING PROCESSES IN THE DENSIFICATION AND GRAIN GROWTH OF UO2-10WT% GD2O3 NUCLEAR FUEL PELLETS
Lima, Margarida Márcia Fernandes;Ferraz, Wilmar Barbosa;Santos, Armindo;Pinto, Lúcio Carlos Martins;Santos, Ana Maria Matildes dos;
In this work, the influence of co-precipitation, mechanical mixing and seeding processes in the densification and grain growth of UO2-10wt% Gd2O3 nuclear fuel pellets was studied. The seeding method using mechanical mixing process was more effective than the co-precipitation process.

MOPSD-571
INFLUENCE OF PPGMA ON THE MORPHOLOGY OF PA6/PP BLENDS
P. Agrawal, S.I. Oliveira, E.M. Araújo, and T.J.A. Mélo
In this work, the influence of PPgMA on the morphology of PA6/PP blends was investigated. Fractured samples of the blends were analyzed by Scanning Electron Microscope (SEM). The results showed that PPgMA improves considerably the adhesion between PA6 and PP phases, regardless of polypropylene grade

MOPSD-573
THE USE OF THE PHOTOACOUSTIC TECHNIQUE TO MONITOR THE CURE PROCESS OF PHOTOSENSIBLE RESINS
Washington L. B. Melo;
The photoacoustic technique was used to determine the spectra in the visible region and the time constants of the cure process for photosensible resins applied in dental treatment. A simple mathematical model was developed and adjusted to the experimental results.

MOPSD-574
CARACTERIZATION OF HOT-PRESSED SIC WITH ALUMINA AND RARE EARTH OXIDES
Hwang, Míriam Kasumi;Silva, Cosme R. M.;Nono, Maria C. A.;Melo, Francisco C. L.;Gonçalvez, Diniz P.;Rocha, Rosa M.;
SiC samples with 5 wt% alumina and 5 wt% rare earth oxides addition were sintered by hot-pressing, in argon-gas atmosphere, under pressure of 20 MPa, heating rate of 20ºC/min up to 1800ºC for 1h. After sintering, the phases, morphology, hardness and fracture toughness were analysed.

MOPSD-575
MICROSTRUCTURAL ASPECTS OF AL2O3/FENICO FRACTURED JOINTS SUBMITTED TO THERMAL CYCLING
Bagnato, Osmar Roberto;Francisco, Fernanda R.;Felder, Adrian;Anglada, Marc;
The fracture aspects of alumina metallized/FeNiCo joints, submitted to thermal cycles, was verified by four-point bending tests and the microstructure observed in a SEM. The results show that the heat treatments do not affect the mechanical resistance, but microstructural changes occurred in the filler metal.

MOPSD-576
POROUS ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE MEMBRANES BY SINTERING TECHNIQUE: PREPARATION AND CHARACTERIZATION
Lira, Hélio de Lucena;Carvalho, Laura Hecker;Leal, Tânia Lúcia;
The aim of this study is to prepare several porous UHMWPE (ultra high molecular weight polyethylene) membranes, by sintering.

MOPSD-577
ZIRCONIA STABILIZATION WTHOUT DOPANTS
Régia Chacon Pessoa;Inez Valéria pagotto Yoshida;Marinalva Cerqueira Nasar;Ricardo Silveira Nasar;José Francinaldo de Oliveira;Maria José Oliveira da Silva Bezerra;Ulisandra Ribeiro de Lima;Wilson Acchar;
they were prepared three different compositions from the ZrO2/SiO2 system. The samples were calcined to 1000ºC, 1200ºC, 1300ºC and 1400ºC for 2, 4 and 6 hours, being characterized by TGA, DTA, XRD and SEM. The results showed that the stabilization of the zirconia happened without formation of solid solution.

MOPSD-578
COPPER SLAG WASTE AS A SUPPLEMENTARY CEMENTING MATERIALS FOR CONCRETE
Moura, W. A.;Gonçalves, J. P.;Leite Lima, M. B.;
This paper presents the results of concrete containing copper slag additions (relative to the mass of cement) and the determined mechanical properties. The test results indicate that the copper slag can be used as a supplementary cementing material to produce concrete.

MOPSD-579
NUMERICAL AND EXPERIMENTAL ANALYSIS OF MICROSTRUCTURE FORMATION DURING SOLIDIFICATION OF STAINLESS STEELS
Melo, Mírian de Lourdes Noronha Motta Melo;Pereira, Nilton Henrique Alves;Penhalber, Carlos Antônio de Lima;
The aim of this work is to numerically examine microstructure formation during the solidification of unidirectionally solidified stainless steels. This model permits determination of the main thermal parameters during of solidication. These results of the model were tested by comparing the results of experimental values, and reasonable correlation was found.

MOPSD-581
CARBON FIBER-REINFORCED CERAMIC MATRIX COMPOSITES WITH A POLYSILOXANE/ALUMINUM-DERIVED MATRIX
Rocha, Rosa Maria;Cairo, Carlos Alberto;Mario, L. Graça;
A ceramic matrix for carbon-fiber-reinforced ceramic matrix composites (CMC) has been developed from Polysiloxane/Aluminum mixtures. On pyrolysis, the polymer-filler mixture is converted to a ceramic matrix, consisting of aluminum nitride, alumina, silicon carbide and a silicon oxycarbide (SiOC) glass. The ceramic laminate composites were characterized by X ray diffraction (XRD), weight loss and scanning electron microscopy (SEM).

MOPSD-583
ELECTRONIC PROPERTIES OF FECL3-ADSORBED SINGLE WALL-CARBON NANOTUBES
Mendes Filho, J.;Guerini, S.;Souza Filho, A.G.;Alves, O. L.;Solange, S.;
Density functional theory is employed for investigating the electronic and structural properties of the FeCl3 interacting with both semiconducting and metallic single-wall carbon nanotubes. It was found that FeCl3 behaves as an electron acceptor. The binding energy is suggesting that the interaction is through a physisorption regime.

MOPSD-584
EFFECTS OF MIXING PROCEDURE ON CRYSTALLIZATION AND DEGRADATION OF POLY(3-HYDROXIBUTYRATE)
Demarquette, Nicole R.;dos Santos, Amilton M.;
In this work the effect of processing conditions, using an internal mixer, on the thermal stability and cristallinity of PHB was studied. The experimental results obtained showed that the cristallinity of the samples depend heavily on the processing conditions. A processing window, considering the results of thermal degradation was defined.

MOPSD-585
SYNTHESIS OF ZRO2/SIO2 SISTEM WITH THE USE OF THE PECHINI METOD
Ricardo Silveira Nasar;Marinalva Cerqueira Nasar;Maria José Oliveira da silva Bezerra;Wilson Acchar;Izangela Marculino de Andrade;Valéria Pagotto Yoshida;José Francinaldo de Oliveira;Régia Chacon Pessoa;
The ZrO2/SiO2 system was synthesized with the use of the method Pechini, stabilizing to 1000ºC in the structures tetragonal and cubic. The increase of the calcination temperature favored the non estabilized of the zirconia. The samples went by thermal treatment and they were characterized by TGA, DTA, XRD, and SEM.

MOPSD-586
CARBOTHERMAL ROUTE FOR PREPARATION OF BORON CARBIDE POWDER USING EXCESS B2O3 AND B4C SEEDS
Rocha, Rosa Maria;Kasumi Huang, Miriam;Gonçalves, Diniz;Mello, Francisco Cristovão;
This work studies the B4C powder obtained by a carbothermal reduction. The process uses excess B2O3 and addition of B4C particles, wich act as seeds during reaction. The reactions take place in a graphite furnace at a temperature of 1750ºC in argon atmosphere. Sintered samples were processed with the obtained powder and compared with a commercial one.

MOPSD-587
MECHANICAL AND THERMAL PROPERTIES OF SUBSTITUTED PVC
Vinhas, Glória Maria;Yêda, Medeiros Bastos de Almeida;Souto-Maior, Rosa Maria;
Mechanical and thermal properties and resistance to ƒ× radiation of PVC substituted with alkyl, benzyl and ethylene glycol groups have been studied. A small decrease on Tg of the substituted polymers when compared to PVC was observed. Mechanical properties did not change substantially, while the resistance to degradation by gamma rays has improved.

MOPSD-588
SPECTROSCOPY STUDY BY IMPEDANCE OF PLZT MATERIAL
Ulisandra Ribeiro de Lima;Manuella Karlla da Cruz Rodrigues;Maria José Oliveira da Silva Bezerra;Régia Chacon Pessoa;Maria Gorette Cavalcante;Marinalva Cerqueira Nasar;Ricardo Silveira Nasar;
The PbO0.91LaO0.09ZrO2(0.65)TiO2(0.35) system was synthesized by the Pechini method. The samples were calcined at 500°C, 600°C, 700°C, 750°C, 800ºC, characterized by DRX, MEV and Z (Spectroscopy by Impedance). The results showed that the crystalline phase increases with the temperature of calcination from 750°C to 800ºC/3h.

MOPSD-589
A CASE STUDY OF THE CERAMIC MATRIX SINTERING OF SEWAGE SLUDGE WHEN FIRED AT HIGH TEMPERATURES
Morais, Leandro Cardoso de;Dweck, Jo;Gonçalves, Eduardo Martins;Büchler, Pedro Maurício;Díaz, Francisco R. Valenzuela;
- This study shows a possibility of using sewage sludge after thermal treatment (at 1050C for 3h), in the production of a building material.

MOPSD-590
THE INFLUENCE OF HUMIDITY CONDITIONS ON THE SURFACE MORPHOLOGY OF CELLULOSE ACETATE FILMS
Bonzanini, Rafaelle;Costa, Carlos;Galembeck, Fernando;Gonçalves, Maria do Carmo;
The surface morphology of cellulose acetate exposed to different humidity conditions during drying have been studied by atomic force microscopy in the dynamic mode. These results demonstrated that the roughness of the cellulose acetate films surface is quite sensitive to the preparation conditions.

MOPSD-591
THERMAL ANALYSIS OF MUNICIPAL SLUDGE WASTE COMBUSTION
Morais, Leandro Cardoso;Büchler, Pedro Maurício;Dweck, Jo;Menezes, James Costa;
Barueri city municipal sludge waste solid combustion was studied by thermogravimetry and differentuial thermal analysis, to better understand the two main stages which occur during the combustion process, and to evaluate how much of the total and significant generated heat is released is during each combustion stage. Chemical analysis of the residual products after each step show that nitrogen organic compounds are burnt only from 350ºC to 550ºC, and that the organics which are released and burnt in the previous step, which begins by 150ºC, present a calorific power of about 7000kcal/kg. The nitrogen containng compounds present a lower calorific power.

MOPSD-592
SYNTHESIS OF POLYESTER COMPOSITES FOR MICROWAVE APPLICATIONS
S. C. Raghavendra and Victor Dmitriev;
Many microwave measurements require samples in the form of plates of different thickness, percentage of composites and with different shapes. To meet this requirement we are here reporting a simple method of synthesis of polyester composites in the form of plates. As an example, the composites with varying weight percentage of fly ash with respect to the weight of polyester in the mould are reported here. Also the measurement results of microwave absorption in X-band frequency range by infinite flange technique are reported.

MOPSD-594
SYNTHESIS OF ZIRCONIA STABILIZED WITH THE ADDITION OF CERIUM AND NEODYMIUM
José Francinaldo de Oliveira;Izangela Marculino de Andrade;Lidiane Alves Pimentel;Régia Chacon Pessoa;Marinalva Cerqueira Nasar;Ricardo Silveira Nasar;
The system Zr0,9Ce0,05Nd0,05O1,975 was synthesized with the use of the method Pechini. The sample was calcined at 350°, 500°, 600°, 700°, 800° and 900°C/3h, characterized by FTIR, TGA, DTA and XRD. The results showed cério addition and neodímio, took the stabilization of the zicônia in the phases tetragonal and/or cubic.

MOPSD-595
STABILIZED ZIRCONIA WITH THE CERIUM ADDITION USING THE PECHINI METOD
Régia Chacon Pessoa;José Francinaldo de Oliveira;Izangela Marculino de Andrade;Lidiane Alves Pimentel;Marinalva Cerqueira Nasar;Ricardo Silveira Nasar;
The system Zr0,9Ce0,1O2 it was synthesized by the Pechini method. The sample was calcined at 500°C, 600°C, 700°C and 800°C/3h, characterized by FTIR, TGA, DTA and XRD. The results showed that cerium addition to 10 mol%, it took the stabilization of the ziconia in the phases tetragonal and/or cubic.

MOPSD-596
STUDY OF APPLICATION OF TANNERY WASTE IN CEMENT BY NMR AND COMPRESSIVE STRENGTH ANALYSIS
Büchler, Pedro M.;Dweck, Jo;Pinto, Carolina A.;Valenzuela-Diaz, Francisco;Sansalone, John;Cartledge, Frank;
This work presents an application of tannery waste containing chromium in cement. Clays were used with adsorption property of the chromium. Samples were analyzed by NMR solid state and unconfined compressive strength analysis. The waste influences cement hydration analyzed by the silicon polymerization. Mechanical analysis presented results above 20MPa.

MOPSD-599
SYNTHESIS OF LITHIUM LANTHANUM TITANATE BY THE POLYMERIC PRECURSOR METHOD
González, Alejandra Hortencia Miranda;Simões, Alexandre;Bueno, Paulo Roberto;Varela, José Arana;Longo, E.;
The preparation of La0.50Li0.50TiO3 by the polymeric precursor method has been investigated. DRX was performed on the final products obtained by heating the precursors over a temperature range from 350 to 900°C/3 h. The thermal evolution of the precursor powder was followed by means of IR spectroscopy and Raman spectroscopy.

MOPSD-604
STUDY OF MICROPHASES PRESENTS IN HAZ OF SUPERFERRITIC STAINLESS STEEL
Silva, Cleiton Carvalho;Marcelino Neto, Moisés Alves;Guimarães, Rodrigo Freitas;Miranda, Hélio Cordeiro;Farias, Jesualdo Pereira;
In this study it was evaluated the HAZ microstructure of the AISI 444 superferritic stainless steel welded plates. The results indicated that the AISI 444 superferritic stainless steel when submited to a weld thermal cycle to cause microphase precipitation similar to the Laves phases.

MOPSD-605
EFFECTS OF MINOR COPPER CONTENDS ON CORROSION RESISTANCE OF CASTING ALUMINUM ALLOYS
Verran, Guilherme;Moraes, Ana C.;Verri, Angelo A.;Rossi, Vilmar L.;
The influence of the copper contends over the corrosion resistance in as cast samples of the 356 d A356 alloys was studied. The corrosion resistance was evaluated by use of the intergranular corrosion tests. The results indicate that even small percentage increments of copper causes significant increase of the corrosion tendency of this alloy.

MOPSD-610
MICROSTRUCTURE OF THE NIOBIUM DEFORMED BY ECAP
Bernardi, Heide;Sandim, Hugo;Verlinden, Bert;
We report on the fragmentation of the structure of a high-purity niobium single crystal deformed by equal channel angular pressing (ECAP) after one pass. Observations of the microstructure in the scanning electron microscope (SEM) reveal the presence of shear bands and deformation bands subdividing the crystal.

MOPSD-612
REINFORCE OF GLASS FIBER IN GLULAM BEAM
Fiorelli, Juliano;Dias, Antonio Alves;
This work present an experimental analysis of glulam beam reinforced with glass fiber. The results of the experimental analysis indicate an increase in stiffness of 35% and in strength of 50%. It was identify that rupture occur after a great displacement. This technique is efficient.

MOPSD-611
CONVECTIVE DRYING OF CERAMICS BRICKS WITH RECTANGULAR HOLES

Lucena, Cristiano R.;Nascimento, José Jefferson S.;Lima, Antonio Gilson B.;
This paper presents a three-dimensional numerical solution to predict mass transfer inside the ceramics bricks with two rectangular holes during drying, considering the constant thermo-physical properties and convective boundary conditions at the surface of the solid. Results of the moisture content during drying are shown and analyzed.

MOPSD-613
POLING BEHAVIOUR OF PTCA/PEEK COMPOSITES
Da Silva, Alberto Faria Gonçalves;Estevam, Pierre Giuliano;Malmonge, José Antonio;Malmonge, Luiz Francisco;Sakamoto, Walter Katsumi;
Composite materials made from Calcium modified lead titanate (PTCa) grains embedded in a polymer matrix of poly(ether-ether-ketone) (PEEK) have been produced in order to study their piezo activity. Although the coefficients is dependent on the electrical, mechanical and thermal properties of the constituents phases, the degree of poling of the ceramic grains is crucial. In this paper the poling behaviour of PTCa/PEEK composites was studied taking into account the temperature, time and electric field.

MOPSD-615
PROPYLENE-1,5-CYCLOOCTADIENE COPOLYMERS OBTAINED WITH METALLOCENE CATALYST
Narda I. J. Soto;Marques, Maria de Fátima V.;
Propylene/1,5-cyclooctadiene copolymerizations were performed using SiMe2(2-Me-Ind)2ZrCl2 at different temperatures (Tp) and comonomer concentrations. On the contrary of ethylene, these reactions showed that the increase of the amount of 1,5-cyclooctadiene caused a sharp decrease in the catalyst activity. Moreover, lower melting temperatures were observed at higher Tps, indicating higher comonomer incorporation.

MOPSD-617
EFFECTS OF HEAT TREATMENT AND TIO2 ADDITION OF THE Ã-AL2O3 STRUCTURE
Hewerton Pablo da Fonseca Feitosa, Maria Rita Cássia Santos, Iêda Maria Garcia Santos, Luiz Edmundo Bastos Soledade, Severino Jackson de Lima, Antonio Gouveia de Souza, Elson Longo
Abstract Não Preenchido

MOPSD-618
ORIENTATION EFFECTS DURING COLD ROLLING OF COARSE-GRAINED TITANIUM
Sandim, Hugo;Hayama, Alexandra;
We report on the inhomogeneous microstructure of coarse-grained titanium deformed by cold rolling (8 to 40%). Orientation effects were observed concerning the deformation mode exhibited by individual grains (twinning and dislocation slip). Microstructural characterization was performed using light optical (LOM) and scanning electron microscopy (SEM) and electron backscattered diffraction (EBSD).

MOPSD-619
SEM CHARACTERIZATION OF THE CORROSION PRODUCTS ON HAZ OF STAINLESS STEEL CAUSED BY BRAZILIAN HEAVY PETROLEUM FROM ESPIRITO SANTO BASIN.
Silva, Cleiton Carvalho;Machado, João Paulo Sampaio Eufrásio;Sant'Ana, Hosiberto Batista;Farias, Jesualdo Pereira;
In this work was evaluated the corrosion products formed on AISI 444 steel surface caused by Brazilian heavy petroleum. The results indicated that for 200°C the corrosion products is exclusively iron oxide and to 300 and 400°C it was observed a predominance of iron oxides, but with presence of sulfide iron.

MOPSD-620
INFLUENCE OF THE CONCRETE QUALITY IN THE COLUMNS FAILURE
Silva, Jefferson Lins da Silva;Aoki, Nelson;
The paper presents a case of safety and failure probability verification of a column. Considering the variability of the concrete and the applied normal load. It was concluded that one column, with the same design fck and equal safety factors could present different failure probabilities depending on the concrete quality.

MOPSD-622
PREPARATION AND CHARACTERIZATION OF BA(TI1-XZRX)O3
F.M. Filho; A.Z. Simões;M.A. Zaghete;B.D. Stojanovic;L. Perazolli;E. Longo;J.A. Varela;
The Ba(Ti1-xZrx)O3 solid solution has attracted much attention due to its dielectric properties with possible practical applications in capacitors. Crystal structure studies have revealed that the substitution of Ti by Zr changes the structure from the orthorhombic to the rhombohedral system, thereby reducing the Curie point.

MOPSD-623
COMPUTATIONAL ANALYSIS OF FRACTURE SURFACES OF POLYMER MATRIX COMPOSITE MATERIAL
Lobo, R. M.; Andrade, A. H. P.; Hein, L. R. O.;Marinucci, G
The comparison between two methods of 3-D reconstruction of fracture surfaces is carried through between samples CFRP composite material. The analysis is done using the technique of parallax in SEM and the stack of images with changing focus in Optic Microscopy for specimens with different characteristics of fabrication processing

MOPSD-624
EXPERIMENTAL DESIGN APPLIED TO CERAMIC COMPOSITIONS BASED ON NATURAL RAW MATERIAL
Albuquerque, Francisco R;Lima, Severino JG;Martinelli, Antonio E;Santos, Ieda MG;Cassia Santos, Maria R;Souza, Antonio G;
Centroid simplex planning was used in the study of ceramic compositions based on natural raw materials (feldspar, kaolin and quartz), from "Pegmatito do Seridó" RN/PB (kindly granted by Armil Mineração). Raw materials were characterized by XRD, XRF, AAS, DTA and TG, before and after thermal treatment at 1100-1200ºC for 1-2h.

MOPSD-625
RECYCLING OF RESIDUE FROM GRANITE INDUSTRY TO CERAMIC TILE
Ramalho, Melina Almeida Felipe;Almeida, Rossana Ramos;Freitas, Felipe Farias;Santana, Lisiane Navarro Lima;Lira, Helio Lucena;Neves, Gelmires Araújo;

The aim of this work is to study the incorporation of granite residue in the ceramic tile. The specimens were processing by uniaxially press with 20MPa of pressure and fired at 1100oC, 1120oC and 1150oC. The results show the values are in accordance with the norm NBR 13818.

MOPSD-626
EVALUATION OF THE CORROSION PRODUCTS IN STAINLESS STEEL CAUSED BY VENEZUELAN HEAVY CRUDE OIL.
Silva, Cleiton Carvalho;Farias, Jesualdo Pereira;Machado, João Paulo Sampaio Eufrásio;Sant'Ana, Hosiberto Batista;
In this work, the corrosion of the AISI 444 ferritic stainless steel caused by Venezuelan heavy crude oil was evaluated. The results indicated that the welding process caused HAZ corrosion. The corrosion observed was characterized as iron sulfide, indicating that the corrosion was caused by substances rich in sulfur, mainly hydrogen sulfide (H2S).

MOPSD-627
OPTIMIZED MECHANICAL BEHAVIOUR OF A NICKEL BASED SUPERALLOY 59 DEVELOPING NANO AND MICOSCALE PRECIPITATE PRODUCTS
Nicoçetti, Erica;Solorzano, Guillermo;
Alloy 59 exposed to high temperature effects can result, depending on the prevailing thermal conditions, in the precipitation of second phases, thus profoundly affecting the alloy properties. TEM observations and experimental mechanical tests conducted in this investigation have corroborated the effect of nano and micro-scale precipitates on the mechanical properties.

MOPSD-630
MECHANICAL PROPERTIES OF PLASMA NITRIDED AUSTENITIC STAINLESS STEEL AND SUBMITTED TO CATHODIC HYDROGENATION
C. M. Lepienski;N. K. Kuromoto;C. E. Foerster;P. C. Soares;C. A. Silva;D. F. Sanchez;J. F. P. Souza;F. C. Serbena;A. C. Zaika;
Samples of AISI 304 austenitic stainlees steel were plasma nitrided at different temperatures and submitted to cathodic hydrogenation. Hardness and elastic modulus were obtained by nanoindentation technique by using the Oliver and Pharr method. X-Ray diffraction was performed to identify the phases produced by plasma nitriding and hydrogenation.

MOPSD-631
OPTICAL AND LUMINESCENT PROPERTIES OF EU3+ DOPED BARIUM MOLYBDATE
Ieda L. V. Rosa, Ana Paula A. Marques, Marcos T. S. Tanaka, Marco A. S. Farias, Dulce M. A. de Melo, Edson R. Leite and Elson Longo.
The structural property of the $Ba_{0.99}Eu_{0.01}MoO_4$ above up 400 °C was identified as crystalline $BaMoO_4$ scheelite-type characterized by X-ray diffraction. The emission spectrum of this material presented the characteristic emission of the $^5D_0 \rightarrow {}^7F_J$ (J=0, 1, 2 and 3) Eu^{3+} transitions. The lifetime of the $^5D_0 \rightarrow {}^7F_2$ transition was evaluated

MOPSD-632
COMPARATIVE EVALUATION OF THE GRAIN GROWTH IN AISI 444 HAZ WELDED AWS E309MOL-16 AND AWS E316L-17 AUSTENITIC ELECTRODES
Rodrigo;Carvalho, Cleiton;Oliveira, George;Neto, Moisés;Farias, Jesualdo;Miranda, Hélio;
In this work it was evaluated the AISI 444 steel HAZ welded with AWS E316L-17 and AWS E309MoL-16 austenitic electrodes employing three welding energy levels. The results indicate that the increase of the welding energy resulted in the increase of the grains in the HAZ

MOPSD-633
COMPARATIVE EVALUATION OF AISI 444 AND AISI 316L STAINLESS STEELS LININGS FOR APPLICATION IN OIL DISTILLATION TOWERS
Guimarães, Rodrigo;Silva, Cleiton;Oliveira, George;Torres, Airton;Farias, Jesualdo;Miranda, Helio;
The application of the AISI 444 ferritic stainless steel for recover of distillation tower was studied. The cracks after thermal fatigue and oil treatment in the AISI 316L and AISI444 steel were not verified.
The AISI 444 ferritic stainless steel is more resistant to the corrosion than AISI316L austenitic stainless steel

MOPSD-635
DIELECTRIC PROPERTIES OF COAL FLY ASHES CERAMICS
Martins,J. L.;Santos,R. P.;Gadelha, C. A. A.;Fechine,P.B.A.;Freire,V. N.;Oliveira, T. M.;Bezerra,G. A.;Cavada, B. S.;
We performed dielectric measurements in ceramics prepared with coal fly ashes from Presidente Médici Power Plant, in Candiota,

Brazil. The results obtained showed low values for the relative dielectric constant (k´) and loss factor (k") and the existence of relaxation frequencies around of 100 Hz and above 40 MHz

MOPSD-636
START-UP OF THE IPEN-CNEN/SP PSD NEUTRON DIFFRACTOMETER
Parente, Carlos Benedico Ramos;Mazzocchi, Vera Lucia;Mestinik-Filho, José;Mascarenhas, Yvonne Primerano;
In this work, the procedures to put into operation the IPEN-CNEN/SP PSD neutron diffractometer are described. This includes the installation of a focusing Si monochromator, a rotating oscillating collimator and the PSD itself with its associated electronics. Checks on the installed parts as well as calibration of the system are also described.

MOPSD-638
ETCHING OF DIAMONMOPSD-LIKE CARBON (DLC) FILMS AT ATMOSPHERIC PRESSURE
Choyu Otani;Kornely Grigorov;Homero S. Maciel;Wilfredo I. Urruchi;Marcos Massi;Jossano S. Marcuzzo;G. Petraconi;
In this work DLC films were etched at sub atmospheric pressure. These etching processes were done by using a dielectric barrier discharge (DBD) in oxygen. The discharge was created with high voltage signal (12kV – 500Hz) and can produce etching rate about 60nm/min at 4W electric power.

MOPSD-640
SRSNO3 – SYNTHESIS BY POLYMER PRECURSORS METHOD
Marcelo R. Nascimento, Lydianne C. O. Miranda, Maria Rita C. dos Santos, Carlos D. Pinheiro, Iêda M. G. dos Santos, Severino Jackson G. de Lima , Elson Longo, Antônio G. Souza
SrSnO3 was synthesized by the polymers precursors method. The decomposition of the precursor dust was investigated by thermal analysis (TG/DTA). After thermal treatment the gotten material was characterized by X rays diffraction (DRX) and infrared spectroscopy (FTIR), beyond a quantum theoretical study.

MOPSD-641
SYNTHESIS OF SR1-XNIXSNO3 BY THE POLYMER PRECURSOR METHOD
Marcelo R. Nascimento, Lydianne C. O. Miranda, Maria Rita C. dos Santos, Carlos D. Pinheiro, Iêda M. G. dos Santos, Severino Jackson G. de Lima, Elson Longo, Antônio G. Souza
Sr1-XNiXSnO3 was synthesized by the polymer precursors method. The decomposition of the precursor dust was investigated by thermal analysis (TG/DTA). After thermal treatment the gotten material was characterized by X rays diffraction (DRX) and infrared spectroscopy (FTIR).

MOPSD-643
DEPOSITION OF SILICON OXYNITRIDE BY INDUCTIVELY COUPLED PLASMA – CVD
Zambom, Luís da Silva;
Oxynitride thin films were deposited at room temperature at relatively high deposition rates in an LPCVD furnace, transformed into an ICPCVD reactor. Their refractive indexes and FTIR spectra indicate that for processes with low N2O gas concentrations, when mixed together with N2 and SiH4, nitrogen was incorporated in the film.

MOPSD-644
STUDY OF CASTOR OIL POLYURETHANE ADHESIVE USING CCA TREATED GLULAM IN BRAZIL
Dias, Antonio Alves;Azambuja, Maximiliano dos Anjos;
This work evaluated the efficiency of an alternative castor oil polyurethane adhesive to be applied in Glulam, in wood with waterborne preservative treatment of chromated copper arsenate and without waterborne preservative treatment. The results prove its efficiency in treated wood.

MOPSD-645
DEVELOPMENT OF A MACHINE FOR CYCLICAL FATIGUE TESTING OF INSTRUMENTS OF ROTATING NITI USED IN ENDODONTIC
AZEVEDO, Patricia Queiroz Orrico de;EDI, Helton;MORENO, João;SALINAS, Héctor L.;ALVES JR., Clodomiro;
In this work a new system is presented for mechanical testing for analysis of friction, fatigue and fracture, based on the motor electric power dissipation, when instruments of NiTi rotate in a endodontic engine. Two different endodontic instruments types were tested by cyclical fatigue to the fracture on the metallic plan of 15 degree of inclination.

MOPSD-646
CONTROLLED OXIDATION OF IRON METAL SURFACE: THE EFFECT ON THE FENTON CHEMISTRY
Ardisson, José;Albuquerque, Adriana;Maura, Flávia;Pereira, Ronaldo;Araujo, Maria Helena;Lago, Rochel;Macedo, Waldemar;
The Mössbauer spectroscopy to study the influence of oxidation the catalytic activity of Fe particles for (i) the H2O2 decomposition and (ii) the oxidation of an organic model molecule with H2O2. It is shown that the controlled oxidation of iron particle surfaces strongly increases the activity for both processes.

MOPSD-647
THERMOGRAVIMETRIC ANALYSIS COUPLED WITH FT-IR SPECTROSCOPY OF BOTH LATEX AND NATURAL RUBBER FILM
Eloizo Job, Aldo;Lincon da Silva, Agostini;Leopoldo Constantino, Carlos José;Simoes Delatore, Rebeca;Alves, Neri;
Abstract Não Preenchido

Symposium E - Advances in Photonics Materials and applications

MOPSE-503
UREA HYDROGEN PEROXIDE BIOSENSOR BASED ON LUMINESCENCE OF EUROPIUM IN EUROPIUM-TETRACYCLINE COMPLEX
Courrol, Lilia;Silva, Flávia R. Oliveira;Mansano, Ronaldo;
A significant increase in the luminescence of lanthanides, particularly, in Europium (III) tetracycline complexes was observed in the presence of urea hydrogen peroxide. Urea hydrogen peroxide (UHP), or carbamide peroxide in its obsolete name, is a stable form of H2O2 and a potential cytotoxic agent . In this paper we report the observation of the europium fluorescence intensity is increased when urea hydrogen peroxide is added to the tetracyclinMoPSE-europium aqueous solution. This effect can be used to determine urea hydrogen peroxide levels .

MOPSE-505
OPTICAL PROPERTIES OF TUNGSTATE FLUOROPHOSPHATE GLASSES
Nalin Marcelo;Messaddeq Younes;Ribeiro Sidney;
Tunsgstate fluorophosphate glasses were studied in the NaPO3-BaF2-WO3 system. Special oxidizing agents must be used for the most WO3 concentrated samples in order to obtain large vitreous samples with good optical quality. Structural variations of the vitreous network were studied in function of the composition and are related with several specific optical properties such as non linear optical absorption and photosensitivity under visible laser exposure.

MOPSE-506
PHOTOLUMINESCENCE IN DISORDERED PBWO4 THIN FILMS PREPARED BY CHEMICAL SOLUTION METHOD
Longo, V. M;Simões, L. G. P.;Santos, M. A.;Ohan, E.;Sambrano, J. R.;Maurera, M. A. M. A.;Pizani, P. S.;Varela, J. A.;Longo, E.;Varela, J. A.;Longo,
E.;
A joint experimental and theoretical study has been caried out to rationalize the photoluminescence properties of disordered PbWO4. The polarization induced by the symetry break and the existence of localized levels favors the creation of trapped holes and electrons, giving origin to the room temperature photoluminescence phenomenon in the PbWO4.

MOPSE-507
RESONANT FREQUENCY OF TRIANGULAR MICROSTRIP ANTENNA WITH PHOTONIC MATERIAL
HUMBERTO FERNANDES;
The antenna is analyzed using the Transverse Transmission Line method (TTL) in combination with the Moment method considering a step by step discretization. The PBG (Photonic Band Gap) material is utilized as substrate to impede the propagation in microwave frequencies. Numerical results of the resonant frequency are shown.

MOPSE-509
APPLICATIONS OF PHOTONIC SUBSTRATE AT MILLIMETER WAVE FREQUENCIES
The Photonic Band Gap material is used for unilateral and bilateral finlines at millimeter-wave band. To analyze its efficiency, the dispersion characteristics were calculated using the full-wave Transversal Transmission Line method to analyze the behavior of the photonic crystal. The efficient results of this finlines are presented.

MOPSE-512
HEXAGONAL PHOTONIC CRYSTALS WITH ELLIPTICAL HOLES
Quiñónez, F.;Menezes, J. W.;Rodriguez-Esquerre, V. F.;Cescato, L.;Mansano, R.;
Two-dimensional hexagonal photonic crystals slabs were designed and fabricated by holographic lithography. This fabrication process results in elliptical air holes instead of cylinders that breakdown the symmetry. The new geometry was taking into account in the design resulting in a decrease of PBG region in the Gap map.

MOPSE-514
INFLUENCE OF GRADED INTERFACES ON THE EXCITON ENERGY OF TYPMOPSE-I AND TYPMOPSE-II SI/SI(1-X)GE(X) QUANTUM WIRES
Chaves, A.;Costa e Silva, J.;Freire, J. A. K.;Degani, M. H.;Farias, G. A;
We calculate the binding energies in typMoPSE-I and typMoPSE-II semiconductor quantum

wires, taking into account the interface fluctuations between the materials. The numerical results show that the graded interfaces may lead up to a 15% difference in the binding energy for thin wires.

MOPSE-518
SURFACMOPSE-RELIEF GRATINGS AND PHOTOINDUCED BIREFRINGENCE IN LAYER-BY-LAYER FILMS OF DENDRIMER WITH AZOPOLYMER
Marcos Roberto Cardoso;David Sotero dos Santos Jr.; Fabio de Lima Leite; Luiz Henrique Capparelli Mattoso;Osvaldo N. de Oliveira Jr;Cleber R. Mendonça;
Layer-by-layer films of different generation DAB dendrimers with an azopolymer PS-119 have been employed for photoinduced birefringence and fabrication of surface relief gratings. Such optical processes were influenced by the insertion of dendrimer shells with very similar structure (with different size) alternated with an azopolymer PS119.

MOPSE-519
DESIGN AND FABRICATION OF 2D PHOTONIC CRYSTAL WAVEGUIDES
Menezes, J. W.;Cescato, L.;Quiñónez, F.;Rodriguez-Esquerre, V. F.;
Photonic Crystal Waveguides were designed using a software based in 2D Finite Element Method, accounting to the experimental feasibility conditions of fabrication. The waveguides were fabricated using the association of the technique of holographic lithography and conventional optical lithography.

MOPSE-521
XRD AND SEM CHARACTERIZATION OF EUROPIUM-DOPED ZINC ALUMINATE
Gama, Lucianna;Barros, Braúlio;Melo, Pollyana;Costa, Ana Cristina;Kiminami, Ruth;Sá, F.;Alves-Jr, Severino;
ZnAl2O4:Eu was prepared by combustion reaction using urea as fuel. The samples were characterized by XRD and SEM. The results confirmed the formation of the spinel phase and a small amount of EuAlO4. SEM results revealed agglomerates of irregularly shaped of nanoparticles with points of second phase at the surface.

MOPSE-522
LIGHT EMITTER DEVICES BASED ON POROUS SILICON HAVING FTO AS TRANSPARENT ELETRODE.
Valaski, Rogério;Macedo, Andréia G.;Vasconcelos, Elder;Silva, Eronides F. da;Silva, Antonio F. da;Roman, Lucimara S.;
In this work we have shown the construction of the light emitter device (LED) using Porous Silicon(1) (PS) as active layer. This material presents red/orange luminescence and requires a transparente electrode to exit the light emission. We make use of eletrode Fluorine doped Tin Oxide (FTO) conductor and transparent material.

MOPSE-523
LUMINESCENT COMPOUNDS PREPARED BY REDUCTION OF RE3+ (RE = EU, SM) IN SRB4O7 BY PECHINI, COMBUSTION AND CERAMIC METHODS
Brito, Hermi F;Stefani, Roberval;Felinto, Maria CFC;Teotônio, Ercules ES;Maia, Alessandra DS;Monteiro, Maria AAF;
This work reports the preparation of the RE2+ (RE = Eu, Sm) doped SrB4O7 matrix by the Ceramic, Pechini and Combustion methods. The reduction of RE3+ to RE2+ in air is observed with some different features according to each preparation. The photoluminescent properties of these systems were studied based on the broad band d-f emissions of Eu2+ (4f65d-4f7) and 4f6-intraconfigurational transitions of the Sm2+ ion (5Do-7FJ) from the spectral data recorded at 298 and 77 K. The emission quantum efficiency of the RE2+ ions in these systems is also discussed.

MOPSE-524
PHOTOLUMINESCENT PROPERTIES AND STRUCTURAL ORDER-DISORDER IN CA0.95SM0.05TIO3
Longo, E;de Lazaro, S. R.;de Figueiredo, A. T.;Varela, J. A.;
Nature of intense visible photoluminescence at room temperature and its application for understand order-disorder in Ca0.95Sm0.05TiO3 (CST5) is discussed in the light of experimental results (raman, X ray and PL) and theoretical calculations (DOS, band dispersion and charge densities). The CST5 powder was synthesized by the polymeric precursor method.

MOPSE-527
FDTD SIMULATION OF A PULSE PROPAGATION IN 1D PERIODIC MAGNETIC STRUCTURES WITH "FROZEN MODES"
Dmitriev, Victor;Alcantara, Licinius;Raghavendra, S. C.;
Using FDTD method, we investigate theoretically the electromagnetic pulse propagation in 1D magnetic photonic crystals with frozen modes. FDTD simulation shows how the pulse changes its shape in spacMoPSE-time coordinates. We discuss also some methods of stretching the frozen mode effect in a frequency region.

MOPSE-529
RIETVELD QUANTITATIVE PHASE ANALYSIS OF ND-, TB- AND TM-DOPED BAYF
Baldochi, Sonia Licia;Valério, Mário Ernesto Giroldo Valério;Mazzocchi, Vera Lucia;Parente, Carlos Benedicto Ramos;
In this work, a Rietveld quantitative phase analysis of Nd-, Tb- and Tm-doped BaY2F8 (BaYF) is made in order to study the synthesis and growth of single crystals of these materials

MOPSE-530
SPECTROSCOPIC PROPERTIES OF SM3+ DOPED IN Y2O3 OBTAINED VIA PECHINI AND COMBUSTION METHODS
Kodaira, Cláudia A.;Brito, Hermi F.;Felinto, Maria Cláudia F.C.;
Yttrium doped with samarium (III) ion was prepared using Pechini and combustion methods with glycine as fuel. Dopant concentration varied from 0.2 to 5 mol % with respect to Y3+ ion. Y2O3:Sm3+ phosphor was characterized by X-ray diffraction, thermal analysis and infrared spectroscopy. Photoluminescent study of this system showed the characteristic emissions arising from 4G5/2→6HJ transitions (J=5/2, 7/2, 9/2 and 11/2) and the luminescence decay curves suggest a bi-exponential behavior.

MOPSE-531
STRUCTURAL TRANSFORMATIONS OF AMORPHOUS SRWO4 POWDERS
J.W. M. Espinosa , V.C. Albarici, S. L. Porto, M.R. C. Santos, I.M. G. Santos, A.G. Souza, E. R. Leite, E. Longo
In this work an experimental study of $SrWO_4$ (SW) powders structural transformations, synthesized by the polymeric precursor method, was made. Using Rietveld method tetragonal structure having a =b= 5.4168(1) Å and c = 11.9722(2) Å lattice parameters was calculated. The results obtained were related to the order-disorder transformations

MOPSE-532
GROWTH AND CHARACTERIZATION OF LIYF4:RE (RE= ER OR ND) SINGLMOPSE-CRYSTALLINE FIBERS FOR OPTICAL APPLICATIONS
Santo, Ana Maria do Espírito;Librantz, Andre Felipe H.;Gomes, Laércio;Ranieri, Izilda Márcia;Vieira Jr., Nilson Dias;Baldochi, Sonia Licia;Pizani, Paulo
Sergio;
The micro-pulling-down technique has been used to study the growth process of Er- and Nd- doped LiYF4 singlMoPSE-crystalline fibers. The dopant distribution and optical properties of the fibers were compared to those of bulk crystals aiming to determine the potential of such fibers for application on compact lasers systems.

Symposium F - Magnetic Materials: Preparation, Characterization and Applications

MOPSF-506
ELECTRICAL PROPERTIES OF FERRITES MGGA2-XFEXO4
da Silva, Manoel Rribeiro;Soares, Demetrio Artur Werner;Ribeiro, Vander A. Santos;Machado, W. S.;Neto, Julio Maria;
The spinel ferrites ceramics present important characteristics of electric conduction and magnetic properties. The materials have chemical formula given by MgGa2-xFexO4 , with the iron concentration given by 0,002  x  0,350. Electrical conductivity measurements shown a semiconductor behavior for samples with x  0,020.

MOPSF-509
RELATO CLÍNICO DE UMA ALTERNATIVA MECÂNICA COM EMPREGO DE FORÇAS MAGNÉTICAS PARA A DESIMPACTAÇÃO DENTÁRIA.
sobrinho,i.s; mohallem,n.d.s; meira-bello,l.c; lana, l.b.s
Abstract not available

MOPSF-510
METHOD FOR ANALYZING SECOND-ORDER PHASE TRANSITIONS: APPLICATION TO THE FERROMAGNETIC TRANSITION OF A POLARONIC SYSTEM
Souza, JA;Jardim, RF;Neumeier, JJ;Terashita, H;Yu, Yi-Kuo;
A new method for analyzing second-order phase transitions is presented and applied to the polaronic system La0.7Ca0.3MnO3. It utilizes heat capacity and thermal expansion data simultaneously to correctly predict the critical temperature's pressure dependence. Analysis of the critical phenomena reveals second-order behavior and an unusually large heat capacity exponent.

MOPSF-511
MAGNETIC BEHAVIOR OF NANOMETRIC STRIPES GROWING USING OPTICAL INTERFERENCE LITHOGRAPHY
de Araujo, A E P;Rosa, W O;Duque, J G S;Gobbi A L;Cescato, L;Knobel, M;
In this work magnetic stripes grown using optical interference lithography on a quartz substrate were studied. The stripes have 400 nm. The magnetic measurements show that the shape anisotropy and the dipolar interaction between the stripes play an important role on the magnetic behavior of the samples.

MOPSF-512
MICROWAVE ABSORPTION PROPERTIES OF POLYESTER BASED COMPOSITES
S. C. Raghavendra, Victor Dmitriev and;P. M. Hadalgi;

The microwave absorption properties (RCS measurement results) of polyester based composites are reported here. The fabricated polyester composites consist of fly ash, lithium ferrite, barium titanate and polyaniline in different combinations to form the mould of dimensions 2 mm x 300 mm x 300 mm. The absorption of about 50 percent is obtained for certain material combinations.

MOPSF-519
INFLUENCE OF THE ADDITION OF SAMARIUM ON THE MAGNETIC PROPERTIES OF NI-ZN POWDERS OBTAINED BY COMBUSTION REACTION
Diniz, Ana paula;Costa, Ana Cristina;Kiminami, Ruth;Gama, Lucianna;Cornejo, Daniel;Resende, Sérgio;
Ni-Zn-Sm ferrite powders were prepared by combustion reaction and subjected to thermal treatment at 500ºC/8h at heating rate of 5ºC/min. An evaluation of the material's magnetic properties, such as saturation magnetization, remanent magnetization and coercive force, revealed that the addition of samarium caused a reduction of all the magnetic parameters.

MOPSF-520
EFFECT OF FREQUENCY ON THE ENERGY LOSSES OF 0.5%SI AND 1.5%SI STEELS
Landgraf, Fernando;Achete, Carlos Alberto;Yonamine, Taeko;Fukuhara, Marcos;de Campos, Marcos Flavio;Missell, Frank Patrick;
The effect of different skin-pass on the losses were compared in two alloys, with 0.5 and 1.5% Si. The results confirm that the optimum grain size for minimizing the energy losses decreases when electrical resistivity decreases or frequency increases.

MOPSF-521
EFFECT OF HOT BAND ANNEALING IN A HIGH MN NON-ORIENTED ELECTRICAL STEEL
Achete, Carlos Alberto;Volgien, Verner;Oliveira, Augusto Cesar Lacerda;Zwirman, Nilza;Rios, Paulo Rangel;de Campos, Marcos Flavio;Yonamine, Taeko;
The hot band annealing was applied for a high Manganese electrical steel. It was observed that longer time for hot band annealing favors an increase of the {110} texture component, with a decrease of the {111} component.

MOPSF-522
ANALYZING IRON LOSSES IN ELECTRICAL STEELS WITH DIFFERENT GRAIN SIZES UNDER SINUSOIDAL, SQUARE AND TWO-LEVEL PWM VOLTAGE WAVEFORMS
de Campos, Marcos Flavio;Batistela, Nelson Jhoe;Sadowski, Nelson;Simão, Claudenei;Landgraf, Fernando;
Square and two-level PWM magnetic induction waveforms are investigated and its effects on electrical steels losses as a function of grain size is determined. The increase of hysteresis losses –as compared to that resulting from sinusoidal voltages - occurs only for two-level PWM waveforms.

MOPSF-523
NANO AND MICRO-SCALE PRECIPICITATION OF CO MAGNETIC PARTICLES IN DILUTED CU-CO ALLOYS
A.L.Rocha and I.G.Solórzano
The precipitation of nano and micro-scale Co particles in diluted Cu-Co alloy was studied by means of transmission electron microscopy. From the experimental findings, it appears that homogeneous coherent precipitation takes place under all aging conditions and that nano-scale discontinuous precipitation is the dominant type of heterogeneous decomposition in diluted Co-containing in this system.

MOPSF-525
MAGNETIC PROPERTIES OF MNAS MODIFIED BY ADDITION OF IRON.
de Campos A.;Gama S.;Coelho A.A.;dos Santos A.O.;Cardoso L. P.;Persiano, A.;
The addition of iron to MnAs changes its crystallographic structure from hexagonal to orthorhombic. The magnetocaloric effect increase with the addition of iron.

MOPSF-526
EPR STUDY AND X-RAY FLUORESCENCE OF IRON-ENTITIES, ELIMINATION KINETICS AND DISTRIBUTION OF BIOCOMPATIBLE FERROFLUIDS BASED ON FE3O4 NANOPARTICLES COATED WITH DEXTRAN INJECTED IN RATS
Gamarra L.F.;Vieira Ernanni D.; Carneiro S.M.;Amaro Jr. E;Pontuschka W. M;Brito G.E.S.;Costa-Filho, A.J.;Falleiros A.M.F.;Juliane L.C.;Mamani J.B.;Salvador V.L.;Faccione M.;Pinto J.P.;
Iron-entities, elimination kinetics and distribution of ferrofluids in liver and blood samples of rats, supplied by intravenous injection, are investigated by means of EPR and X-ray fluorescence techniques. HalMoPSF-life of about 8 min of the pharmacon persistence in the blood was determined and the peak of its maximum concentration was attained at 90min after administration.

MOPSF-527
FMR MEASUREMENTS IN NI AND PERMALLOY SUB-MICROMETRIC PATTERNED STRIPES
Rosa W. O.;Nunes W. C.;de Araújo A. E. P.;Duque J. G. S.;Cescato L.;Gobbi A.;Zysler R. D.;Knobel M.;Socolovsky L. M.;
Ferromagnetic resonance (FMR) measurements were performed in sub-micrometric magnetic structures of Ni and Permalloy (Ni80Fe20). The samples were produced using interferometric lithographic technique combined with sputtering deposition. Ferromagnetic resonance was used to investigate the in-plane anisotropy and possible dipolar interactions among magnetic stripes. The results show that the easy axis is along the axial direction of stripes, as expected, but anisotropy fields are smaller than the ones predicted in the literature. This result is discussed in terms of dipolar interactions among the stripes, sample oxidation and non-uniformities.

MOPSF-528
FLUX GROWTH SYNTHESIS AND MAGNETIC CHARACTERIZATION OF THE NEW SERIES OF RARE EARTH INTERMETALLIC COMPOUND: 3CO4SN13
Bittar, E. M.;Mendonça Ferreira, L.;Pires, M. A.;Urbano, R. R.;Duque, J. S. G.;Agüero, O.;Torriani, I.;Rettori, C.;Granado, E.;Pagliuso, P. G.;Caytuero, A.;Chagas, E. F.; Baggio-Saitovich, E.;Rapp, R. E.;Gratens, X.;Oliveira Jr., N. F.;
We have synthesized the series of single crystalline intermetallic materials of R3Co4Sn13 and using a Sn-flux method. They crystallize in a cubic Yb3Rh4Sn13 type structure (Pm-3n), which has 40 atoms per unit cell. We report the low temperature physical proprieties of these series of compounds, compared with the properties of other isomorphos compounds.

MOPSF-530
NANOCRYSTALS OF BAFE12O19 BY PROTEIC SOL-GEL PROCESS
Santos Fortes, Saulo;Gerivaldo S. Duque, José;Andrade Macêdo, Marcelo;
Since it was discovered in 1951, the BaFe12O19 has been intensevely studied and some methods of synthesis have been developed. The BaFe12O19 powder was prepared through proteic sol-gel blending Fe(NO3)2.9H2O and Ba(NO3)2 in coconut water. The efficiency of the method was proven through analyses of XRD and VSM.

Symposium G - Superconductor Materials

MOPSG-501
SCALE AND SURFACE EFFECTS ON MOVING VORTICES IN SUPERCONDUCTING STRIPES
J. D. Reis(1); P. A. Venegas(2), D. F. Mello(2);G. G. Cabrera(1);
We perform numerical simulations of the vortex dynamics for superconducting strips of finite width, of the order of the penetration depth, and a random distribution of pinning centers. The dynamics is solved for different sizes of the sample, but with the same density of vortices and pinning centers.

MOPSG-502
DIFFERENTIAL RESISTIVITY AND VORTEX VELOCITY IN SUPERCONDUCTING STRIPES WITH PERIODIC PINNING
J. D. Reis(1);P. A. Venegas(2), D. F. Mello(2);G. G. Cabrera(1);
Using Molecular Dynamics, we study the collective motion of vortex lattices in thin type-II superconducting stripes with periodic pinning. We calculate the vortices trajectories, the differential resistivity and compare our results with the random pinning case.

MOPSG-503
INFLUENCE OF THE GRANULARITY ON THE TRANSVERSE VOLTAGE IN HIGH-TC SUPERCONDUCTORS
Antonio Jefferson da Silva Machado;Ausdinir Danilo Bortolozo;Carlos Alberto Moreira dos Santos;Mário Sérgio da Luz;
We report the influence of the granularity on the transverse voltage in high-Tc superconductors. It is observed two peaks in the VXY in the vicinity of superconducting transition which can be related to the intragranular and intergranular transitions and explained within the framework of the motion of Josephson/Abrikosov vortex.

MOPSG-504
INFLUENCE OF THE PEROVSKITE PHASE OF Y0.5TA 0.5BAO3 STOICHIOMETRIC ON THE TEXTURED YBA2CU3O7-D
Bortolozo, Ausdinir Danilo;Oliveira, Célio J. V.;dos Santos, Carlos A. M.;Machado, Antonio Jefferson S.;
In this work we are showing a systematic study of the influence of mixture Y0.5Ta0.5BaO3 (YBaTa) perovskite phase on the texturing YBa2Cu3O7- (Y123) phase. The results show a decrease in peritectic line as the YBaTa content increasing. Finally, it is evidenced that this phase can act as an excellent pinning center.

MOPSG-505
COUPLING PHENOMENA AND VORTEX TRANSITIONS IN SUPERCONDUCTING NI/NB MULTILAYERS
Siqueira, Ezequiel Costa;de Lima, Oscar Ferreira;
We measured the critical temperature Tc and critical field Hc2 of Ni/Nb multilayered films prepared by magnetron sputtering. The HxT diagram, for the applied field perpendicular and parallel to the film surface, shows a 3D-2D dimensional crossover and a decoupling transition of the Abrikosov vortex lattice.

MOPSG-507
ON THE SUPERCONDUCTIVITY IN THE BAPB1-XBIXO3+ƒÔ SYSTEM
A. D. A. Coelho;C. A. M. dos Santos;M. S. da Luz;H. J. Izario Filho;A. J. S. Machado;
It is reported electrical resistivity as a function of the temperature, ρ(T), and X-ray powder diffractometry performed in polycrystalline samples of the BaPb1-xBixO3+ system. R(T) measurements carried out in single phase samples show metal-like behavior, superconducting state and insulating regime.

MOPSG-509
TEXTURING AND TRANSPORT PROPERTIES OF AG/BI2212 MONOFILAMENTARY SUPERCONDUCTING TAPES
Cursino, Eliana;Rodrigues Jr., Durval;
Superconducting oxides of Bi2Sr2CaCu2O8+x (Bi2212) need texturing heat treatments to improve the critical current densities. In this work we show results on the development and characterization of highly textured Ag/Bi2212 superconducting tapes with the doping of 0, 10 and 20wt.% Ag in the superconducting phase.

MOPSG-512
SN DOPING EFFECTS IN THE UNCONVENTIONAL SUPERCONDUCTOR SR2RUO4
López, Ada;Souza Azevedo, Izabel;Baggio Saitovitch, Elisa;
We have investigated the Sn doping effects in the Sr2RuO4, an unconventional superconductor with a layered perovskite structure without copper. We report on the results of 119Sn-Mössbauer measurements of a series of polycrystalline Sr2(Ru1-xSnx)O4 samples. The synthesis and the characterization by powder X-ray diffraction are also described.

MOPSG-513
SUPERCONDUCTIVITY ON THE NB2ALCX PHASE AT 12.7K
Bortolozo, Ausdinir D.;dos Santos, Carlos A. M.;Machado, Antonio J. S.;
In this work will be shown the influence of C content on the Nb2Al phse. The results suggest a low solubility limit Nb2AlC0.2. The resistivity behavior shows a superconductivity temperature transition close to 12.7K and magneto-resistance with applied magnetic field in the range 0 ≤ m0H ≤ 9.0T suggest that material have High Hc2.

MOPSG-514
SUPERCONDUCTIVITY AT 8.9K ON THE NB3.2BSI0.8 PHASE
Bortolozo, Ausdinir D.;Machado, Antonio J. S.;Nunes, Carlos A.;Suzuki, Paulo A.;Rodrigues, Geovani;
Results obtained by measurements of electrical resistivity and magneto-resistance shown superconductivity in Nb_5B_2Si phase below 8.9K

Symposium H - Sol-Gel Materials

MOPSH-502
MESOSTRUCTURED SILICA SOL-GEL THIN FILMS: SYNTHESES AND CHARACTERIZATION
Maranhão, Silvanna;Carneiro, Sylvia;Ochoa, John;Brito, Giancarlo;Matos, Jivaldo;Fantini, Márcia;
Highly ordered hexagonal mesostructured silica (SBA-15) were synthesized using a triblock copolymer (PEO-PPO-PEO) in acid media and deposited by dip-coating on glass slides. X-ray diffraction patterns and transmission electron microscope (TEM) images indicate that as-deposited and surfactant extracted films had a periodic hexagonal structure with channels parallel to the substrate surface.

MOPSH-503
KNBO3 THIN FILMS GROWN BY POLYMERIC PRECURSORS AND PLD METHODS : A MICROSTRUCTURE COMPARISON
I.T. Weber, A. Rousseau, V. Bouquet, M. Guilloux-Viry, A. Perrin.
KNbO3 thin films were prepared by Pulsed Laser Deposition and Polymeric Precursor Route onto Al2O3 and single-crystalline (100) SrTiO3 substrates. Well crystallized single phased films presenting an (110) epitaxial growth onto STO substrates were obtained with both method. However, film microstructure is quite affected by the preparation method.

MOPSH-511
INFLUENCE OF THERMAL PARAMETERS IN STRUCTURAL ORGANIZATION OF SRBI2NB2O9 THIN FILMS OBTAINED BY MICROWAVE IRRADIATION
Leite, E. R.;Campos Jr., I. E.;Vasconcelos, N. S. L. S.;Vasconcelos, J. S.;Varela, J. A.;Longo, E.;
In this work the influence of thermal parameters to obtain SrBi2Nb2O9 thin films were studied. An adapted microwave oven was used for the thermal treatment. After analysis by X-ray diffraction and Raman spectroscopy concluded that 10 min at 230 oC/min is enough to obtain SBN films organized and orientated.

MOPSH-513
NANOSTRUCTURE AND LUMINESCENT PROPERTIES OF SOL-GEL DERIVED EUROPIUM-DOPED AMINE FUNCTIONALIZED HYBRIDS
Dahmouche Karim;Sá Ferreira Rute;Pulcinelli Sandra Helena;Craievich Aldo Felix;Santilli Celso Valentim;Carlos Luis Antonio Dias;
The effect of doping by europium triflate on the nanoscopic structure of organic-inorganic hybrid formed by a siliceous network containing pendant amine-terminated propyl chains, called aminosils, was investigated by Small-Angle X-ray scattering (SAXS). It appears that the composites exhibit a two-level structure.

MOPSH-516
ADVANCED OPTICAL METHODS FOR CHARACTERIZATION OF SOL-GEL FILMS
Horowitz, Flavio;Pereira, Marcelo B.;Michels, Alexandre F.;Horowitz, Flavio;
A brief review of in situ and ex situ optical characterization methods, based on polarimetric and interferometric techniques, for films produced by the sol-gel route is presented, in connection with our most recent results in this area.

MOPSH-520
SOLVATATION AND COMPLEXATION OF SODIUM IODIDE DISSOLVED IN HYBRID SOLID ELECTROLYTES
Santilli, Celso;Briois, Valerie;Craievich, Aldo;Chaker, Juliano;Pulcinelli, Sandra;Dahmouche, Karim;Judeinstein, Patrick;
The work here reported is mainly devoted to structural and ionic conductivity properties relationships of siloxane-PPO organic-inorganic hybrids prepared by the sol-gel process. A multi techniques approach was used to establish the preferential coordination site of Na+ and I- ions in the hybrid molecule and its implications on ionic conduction.

MOPSH-521
SYNTHESIS OF BA AND SR HEXAFERRITES
Glauco Soares Braga, Camilar Soares Xavier, Luiz Edmundo Bastos Soledade, Ieda Maria Garcia dos Santos, Elson Longo, Antônio Gouveia de Souza
This work studies the usage of BaFe12O19 and SrFe12O19 powders as pigments. These inverse spinels were synthesized by the polymeric precursor method, obtaining single phase stoichiometric powders displaying high purity and controlled dimensions.

MOPSH-522
SYNTHESIS OF ZR-DOPED ZN2TIO4 POWDERS AND THIN FILMS
Carlos Christiano Lima dos Santos, Herbert Henrique de Souza Lima, Márcia Rejane Santos Silva, Soraya Carvalho de Souza, Luiz Edmundo Bastos Soledade1, Ieda Maria Garcia dos Santos, Elson Longo, Antônio Gouveia de Souza
Zr-doped Zn2TiO4 powders and thin films were synthesized by the polymeric precursor method. The samples were characterized by XRD, SEM and UV-Vis. The results obtained are according to what was expected, since the optical bandgap increases with the heat treatment temperature and decreases with the doping level.

MOPSH-524
COBALT ALUMINIUM SILICATOS COMPLEX PREPARED BY THE NON-HYDROLYTIC SOL-GEL ROUTE.
Caetano, Bruno L.;de Lima, Omar J.;Rocha, Lucas A.;Molina, Eduardo F.;Rocha, Rafael A.;Marçal, Liziane;Calefi, Paulo S.;Rocha, Zenis N.;Nassar, Eduardo J.;Ciuffi, Katia J.;
Sol-gel non-hydrolytic processes are very attractive alternative methods for the synthesis of multicomponent oxides where metal halides can reacted with metal alkoxides through the formation of alkyl halide in situ. This work describes the optimized conditions for preparation of cobalt entrapped in alumina-silica materials in the form of powder.

MOPSH-526
PB0.5SR0.5TIO3 THIN FILMS PROCESSED IN MICROWAVE OVEN AND CONVENTIONAL FURNACE: A COMPARATIVE STUDY
Longo, Elson;Varela, José Arana;Leal, Sérgio Henrique Bezerra de Sousa;Pontes, Fenelon Martinho Lima;Leite, Edson Roberto;
Pb0.5Sr0.5TiO3 thin films were deposited on Si (100) substrates, processed in conventional furnace and, for the first time, sinterized in a domestic microwave oven at 600„aC with the annealing time varying from 1 to 20 minutes. The influence of this type of heat treatment on the film surface was analyzed by X-ray diffraction (XRD), ellipsometry, scanning electron microscopy (SEM) and atomic force microscopy (AFM).

MOPSH-527
ORGANOFUNCTIONAL SILICA OBTAINED BY SOL-GEL PROCESS: SPHERICAL PARTICLES
Nassor, Evelisy C. O.;Pereira, Paula F. S.;Avila, Lilian R.;Calefi, Paulo S.;Luz, Luiz M.;Ciuffi, Katia J.;Nassar, Eduardo J.;
Inorganic materials are used in dental resins composites and can be obtained by the sol-gel process. The possibility of modification in their surface results in materials with new physics

and chemical properties. The organic phase promoting an adhesion between inorganic phase and dental resin.

MOPSH-528
CRYSTALLIZATION CONTROL OF PEO-MATRIX IN ORGANIC-INORGANIC HYBRIDS BY MINERAL CLAY INCORPORATION
Hikosaka, Márcia;Pulcinelli, Sandra Helena;Santilli, Celso Valentim;Dahmouche, Karim;Craievich, Aldo F.;
The crystallization of poly(ethylene oxide) (PEO) solid electrolytes hinders the fast ionic conductivity of these materials. Layered silicates with cation exchange capacity inhibit the PEO crystalline phase formation. The addition of swelled Montmorillonite clay facilitates the intercalation of PEO chains between layers until complete exfoliation and amorphization.

MOPSH-531
PREPARATION AND CHARACTERIZATION OF SPHERICAL SILICA-CATIONIC IRON(III)PORPHYRIN CATALYST BY THE SOL-GEL METHODOLOGY
Nakagaki, Shirley;Halma, Matilte;Castro, Kelly;Mattso, Ney;Rocha, Rafael;Nassar, Eduardo;Ciuffi, Katia;
The synthesis of a cationic porphyrin, Fe(TM-4-NpyP5+) entrapped in a silica matrix by the sol-gel route leading to spherical particles through hydrolysis and condensation of the alkoxysilane is described. The compound was characterized by UV-Vis, infrared, EPR and transmission electron microscopy. Its ability to catalyze cyclohexane oxidation was preliminarily investigated.

MOPSH-532
INFLUENCE OF CO2+, FE3+ AND MN2+ DOPING IN MAGNESIUM ORTOTITANATE STABILITY
Silva, Marcia R S;Santos, I M G;Longo, Elson;Souza, A G;Lima, Severino J G;Espinosa, Jose W M;Souza, S C;
Magnesium ortotitanate, Mg2TiO4, was synthesized by the polymeric precursor method, presenting ilmenite, MgTiO3, and manesium oxide, MgO, as secondary phases, after calcination above 800 ºC1. The influence of doping in the Mg2TiO4 stability was evaluated by XRD, infrared and raman spectroscopy.

MOPSH-537
PREPARATION OF CERAMIC POWDERS WHITH LUMINESCENT PROPERTIES
Francini C. Picon, Elson Longo, Edson R. Leite, José A. Varela.
Abstract not available

MOPSH-539
FLUORESCENCE STUDIES OF PROTON TRANSFER LASER DYES INCORPORATED IN SILOXANE-PPO HYBRID MATERIALS
MEIRA MATOS Luiz Felipe;DAHMOUCHE Karim;DE SOUZA GOMES Ailton;MARTINS CARVALHO Carlos Eduardo;
Transparent and chemically stable Siloxane-Polyoxypropylene (PPO) hybrids materials doped with the laser dye 2-(2'-hydroxyphenyl)-benzimidazole (HPBI) have been obtained by the sol-gel process. These nanocomposites exhibit a good laser output and stability in the N2 laser whereas the intrinsic luminescence of the hybrid network has been greatly enhanced by HPBI doping.

MOPSH-541
STRUCTURAL AND FERROELECTRIC CHARACTERIZATION OF (PB1-XSMX)TIO3 THIN FILMS
E. C. Paris;L. S. Cavalcante;E. R. Leite;M. R. Joya;P. S. Pizani;E. Longo;J. A. Varela;
(Pb1-xSmx)TiO3 thin films, with x varying from 0,01 to 0,1 using the polymeric precursors method (Pechini method) were obtained. In these films were observed that Sm contents decrease the tetragonality of the material and improve the dielectric and ferroelectric response.

MOPSH-543
THEORETICAL AND EXPERIMENTAL STUDY IN THE ORDER-DISORDER STRUCTURAL OF LINBO3 PURE
Maria. F. C. Gurgel, Iêda L. V. Rosa, Wiss K. B. Junior, Iêdo A. Souza, Márcio S. Góes, Sérgio H. B. S. Leal, Carlos O. Paiva-Santos, Elson Longo.
We discuss the theoretical ab intio periodic quantum mechanical and using study experimental data such as DRX, UV-Vis from lithiun niobate pure (LN) and doped (LSN) into a strategy for understanding the origin the of properties photoluminescence (PL) in niobate lithium at room temperature the visible

MOPSH-544
CONTROL OF SURFACE CHARGE PROPERTIES OF SNO2 NANOPARTICLES PREPARED BY SOL GEL ROUTE
Kawaguti, Carla Akimi;Pulcinelli, Sandra Helena;Santilli, Celso Valentin;
Electrophoresis measurements have shown that the addition of Tiron„¥ in relation of Catechol„¥ causes a small displacement of iep for low values of pH. When Tiron„¥ or Catechol„¥ it is added, these are adsorbed by the surface of SnO2 due to the electrostatic interactions of the hydrogen linking.

MOPSH-545
SYNTHESIS OF BI1.5ZNNB1.5O7 BY THE POLYMERIC PRECURSOR METHOD: THE EFFECT OF CITRIC ACID AND ETHYLENE GLYCOL MOLAR RATIOS
da Silva, S. A.;Zanetti, S. M.;
Bi1.5ZnONb1.5O7 pyrochlore nanopowders were obtained by the polymeric precursor method. The influence of the variation of citric acid and ethylene glycol contents on the obtained powders' characteristics was studied. Fourier-transformed infrared and Raman spectroscopy, and X-ray diffraction.

MOPSH-546
OBTAINMENT OF FE2TIO5 USING THE POLYMERIC PRECURSOR METHOD
Renata F. Lins, Iêda M. G. Santos, Antonio G. Souza, Severino J. G. Lima, Elson Longo
Fe2TiO5 synthesis was done using the polymeric precursor method, at low temperature. After synthesis, the decomposition temperature of the precursor was evaluated by TG/DTA. After calcination of the precursor, the material was characterized by IR spectroscopy and XRD. A single phase material was obtained.

MOPSH-548
STRUCTURAL PROPERTIES OF THE CERAMIC PIGMENTS SRCOXTI1-XO3 E SR1-XCOXTI1-XO3
Souza, A G;Santos, I M G;Souza, M. A. F. de;Lima, S. J. G.;Longo, E.;
Using the polymeric precursor method, the pigment SrCoxTi1-xO3 e Sr1-xCoxTi1-xO3, with the perovskite structure was synthesized. From the TG and DTA data the decomposition temperature of the material was studied. The phase crystallization, grain size and color of the pigments were characterized by XRD, IR, SEM and colorimetry.

MOPSH-549
NEW ALUMINOXANE-EPOXI-SILOXANE HYBRIDS
Caiut, José Maurício Almeida;Ribeiro, Sidney José Lima;Messaddeq, Younes;
New aluminoxane-epoxi-siloxane hybrids were obtained by sol-gel methodology and characterized by NMR and infrared spectroscopies. Eu3+ containing samples were studied. Emission and excitation spectra, excited state decay times, and quantum efficiency have been evaluated. Different possibilities for the Eu3+-hybrid interaction are discussed.

MOPSH-551
SAXS STUDY OF TITANIA SOL AND REDISPESIBLE POWDERS PREPARED WITH DIFFERENT COMPLEXING AND HYDROLYSES RATIOS
Renata C. K. Kaminski;Celso V. Santilli;Sandra H. Pulcinelli;Aldo F. Craievich;Valérie Briois;
Redispersible titania nanoparticles with tailored particles size and aggregation degree were prepared from the sol-gel route, by controlling the nominal complexing ratio, the hydrolysis ratio, and the acidity ratio.

MOPSH-553
THE EFFECT OF THE MODIFIER IN THE COLOR OF TITANIUM SPINEL
Souza, Soraia C;Silva, Marcia R S;Santos, Ieda M G;Souza, Antonio G;Longo, Elson;
The absorption in the visible region is caused by variations in the electronic energy, which is related to the ligand field of chromophore cations. In this work, the effect of the modifier in the color of Zn2TiO4 and Mg2TiO4 spinels, containing Co2+ or Mn2+ was evaluated. The synthesis was done using the polymeric precursor method.

MOPSH-554
DEVELOPMENT AND STRUCTURAL STUDY OF LIQUID CRYSTALLINE DRUG DELIVERY SYSTEMS FORMED BY PROPOXYL(5OP) ETHOXYL(200E) CETHYL ALCOHOL.
Pulcinelli, S.H.;Corrêa, M.A.;Urban, M.C.C;Chiavacci, L.A.;Craievich, A.F.;
In this work the structural characterization of a new topical drug delivery system prepared by sol-gel route was performed. The results have shown that the water/oil ratio is the main factor controlling the structural variations. Increasing water/oil ratio, organized structures, with 1D or 2D long range order, are formed.

MOPSH-555
ZN2TIO4 SPINEL APPLIED AS CERAMIC PIGMENT
Souza, A G;Santos, Ieda M G;Silva, Marcia R S;Santos, M R Cassia;Longo, E;Souza, Soraia Carvalho;
Zn2TiO4 was obtained, at low temperatures, using the polymeric precursor method. Mn2+ and Co2+ were added to the structure, acting as chromophore ions. Its structural, morphological and optical properties were evaluated in order to verify its application as ceramic pigment.

Tuesday October 18th
1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira I

TuSA - Synthesis and Characterization of Nanocomposites

TuSA I-2 8:00/9:00
GLASS DYNAMICS IN THE EXCHANGE BIAS PROPERTIES OF NANOGRANULAR MAGNETIC SYSTEMS
Dino Fiorani, CNR, Roma

TuSA -658 9:00/9:15
INFLUENCE OF N-HETEROCYCLIC CONNECTORS ON THE AGGREGATION AND FUSION OF GOLD NANOPARTICLES
Bonifacio, L S;Toma, S H;Araki, K;Toma, H E;
The spectrocopic behavior of neutral and negatively passivated gold nanoparticles has been investigated uppon addition of linear N-heterocyclic connectors exhibiting different lengths. A pronounced length dependence has been detected in the case of the negatively charged citrate gold nanoparticles reflecting the influence of the remanescent charges on the substitution process.

TuSA -731 9:15/9:30
INVESTIGATION ON THERMAL BEHAVIOR OF HOLE TRANSPORTING MOLECULES USED IN ORGANIC LIGHT EMITTING DIODES (OLEDS)
Legnani, C.;Quirino, W. G.;Cremona, M.;Tentardini;de Matos, T. F.;Achete, C. A.;
The durability of the OLEDs is mainly related to the thermal stability of the hole transporting layer (HTL) which strongly depends on the so called "glass transition temperature" (Tg). In this work, a method involving the differential scanning calorimetry technique was proposed and used to compare Tg of different HTLs

TuSA 735 9:30/9:45
LOADING EFFECTS OF PT-RU PARTICLES SUPPORTED ON FISH SPINE MULTIWALLED CARBON NANOTUBES ON METHANOL OXIDATION
Moraes, I. R.;Tronto S.;Marchesin, M.S.;Rosolen, J. M.;Silva, W. J;
Platinum-ruthenium catalysts were prepared by the microemulsion method. The catalysts contain 10, 20, and 30 wt% of Pt50Ru50 on FS-MWNT. TEM images show that the particle size is 3.5 nm. From the electrochemical results it can be concluded that 20 wt% Pt50Ru50/FS-MWNT displays the highest perfomance for methanol oxidation.

TuSA -641 9:45/10:00
MAKING, EVALUATING AND TRANSFORMING NANOPARTICLES INTO NEW PRODUCTS
Galembeck, Fernando;
Nano-sized particles are versatile and powerful building blocks for new and interesting materials. This is an account of the author's work in this area, describing some results that have actually been transformed into products and stressing the many possibilities for nano-particle design.

TuSA -697 10:00/10:15
MISCIBILITY AND MORPHOLOGY OF P(3HB)/PCL-T BLENDS
Wessler, Katiusca;Vieira, Tomaz A.;Pezzin, Ana Paula T.;Pezzin, Sérgio H.;
The miscibility behavior and the morphology of blends of poly(3-hydroxybutyrate), P(3HB), and polycaprolactone triol, PCL-T, obtained by casting, were studied by differential scanning calorimetry, thermogravimetric analysis, X-ray diffraction, infrared spectroscopy and scanning electron microscopy. It was observed that higher PCL-T ratios results in transparent, porous and flexible films.

Room Carlos Pena II

TuSB - Supramolecular Materials and Organic Devices

TuSB -I-5 8:00/9:00
HYBRID METAL BASED TRANSISTORS
Ivo Hummelgen, DF/UFPR, PR

TuSB-543 9:00/9:15
EVIDENCES OF SCHOTTKY BEHAVIOR OF ORGANIC LIGHT-EMITTING DIODES
Souza Coêlho, I. J.;Oliveira, H. P.;Martins-Filho, J. F.;De Melo, C. P.;
Analysis of electronic behavior of OLEDs are shown, which are consistent with Schottky theory for modeling the processes of injection of majority carriers. Injection of minority carriers is enabled by the establishment of such majority population in the active layer, and their role is strictly regarded to light generation.

TuSB -504 9:15/9:30
E-TONGUE ANALYSIS IN HIGH DILUTED SYSTEMS
Fervença, A.C.;Dantas, D.A.R;Pandur, F.A.;Taylor, D.M.;Santos Jr, D.S.;Giacometti, J.A.;Carvalho, A.J.F.;Constantino, C.J.L.;Oliveira Jr, O.N.;Riul Jr, A.;
A compact "electronic tongue" prototype presenting high accuracy when compared with commercial impedance analysers was used in the study of diluted NaCl and sucrose solutions. In addition, three distinct homeopathic medicines were compared in two different potencies. All sensing units were prepared with ultra-thin films of different materials.

TuSB-559 9:30/9:45
DEVELOPMENT OF TASTE SENSOR SYSTEM BASED ON NANOSTRUCTURED FILMS
In this work, nanostructured films of poly(o-ethoxyaniline)-POEA fabricated by the layer-by-layer method were investigated as sensitive layers in an electronic tongue system. The reversibility and reproducibility of films response were demonstrated after successive measurements in ultra pure water and NaCl solutions.

TuSB -I-6 9:45/10:15

SENSORS AND BIOSENSORS MADE OF LAYER-BY-LAYER FILMS
Osvaldo Novaes Jr.

Room Carlos Pena IV

TuSC - Biocompatible Materials

TuSC -I-1 8:00/9:00
INJECTABLE BIOMATERIALS FOR BONE REGENERATION
Pedro Granja INEB- Univ. do Porto, Portugal

TuSC -504 9:00/9:15
A COMPARATIVE STUDY OF IN VITRO CORROSION RESISTANCE OF THE AUSTENITIC STAINLESS STEELS DIN W. NR. 1.4460-HIGH NITROGEN MODIFIED AND ASTM F-138 IN MEM
Terada, M;Antunes, R. A.;Costa, I;Machado, I. F.;Padilha, A. F.;
The corrosion resistance of the modified austenitic stainless steel DIN W. Nr. 1.4460-high nitrogen has been investigated in a simulated physiological solution known as minimum Eagle medium (MEM) naturally aerated and at 37°C. The results of this steel were compared to those of the ASTM F-138, used for implant materials.

TuSC-517 9:15/9:30
EFFECT OF INTERSTITIAL ELEMENTS ON THE ELASTIC PROPERTIES AND BIOCOMPATIBILITY OF TI ALLOYS USED AS BIOMATERIAL
Florêncio, Odila;Santos Jr, Arnaldo R.;Donato, Tatiani A.G.;Niemeyer, Terlize C.;Almeida, Luciano H.;Grandini, Carlos R.;Schneider, Sandra G.;Caram, Rubens;
This work presents a study on the effect of heavy interstitial elements in solid solution in Ti alloys on their elastic properties and biocompatibility using anelastic spectroscopy, X-ray diffraction, scanning electronic microscopy, corrosion and biocompatibility assays.

TuSC-518 9:30/9:45
MICROSTRUCTURAL AND CYTOTOXIC ANALYSIS OF TI-13NB-13ZR ALLOY PRODUCED BY POWDER METALLURGY
Henriques, Vinicius André Rodrigues;Cairo, Carlos Alberto Alves;Bressiani, José Carlos;Bottino, Marco Cícero Martns;
Ti-13Zr-13Nb alloy due to its high biocompatibility and lower modulus of elasticity is a promising candidate for implants fabrication. Samples were produced by uniaxial and cold isostatic pressing with subsequent densification by sintering between 900 up to 1600 °C, in vacuum. Microstructural and cytotoxicity results are analysed.

TuSC -558 9:45/10:00
DETERMINATION OF THE RELATIVE PERCENTAGE OF THE PHASES ¥Á AND ©¬ ALLOY OF TITANIUM THROUGH ANALYZIS OF IMAGE
Severino Jacksom Guedes de Lima;Sônia Regina Sales Barbpsa;Verônica Lacerda Arnaud;Elza Monteiro L. Filha;
Abstract Given the influence of the morphology and of the relative amount of the phases in the mechanical properties of the alloy of titanium for biomedical applications, the study has as an objective te analyzes the relative percentages of the phases a and ß, obtained by sweeping electronic microscopy (MEV), through the Soft Imaging Systemprogram.

TuSC -603 10:00/10:15
DEVELOPMENT OF BIOCERAMIC COATINGS ON 316 STAINLESS STEEL AND MECHANICAL-HISTOLOGICAL ANALYSIS OF BONE-HYDROXYAPATITE INTERFACE
Sidney N. Silva;Cleuza M. Resende;Heleno A. Rocha;José Roberto T. Branco;Marivalda M. Pereira;
Air plasma spray (APS) technique has been used to coat substrates of steel stainless AISI 316L and Ti6Al4V alloy rods and plates with crystallinity 40% and 95%. In this study we will primarily analyse the consequences (tests push-out) of their relation on the histology interface.

Tuesday October 18th

1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira II e III

TuSD - Structural materials: Processing Properties and Applications

TuSD I-2 8:00/8:30
RECICLAGEM DE REJEITOS DA INDÚSTRIA CERÂMICA TRADICIONAL COMO AGREGADOS PARA ARGAMASSA DE ALVENARIA E CONCRETO DO TIPO PORTLAND
João Batista Baldo, UFSCar, SP

TuSD I-3 8:30/9:00
NON-EQUILIBRIUM SOLIDIFICATION OF UNDERCOOLED METALLIC MELTS
Walman Benicio, DEM – UFCG, PB

TuSD -698 9:00/9:15
NANOSTRUCTURED CERAMICS COATINGS FOR PROTECTION OF 430 STAINLESS STEEL
Varela, Jose A.;Volanti, Diogo P.;Ferreira, Luiz L. Jr.;Ferreira, Renato A.;Longo, Elson;Minozzi, Daniel T.;Simoes, Luiz Gustavo;Araujo, Andre; Ceramic Coatings of ZrO2, TiO2 and Al2O3 were obtained by polymeric precursors method and deposited in 430 Stainless Steel substrates by dip coating. The nanostructured coatings changed the roughness and the color of surface, modifying physical and chemical properties of the steel.

TuSD -582 9:15/9:30
MONO-PHASE ELECTRODE BASED ON SNO2
Francisco Moura Filho;Tamara Martins;Adolfo Mosqueira;José Arana Varela;Leinig Perazolli; SnO2 Ceramics was obtained doped with ZnO and Nb2O5. The powder was obtained using the oxides mixture method, so they were pressed and sintered at 1350ºC for 2 hours. Resistivity of 17.5 m. was measuring and through X-Ray diffraction and scanning electronic microscopy was verified that the ceramic was mono-phased.

TuSD 728 9:30/9:45
PREPARATION AND CHARACTERIZATION OF LOW VOLTAGE TIN OXIDE VARISTORS
Moreira, M. L.;Tebecherani, S. M.;Pianaro, S. A.;Cava, S. S.;Diaz, N. N.;
Varistors are polycrystalline ceramics with electrical properties are highly dependent on the microstructure. The powders were conformed and sinterized at 1350 °C for 120, 240 e 360 min with a heating and cooling rate of 3°C/min. The broken-down voltage reduction of 3300V/cm, reaching 600V/cm with á between 1,6 and 6.

TuSD -704 9:45/10:00
THE ROLE OF STRUCTURAL ORDER–DISORDER FOR VISIBLE INTENSE PHOTOLUMINESCENCE IN SR3TI2O7
Simões, P. Luiz Gustavo;Paulo, S. Pizani;Elson, Longo;Jose, A. Varela;
Strontium titanate of prepared by the polymeric precursors method presents photoluminescence at room temperature. The emission band maxima of this material are in the visible region. The photoluminescence this related with the structural disorder, that is, materials disordered presents photoluminescence at room temperature

TuSD -586 10:00/10:15
PECULIARITIES OF BA2TI9O20 CERAMIC PROCESSING BASED ON BASO4 AND TIO2 MIXTURE
Maria do Carmo Andrade Nono; Ba2Ti9O20 ceramics were prepared from BaSO4 and TiO2 mixture and their microstructures were investigated. Ba2Ti9O20 phase formation occurs at lesser temperatures (1000 – 1200 °C) that of the same ones based on BaCO3 and TiO2 mixture. But dense ceramics were not obtained at these temperatures. This phenomenon investigation is of great technological interest.

Room Carlos Pena III

TuSE - Advances in Photonics Materials and applications

TuSE -I-5 8:00/9:00
RECENT ADVANCES AND CHALLENGES IN SOLID STATE LIGHTING
Fernando A. Ponce, Arizona State University, USA

TuSE-516 9:00/9:15
RARE EARTH DOPED TRANSPARENT FERROELECTRIC CERAMICS FOR PHOTONIC APPLICATIONS
de Camargo, Andrea Simone Stucchi;Nunes, Luiz Antonio de Oliveira;Garcia, Ducinei;Andreeta, Erika Regina Manoel;Botero, Eriton Rodrigo;Eiras, José Antonio;
Rare-earth doped transparent ceramics are new and promising materials for photonic device applications. In this work we present structural, microstructural and spectroscopic characterization of PLZT ferroelectric ceramics.

TuSE -513 9:15/9:30
SB-BASED PHOTOSENSITIVE GLASSES: A HOLOGRAPHIC STUDY
Messaddeq, Younes;Poirier, Gael;Nalin, Marcelo;Carvalho, Edson;Ribeiro, Sidney;Cescato, Lucila;Nalin, Marcelo;
Antimony based photosensitive glasses have been studied using a holographic set up, that allows the measurement of small changes in the optical constants induced by light, in real time. A permanent refractive index modulation is observed that can be erased by a thermal treatment

TuSE-559 9:30/9:45
SPECTROSCOPIC STUDY AND CHARACTERIZATION OF PLANAR AND CHANNEL WAVEGUIDES IN PHOSPHATE GLASSES
Barbosa, Anne Jacqueline;Gonçalves, Rogéria Rocha;Pavani Filho, Aristides;Dias Filho, Francisco Audísio;Sigoli, Fernando A.;Gomes, Anderson S. L.;Messaddeq, Younès;Ribeiro, Sidney J. L.; Channel and planar waveguides were prepared by Na+-Ag+ ionic exchange on Er3+ doped niobium-phosphate glasses. Er3+ emission at 1.5 mm was evaluated as a function of the glass composition and also Er3+ concentration. The optical and spectroscopic properties were available for all samples.

TuSE-544 9:45/10:00
WAVEGUIDES IN TELLURITE GLASS ER3+-DOPED BY THE SOLDER METHOD OF FIBER AND GLASS
Víctor Rivera;
Tellurite glasses Er3+-doped are now the materials promising for the production of optical waveguide for optic amplifiers in the band of the optic telecommunications in 1.5 um for great broadband. Lately the optical waveguides fabrications grow a quick rhythm. We propose a new method of production for channel waveguide making from side to the traditional method of exchange-ions..

Room Manuel Bandeira IV

TuSF - Magnetic Materials: Preparation, Characterization and Applications

TuSF -I-3 8:00/9:00
THE MAGNETOCALORIC EFFECT: MATERIALS AND APPLICATIONS
Sergio Gama, UNICAMP, SP

TuSF -524 9:00/9:15
ON THE STRUCTURAL AND MAGNETIC PROPERTIES OF MNFEGE1-XSIX COMPOUNDS
Caron, Luana;G. Carvalho, A. Magnus;O. dos Santos, A.;A. Coelho, A.;P. Cardoso, L.;Gama, S.; In this work we present preliminary structural and magnetic data on the new series of compounds MnFeGe1-xSix . X- rays analyses show that these compounds crystallize in the hexagonal Ni2In structure with a second phase for x > 0.6. It also presents interesting magnetic properties.

TuSF-503 9:15/9:30
INTERMEDIATE-SPIN STATE IN THE SRCOO3 COMPOUND
D.M. Gomes and M. Abbate
We studied the electronic structure of the SrCoO3 compound using X-Ray Absorption Spectroscopy. The experimental spectra were interpreted in terms of a combination of band structure and cluster model calculations. The shape of the O 1s XAS spectra is consistent with a cluster model calculations for an intermediate-spin state

TuSF-543 9:30/9:45
IS THE ORTHORHOMBIC ROOM TEMPERATURE FERROMAGNETIC CRAS A HALF METALLIC SYSTEM?
Alexandre A. Araújo , Bernardo Laks, and Paulo César de Camargo
We report a theoretical study of the orthorhombic ferromagnetic phase of CrAs. Despite of a predominance of minority spins at Fermi level, contrasting with zb-CrAs, no evidence of half-metallic behavior was found. Calculation was performed based on first principles spin-polarized electronic band-structure, within the scope of Density Functional Theory.

TuSF -513 9:45/10:00
THE ELECTRONIC STRUCTURE AND MAGNETIC PROPERTIES OF CR AND V NITRIDES.
krause, J. C.;Benedetti, L.;Santos, A. V.;Machado, K. D.;
The electronic structure of V and Cr nitrides have been investigated by means the first principles discrete variational method. We investigate the local magnetic properties at V and Cr sites in sodium chloride structure as well as in a perovskite-like structure. In both strutures our calculations had indicated a very small magnetization for chromium and vanadium sites.

TuSF -502 10:00/10:15
A STUDY OF THE LOCAL MAGNETIC PROPERTIES OF 4D AND 5S IMPURITIES IN THE FE4N NITRIDE.
Krause, João Carlos;dos Santos, Antonio Vanderelei;Paduani, Clederson;Machado, Kleber Daum;
The local magnetic properties of 5s4d impurities in Fe4N are investigated with the molecular cluster DV method. We investigate also the effect of the impurities on the iron sites. Our calculations indicate a very small magnetization for impurities and a strong influence on the magnetization of the iron sites for the Rh, Ru , Pd and Ag impurities

Symposia, Tuesday October 18th

Tuesday October 18th
1st Sessions (08:00 – 10:15am)

Room Carlos Pena III

TuSH - Sol-Gel Materials

TuSH -I-1 **8:00/8:30**
DFB EMISSION OF RHODAMINE CONTAINING ORGANIC-INORGANIC HYBRID MATERIALS
Sidney José Lima Ribeiro, UNESP, SP

TuSH-539 **8:00/9:00**
FLUORESCENCE STUDIES OF PROTON TRANSFER LASER DYES INCORPORATED IN SILOXANE-PPO HYBRID MATERIALS
MEIRA MATOS Luiz Felipe;DAHMOUCHE Karim;DE SOUZA GOMES Ailton;MARTINS CARVALHO Carlos Eduardo;
Transparent and chemically stable Siloxane-Polyoxypropylene (PPO) hybrids materials doped with the laser dye 2-(2'-hydroxyphenyl)-benzimidazole (HPBI) have been obtained by the sol-gel process. These nanocomposites exhibit a good laser output and stability in the N2 laser whereas the intrinsic luminescence of the hybrid network has been greatly enhanced by HPBI doping.

TuSH-573 **9:00/9:15**
SPHERICAL SILICA BASED CHRISTIANSEN FILTERS
Edwin Rafhael C. Milet;Antonio Marcos de Brito Silva;André Galembeck;
Christiansen filters were assembled with spherical silica particles synthesized by the sol-gel method, methyl benzoate and ethanol. The filters transmit UV and Blue light with a 17,4% and 26% maximum transmission.

TuSH-523 **9:00/9:15**
SYNTHESIS AND CHARACTERIZATION OF SNO2-BASED CERAMIC PIGMENTS
Susete Trazzi Breviglieri, Maria Rita de Cássia Santos, Iêda Maria Garcia dos Santos, Luiz Edmundo Bastos Soledade and Antonio Gouveia de Souza
This work has as objective the synthesis and characterizations of SnO2-based ceramic pigments substituted by the chromophore ions Co2+ and Cr3+ synthesized by the polymeric precursor method. The powders were calcined at different temperatures and were characterized by XRD and SEM.

TuSH -570 **9:15/9:30**
GREEN EMITTING RHODAMINE ?
Oliveira, R. J.;Faustino, W. M.;Galembeck, A.;
Rhodamine B was incorporated within aluminum polyphosphate gels. As the samples aged, a bright green emission was observed. The same occurred when the dye was dissolved in NaH2PO4 aqueous solutions. The phenomenon only occurs under exposition to UV light, which means that a photochemical event may be involved.

TuSH-529 **9:30/9:45**
EFFECT OF THE TIME OF HEATING IN THE SYNTHESIS OF YAG BY NON-HYDROLYTIC SOL-GEL ROUTE
Pereira, Paula F. S.;Cestari, Alexandre;Avila, Lilian R.;Nassor, Evelisy C. O.;Ciuffi, Katia J.;Calefi, Paulo S.;Nassar, Eduardo J.;
Yttrium Aluminum Garnet (YAG) have been used as hosts for lasers and phosphors which presents the Y3Al5O12 like principal crystalline phases. The process used to prepare YAG consists in thermical treatment of oxide mixture. In this work we used the non-hydrolytic sol-gel route to obtained YAG matrix.

TuSH-I-2 **9:45/10:15**
X-RAY ABSORPTION SPECTROSCOPY AND SOL-GEL CHEMISTRY
Valerie Briois, SOLEIL, UP-Sud, Orsay, FR

Notes

Tuesday October 18th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira I

TuSA - Synthesis and Characterization of Nanocomposites

TuSA-720 10:30/10:45
NANOCRACK NUCLEATION AND BLISTERING BEHAVIOR IN H+ AND HE+ CO-IMPLANTED SI(001) SAMPLES
Reboh, Shay;Mattos, Augusto A. D.;Marcondes, Tatiana L.;Rossato, Francis;Silva, Aline L.;Campos, Fabiola; Mörschbächer, Márcio J.;Fichtner, Paulo F. P.;
The formation of nanocracks caused by the co-implantation of H and He ions into Si(001) samples is investigated as a function of thermal annealing and implantation conditions. The results are discussed in terms of the atomic mechanisms affecting the formation of nanocracks and their strength to evolve into blisters.

TuSA-691 10:45/11:00
NANOSTRUCTURED SILICA VAD CONTROL METHOD: H2/O2 RATIO
Gusken, Edmilton;Jacon, Rita H. B.;Santos, Juliana S.;Ono, Eduardo;Suzuki, Carlos K.;
In this work, it was studied the effect of H2/O2 ratio on the nanoporous and nanoparticle sizes of silica by the VAD process (Vapor-phase Axial Deposition). For the deposited silica, the stoichiometry ratio (H2/O2=2) increased the nanoparticle size (125 nm) and reduced nanoporous size distribution.

TuSA-532 11:00/11:15
PREPARATION OF HOLLOW MICROSPHERES OF POROUS CARBON THROUGH THE PYROLYSIS OF TIO2/POLY(FURFURYL ALCOHOL) NANOCOMPOSITES OBTAINED BY SOL-GEL METHOD
Almeida Filho, Cláudio;Zarbin, Aldo José G.;
This work describes the synthesis and characterization of new nanocomposites materials from anatase and poly(furfuryl alcohol), obtained by sol-gel method. Pyrolysis of these hybrid materials produced new rutile and carbon nanocomposites. After the oxide dissolution the obtained carbon is extremely porous and exhibits a highly ordered morphology as hollow microspheres.

TuSA-687 11:15/11:30
PRODUCTION AND CHARACTERIZATION OF PURE AND DOPED HYDROXYAPATITE FOR BIOMEDICAL APPLICATIONS AS FLUORESCENT PROB
Araujo, Tatiana S;Macedo, Zélia S;Oliveira, Petrus D Amorim S C;Valerio, Mário E Giroldo;
In this work chemical precipitation method was used to produce nanocrystals of Hydroxyapatite (HAP). Pure and Cr3+ doped samples were characterized using powder X-Ray Diffraction, Scanning Eletron Microscopy and Energy Dispersive X-Ray techniques. The emission and excitation spectra of the doped samples were also investigated and the potential use of the Cr3+ as a fluorescent probe were discussed.

TuSA 714 11:30/11:45
SCINTILLATING PROPERTIES OF PURE AND DOPED BGO CERAMICS
Hernandes, Antonio Carlos;Silva, Ronaldo Santos;Mello, Ana Carolina Santana;Santana, Geane da Cruz;Macedo, Zelia Soares;Valerio, Mario Ernesto Giroldo;
The main scintillating properties of pure and doped Bi4Ge3O12 ceramics were studied in the present work. All the samples presented emission near 440–500 nm, and doped ceramic presented additional emission bands at the typical wavelength position of each dopant. Kinetic thermoluminescent parameters are presented and discussed.

Room Carlos Pena II

TuSB - Supramolecular Materials and Organic Devices

TuSB -I-7 10:30/11:00

MOLECULAR NANODEVICES DEVELOPED AT THE LAND-FOTON/DQF/UFPE
Petrus Santa Cruz, DQF/PE

TuSB-568 11:00/11:15
NANODOSIMETER N-DOMOLED: OLED FOR UV PERSONAL DOSIMETRY
Nóbrega, Patrícia;Cremona, Marco;Malvestiti, Ivani;Santa-Cruz, Petrus;
This work presents an UV dosimeter we named n-DOMOLED, characterized by use an OLED as the active part of the device. The photonic film of the OLED (europium complex nanofilm) has luminescent properties irreversibly affected by the UV dose received. Electroluminescence is used to inspection of the UV dose accumulated.

TuSB-520 11:15/11:30
LANGMUIR AND LANGMUIR-BLODGETT FILMS OF LIGNINS EXTRACTED FROM SUGAR CANE BAGASSE: CHARACTERIZATION AT MOLECULAR LEVEL AND SENSOR APPLICATION
Pereira, Alvaro A.;Martins, Gislaine F.;Antunes, Patricia A.;Conrrado, Rosangela;Pasquini, Daniel;Curvelo, Antonio A.S.;Riul Jr., Antonio;Constantino, Carlos J. L.;
Lignins extracted from sugar cane have been applied in the fabrication of Langmuir and Langmuir Blodgett (LB) films. When exposed to metallic ions (Cu+2, Cd+2 and Pb+2) both Langmuir and LB films have been found sensitive to the presence of the ions accordingly to pi-A isotherms and impedance spectroscopy measurements.

TuSB-565 11:30/11:45
ELECTRICAL RESPONSE OF BENTONITE - VANADIUM OXIDE XEROGELS FILMS FOR DETECTION OF COMPONENTS OF AUTOMOTIVE FUELS
Pilar Hidalgo, Henrique E. M. Peres, Alexandre M. Honorato J. Ramirez-Fernandez Ronaldo A. Timm, Henrique E. Toma, Koiti Araki
In this work, films of Bentonite/Vanadium (V) oxide xerogels (BV) were studied aiming the development of integrated gas sensors for detection of some components of automotive fuels (gasoline and alcohol), in particular hydrocarbon, ethanol, SO2 and solvents (such as varsol and xylol), normally used as gasoline adulterants.

Room Carlos Pena IV

TuSC - Biocompatible Materials

TuSC-I-2 10:30/11:30
BIORESORBABLE SCAFFOLDS PREPARED BY PARTICULATE LEACHING METHOD FOR TISSUE ENGINEERING
Samuel H. Barbanti, UNICAMP, SP

TuSC -573 11:30/11:45
PREPARATION AND CHARACTERIZATION OF CHITOSAN-POLOXAMER 407 BASED MATRIX FOR BIOMEDICAL APPLICATIONS
Ricardo, Nagila;Cavalcante, Igor;Costa, Flavia;
Chitosan/Poloxamer 407 films were prepared by solvent evaporation method with different proportions. These films were characterized by infrared analysis, thermogravimetric analysis, differential scanning calorimetry and X-ray diffraction. The results indicated that the addition of poloxamer 407 to chitosan improves the thermal and mechanical properties of these films.

TuSC-543 11:45/12:00
EVALUATION OF THE OXIDATION FOR PLASMA ON THE SURFACES OF FIBERS AND POSTS OF THE CARBON AND GLASS USED IN DENTISTRY.
Guerra, Tácio D. B.;Araújo, Lílian A.;Salinas, Héctor L.L;Alves Jr. Clodomiro;
The work presents the effect of plasma treatment when applied in fibers or carbon/glass posts in the adhesion fiber/resin and posts/cement. The wettability was measure by pendent drop method and interface fiber/resin and posts/cement observed by optical and electronic microscopy. It was observed that both wettability and texture were increased with plasma treatment.

TuSC-551 12:00/12:15
EFFECT OF PARTICLE SIZE OF CER CEMENT ON MECHANICAL PROPERTY
Moraes, JCS;Zagato, EF;Santos, AD;Baesso, ML;Bento, AC;
Our purpose is to evaluate thermal expansion coefficient (TEC) of experimental dental cement. The results indicate that the TEC decreases with the increase of the particles size. Measurements of diffusivity and conductivity justify in a certain way the increase of the porosity in the material and consequently the decrease in TEC

TuSC -604 12:15/12:30
DEVELOPMENT OF SELF-EXPANDABLE NITINOL STENT FOR TRAQUEAL USE
Vearick, Samanta B.;Xavier, Rogério G.;Schaeffer, Lirio;Sanches, Paulo S.;
Stents were made and evaluated through the use of different nitinol superelastic wires diameter. After the braided step, stents were submitted the thermal treatment, where it was observed that the variation of the treatment time conferred different colorations. Stents had been evaluated through mechanical and in vivo expirements.

Tuesday October 18th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira II e III

TuSD - Structural materials: Processing Properties and Applications

TuSD-758 10:30/10:45
RHEOLOGICAL BEHAVIOUR OF AQUEOUS SUSPENSIONS OF LI2O-ZRO2-SIO2-AL2O3 (LZSA) GLASS CERAMICS PRECURSOR
Gomes, Cynthia M.;Rambo, Carlos Renato;Sousa, Eliandra;Oliveira, Antônio P. Novaes;Hotza, Dachamir;
The rheological behaviour of aqueous suspensions from precursor of Li2O-ZrO2-SiO2-Al2O3 (LZSA) system was evaluated. The suspensions were prepared using different types of dispersants. The effect of these dispersants on the viscosity and stability of the suspensions was also determined

TuSD-730 10:45/11:00
EFFECT OF NIOBIUM OXIDE ON THE CAO-AL2O3-SIO2 CRYSTALLIZATION
Moreira, M. L;Pianaro, S. A.;Diaz, N. N.;Cava, S. S.;Henrique, T. B.;Tebecherani, S. M.;Castelló, J. B. C;
This work studied the influence of Nb2O5 on the glass structure of anortite by. The glass was obtained by quenching in the deionized water and conformed in cylindrical samples for the thermal treatment. The DRX analysis showed that niobium in anortite induced a new phase and promoted the crystallization.

TuSD-769 11:11/11:15
ION IRRADIATION EFFECTS ON MECHANICAL PROPERTIES OF DENTAL CERAMICS
Mozzaquatro, Lucia H.;Zawislak, Fernando C.;Lepienski, Carlos M.;Forster, Carlos E.;
Pronounced decreases in friction coefficient hardness and Young modulus have been measured for three different ion irradiated ceramics disks. As consequence, the wear of dental enamel pins against the irradiated ceramic materials also decreased. Our results show that ion irradiation can be used to transform commercial dental ceramics into materials more compatible with dental enamel

TuSD-684 11:15/11:30
SINTERING OF CUBIC BORON NITRIDE USING TITANIUM-BASED BINDERS
Valpassos, Juliana;Monteiro, Sérgio N.;Bobrovnitchii, Guerold S.;Ramalho, Alan M.;
Composites of cBN and titanium-based binders with different cBN ratio were sintered under high pressure high temperature conditions. The microscope observations showed a porous less, sintered structure. Hardness and wear measurements were made demonstrating good results.

TuSD -790 11:30/11:45
HOW TO RUN MIXTURE EXPERIMENTS OPTIMIZING COMPONENTS PERCENTAGES IN MECHANICAL PROPERTIES MAXIMIZATION.
Nardi, José Vidal;
A pozzolanic product can be understood as a ternary mixture where two components are ceramics solid particulates and the third components is liquid. In this work the experimental data of the measured properties were adapted to show how to run mixtures experiments optimizing compositions of the components using triangular surface.

Room Carlos Pena III

TuSE - Advances in Photonics Materials and applications

TuSE- 560 10:30/10:45
PHYSICAL BEHAVIOR OF REACTIVE MAGNETRON SPUTTERED ZNO CONDUCTOR THIN FILMS
Carvalho, Marcos de Castro;Nascimento, Valbero P.;Mello, Alexandre;Ferreira, Carlos Luis;Baggio-Saitovitch, E.;
We have produced ZnO ceramic thin films on glass substrates using reactive DC magnetron sputtering. Substrates were heated at 300oC. The O2 partial pressure was kept at 0,75mtorr. The working pressure effects on the properties of the films were analyzed by XRD, optical transmittance and reflectance, electrical and Hall measurements.

TuSE- 551 10:45/11:00
PROCESS TO CONTROL THE DENSITY AND NANOPOROSITY OF VAD SOOT PREFORMS FOR ER-DOPED FIBER FABRICATION
Ono, Eduardo;Jacon, Rita H. B.;Braga, Robinson;Gusken, Edmilton;Rieznik, Andrés A.;Fragnito, Hugo L.;Suzuki, Carlos K.;
We report here a process to control the nanoporosity and radial density profile of soot preforms produced by the VAD method in order to obtain a homogeneous distribution of Er ions through the solution doping technique for EDF fabrication.

TuSE-I-5 11:00/12:00
LASER-INDUCED REFRACTIVE INDEX CHANGES IN PHOTONIC MATERIALS
Tomaz Catunda, IF-São Carlos, SP

Room Manuel Bandeira IV

TuSG - Superconductor Materials

TuSG-I-1 10:30/11:00
RESEARCH AND DEVELOPMENT OF HIGH-TC SUPERCONDUCTORS IN CEPEL-ELETROBRÁS
Alexandre Polasek, CEPEL-Eletrobrás,RJ

TuSG-533 11:11/11:15
SURFACE MAGNETISM IN SUPERCONDUCTING LACECUO FILMS
H. Luetkens1, Y. Krockenberger, L. Alff, A. Tsukada, M. Naito, E. Morenzoni, T. Prokscha1, A. Suter, R. Khasanov, F.J. Litterst and H.H. Klauss
A La1.9Ce0.1CuO4 film has been studied by Low Energy Muon Spin Rotation. Below 90 K the stoichio- metrically homogeneous film exhibits a magnetic surface layer. The thickness of this layer increases continuously from 0 to 50 nm with decreasing temperature and persists below the superconducting transition at 26 K. Meissner screening with a magnetic penetration depth of the order of 350 nm proves the coexistence of bulk superconductivity and magne- tism in the same sample

TuSG-500 11:15/11:30
QUANTUM CRITICALITY IN A CEPT FERROMAGNETIC KONDO LATTICE
J. Larrea J.;Elisa Baggio Saitovitch;M. B. Fontes;M. Continentino;A. Eichler;
We report for the first time the disappearance of ferromagnetic (FM) order in CePt as seen by ac magnetic susceptibility and electrical resistance measurements under pressures (P) up to ~ 15 GPa. Non-Fermi liquid (NFL) behavior is observed near to the quantum critical point (QCP) at PC ~ 12.1 GPa

TuSG-515 11:30/11:45
THE FFLO STATE: IS CECOIN5 A DEFINITIVE CANDIDATE FOR ITS EXPERIMENTAL REALIZATION?
Mendonça Ferreira, L.;Gratens, X.;Oliveira Jr., N. F.;Bianchi, A.;Movshovich, R.;Sarrao, J. L.;Thompson, J. D.;Pagliuso, P. G.;
We discuss the possible occurrence of the Fulde-Ferrel-Larkin-Ovchinnikov (FFLO) inhomogeneous superconducting state in several materials. In particular, we focus on a detailed discussion about the possibility of a FFLO state in the high field phase diagram of the heavy-fermion superconductor CeCoIn5, including new results of magnetization and magnetic relaxation measurements.

Symposia, Tuesday October 18th

Tuesday October 18th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira I
TuSA - Synthesis and Characterization of Nanocomposites

TuSA 634 11:45/12:00
SELF-ASSEMBLY OF AG NANOSTRUCTURES IN TEO2 GLASSES AND THEIR OPTICAL PROPERTIES
Kassab, Luciana Reyes Pires;de Araújo, Cid Bartolomeu;Naranjo, Luz Patricia;Kobayashi, Renata;
Self-assembled nanoscale patterns formed by silver particles in TeO2-PbO-GeO2 glasses are presented. Using transmission electron microscopy the nanostructures were characterized. Formation of polycrystalline aggregates, connected by wires assembled due to the diffusion of silver nanoparticles are demonstrated. Optical absorption and luminescence measurements of samples heat-treated in different times are reported.

TuSA-659 12:00/12:15
SYNTHESIS AND NONLINEAR OPTICAL PROPERTIES OF A COLLOIDAL SOLUTION OF GOLD NANOPARTICLES IN CASTOR OIL
da Silva, Monique G. A.;Machado, Giovanna;Hickmann, Jandir M.;Alencar, Márcio A. R. C.;Nascimento, César M.;Meneghetti, Mario R.;
Gold nanoparticles with average size of ~10 nm were prepared by heating an aqueous solution of HAuCl4 in the presence of base and castor oil. The nanoparticles were characterized by TEM and UV-vis spectroscopy. A large optical self-phase modulation effect was observed when a laser beam interacted with the colloid.

TuSA- 693 12:15/12:30
SYNTHESIS OF NANOESTRUCTURED SILICA AND CHARACTERIZATION BY X-RAY ABSORPTION AT LNLS
Tomazi, Rodrigo;Dalmon, Danilo;Silva, Rodrigo ;Droppa, Roosevelt;Shinohara, Armando;Suzuki, Carlos;
X-ray absorption measurement using synchrotron radiation combined with image plate detector was successfully used for the characterization of relative nanoporosity of silica soot preforms prepared by vapor-phase axial deposition.

Room Carlos Pena II
TuSB - Supramolecular Materials and Organic Devices

TuSB -I-8 11:45/12:15

SUPRAMOLECULAR MATERIALS AND DEVICES
Koiti Araki, IQ-USP

Symposia, Tuesday October 18th

Tuesday October 18th
2nd Sessions (10:30am – 12:30pm)

Room Manuel Bandeira II e III

TuSD - Structural materials: Processing Properties and Applications

TuSD-749 11:45/12:00
STUDY OF GYPSUM DEHYDRATION BY THE SAXS TECHNIQUE
Shinohara, Armando;Oliveira, Erica;Leite, Luiza;Pinho, Renata;Guzzo, Pedro;Funari, Sergio;
Dehydration of gypsum was investigated the SAXS technique using 2D on-line digital detector as a function of temperature up to 250oC, aiming to study the kinetics of dehydration. Furthermore, the microstructure of gypsum was also investigated by infrared spectroscopy, X-ray diffraction and thermal analysis

TuSD-680 12:00/12:15
TWO-DIMENSIONAL SMALL-ANGLE X-RAY SCATTERING OF HEAT-TREATED NATURAL QUARTZ
Pedro L. Guzzo;Armando H. Shinohara;Sérgio S. Funari;
The coalescence of water aggregates in quartz is investigated by small-angle X-rays scattering using synchrotron radiation. The scattering patterns are anisotropic and its intensities were corrected for parasitic and lattice vibration scatterings. Heterogeneities with sizes ranged from 0.5 to 5 nm were found samples heat-treated above 400oC.

TuSD-670 12:00/12:30
MICROWAVE ABSORBING MULTILAYER MATERIAL PROCESSED WITH POLYANILINE CONDUCTING POLYMER
Folgueras, Luiza;Rezende, Mirabel;
The aim of his work was the development of absorbing material of electromagnetic radiation with low specific mass and flexibility to be applied in strictly restricted areas. Polyacrilonitrile nonwoven was impregnated with conducting polymer Polyaniline and evaluated in relation to its absorption of microwave radiation presenting an attenuation of 99% of radiation.

Room Manuel Bandeira IV

TuSG - Superconductor Materials

TuSG -532 11:45/12:00
THE FFLO STATE: IS CECOIN5 A DEFINITIVE CANDIDATE FOR ITS EXPERIMENTAL REALIZATION?
Mendonça Ferreira, L.;Gratens, X.;Oliveira Jr., N. F.;Bianchi, A.;Movshovich, R.;Sarrao, J. L.;Thompson, J. D.;Pagliuso, P. G.;
We discuss the possible occurrence of the Fulde-Ferrel-Larkin-Ovchinnikov (FFLO) inhomogeneous superconducting state in several materials. In particular, we focus on a detailed discussion about the possibility of a FFLO state in the high field phase diagram of the heavy-fermion superconductor CeCoIn5, including new results of magnetization and magnetic relaxation measurements.

TuSG -519 12:00/12:30
MOBILITY OF INTERSTITIAL OXYGEN AND OXYGEN VACANCIES IN RUSR2GDCU2O8 MEASURED BY ANELASTIC SPECTROSCOPY
Dobrzanski, Rogério;Jurelo, Aucione R.;Grandini, Carlos R.;Gimenez, Juliana M.A.;
The discovery of the superconductivity of RuSr2GdCu2O8 coexisting with the ferromagnetism spatially uniform presented an extraordinary development in the comprehension of magnetism and superconductivity. In this work anelastic spectroscopy measurements are presented, where two relaxation processes had been found, due to mobility of interstitial oxygen and mobility of oxygen vacancies.

Symposia, Tuesday October 18th

Tuesday October 18th
2nd Sessions (10:30am – 12:30pm)

Room Carlos Pena III

TuSH - Sol-Gel Materials

TuSH -I-3 10:30/11:00
SOL-GEL COATINGS ON METALLIC SUBSTRATES
Wander Vasconcelos, DEM/UFMG, MG

TuSH-543 11:00/11:15
THEORETICAL AND EXPERIMENTAL STUDY IN THE ORDER-DISORDER STRUCTURAL OF LINBO3 PURE
Maria. F. C. Gurgel, Iêda L. V. Rosa, Wiss K. B. Junior, Iêdo A. Souza, Márcio S. Góes, Sérgio H. B. S. Leal, Carlos O. Paiva-Santos, Elson Longo. We discuss the theoretical ab intio periodic quantum mechanical and using study experimental data such as DRX, UV-Vis from lithiun niobate pure (LN) and doped (LSN) into a strategy for understanding the origin the of properties photoluminescence (PL) in niobate lithium at room temperature the visible

TuSH-584 11:15/11:30
HIGH TEMPERATURE EQUILIBRIUM IN GERMANATE, TELLURITE AND MOLIBDATE GLASS MELTS
Igor V. Skripachev, Gael Poirier, Rafael C. Sartorelli, Younes Messaddeq, Sidnei J.L. Ribeiro
Thermodynamic simulation of chemical equilibrium in lead germanate, tellurite and molibdate glass melts was made for various temperature conditions. These glasses are considered to be suitable materials for fiber optics and variety of photonics applications

TuSH-547 11:30/11:45
PREPARATION OF BI1.5ZN(NBXTA1-X)1.5O7 THIN FILMS BY SOFT CHEMICAL ROUTE
The pyrochlore Bi1.5Zn(NbxTa1-x)1.5O7 (x= 0; 0.5; 1) were prepared by the polymeric precursor method. The films deposited on different substrates were annealed at different temperatures. X-ray diffraction detected the cubic pyrochlore in films treated above 450oC and the full crystallization occured at 700oC, without formation of secondary or intermediate phases.

TuSH -574 11:45/12:00
PREPARATION OF BIOACTIVE COATINGS BY THE SOL-GEL PROCESS
Vasconcelos, Daniela;Federman, Sonia;Costa, Vilma;Sabioni, Antonio;Vasconcelos, Wander; 409 stainless steel were coated by a single layer of bioactive films in the system SiO2-CaO and SiO2-CaO-P2O5. The bioactivity of the films were tested by immersion on SBF solution. Infrared spectroscopy and atomic force microscopy were used to investigate the deposition process and formation of these coatings.

TuSH-589 12:00/12:15
ORGANIC-INORGANIC HYBRID MATERIAL DOPED WITH ERBIUM OBTAINED BY NONHYDROLYTIC SOL GEL ROUTE
Molina, Celso;Fu, Lianshe;Sá Ferreira, Rute A;Carlos, Luis Dias;Messaddeq, Younes;Ribeiro, Sidney José Lima;Frejlich, Jaime;
Sol-gel processing offers a low temperature route for the development of organic-inorganic hybrid materials potentially suitable for the production of optical waveguides and functional integrated optic (IO) devices at low cost. Organic-inorganic hybrids named di-ureasils doped with erbium were prepared through sol gel derived from different carboxylic acid solvolysis

TuSH-504 12:15/12:30
PREPARATION AND CHARACTERIZATION OF KTAO3 POWDERS AND THIN FILMS
I.T. Weber1*, N. Audebrand, V. Bouquet, M. Guilloux-Viry, A. Perrin
KTaO3 powder and thin films were prepared by polymeric precursor method. Pyrochlore free samples were achieved, but a secondary perovskite, probably K deficient, was identified. Films prepared onto (100) SrTiO3 and (100) LaAlO3 substrates are crack free, homogeneous and highly oriented – epitaxial onto SrTiO3 and textured onto LaAlO3.

Tuesday October 18th

Poster Sessions (3:30 – 6:00pm)

Symposium A - Synthesis and Characterization of Nanocomposites

TUPSA-632
MAGNETIC COUPLING AMONG NANOCRYSTALLINE PARTICLES IN AN AMORPHOUS FECUNBSIB MATRIX
Duque J. G. S.;Nunes W. C.;Socolovsky L. M.;Knobel M.;Pagliuso P. G.;
Amorphous FeCuNbSiB ribbons were submitted to isothermal treatments in order to induce partial crystallization. Magnetization and X-ray measurements indicate the crystallization of two distinct phases. The magnetic coupling among ferromagnetic particles was studied via the
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M technique below and above the Curie temperature of the residual amorphous matrix. High temperature DC electrical resistivity measurements were also performed in both ferromagnetic and paramagnetic state of the amorphous matrix.

TUPSA-633
NON-CONDUCTING SILVER NANOFILMS SELF-FORMED BY THERMAL DIFFUSION OF NANOPARTICLES IN GLASSY ACTIVE UBSTRATE
Pedrosa, Gilmara G.;Cunha, Frederico G. C;de Souza, Ricardo E.;Santa Cruz, Petrus;
We have analyzed the non-conductivity of self-formed silver nanofilms produced by thermal diffusion of nanoparticles in glass substrates. By AFM monitoring of these metallic silver nanofilms over the glass surfaces it was possible to identify a second nanostructure with a dielectric character, explaining the non-conductivity of the sample.

TUPSA-635
POLYMER BLENDS FOR CARBON NANOTUBE DISPERSION
Lavall, R.L.;Borges, R.S.;Trigueiro, J.P.C.;Neves, B.R.A.;Ladeira, L.O.;Paschoal, F.N.;Santos, A.P.;Furtado, C.A.;Silva, G.G.;
The dispersion behaviour of carbon nanotubes in a polymeric matrix formed by a blend between PEO and a copolymer was studied. It was verified that the carbon nanotubes are located preferentially in certain regions of the film, probably due to interactions of nanotube surface with amino end chain of copolymer.

TUPSA-636
THERMAL STABILITY OF THE COERCIVITY IN THE NANOCOMPOSITE SYSTEM FECO/MNO
Araújo, L. R. S.;Montenegro, F. C.;Cornejo, D. R.;
The magnetization of the nanocomposite system Fe40Co60/MnO, prepared by mechanical alloying, has been investigated at high temperatures under magnetic fields up to 0.5 T. Hysteresis curves, measured in the temperature range 300-1000K, showed that the coercivity remains thermally stable in the temperature range 300-850K.

TUPSA-637
SYNTHESIS AND SPECTROSCOPIC ANALYSIS OF LI2CO1-XNIXTI3O8 AND LI2CO1-3X/2FEXTI3O8 PIGMENTS
Câmara, Maria Suely Costa da;Neto , Lauro Pereira; Melo, Dulce Maria de Araújo;Silva, Afrânio Gabriel; Lima, Francisco José; Martinelli, Antônio Eduardo Martinelli;
Abstract- High specific area pigments were synthesized at relatively low temperatures. The results of a spectroscopic study revealed the effect of Ni and Fe on the structure of Li2CoTi3O8, suggesting that increased doping levels contributed to the stability of the system compared to plain Li2CoTi3O8.

TUPSA-639
SYNTHESIS OF NANOSTRUCTURED GD-DOPED CERIA USING A SIMPLE COPRECIPITATION METHOD THAT PRECLUDES CALCINATION
Godinho M.J.;Santos L.P.S.;Gonçalves R.F.;Longo E.; Varela J.A.;Leite E.R.;
CeO2 and Ce0,8Gd0,2O1,9-d was synthesized for a simple method to coprecipitate in different solvents using like precursors cerium and gadolinium nitrates and precipitating with amonium hydroxide. Characterization by Raman spectroscopy and XRD evidenced the formation of a solid solution of gadolinium-doped ceria at room temperature and nanometric particles with crystallite size of 3.1 nm were obtained.

TUPSA-640
NATURAL RUBBER REINFORCED WITH BLANKETS OF COTTON AND JUTE TREATED WITH CONDUCTIVE POLYANILINE
G.S. Silva, F.C. Ferreira, N. Alves, A.E. Job
In this work is shown a method of preparation and characterization of polymeric composites using natural rubber and blankets of cotton and jute as reinforcement. This material has as goal to be applied as inner sole sensors. The blankets were submitted to treatment with polyaniline seeking improvements in the properties of the composite. The results showed that the blankets after treatment with polyaniline demonstrate the behavior of conducting material preserve your properties in the natural rubber.

TUPSA-643
PBTE QUANTUM DOTS FOR PHOTONIC APPLICATIONS: NEW METHODOLOGIES
Menezes, Frederico D.;Jovino, Cauêh N.;Farias, Patrícia M. A.;Ferreira, Ricardo;Santos, Beate S.;
We report a new methodology for the obtention of colloidal PbTe nanocrystals in aqueous medium in the 3-6 nm diameter range. The particles were characterized with absorption spectra and X-ray powder diffraction. The structural data suggest that the PbTe particles are coated with a PbS layer.

TUPSA-644
SYNTHESIS AND CHARACTERIZATION OF LANIO3 AND LAMNO3 PEROVSKITES BY NEW ROTE
Grace Rafaela Silva;
The LaNiO3 and LaMnO3 perovskites were synthesized by new rote and characterized by X-ray diffraction patterns (XRD), thermogravimetric analysis (TG), infrared spectroscopy (FTIR) and differential thermal analysis (DTA).

TUPSA-645
EFFECT OF TUPSA-SITE SUBSTITUTION IN 50PMN-50PT POWDERS PREPARED BY MNT ROUTE
Thays Cristina Boni;Juliana Catarina Bruno;Alberto Adriano Cavalheiro;Maria Aparecida Zaghete;Jose Arana Varela;
50PMN-50PT powders were synthesized using the MNT route. Several samples were prepared in order to study the effects caused by TUPSA-site substitution in 0.5Pb(Mg1/3Nb2/3)O3–0.5(AxPb(1-x)TiO3) powders. High amounts of Pb (10, 20 and 40mol%) were substituted by Ba or (K,La) resulting in perovskite single phase for all samples.

TUPSA-647
POLYANILINE/VANADIUM OXIDE HYBRID MATERIALS OBTAINED BY SOL-GEL
Menezes, Willian;Reis, Dayane;Soares, Jaísa;Zarbin, Aldo;
This work describes the synthesis and characterization of novel hybrid materials formed between polyaniline and vanadium oxide and obtained through the sol-gel processing of a new vanadium(IV) precursor, [V2(OR)8].

TUPSA-648
NANOCOMPOSITE OF PET AND LAMELLAR ZIRCONIUM PHENYLPHOSPHONATE
Lilian S. Brandão;Luis C. Mendes;Marcos L. Dias;Marta E. Medeiros;
Preparation and properties of nanocomposite of PET and zirconium phenylphosphate Zr(C6H5PO3)2 (ZrPP) was investigated. Nanomposite of PET/ZrPP was obtained by extrusion at 280°C. The results showed that the molecular weight of PET decreased as result of hydrolysis caused by presence of zirconium during the processing.

TUPSA-649
PHOTOLUMINESCENCE AT ROOM TEMPERATURE OF DISORDERED BA0.50SR0.50(TI0,80SN0.20)O3 THIN FILMS CHEMICALLY PREPARED
Souza, Iêdo;Cavalcante, Laécio;Santos, Luís;Joya, Miryam;Gurgel, Maria;Rosa, Iêda;Cilense, Mário;Longo. Elson;
Abstract: In the present paper the photoluminescence (PL) of Ba0.50Sr0.50Ti0.80Sn0.20O3 (BST:Sn) thin films were synthesized by the polymeric precursor method (PPM). The thin film was treated at 623 K under oxygen atmosphere for different calcination times and characterized the PL.

TUPSA-650
SYNTHESIS AND CHARACTERIZATION OF NI NANOPARTICLES OBTAINED BY THE POLYOL ROUTE AND STUDY OF THEIR CATALYTIC ACTIVITY ON THE CARBON NANOTUBES SYNTHESIS
Couto, Giselle G;Zarbin, Aldo J G;
In this work we present the synthesis and characterization of different Ni nanoparticles obtained by the polyol route, and their use as catalyst for carbon nanotubes (CNT) synthesis.

TUPSA-651
POROUS MATERIALS AS HOST FOR NANOPARTICLES: AN X-RAY MICROTOMOGRAPHY (MICRO-CT) STUDY
Iglesias, Amadeu Hoshi;Mazali, Italo Odone;Alves, Oswaldo Luiz;
This study reports the characterization of a porous glass-ceramic by x-ray microtomography. This system can be used as a matrix to obtain nanoparticles, due to its microporous nature. Micro-CT allowed the fast analysis of the inner structure and a reconstruction of the three-dimensional image of the material, without the need of sample preparation.

TUPSA-655
MEMBRANE ASSISTED SYNTHESIS OF PBTIO3
Rodrigues de Lucena, Poty;Farah, Carla;Roberto Leite, Edson;Longo, Elson;Varela, José Arana;
Multifuncional oxides membrane can be used as support in heterogeneous catalysis and for

oxide membrane for physical microseparation. Membrane assisted synthesis associated with polymeric precursor method was used for production of PbTiO3 oxide in differents morphology. PTFE membranes were impregnated with cation precursor solution and calcined at 700„aC/2h for production of PbTiO3.

TUPSA-656
SYNTHESIS AND CHARACTERIZATION OF ORGANOPHILIC CLAYS FOR ADDITION IN THE STYRENE MASS POLYMERIZATION
Botelho, Kilça;Hotza, Dachamir;Morgado, Ayres;
The organophilic clays are used in nanocoposites preparation. In this work, the organoclays were synthesized by the reaction of sodium smectitic clays with quaternary ammonium salts. We characterize them by X-ray diffraction (XRD), infrared spectroscopy, and Foster swelling. The incorporation of organoclays in the polystyrene was verified.

TUPSA-661
LOW TEMPERATURE SYNTHESIS OF NB2O5 NANOPARTICLES FROM NB-PEROXY COMPOUND AQUEOUS SOLUTION
Vila, Cristiane;Stroppa, Daniel. G.;Longo, Elson;Leite, Edson R.;
Nb2O5 nanoparticles were prepared by the decomposition of Nb-peroxy aqueous solution. The niobium peroxide was synthesized from niobium oxalate and hydrogen peroxide. The resulting complex was kept refluxing at 85oC and, after 4 days, a white precipitate of Nb2O5 appeared. The material was characterized by XRD, TEM and BET.

TUPSA-663
CHARACTERIZATION OF TIO2 THIN FILMS BY DC MAGNETRON SPUTTERING
Estevan Alarcon, Orestes;Artur Bianchini Bilac, Sergio;Pascoali, Suzy;
In this work were produced thin films of titanium dioxide by magnetron sputtering DC. Deposits were formed onto glass plates, in four time deposition. Films thickness, structure and transmittance were evaluated. Amorphous and crystalline films were obtained, with distinct fractions of anatase and rutile, all layers has high transmittance level.

TUPSA-664
POLYPROPYLENE-CLAY NANOCOMPÓSITOS: EFFECT OF COMPATIBILIZING AGENTS ON CLAY DISPERSION
Adriana B. Stelet, Daniel S. Raimundo, Francisco J. R. Fernandez and Walter J. Salcedo
Lens to evaluate the efficiency of the incorporation of the clays chocolate in the concentrations of 1 and 3% in the mixtures of PP/PP - g-AA. Those mixtures were processed in an extruder to 210°C and 60rpm. The diffraction results showed that the type salt and the processing conditions influenced in the characteristics of the material.

TUPSA-666
PARTICLE-SIZE DEPENDENCE OF THE MAGNETIZATION IN COBALT FERRITE MAGNETIC FLUIDS
Montenegro, F. C;dos Santos, F. E. P;Depeyrot, J.;
The magnetization of magnetic fluids composed of nanoparticules of cobalt ferrite (CoFe2O4), with double electric layer and average diameters from 4,5nm to 11nm, has been measured at room temperature under applied magnetic fields up to 10T. All measured samples present a superparamagnetic behavior which can be fitted by the Langevin model. The magnetization curves are strongly dependent on the particle size.

TUPSA-667
PEROVSKITES BA2HOZRO5,5: COMBUSTION REACTION SYNTHESIS AND SINTERING
Barros, J. V.;Aguiar, J. Albino;
This work presents the study of the synthesis by combustion reaction and sintering of Ba2HoZrO5,5 nanometric perovskite powders. The resulting powders of the combustion were characterized by x-ray powder diffraction and scanning electron microscopy. Uniaxially pressed samples were sintered and were characterized by scanning electron microscopy and x-ray powder diffraction.

TUPSA-668
SYNTHESIS AND CHARACTERIZATION OF BA2(LA1-XSRX)ZRO5.5 NANOSIZED POWDERS
Corredor Bohórquez, Laura Teresa;Aguiar, Jose Albino;
Nanoparticles of barium zirconate doped with strontium (x=0-0.5) were obtained by a modified combustion method for the first time. This powders were characterized by x-ray diffraction, SEM, and were carried out DTTUPSA-TG analysis, as BET measurements. The combustion product was sintered at temperatures between 900C-1300C and characterized structurally.

TUPSA-669
ELECTROGRAVIMETRIC STUDY OF THE INVOLVED PROCESSES IN SE DEPOSITION ON AU ELECTRODE
Manzoli, Alexandra;Solaliendres, Marcelina O.;Tanimoto, Sonia T.;Machado, Sérgio A. S.;
Electrodeposition mechanism of massive selenium, mainly the process of formation of the H2Se species, was studied by cyclic voltammetry (CV), electrochemical quartz crystal microbalance (EQCM) and atomic force microscopy (AFM). The deposition of Se on the Au electrode was found to proceed via upd Se, massive Se and the formation of H2Se via the reduction of the deposited Se.

TUPSA-670
INFLUENCE OF MATERIAL ORGANIC RATIO IN PREPARATION OF COMPOSITON OF NICKEL AND CERIUM THROUGH PECHINI´S METHOD
Luciano. L. M. Sales, Alexsandra.C. Chaves, Marcos A. F. Souza, Dulce M. A. Melo, Antonio G de Souza.
Using the polymeric precursor method, the composite CeO2-NiO, was synthesized. From the TG and DTA data the decomposition temperature and superficial area of the material was studied. The phase crystallization, were characterized by XRD, IR, SEM to later aplicated in catalysts for steam reforming process of methane.

TUPSA-671
CHARACTERIZATION OF NANOSTRUCTURED LAMO3 (M – NI, CO) CATALYSTS PREPARED BY COMBUSTION REACTION
Luciano Leal de Morai Sales
Nanostructured LaMO3 (M = Ni, Co) catalysts with a perovskite structured were successfully prepared by a combustion reaction method, using urea as fuel. The nanocrystalline catalysts were characterized by X-ray diffraction (XRD), thermal gravimetric analysis (TG), Fourier-transform infrared spectroscopy (FTIR), specific surface area measurement (BET) and scanning electron microscopy (SEM). The results obtained by XRD, confirmed a formation.

TUPSA-672
EFFECTS OF BARIUM ON THE PIEZOELECTRIC PROPERTIES OF LEAD ZIRCONATE TITANATE (PZT) CERAMICS.
José Arana Varela;Elson Longo;Mário Cilense;Margarete Soares da Silva;Maria Aparecida Zaghete;Márcio de Souza Góes;Carlos de Oliveira Paiva Santos;
In this work crystalline powders of pure and BTuPSA-doped PZT were obtained by the polymeric precursor method to study microstructure and electrical properties. All analyzed samples of PZT presented high dielectric constant (K) values and the samples of doped PZT presented piezoelectric charge constant (d33) higer than pure PZT.

TUPSA-674
IN-SITU CHARACTERIZATION OF PHOSPHOLIPID BILAYERS BY ATOMIC FORCE MICROSCOPY
Maximiliano L. Munford;Germano Heinzelmann;Tiago O. Vieira;Eric A. B. da Silva;Vânia R. de Lima;André A. Pasa;Tânia B. Creczynski-Pasa;
In-situ atomic force microscopy was used to characterize the morphology of supported phospholipid bilayers formed on the surface of mica substrates by vesicle fusion. For this investigation bilayers of DOPC, DMPC, PCegg and a mixture of DMPC/DMPC were prepared. The influence of melatonin incorporated into PCegg membranes on lipid assembly was observed.

TUPSA-675
PHOTOACTIVATED ELECTRONIC TRANSFERENCE IN DYE SENSITIZED TIO2 – Y2O3 ENCAPSULATED NANOPARTICULES.
Longo, Elson;Leite, Edson;Libanori, Rafael;Ribeiro, Caue;Giraldi, Tania;Varela, José;
The photocatalyst of degradation of Rhodamine B dye in TiO2 and TiO2 - Y2O3 encapsulated was studied by means of photoluminescence and UV-Vis spectroscopy. A investigation about tunelling effects and electronic recombination was done by changing the Y2O3 concentration in the samples.

UPSA-676
SYNTHESIS AND OPTICAL CHARACTERIZATION OF CDWO4 CERAMICS
Kodel, Karina Araujo;Valerio, Mario Ernesto G;Macedo, Zélia S.;
This work aims the production of ceramic CdWO4 and its characterization as potential scintillator for radiation detectors. The CdWO4 powder was prepared by solid-state route and the sintered samples were used for optical characterization. The excitation peaks observed can be related to electronic transitions in tungstate groups (WO66-).

TUPSA-677
PREPARATION OF ZIRCON PIGMENTS FROM THE ZRSIO4-FE2O3 SYSTEM
Sandra Regina Masetto Antunes;Juliano Duarte Albani;Augusto Celso Antunes;Sérgio Cava;Sidnei Antonio Pianaro;Christiane Philippini Ferreira Borges;
Fe-doped ZrSiO4 based pigments were obtained in this work using conventional ceramic method. The ZrSiO4 samples were doped with different concentrations of Fe2O3. The pigments obtained were characterized using XRD and UV-Visible spectroscopy. The results showed changes from light red to dark red when Fe2O3 were added.

TUPSA-679
THE RELATION BETWEEN PHYSICAL AND OPTICAL PROPERTIES OF TIO2 THIN FILMS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING
Feil, Adriano F.;Blando, Eduardo;Hübler, Roberto;Pereira, Marcelo B.;Horowitz, Flavio;
In this work, TiO2 thin films were deposited by reactive magnetron sputtering technique, changing the Ar/O2 rate between 0.8 and 7, in order to relate the structure and stechiometry of the coatings with its optical properties.

TUPSA-681
STRUCTURAL MODIFICATION OF TIN THIN FILMS INDUCED BY BIAS VOLTAGE APPLICATION
Feil, Adriano F.;da Costa, Marlla V.;Blando, Eduardo;Hübler, Roberto;
The aim of this work is to produce TiN films under different deposition conditions to study the growth dynamic process and the relation with Ar / N2.

TUPSA-683
PREPARATION OF ZIRCON PIGMENTS FROM THE ZRSIO4-FE2O3 SYSTEM
Antunes, Augusto Celso;Cava, Sérgio;Albani, Juliano Duarte;Pianaro, Sidnei Antonio;Antunes, Sandra Regina Masetto;Borges, Christiane Philippini Ferreira;
Fe-doped ZrSiO4 based pigments were obtained in this work using conventional ceramic method. The ZrSiO4 samples were doped with different concentrations of Fe2O3. The pigments obtained were characterized using XRD and UV-Visible spectroscopy. The results showed changes from light red to dark red when Fe2O3 were added.

TUPSA-685
HYDROTHERMAL SYNTHESIS OF ANATASE AND FE- OR CO-DOPED ANATASE NANOPARTICLES STARTING FROM METALLIC TITANIUM.
Armoa, Marcelo Henrique;Jafelicci Jr., Miguel;
Hydrothermal synthesis of anatase and Fe- or Co-doped anatase nanoparticles were reported. Physical characterizations show that dopant-metals were homogeneously distributed on the anatase nanoparticles. Thermal treatment in reducing atmosphere at 450oC/4h promotes the dopant-metal phase segregation. These results suggest a high potential for prioritary pollutants photocatalitic degradation uses.

TUPSA-686
INFLUENCE OF ALKALINE ION (K+) ON THE PROPERTIES OF THE NI/SIO2 NANOCOMPOSITES OBTAINED BY THE POLYMERIC PRECURSOR METHOD
Tararam, Ronald;Cavalheiro, Alberto Adriano;Varela, José Arana;
Mesoporous materials with controlled size distributions have received great attention because of their potential use in technological needs. The goal of this work is to knowledge the effects of alkaline ions (K+) on the pore size distribution, dispersion Ni particles and thermal stability of the Ni/SiO2 nanocomposites using the polymeric precursor method.

TUPSA-688
SYNTHESIS OF SNO NANOBELTS BY A CARBOTHERMAL REDUCTION METHOD
Orlandi, Marcelo;Leite, Edson;Longo, Elson;
In this work the synthesis and structural characterization of SnO nanobelts is presented. The nanobelts were growth by a reduction carbothermal method and characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). A growth model for the nanobelts is also proposed.

TUPSA-690
SYNTHESIS BY POLYMERIC PRECURSOR METHOD AND CHARACTERIZATION OF CA(ZRXTI1-X)O3
Sayuli Tamura, Carolina;Rodrigues de Lucena, Poty;R. Cavalcante, Laecio;Longo, Elson;Arana Varela, José;
In this work is proposed the synthesis and study of the structural and morphologic properties of the calcium titanate zirconate, Ca(ZrxTi1-x)O3 solid solution, varying x concentration from 0 to 0.75. Characterization by X-ray diffraction (XRD) and FT- raman displayed that the oxides synthesized by polymeric precursor method form a solid solution in orthorhombic Pnma symmetry.

TUPSA-696
PREPARATION OF ZIRCON PIGMENTS FRON THE ZRSIO4 - CR2O3 SYSTEM
Albani, Juliano Duarte;Antunes, Augusto Celso;Cava, Sérgio;Antunes, Sandra Regina Masetto;Pianaro, Sidnei Antonio;
Cr-doped ZrSiO4 based pigments were obtained in this work using conventional ceramic method. The ZrSiO4 samples were doped with different concentrations of Cr2O3. The pigments obtained were characterized using XRD and UV-Visible spectroscopy. The results showed changes from light green to dark green when Cr2O3 were added.

TUPSA-700
PREPARATION AND CHARACTERIZATION OF AU- CONJUGATED POLYMERS NANOCOMPOSITES
Ribeiro-Filho, Jayme D.;dos Santos, Clécio G.;Salazar, Ana Clara R.;de Melo, Celso P.;
We report the preparation and spectroscopic characterization of nanocomposites formed by gold nanoparticles encapsulated by conjugated polymers chains. The resulting nanocomposites exhibit fluorescence both when in alcoholic solutions as deposited films, and were analyzed through measurements of the average particle size, UV-Vis and fluorescence spectroscopy and scanning electron microscopy.

TUPSA-701
AMPEROMETRIC DETECTION OF GLUCOSE INVOLVING POLYANILINE NANOTUBES AND POLY(GLYCEROL) DENDRIMERS
Fernandes, Edson G.R.;Soares, D.A.W.;de Queiroz, Alvaro Antonio Alencar;
A novel glucose biosensor based on the bioconjugate poly(glycerol dendrimers)/glucose oxidase and polyaniline nanotubes as was studied. The electrode displayed excellent electroanalytical response to the glucose. The peak currents were proportional to the glucose concentration in the range of 10 mM to 200 mM with a correlation coefficient of 0.99.

TUPSA-702
INFLUENCE OF POLYMERIC PRECURSOR ETHERIFICATION IN THE MORPHOLOGIC CHARACTERISTICS OF PR2TIO5 THIN FILMS.
Henrique Gonçalves, Ricardo;Silva, Rafael;Rodrigues de Lucena, Poty;Longo, Elson;Arana Varela, José;
The object of this study was to analyses the influence of two different polyalcohols in the morphologic characteristics rare-earth titanate Pr2TiO5 thin films, comparing ethylene glycol and glycerin. Ethylene glycol present two hydroxyls to form a ramified polymeric chain with citric acids metallic complexes, in this form, the three etherificated hydroxyls of glycerin become the chain larger, more ramified and homogeneous than etherificated ethylene glycol chain, producing nanostructured films with better morphology.

TUPSA-705
EXPERIMENTAL STUDY ON THE NANOSTRUCTURED NI MATRIX NANOTUBE COMPOSITES
Freire Jr., Fernando L.;Solórzano, Iván Guillermo;Ayala, Paola;
It has been predicted that placing carbon nanotubes into appropriate matrices the resulting composites will have enhanced behavior. We study the performance of bulk nanotube niquel-matrix composites prepared through a process used to obtain nano-structured Ni powder from thermodynamical reduction of metal oxides. Nitrogen doped nanotubes are used speculating less internal sliding of the tubes.

TUPSA-707
Y2O3 AND CEO2 ADDITION IN ZRO2 PREPARED BY COMPLEXIOMETRIC METHOD
Paskocimas, Carlos Alberto;Rabelo, Adriano Alves;Macedo, Marfran Cardoso;Nascimento, Rubens Maribondo;Melo, Dulce Maria de Araújo;Martinelli, Antonio Eduardo;
In this work were synthetized of yttrium stabilized zirconia and ceria stabilized zirconia. These compositions were adopted in function of potential use in electrochemical sensors of oxygen, reactors, and electrolytes of fuel cells

TUPSA-708
OBTAINING OF NANOGRAINS OF TIN DIOXIDE VIA CHEMICAL ROUTE
Tebcherani S.M;Sequinel T.;Cava S.;Jesus C.G.;Martins T.;Granado C;Lanfredi S.;Pianaro S.;Longo E.;
In this work, tin dioxide was obtaining by chemical route and controlled pH. Calcination of the precursors was performed in a calorimetric pumb in presence of oxygen at 900°C. The results show a powder with spherical grains of SnO2 with average size of 600 nanometers.

TUPSA-709
THE EFFECT OF NANOSIZED SILVER ON THE LUMINESCENCE OF Y2O3:EU3+ NANOPHOSPHOR
Ferrari, Jefferson Luis;Davolos, Marian Rosaly;Pires, Ana Maria;Santos, Marcos A. Couto dos;
The Y2O3:Eu3+, Ag-containing samples in different quantities were prepared from citrate precursors. The materials were characterized by XRD, TEM, EDS and PLS. The effects of Ag-addition on the luminescence, structure and particle size are regarded.

TUPSA-710
SPIN-COATED COLLOIDAL MASKS
Jasinski, Everton;Pereira, Guilherme M. C.;da Rocha, Alexsandro S.;Spada, Edna R.;
A method for fabrication of colloidal masks by spin-coating is presented. The main factors affecting the quality of masks are discussed.

TUPSA-713
PREPARATION AND CHARACTERIZATION OF POLYETHYLENE-NYLON 6/MODIFIED CLAY NANOCOMPOSITES
Eleonora Erdmann;Marcos L. Dias;Cintia L. Gomes;Victor J.R.R. Pita;Hugo Destéfanis;Delicia Acosta;
This paper shows the importance of both the chemistry of the clay and how the clay was melt processed into the polymer. Three different clay treatments were added to HDPE using melt mixing varying de rotor velocity. The mixtures of organoclay, nylon and HDPE were characterized by X-ray diffraction and the rheological properties were evaluated.

TUPSA-715
HETEROGENEOUS FENTON-LIKE SYSTEMS BASED ON FEO/FE3 O4 COMPOSITES PREPARED BY CONTROLLED REDUCTION OF IRON OXIDES
Costa, Regina;Fabris, José;Lago, Rochel;Albuquerque, Adriana;Macedo, Waldemar;Bergo, Rafael;Ardisson, José;
The effect of the metal/oxide ratio in Fe0/Fe3O4 composites on the oxidation of methylene blue in aqueous medium were studied. Our results show that the combination of Fe0 and Fe3O4 leads to a remarkable increase of the activity of the samples for oxidation of methylene blue.

TUPSA-716
EUROPIUM DOPED-ZINC OXIDE ELECTROLUMINESCENT DEVICE
Lima, Sergio Antonio Marques de;Davolos, Marian Rosaly;Legnani, Cristiano;Quirino, Welber Gianini;Cremona, Marco;
Better electroluminescent devices (ELDs) need to be developed to overcome traditional technology. In this work we are comparing SiO2 and LiF as insulator layers in europium doped-zinc oxide ELD. The device with silica shows more intense electroluminescence and higher color purity than the device with LiF.

TUPSA-719
PROCESSING AND MICROSTRUCTURE STUDY OF ALUMINA CERAMICS FROM MIXTURES OF NANO AND MICROSIZED POWDER PARTICLE
Fonseca, Solange Tamara;Nono, Maria do Carmo de Andrade;Cairo, Carlos Alberto Alves;
The objective of these work is production nanosized Al2O3 powder and mixture of these powder with microsized powder to promote the reduction of the sintering temperature of the alumina ceramic. The nanosized powder is used to join the microsized particles during the sintering step.

TUPSA-723
MATERIAL SYNTHESIS IN THE AL2O3 – TIO2 SYSTEM USING THE POLYMERIC PRECURSOR METHOD
D. S. Melo, H. P.F. Feitosa, M. R. CassiTuPSA-Santos, I.M.G. Santos, A. G. Souza, L. E.B. Soledade , S.J.G. Lima, E. Longo
The present work has as objective the synthesis of powders from the Al2O3 – TiO2 system, with 0, 18, 40, 67, 86, 95 and 100 % of TiO2, using the polymeric precursor method. Stabilization of corundum and rutile is observed for samples with higher amounts of alumina and titania, respectively.
UPSA-724
PREPARATION OF ZIRCON PIGMENTS FRON THE ZRSIO4 - CR2O3 SYSTEM
Albani, Juliano Duarte;Cava, Sérgio;Antunes, Sandra Regina Masetto;Antunes, Augusto Celso;Pianaro, Sidnei Antonio;
Cr-doped ZrSiO4 based pigments were obtained in this work using conventional ceramic method. The ZrSiO4 samples were doped with different concentrations of Cr2O3. The pigments obtained were characterized using XRD and UV-Visible spectroscopy. The results showed changes from light green to dark green when Cr2O3 were added.

TUPSA-725
MODIFICATION IN THE FORMATION OF NANOGRAINS OF TIN DIOXIDE VIA CHEMICAL ROUTE
Tebcherani S.M, Sequinel T., Cava S., Martins T., Granado C, Nobre M.A.L., Chinelatto A.L., Pianaro S., Moreira M.L., and Varela J.A.
In this work, tin dioxide was obtaining by chemical route and controlled pH. Calcination of the precursors were performed in a calorimetric pumb in presence of oxygen at 900°C. The results shows a powder with spherical grains of SnO2 obtained by for sulfuric and ring solution when the pressure was raised in 1 atm.

TUPSA-726
STUDY OF MICROSTRUCTURAL AND TRIBOLOGICAL ALTERATIONS IN TUPSA-C:H, TUPSA-C:N:H E TUPSA-C:F:H FILMS DEPOSITED BY PECVD AND IRRADIATED WITH N+
Zawislak, F. C.;Baptista, D. L.;Galvao, J. R.;Luce, F. P.;Lepienski C. M.;
Filmes de TuPSA-C:H, TuPSA-C:N:H e TuPSA-C:F:H foram depositados por PECVD sobre Si. Após a deposição os filmes foram submetidos a irradiações com N+ a 400 keV, com fluências variando de 1 x 1014 a 3 x 1016 íons.cm-2.Os resultados são discutidos em termos das mudanças estruturais induzidas pela deposição de energia durante a irradiação iônica.

TUPSA-728
MICROSTRUCTURE OF BIOMEDICAL TI ALLOYS UNDER DIFFERENT QUENCHING RATES
Aleixo, Giorgia T.;Afonso, Conrado R. M.;Caram, Rubens;
This work deals with the analysis of microstructure and phases formed during water quenching of beta Ti-25Nb alloy through different cooling rates. As the cooling rate imposed increases, the volume of alfa" martensite acicular phase increases and the size decreases together with diminishing alfa phase quantity.

TUPSA-732
THE EFFECT OF THE STRUCTURE OF STARCH IN THE MECHANICAL MORPHOLOGICAL AND THERMAL PROPERTIES OF POLY (E-CAPROLACTONE) WITH STARCH BLENDS
Derval S. Rosa, Daniela R. Lopes and MariaR.Calil,
Blends of poly(e-caprolactone) (PCL) with three different starches, as well as from of proportions w/w% PCL/Starch: 100/0; 75/25; 50/50; 25/75 were prepared. Mechanical, morphological and thermal analyses were performed in order to compare the performance of these blends with different types of starches.

TUPSA-734
SYNTHESIS AND STRUCTURE OF FE-AL2O3 NANOCOMPOSITES
Macedo, Waldemar A. A.;Ardisson, José Domingos;Santos, Armindo;
We have investigated the synthesis and the structural properties of Fe nanoparticles embedded in Al2O3, and developed a very efficient method to prepare this granular nanocomposite by sol-gel processing. For up to 50% vol. Fe and reduction at low temperature, we obtain pure -Fe-Al2O3 nanoparticles, as determined by Mössbauer spectroscopy.

TUPSA-736
SYNTHESIS AND CHARACTERIZATION OF MONTMORILLONITE/POLYPYRROLE NANOCOMPOSITES USING METALLIC IONS AS INITIATOR AGENTS
Ribeiro-Filho, Jayme D.;Galembeck, André;Lira, Liliana F.B.;de Melo, Celso P.;
We describe the synthesis of montmorillonite/polypyrrole nanocomposites using Fe3+ and Au3+ ions as initiator agents. The polymer chains are intercalated in between the clay lamels. X-ray difratograms reveal an increase of the lamellar separation while infrared spectra allows a better understanding of the steps in the formation of the nanocomposite.

TUPSA-737
PREPARATION AND CHARACTERIZATION OF MESOSTRUCTURED MG-V2O5
Guerra, Elídia M.;Oliveira, Herenilton P.;
Mesostructured V-Mg oxides were synthesized using the surfactant cetyltrimethylammonium bromide (CTAB) and hexadecylammonium (HDA) as template and V2O5 as vanadium source. The cooperative self-assembly based on electrostatic interactions between V species and surfactant micelles lead to the preparation of the mesostructures.

TUPSA-738
DIELECTRIC RESPONSE AND CURIE TRANSITION OF LEAD-FREE FERROELECTRIC P(VDF-TRFE)/BATIO3 MICROCOMPOSITES.
Rossano Gimenes, Maria Ap. Zaghete, Marcio J. Bertolini, José A. Varela, Elson Longo
Poly(vinilidene fluoride-trifluoroethylene)/Barium titanate – P(VDF-TrFE)/BaTiO3 – microcomposites were prepared by hot-pressing method at volume fractions of BaTiO3 powders ranging of 0 to 55%. The relative permittivity and dielectric loss of the microcomposites increases with BaTiO3 addition. Curie temperatures of copolymer matrix decrease with increase of BaTiO3 content

TUPSA-739
SYNTHESIS AND CHARACTERIZATION OF NANOESTRUCTURE OF TIO2 IN DIFFERENT TIMES
Costa, Maria J.F.;Silva, Arilson J.N.;Souza, Bruno S.;Araujo, Antonio S.;
Nanoestructures of TiO2 were synthesized starting from Na2Ti6O13 through the method hidrothermal, used for your formation Na2CO3 and TiO2 (anatase). The obtained materials were characterized (DRX) and (MEV). through those you analyze it was possible to observe that were obtained nanoestructures in the form of tubes with very crystalline structure.

TUPSA-740
BENTONITE/POLYMETHYLMETHACRYLATE NANOCOMPOSITES: PREPARATION AND CHARACTERIZATION
Pereira, Kleberson;Valenzuela Diaz, Francisco;
Clays and other silicates are widely used as fillers for plastics. Recently, a new kind of material, based on clays, is under research and development: polymer nanocomposites. This work describes the procedure to obtain bentonite/PMMA nanocomposites with a sodium bentonite as the silicate material used as filler.

TUPSA-741
SYNTHESIS AND CHARACTERIZATION OF SILICATE/POLYVINYL BUTIRAL NANOCOMPOSITES
Moreira, Adriana;Pereira, Kleberson;Dweck, Jo;Valenzuela Diaz, Francisco;
Usually the clays added to the monomer or the polymer have had their surface modified by the treatment with organic compounds. The present work nanocomposites were prepared by solution intercalation, using bentonite from Wyoming – USA and polyvinyl butiral.

TUPSA-742
FE NANOPARTICLES IN AG AND CD FILMS
Elisa Baggio Saitovicth;Pablo Munayco;
Films of Ag and Cd, with 1.5 at.% Fe, were prepared by vapor quenching technique deposition at low temperatures (20 and 80K), using a evaporator cryostat (see figure)1. The two metals were thermal evaporated from two Ta crucibles with independent deposition controlling.

TUPSA-743
NANOSIZED MASKS PRODUCTION FOR CARBON NANOTUBES DEPOSITION
Antunes, E. F;Corat, E. J.;Beloto, A. F.;Sartorelli, M. L.;A. S. Rocha;Cescato, L;Gutierez. L.E.;
Abstract – Two methods for production of nanosized mask were studied: 1) colloidal masks of polystyrene sphere and 2)holographic lithography for control of density of tube s in carbon nanotubes films deposited by microwave plasma.

TUPSA-744
MÖSSBAUER SPECTROSCOPY AND SCANNING ELECTRON MICROSCOPY CHARACTERIZATION OF GAS AND WATER ATOMISED AISI 316L STAINLESS STEEL FOR POWDER INJECTION MOLDING PROCESS
Zampieron, João Vicente;Miola, Eduardo;Dyonisio, Sylvio;Rossi, Jesualdo Luiz;Ambrosio Filho, Francisco;
The PIM process starts by combining fine metal powders with a polymer binder to create a feedstock suitable for injection molding. The aim of this work was the evaluation of surface, contaminants and oxidation states of the metallic powders by scanning electron microscope and Mössbauer spectroscopy

TUPSA-745
PHOTOLUMINESCENCE AT ROOM TEMPERATURE OF DISORDERED BA0.50SR0.50(TI0,80SN0.20)O3 POWDER CHEMICALLY PREPARED
Joya, Miryam;Keyson, Dawy;Souza, Iêdo;Varela, José A.;Longo, Elson;
Abstract: In the present paper the photoluminescence (PL) of Ba0.50Sr0.50Ti0.95Sn0.05O3 (BST:Sn) powder were synthesized by the polymeric precursor method (PPM). The powder was treated at 623 K under oxygen atmosphere for different calcination times in microwave oven and characterized the PL.

TUPSA-746
CHARACTERIZATION AND PREPARATION OF ORGANOPHILIC BENTONITES FOR MYCOTOXIN ADSORPTION
C de A Viotti, Glêdes;G. Riella, Humberto;
Animals and food contaminated with mycotoxins are a strong problem for human health. In this work, we prepared organophilic clays to study their performance for mycotoxins adsorption. The quaternary ammonium salts were zephiran and tallow. The characterization of the samples was done through the X-rays diffraction, Foster swelling, and chemical analysis.

TUPSA-747
INFLUENCE OF HYDROLYSIS CONDITION IN THE PROPERTIES OF TIO2 SYNTHESIZED FROM AQUEOUS TICL4 SOLUTION
Takimi, Antonio Shigueaki;Roxo, Gabriela Soter;Bergmann, Carlos Pérez;
The hydrolysis conditions employed in the synthesis of TIO2 from TiCl4 aqueous solution are evaluated. Several phase compositions (amorphous, anatase, rutile or mixtures) and nanometric crystallite size can be obtained through careful control of hydrolysis conditions as concentration of NH4OH solution and hydrolysis temperature.

TUPSA-748
EVALUATION OF SYNTHESIS CONDITIONS IN THE PROPERTIES OF ZNFE2O4 OBTAINED BY THE POLYMERIC PRECURSORS METHOD
Souza, A G;Santos, I M G;Souza, S C;Espinosa, J V;Soledade, L E B;- Lima, S J G;Longo, E;Xavier, C S;
The pigment ZnFe2O4, with the spinel structure, was synthesized using the polymeric precursors method. From the TG and DTA data the decomposition temperature of the material was studied. The phase crystallization, grain size and color of the pigments were characterized by XRD, IR, SEM and colorimetry.

TUPSA-749
FORMATION OF CARBON NANOTUBES BY METHANE CVD ON NI/AL2O3 SPHERICAL CATALYST
Nuenrberg, Gizelle de Boit;Almeida, Rusiene Monteiro;Fajardo, Humberto;Mezalira, Daniela Zambelli;Noda, Lúcia Kiyomi;Probst, Luiz Fernando Dias;
Carbon nanotubes were synthesized by chemical vapor deposition (CVD) of methane at 700°C on Ni/Al2O3 spherical catalyst. Raman spectra revealed formation of carbon nanotubes using Ni/Al2O3 calcined at 550 C and 700 C, but single wallled carbon nanotubes were formed preferentially on 550 C calcined catalyst. SEM images of catalyst after reaction showed some spheres covered with carbon nanotubes

TUPSA-750
THICK FILM OF TUNGSTEN FOR PVD
I.A.Santos, R.D.Mansano, P.R.Mei, L.H.Claro;
Abstract-Three types of superficial roughness of Si (substratum) had been used preliminarily to evaluate the deposition of films of W (thick) with interface of Ti, for sputtering. SEM and TAPE TEST had consisted the influences of the surface of the substratum in the quality of the adherence of the metal/semiconductor.

TUPSA-751
PREPARATION AND CHARACTERIZATION OF POLYETHYLENE-NYLON 6/MODIFIED CLAY NANOCOMPOSITES
Eleonora Erdmanna, Marcos L. Dias, Victor J.R.R. Pita, Cintia L. Gomes, Hugo Destéfanis and Delicia Acosta
This paper shows the importance of both the chemistry of the clay and how the clay was melt processed
into the polymer. Three different clay treatments were added to HDPE using melt mixing varying de rotor velocity. The mixtures of organoclay, nylon and HDPE were characterized by X-ray diffraction and the rheological properties were evaluated.

TUPSA-752
Synthesis of $Zn_xCo_{1-x}TiO_4$ ($0 \leq x \leq 1$) catalysts for the H_2S gas removal
B. J. S. Capistrano, A. G Souza, I. M. G. Santos, M. R. C. Santos, L. E. B. Soledade, S. J. G. Lima, E. Longo
$Zn_xCo_{1-x}TiO_4$ ($0 \leq x \leq 1$) catalysts with the spinel structure were obtained by the polymeric precursor method. TG and DTA analyses were performed aiming at studying the thermal behavior of the samples. The phase crystallization and the carbonate band characterization were observed by XRD and IR, respectively

TUPSA-753
THEORETICAL STUDY OF THE ELECTRONIC STRUCTURE OF THE MATERIAL
Sergio R. de Lazaro, Júlio R. Sambrano, José A. Varela and Elson Longo
Complexes oxides of general formula $AA'BO_3$ are study as possible materials to applications in technology of semiconductors. However, these materials can present a structural phase transition according with the composition. In this present work, the electronic structure of $Pb_{1-x}Ba_xTiO_3$ (x = 0.25; 0.50; 0.75) were studies by *ab initio* calculation

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TUPSB537
VERSATILE ELECTROCATALYTIC PROPERTIES OF SELF-ASSEMBLED FILMS OF SUPRAMOLECULAR TETRARUTHENATED COBALT-PORPHYRAZINES
Matsumoto, Marcio Yuji;Mayer, Ildemar;Toyama, Marcos Makoto;Araki, Koiti;Toma, Henrique Eisi;
Novel electrostatically assembled films of tetraruthenated cobalt-porphyrazines and copper-phtalocyanines have been prepared. Such films exhibited enhanced electrocatalytical activity in the oxidation of nitrite and sulphite ions, at pH 6.8. On the other hand, at pH 4.7, selective electrocatalytic reduction of the sulphite ions was observed, mediated by the porphyrazine center.

TUPSB538
ANALYSIS OF THE INCORPORATION OF THERMOPLASTIC STARCH ON THERMAL AND MECHANICAL PROPERTIES OF POST-CONSUMER POLYOLEFIN BLENDS
ROSA, DERVAL DOS SANTOS;CARVALHO, CELSO LUIZ;GUEDES, CRISTINA DAS GRAÇAS FASSINA;
Blends of post-consumer high density polyethylene (HDPE) and polypropylene (PP) containing different proportions of thermoplastic starch (TS) were evaluated by melt flow index (MFI) and tensile strength. The addition of TS reduced MFI of PP, increased MFI of HDPE and HDPE/PP blends. TS also increased the rigidity of the materials.

TUPSB539
STUDY OF THE GELATINIZATION OF STARCH ON DEGRADATION OF PCL/STARCH BLENDS
ROSA, DERVAL DOS SANTOS;REZENDE, MAÍRA DE LOURDES;GUEDES, CRISTINA DAS GRAÇAS FASSINA;
The gelatinization of starch on poly(e-caprolactone)/starch blends in different proportions, was evaluated by alpha-amylase enzyme and soil simulator degradation. The incorporation of starch reduces the degradation time of the materials and the gelatinization of starch reduced the time of degradation of the materials in both enzymatic and soil simulator analysis.

TUPSB541
NEW FLUORESCENT MONOMERS AND POLYMERS DISPLAYING AN INTRAMOLECULAR PROTON-TRANSFER MECHANISM IN THE ELECTRONICALLY EXCITED STATE (ESIPT). PART V SYNTHESIS AND SPECTROSCOPIC CHARACTERIZATION OF NEW MALEIMIDYL BENZAZOLE DERIVATIVES AND ITS COPOLYMERIZ
Santos, Rosane Catarina dos;Faleiro, Nalva Vívian da S.;Corrêa, Dione Silva;Stefani, Valter;
Four new highly fluorescent monomers were synthesized by reaction of 2-(4′(5′)-amino-2′-hydroxyphenyl)benzazoles with maleic anhydride. The monomers are fluorescent in the yellow-green region and presented a Stokes shift between 135 and 186 nm. The radical polymerization of the monomers with MMA produced new fluorescent polymers with good optical and thermal properties.

TUPSB542
ORGANIC MATERIAL AS GAS SENSOR FOR FARM APPLICATION
M. P. Regaço, E. R. Santos, E. A. T. Dirani, F. J. Fonseca, A. M. Andrade
In this work we show results of the thin Polyaniline films deposited in situ oxidative polymerization having different thickness for applications as gaseous ammonia sensor analysis at chicken farm. The electrical characteristics was obtained through conductivity measurements, in order to determinate its dependence with ammonia concentration, humidity and temperature.

TUPSB544
MESOPOROUS TIO2 FILMS MODIFIED WITH CARBOXYMETHYL-TUPSBCYCLODEXTRINS
Toma, Henrique E.;Bonacin, Juliano A.;Toma, Sergio H.;
In this work it is presented the modification of mesoporous nanocrystalline TiO2 films surface by carboxymethyl--cyclodextrins, which were investigated by diffuse reflectance infrared fourier transform (DRIFT) and thermal analyses (TG-DTA). The new material can provide suitable interaction of

non anchoring sensitizers for dye sensitized solar cells

TUPSB545
WETTABILITY OF PLASMA TREATED POLYESTER FILMS
M. C. Feitor;T. H. de C. Costa;C. Alves Jr;C. M de Bezerra;
Abstract – The surface of poly(ethylene terephthalate) (PET) film was modified by low-temperature plasma with O2 and N2 + O2. After being treated by low-temperature plasma, their wettability were investigated by contact angle and surface tension measurement. The result shows that the surface wettability of PET can be improved by low-temperature plasma.

TUPSB547
COMPARATIVE STUDY DETERMINING CONTACT ANGLE AND SUPEFICIAL TENSION USING TWO SOFTWARES.
M. C. Feitor;T. H. de C. Costa;C. M de Bezerra;Alves Jr;
Evaluate the perfomance of a method that determine contact angle and superficial tension. Therefore, it was realized a comparative study using two diferent softwares. One of them was developed by the group of the laboratory materials processing by plasma (labplasma), the other was available in the internet known was surftens.

TUPSB550
ELABORATION OF AN APPARATUS FOR DETERMINING CONTACT ANGLE AND SURFACE TENSION
T. H. de C. Costa;M. C. Feitor;J. M. V. B. S. Souza;C. Alves Jr;M. A. M. da Silva;
Contact angle of a liquid with a solid surface is important for many filds of research. Due to this importance, the laboratory materials processing by plasma (labplasma) developed an apparatus to capture an image of a drop and made software that determines the value of contact angle and superficial tension.

TUPSB551
NOVEL Â-CYCLODEXTRIN INCLUSION COMPOUND WITH IRON TERPYRIDINE DERIVATIVES
Bonacin, Juliano A.;Toma, Sergio H.;Toma, Henrique E.;
A novel inclusion complex enclosing an iron terpyridine derivative was prepared and characterized by Uv-vis and NMR spectroscopy. The inclusion complex presented 2:1 stoichiometry, strong binding constants and electronic environment effect associated to the favorable interaction with the
terpyridine ligand with the β-Cyclodextin host molecule.

TUPSB552
ELECTRICAL AND OPTICAL CHARACTERIZATION OF ORGANIC LIGHT-EMITTING DEVICES BASED ON MOLECULARLY DOPED POLY(9-VINYL CARBAZOLE)
Faria, G. C,;Santos, L. F.;Mergulhão, S.;
Organic light-emitting diodes (OLEDs) based on poly(9-vinyl carbazole) (PVK) films molecularly doped with (tris-8-hydroxiquinoline aluminum) (Alq3), as electron transport material, and N,N′-bis(3-methilphenyl)-N,N′-diphenyl
benzidine (TPD), as hole transport material, have been characterized by electrical and optical measurements. The dependence of the device efficiency on the dopant concentration was evaluated by
current-voltage, impedance spectroscopy and luminance-voltage techniques.

TUPSB553
NON-DISPERSIVE RESPONSE IN POLY(2-METOXI, 5-(2-ETHYL-HEXYLOXI)- 1-4 PHENYLENE VINYLENE) STUDIED BY TIME OF FLIGHT TECHNIQUE
Andrade, A. R.;Faria, G. C,;Santos, L. F.;Mergulhão, S.;Faria. R. M;
The transport properties of holes and electrons in poly (2-metoxy, 5-(2- ethyl-hexyloxi) 1-4 phenylene vinylene) (MEH-PPV) prepared on a p type Gallium Arsenide (p-GaAs) substrate are investigated by the Time of Flight technique (TOF). The results are presented in function of applied field, and the laser incident wavelength.

TUPSB555
AGGREGATION PROCESSES IN METHYL ORANGE SOLUTIONS STUDIED BY ELECTRICAL IMPEDANCE SPECTROSCOPY
de Melo, Celso P.;de Lima, Elisângela G.;de Oliveira, Helinando P.;
We use electrical impedance spectroscopy (EIS) to analyze the behavior of Methyl Orange (MO) solutions for varying concentrations and values of pH. Using a constant phase model (CPE) treatment we have determined the successive steps of the dye aggregation when as well as the pKA of the azocompound.

TUPSB557
ELECTRONIC AND STRUCTURAL PROPERTIES OF THE (101) SURFACE OF TIO2 ANATASE
Santos, M. A.;Caldas, M. J.;Petrilli, H. M.;Blochl, P. E.;
DFT ab initio calculations of electronic and structural properties of anatase TiO2 slabs with (101) surfaces are presented. The relaxation of the slabs is compared to that of the bulk, and core level energies of the most inner atoms of the slabs are used as an additional indication that the bulk geometry is obtained inside the TiO2 slabs.

TUPSB558
MORPHOLOGICAL ANALYSIS OF POLY(O-METHOXYANILINE) THIN-FILMS DEPOSITED BY SPIN COATING TECHNIQUE
Andrade, Adnei Melges de;Lima, John Paul Hempel;
Morphological study of thin films of a conducting polymer obtained by spin coating is reported. Poly(o-methoxyaniline) films were deposited onto glass substrates. Thicknesses were obtained by perfilometry and surface roughness by AFM images. It is shown that thickness is correlated by a power law and roughness decrease with spin speed

TUPSB560
INFLUENCE OF THE CONJUGATION LENGTH IN THE PERFORMANCE OF FLUORENE-BASED POLYMER LIGHT-EMITTING DIODES
Santos, Lucas;Glogauer, Arnaldo;Akcelrud, Leni;Faria, Roberto;
Two different electroluminescent polymers, based on the same conjugated unit (9,9–dihexylfluorene-2,7-divinylene-1,4-
phenylenevinylene), but with different conjugation lengths, have been synthesized in this work, and the performance of the corresponding light-emitting devices was compared by current-voltage and electroluminescence measurements.

TUPSB561
INKJET PRINTING OF POLYANILINE
Dirani, E. A. T.;Santos A. F. F.;Bianchi, R. F.;Andrade, A. M.;
This work describe the process used to form a patterned thin film involving inkjet-related technologies, the self-patterning behavior of a polymeric solution on the substrate, and the drying process that defines the thickness profile and film properties. Special emphasis is placed upon the utilized polymers and conditions, such as polymer structure, molar mass, solvents and concentration.

TUPSB562
A DOMAIN WALL MODEL FOR SPECTRAL REFLECTANCE OF PLANT LEAVES
Brito, Francisco;Freire, Morgana;
We model a plant leaf by using two-dimensional domain walls with internal structures. Such domain walls can be found as soliton solutions in field theory describing magnetic materials. The radiation scattered by such domain walls behaves quite similar to the spectral reflectance of plant leaves.

TUPSB563
PHOTOLUMINESCENCE AND ELETROLUMINESCENCE OF AN EUROPIUM BETA-DIKETONATE WITH PHOSPHINE OXIDE COMPLEX. AN OLED DISPLAY
Adati, Renata Danielle;Lima, Sergio Antonio Marques de;Davolos, Marian Rosaly;Jafelicci, Miguel Jr;Cremona, Marco;Quirino, Welber Gianini;Legnani, Cristiano;
Photo and electroluminescent properties of europium bis[triphenylphosphine oxide] tris[butylmethoxy-dibenzoyl-methane] are regarded. Intensity parameters omega-2 and omega-4 were calculate from the photoemission spectrum, CIE coordinates from photo- and eletroluminescece data reveal a high color purity.

TUPSB564
GAS SENSOR FOR DETECTION OF GASOLINE ADULTERANTS BASED ON FILMS OF PORPHYRIN -V2O5 DEPOSITED ON INTERDIGITATED AU ELECTRODES
Hidalgo, Pilar;Peres, Henrique;Honorato, Alexandre;Ramirez, Javier;Toma, Henrique;Timm, Ronaldo;Koiti, Araki;
Meso-tetra(4-methylpyridinium)Porphyrin/Vanadium(V) oxide xerogel (VXG-4TMPYP) hybrid material films were deposited on interdigitated gold
electrodes and studied as integrated gas sensors for detection of aromatic solvents such as varsol, xylol, etc, used as adulterants of gasoline.

TUPSB566
AFM ANALYSIS OF THE PERNA PERNA MUSSEL SHELLS THERMALLY TREATED
Pessatti, T. L. P.;Martins, J. L.;Pessatti, M. L.;Santos,R. P;Rebelo, L. M;Costa, E. F.;Cavada, B. S.;Freire, V. N.;Freire, J. A. K;Gadelha, C. A.
A.;Cajazeiras, J. B.;
We used Atomic Force Microscopy (AFM) to study the nanostructure of P. perna mussel shells in natura, and thermally treated in the temperature range 100 – 900 ºC. Height, friction, and force AFM analysis showed structural alterations with the temperature

TUPSB567
TRANSITION FROM NON-DISPERSIVE TO DISPERSIVE TRANSPORT IN POLY(2-METOXI, 5-(2-ETHYL-HEXYLOXI)- 1-4 PHENYLENE VINYLENE) (MEH-PPV) DEVICES
Mergulhão, S.;Faria. R. M;Santos, L. F.;Faria, G. C,;Andrade, A. R.;
Transport properties of holes and electrons in poly (2-metoxy, 5-(2- ethyl-hexyloxi) 1-4 phenylene vinylene) (MEH-PPV) prepared on a p type Gallium Arsenide (p-GaAs) substrate were investigated by the Time of Flight technique (TOF). The results are presented in function of applied field, and the temperature.

TUPSB569
GROWTH AND CHARACTERIZATION OF DIPYRIDAMOLE BASED OLED
Quirino, W. G.;Legnani, Cristiano;Louro, S. R.;Tabak, M.;Cremona, M.;
In this work the results of the growth and the electrical and optical characterization of a dipyridamole (DIP) based OLED are presented.

TUPSB570
DIFFERENT EXCITATION PROCESSES OF EU3+-BIS(Â-DIKETONATE) COMPLEX: PHOTO-, TRIBO- AND ELECTROLUMINESCENCE
W. G. Quirino;C. Legnani;E.E.S. Teotonio;H.F. Brito;G.M. Fett;W.M. Faustino;M.C.F.C. Felinto;M. Cremona;
The development of organic light emitting diodes (OLEDs) as display devices promises many advantages over current display technologies. In this work we report the photo-, tribo- and electroluminescence investigation of a novel β-diketone complex, the Eu(TTA)2(TPPO)2NO3. This complex was used to build an OLED device.

TUPSB571
EMITTING MATERIALS: NMR, PM3 CALCULATIONS AND BEHAVIOUR OF OLED WITH [AL•1]3+ AND [ZN•1]2+ (1 = 8-OXYQUINOLINECALIX[4]ARENE)
Bagatin, Izilda;Formiga, A. L. B;Legnani, C;Cremona, M;
Recently, a good device was reported wherein a fluorescent supramolecular (Al•1)3+ complex was used as emissive and electron-transporting material instead of the typical Alq3 compound. Now, we report analysis of structure, comparing NMR and UV-vis results with simulations and molecular dynamics calculations, as well as performance of OLED with [Al•1]3+ and [Zn•1]2+ (1 = 8-oxyquinolinecalix[4]arene).

TUPSB572
EFFECT OF THE POLYMERIC MATRIX IN THE DECAY TIME OF A EUROPIUM COMPLEX IN PVK BLENDS.
Novo M., João Batista;Akcelrud, Leni;Deichmann F., Vitor Angelo;
Europium ion reacting with 2,2'-Bipyridine formed Eu(TTA)3.Bip. The complex was dispersed in poly(vinyl carbazole) (PVK), in various concentrations, giving rise to PVK-Eu. The study about decay time of Eu3+ was carried out in the solid state. It was verified that decay time increased with the increase of the ion concentration in PVK.

TUPSB573
SYNCHROTRON RADIATION RENNINGER SCAN AS A PROBE TO STUDY PURE AND NI-DOPED L-HISTIDINE HYDROCHLORIDE MONOHYDRATE
de Menezes, Alan Silva;dos Santos, Adenilson Oliveira;de Almeida, Juliana Marcela Abraão;Sasaki, José Marcos;Cardoso, Lisandro Pavie;
In this work, Pure and Ni doped L-Histidine Hydrochloride Monohydrate were investigated using synchrotron radiation Renninger scans performed at LNLS. Chosen secondary reflections were carefully measured to allow for the determination of the unit cell parameters of both pure and doped crystals.

Symposium C - Biocompatible Materials

TUPSC-556
CHARACTERIZATION OF TITANIUM CALCIUM PHOSPHATE AND ZIRCONIUM CALCIUM PHOSPHATE FOR X-RAY AND SEM FORMED BY A ALCINATION METHOD
Cléber Cândido Silva;Helainne T. Girão;António Sérgio Bezerra Sombra;
The high efficiency of the calcination process opens a way to produce commercial amount of nanocrystalline bioceramics. Was used to produce nanocrystalline powders of titanium and zirconium experimental chemical procedures: CaP-Ti: Ca(H2PO4)2 + TiO2 and CaP-Zr: Ca(H2PO4)2 + ZrO2 and characterized by X-Ray powder diffraction and SEM analysis.

TUPSC-557
EFFECT OF AGING TREATMENT ON MICROSTRUCTURE OF TI-13NB-13ZR ALLOY
Schneider, S. G.;Novo, M. M. M.;Silva, H. M.;Elias, L. M.;Baptista, C. A. R. P.;
This work describes the influence of the aging treatment on microstructure of the beta type titanium alloy, Ti-13Nb-13Zr (% wt), that is produced by arc melting under argon atmosphere. The characterization of this alloy is based on microstructural analyzes and microhardness tests.

TUPSC-558
DETERMINATION OF THE RELATIVE PERCENTAGE OF THE PHASES ¥Á AND ©¬ ALLOY OF TITANIUM THROUGH ANALYZIS OF IMAGE
Severino Jacksom Guedes de Lima;Sônia Regina Sales Barbpsa;Verônica Lacerda Arnaud;Elza Monteiro L. Filha;
Abstract Given the influence of the morphology and of the relative amount of the phases in the mechanical properties of the alloy of titanium for biomedical applications, the study has as an objective te analyzes the relative percentages of the phases a and ß, obtained by sweeping electronic microscopy (MEV), through the Soft Imaging Systemprogram.

TUPSC-559
LAYERED DOUBLE HYDROXIDE INTERCALATED BY THE LIPID-LOWERING DRUG PRAVASTATIN
da Cunha, V.R.R.;Pereira, D.C.;Barbosa, C.A.S.;Constantino, V.R.L.;
Layered Double Hydroxides (LDHs) containing Mg and Al cations and carbonate anions in the interlayer region are good neutralizing agents used as antacids. In this work, the lipid-lowering compound Pravastatin, which reduce cholesterol biosynthesis, was intercalated between LDHs layers by three synthetic methods and characterized by textural and spectroscopic techniques

TUPSC-560
CHARACTERIZATION OF BINARY ALLOYS OF TITANIUM CONTAINING ALUMINÍUM α -STABILIZING AND NIÓBIUM ß-STABILIZING
Elza Monteiro L. Filha;Verônica Lacerda Arnaud;Sônia Regina Sales Barbpsa;Severino Jacksom Guedes de Lima;
The aim of this paper is to investigate the influence of the variaton of the tenors of al and niobium in the alloy of titanium. The studies mathe an approach of the eletrochemical teses for verification of the break potential, the potential of primary passivation and repassivation, as well as the estabilized phases through X-ray diffraction.

TUPSC-561
TITANIUM OXIDE LAYERS PRODUCED BY MICRO-ARC OXIDATION FOR TITANIUM IMPLANTS
Filho, J.T.;Lidízio, L.R.;Sena, L.A.;Damasceno, J.C.;Achete, C.A.;
The growth of titanium oxide layer on titanium surface by the micro-arc oxidation technique was investigated. Na2CO3 (0.6M) and Ca(CH3COO)2 (0.3M) solutions were employed as electrolytes. SEM and EDS microanalysis were used for morphology and composition characterization respectively. TiO2 films formed by using 0.3M Ca(CH3COO)2 solution showed a porous, homogeneous surface structure, with presence of calcium.

TUPSC-562
SULINDAC INTERCALATED INTO ZN-AL LAYERED DOUBLE HYDROXIDE: A NSAID – LDH NEW HYBRID MATERIAL
Constantino, Vera R.L.;Onody, Virginia P.B.;Barbosa, César A.S.;Santos, Renata R. P.;de Oliveira Silva, Denise;
A NSAID-LDH hybrid material containing sulindac anions intercalated between Zn-Al LDH layers has been prepared and characterized by x-ray
diffractometry, FTIR vibrational spectroscopy and thermal analysis. Products isolated by two synthetic methods (co-precipitation from the metal
chloride solutions and ion exchange employing the chloride precursor) were investigated.

TUPSC-563
STUDY OF TRICALCIUM PHOSPHATE WITH MNO2 ADDITIONS
Ramalho, Eduardo G.;Acchar, Wilson;Fonsêca, Ygor A. A.;Silva, Cleyton L. S.;
Tricalcium phosphate (TCP) is a promising compound for bone and tooth implant materials, due its bioactivity, high solubility and high bioresorption rate. In this work was investigated the effect of MnO2 addition in sintering and mechanical behavior of β-TCP.

TUPSC-564
VEGETABLE POLYMER FOR ENDODONTIC THERAPY APPLICATION
Pimentel, Fabiana;Sousa, Simone;Avillez, Roberto;
The polyurethane derived from castor bean has excellent biocompatibility and similarity to the physical chemical properties of the human bone. This study intends to develop a polymer to fill roots in endodontics. Preliminary tests were made and it was observed that the material could be indeed a substitute for the gutta-percha/filling cements.

TUPSC-565
POROUS TITANIUM SCAFFOLD EXPANDED IN VACUUM FOR BIOMEDICAL APPLICATIONS
Uzumaki, E. T.;Lambert, C. S.;
Titanium foams were produced using expansion in vacuum. The microstructure and morphology of the titanium scaffolds were observed by scanning electron microscopy (SEM). The porous material exhibit an open-cell structure with interconnected macropores, which provide the potential for tissue ingrowths and the transport of the body fluids.

TUPSC-566
THE EFFECT OF PROSTHETIC VARIABLES IN THE METAL-CERAMIC UNION
Sá, J.C.;Silva, J.M.V.B.S.;Alves Jr., C.;Salinas, H.L.L.;
This paper investigate if the reuse of alloys and if changes in porcelain firing procedure affect the wettability of the alloy. A drop of a ceramic was put on a Ni-Cr alloy. The contact angle between alloy and ceramic was measured in order to define the wettability.

TUPSC-568
CHEMICAL AND MICROSTRUCTURAL ANALYSIS OF OPAQUES FELDSPARS PORCELAINS USED IN DENTISTRY
Gomes, M.T.C.;Souza, J.C.M;Paskocimas, C.A.;Nascimento, R.M.;
In this work two opaques dental porcelains usually used in Dentistry had been characterized, enclosing a product of low fusing and a product of ultrasoftly fusing. The porcelains had been analyzed by XRD, SEM, EDS and Fluorescence observing themselves a

variation of its chemical compositions and properties.

TUPSC-569
PRODUCTION AND CHARACTERIZATION OF POROUS HYDROXYAPATITE CERAMICS FOR BIOMEDICAL APPLICATIONS
JOSÉ DA SILVA RABELO NETO;MÁRIO ERNESTO GIROLDO VALÉRIO;PETRUS D´AMORIM SANTA CRUZ DE OLIVEIRA;
The hydroxyapatite (HAP, $Ca_{10}(PO_4)_6$ $(OH)_2$) is the main inorganic biocompatible material used in tissue engineering. In the present work porous HAP were prepared and characterized. The aim is to develop a methodology to produce HAP with porous size in the micrometric and nanometric scales that can be used to easily incorporate important drugs for tissue engineering and in the bone regeneration

TUPSC-572
PROPERTIES OF CROSSLINKED GELS OBTAINED FROM POLYSACCHARIDES ISOLATED FROM AGARICUS BLAZEI MURILL
Menezes, Thiago;Gonzaga, Maria Leonia;Ricardo, Nagila;Soares, Sandra;
Isolated Polysaccharides from Agaricus blazei Murill were crosslinked using epichlorohydrin as the crosslinking agent. The resulting gels were characterized for swelling capacity, thermal stability, phase inversion and morphologic analysis. The characteristics observed suggest that the gels can be used in affinity chromatography and drugs delivery systems.

TUPSC-575
UHMWPE OXIDATION AND MECHANICAL DEGRADATION CAUSED BY CLINICAL X-RAY PROCEDURES
Letícia Araújo Vasconcellos;Eduardo Blando;Roberto Hübler;
We study the UHMWPE degradation as function of the x-ray dose. The elastoplastic proprieties were carried out by means of a nanohardness tester equipment and the polymer degradation was measured using a FTIR equipment. The results show the compromise among the irradiation doses, the surface oxidation and the mechanical properties.

TUPSC-579
PRODUCTION OF POLY(3-HYDROXYBUTYRATE) FROM VEGETABLE OILS BY RALSTONIA
Pezzin, Ana Paula T.;Aragão, Glaucia Falcão;Grigull, Vitor;Schneider, Andréa L.;Capanema, Débora;Formolo, Michele C.;
The synthesis of poly(3-hydroxybutyrate) by Ralstonia eutropha using vegetable oils as co-substrate was investigated. Cultures were established using glucose and fructose and pulse feeding vegetable oils at the beginning of the production phase. The results demonstrated that biomass increased when soye and sunflower oils were utilized.

TUPSC-580
STUDY OF THE REDUCTION OF THE TIME OF FORMATION OF THE COMPOSITE BIOMIMETIC HYDROXYAPATITE
FOOK, MARCUS V. LIA;Silva, Leonardo de A. F. e;APARECIDA, ANAHI HERRERA;SANTOS, MÁRCIO L. DOS;GUASTALDI, ANTONIO C.;
In this work, studied it influence of the fixed use of the SBF during the seven days of the cycle in the reduction of the period of HA formation. The results had shown that occurs the formation of HA in 4th day of the cycle, occurring in the last days the reduction of the Ca/P reason and after the stabilization of this reason.

TUPSC-581
INFLUENCE OF IONS K+, MG2+, SO42- AND HCO3- IN THE ATTAINMENT OF BIOMIMETIC APATITES
APARECIDA, ANAHI HERRERA;FOOK, MARCUS V. LIA;Silva, Leonardo de A. F. e;SANTOS, MÁRCIO L. DOS;GUASTALDI, ANTONIO C.;
In this work, it was studied the influence of ions K+, Mg2+, SO42- and HCO3- in the formation of biomimetic apatites on metallic substrate of Ti c.p., before and after the thermal treatment at 800ºC. The results were analyzed by scanning electron microscopy, energy dispersive X-rays, X-ray diffractometer and Fourier transformation infrared.

TUPSC-582
INFLUENCE OF INTERSTITIAL ELEMENTS ON THE ANELASTIC BEHAVIOR AND BIOCOMPATIBILITY OF TI-ZR-NB-TA ALLOYS
Almeida, Luciano H.;Donato, Tatiani A. G.;Grandini, Carlos R.;Oliveira, Volney M.;Dutra Jr., Atonio T.;Caram, Rubens;
Titanium and its alloys have been used for biomedical applications. This work presents a study of the influence of interstitial elements on mechanical properties and biocompatibility of Ti-35Nb-7Zr-5Ta. Substitutional and interstitial elements cause significant changes in mechanical properties of these materials.

TUPSC-583
PRODUCTION OF POLY(3-HYDROXYBUTYRATE FROM OLEIC ACID BY RALSTONIA EUTROPHA
Capanema, Débora;Grigull, Vitor;Formolo, Michele C.;Pezzin, Ana Paula T.;Schneider, Andréa L.;Aragão, Glaucia Falcão;
The synthesis of poly(3-hydroxybutyrate) by Ralstonia eutropha using oleic acid as nutritional supplement was investigated. Cultures were established using glucose and fructose and pulse feeding of oleic acid at the beginning of the production phase. The results demonstrated that oleic acid can lead to increase polymer production.

TUPSC-584
BIOACTIVE PROPERTIES OF PCL-EUGENOL COPOLYMERS
Tangerino, Laiza M.B.;Grassi, Mariza;de Queiroz, Alvaro Antonio Alencar;
Eugenol was copolymerized with e-caprolactone to give a copolymer with bioresorbable and antimicrobial properties. The osteoinductive and antimicrobial properties were investigated by in vitro and in vivo techniques. The structural and electronic properties of eugenol and its copolymers with caprolactone were investigated theoretically by performing semi-empirical molecular orbital theory calculations.

TUPSC-585
STUDY IN VITRO OF IONS RELEASE FROM ORTHODONTIC APPLIANCES IN DIFFERENT MOUTHWASHES
Alves, Ana Paula Rosifini;Rocha, Gabriela;Rodrigues Júnior, Durval;Dantas, Elizabeth S. K.;
The purpose of this study was to evaluate ions release from fixed orthodontic appliance after immersion in three mouthwashes for 60 days: Oral-B; Cepacol e Noplak. Appliances were brushed and exposed for one minute to fluoride mouthwash daily. Oral-B was shown to be the most aggressive of the mouthwashes.

TUPSC-587
CHARACTERIZATION OF TI-10MO ALLOY FOR DENTAL APPLICATIONS
Alves, Ana Paula Rosifini;Rosa, Luiz Antonio Azevedo;
The purpose of this study was to evaluate the mechanical properties and microstructure changes of the experimental titanium alloy Ti-10Mo after
dental porcelain deposition (thermal cycle was used to simulate porcelain deposition).

TUPSC-588
STUDY IN VITRO OF OVERLOAD IN IMPLANT-SUPPORTED RESTORATIONS
Borba Jr, W.;Alves, Ana Paula Rosifini;Guimarães, Valdir Alves;
The aim of this study in vitro was to evaluate the effect of overload in implant-supported restorations. Samples were loaded with 1000 N in fluoride media (37ºC) using a testing machine. Surfaces were observed in optical and scanning electron microscope. Results showed that micrcocracks for 460.000 cycles approximately.

TUPSC-591
CORROSION RESISTANCE OF NI-CR ALLOYS IN DIFFERENT MOUTHWASHES
Alves, Ana P. R.;Codaro, E.N.;Alves-Rezende, Maria Cristina Rosifini;Dutra, Conceição A.M.;
The objective of this study was evaluated corrosion resistance of Ni-Cr alloys in three types of mouthwashes: Cepacol, Dental Fresh and Periogard. From results obtained was possible concluded that Periogard would be recommended for patients with Ni-Cr-Ti alloys and Cepacol and Dental Fresh for patients with Ni-Cr alloys.

TUPSC-592
COMPOSITE MATERIAL BASED ON CALCIUM PHOSPHATE AND BACTERIAL CELLULOSE
Hisano, Cintia;Martines, Marco A. U.;Barud, Hernane S.;Pecoraro, Edison;Ribeiro, Sidney J. L.;Messaddeq, Younes;
Bacterial cellulose (Acetobacter xylinum) was used to prepare a bioceramic/polymer composite. Pieces of bacterial cellulose were soaked in solutions of CaCl2 and Na2HPO4 at room temperature to investigate the precipitation of calcium phosphate over cellulose fibers. The composites were characterized by XRD, FT-IR, SEM and EDS which indicate the formation of crystalline phase of hydroxyapatite.

TUPSC-595
HYDROXYAPATITE MORPHOLOGY FROM BRUSHITE AND MONETITE PRECURSORS
Mello, Alexandre;Rossi, Alexandre Malta;Santos, Sílvia Rachel Albuquerque;Moreira, Elisabeth Lima;Prado da Silva, Marcelo Henrique;
In the present study, morphological and crystalline structure of hydroxyapatite obtained from alkali conversion from precursors monetite and brushite. The results point to a dissolution-reprecipitation mechanism generating nano-sized apatite crystallites.

TUPSC-596
BIOACTIVITY IMPROVEMENT OF POROUS TITANIUM SAMPLES VIA BIOMIMETIC METHOD
Oliveira, Marize Varella;Medeiros, Waleria da Silva;Pereira, Luiz Carlos;Cairo, Carlos Alberto Alves;Andrade, Monica Calixto;
Porous titanium substrates were submitted to the biomimetic process in order to improve its osteoconductivity. The samples were chemically treated, heat treated at 400 oC and 600 oC and soaked into a modified body fluid solution during periods from 2 to 28 days. Calcium phosphates were found on all samples.

TUPSC-597
HISTOMORPHOMETRIC ANALYSES OF PURE TITANIUM IMPLANTS WITH POROUS AND ROUGH SURFACE
Vasconcelos, Luana Marrota Reis;Oliveira, Marize Varella;Graça, Mario Lima de Alencastro;Balducci, I;Carvalho, Yasmim Rodarte;
This study evaluated bone repair around porous implants and rough implants, made of pure titanium by powder metallurgy, which were implanted in male rabbit's tibiae. Histological analysis showed osseointegration in both implant types, with similar quality of newly formed bone. Additionally, porous

implants also exhibited bone ingrowth into the pores.

TUPSC-599
MICROSCOPIC EVALUATION OF THE ACTIVE PART IN STAINLESS ENDODONTICS FILES - THE EFFECT OF STERILIZING AND REUTILIZATION
Alves, Ana Paula Rosifini;Clemente, Rosana Giovanni Pires;Zöllner, Nivaldo André;Carvalho, Pedro Luiz de;Medeiros, João Marcelo Ferreira de;
The aim of this study in vitro was to evaluate the effects of two sterilization methods, dry heat sterilization (greenhouse) and autoclave sterilization, in stainless steel endodontics files. Also these methods were associated with use of instruments in teeth. After tests, active part was evaluated in scanning electron microscope.

TUPSC-601
CHARACTERIZATION OF POROUS HA - TIO2 COMPOSITES MADE BY THE POLYMERIC SPONGE METHOD
Cestari, João Marcelo Teixeira;Galdino, André Gustavo de Sousa;Zavaglia, Cecília Amélia de Carvalho;
This research aimed to characterize porous HA – TiO2 composites made by the polymeric sponge method. Samples with 50% wt. – 50% wt., 60%
wt. – 40% wt., 70% wt. – 30% wt. were calcined at 550ºC and sintered at 1250ºC, 1300ºC and 1350ºC. Results showed in accordance to
literature.

TUPSC-602
POLYCAPROLACTONE/HYDROXYAPATITE COMPOSITES AS NEW BONE-LIKE BIOACTIVE MATERIALS
Queiroz, Robson;de Melo, Celso P.;
When films of polycaprolatone are exposed to simulated body fluid (SBF) for varying periods of time, a hybrid organic/inorganic composite is formed. Structural analyses reveal that the deposition of apatite begins after only 3 h of exposure, while hydroxyapatite is formed after 21 days.

TUPSC-606
PRODUCTION PROCESS AND CHARACTERIZATION OF TI-15NB ALLOY FOR ORTHOPEDIC IMPLANTS APPLICATION
Martins, G.V., Henriques, V.A.R., Chad, V.M., Machado, J.P.B., Nunes, C.A. and da Silva, C.R.M
Titanium and titanium alloys present the highest biocompatibility among metallic biomaterials. Ti-15%Nb (wt.%) is a promising alloy because of its high biocompatibility and low Young's modulus. In this work it is presented the powder metallurgy method used to produce this alloy and its
characterization by SEM, EDS,
microhardness and XRD

Symposium D - Structural materials: Processing Properties and Applications

TUPSD-649
STUDY OF PHOTOCATALYTIC DECOMPOSITION OF PHENOL USING TIO2 THIN FILM PREPARED BY SOL-GEL TECHNIQUE
Araújo,Adriana B.;Santos,Jomilson M.;Cavalheiro,Alberto A.;Cristante,Valtair M.;Valente,José Pedro S.;Florentino,Ariovaldo O.;Padilha,Pedro M.;
Abstract – The photoactivity on TiO2 thin film prepared by the sol-gel technique was investigated monitoring the phenol degradation. Different reactors were tested varying layout, volume and catalyst amount. Thin films samples were characterized by XRD and SEM. The photoactivity of the samples has shown strong dependence of morphology and crystallinity of the TiO2 phase. Approximately 65% for degradation of phenol was reached in this study.

TUPSD-650
ISOTHERMAL SECTION IN THE CR-RICH REGION OF THE CR-SI-B SYSTEM AT 1200°C.
Coelho, Gilberto;Chad, Vanessa;Nunes, Carlos;Suzuki, Paulo;
The present work report our results on the phase equilibria in the Cr-rich region of the Cr-Si-B system at 1200°C. The alloys were arc melted and heat-treated at 1200°C, and their microstructures were characterized by Scanning Electron Microscopy and X-Ray diffraction analysis. A new isothermal section is proposed.

TUPSD-651
COAGULATION-FLOCCULATION:
REMOVAL OF TIO2 OF SUSPENSIONS USED IN PHOTOCATALYSIS AND OF REMAINING CU2+, CD2+ AND PHENOL AFTER THE TREATMENT OF THE WATER
Florentino,Ariovaldo O.;Santos,Jomilson M.;Valente,José Pedro S.;Padilha,Pedro M.;
Abstract – Removal of TiO2 of suspensions used in heterogeneous photocalysis was studied using the coagulation-flocculation method. The feasibility of removing heavy metals ions and soluble organic compounds remainders after treatment of water was also evaluated. The results were promising.

TUPSD-652
THE INFLUENCE OF A AMMONIUM SALT IN A CLAY IN THERMAL DECOMPOSITION
Bareto, Emerson Paes;
Activation energies of thermal decomposition of an original Brazilian organoclay from thermal analyses had been calculated using the method of Kissinger. The results indicate that there has been a reduction of the activation energy of the chemical processes happened in the clays due to insertion of the salt in the interlamelar region.

TUPSD-653
CHARACTERIZATION OF RAW MATERIAL RN AND PRODUTION OF NEW DIELECTRIC PORCELAIN.
Silva, Eliado Chibério;Acchar, Wilson;Fonsêca, Ygor Alexandre de Aquino;Gomes, Uílame Umbelino;Silva, Nagib Francisco;
This work present the result of development of the process of obtainment and characterization of a tecnic porcelain obtained from raw material of pegmatite from the Seridó region in Rio Grande do Norte state.

TUPSD-654
THERMAL POLYMERIZATION STUDY OF TECHNICAL CARDANOL BY RHEOLOGY AND 1H NMR
Feitosa J. P. A;Souza J. R. R;Ricardo, N. M. P. S;
Polymerized materials were obtained by heating Cashew Nut Shell Liquid (CNSL). The polymerization was observed by 1H NMR and viscosity measurements. The evolution of the bands in the region for phenolic olefin as well as the increase in the flow of activation energy values with the heating time showed the consumption of the C=C from the unsaturated compounds and the formation of new C-H bonds.

TUPSD-655
COBALT COMPLEXES CATALYZING TRANSESTERIFICATION REACTION IN PET/PC REACTIVE BLENDING
Luis C. Mendes;Alexey M. Giornes;Marcos L.. Dias;Alexandre F. Cordeiro;Marcia R. Benzi;
Reactive blending of PET/PC catalyzed by cobalt acetylacetonate were prepared. The reaction products were evaluated through solubility, DSC, TGA and FT-IR. The DSC showed only one (Tg), absence of melting temperature of PET, indicating that an amorphous and miscible material was obtained. The composition and the possible reactions were evaluated by FT-IR.

TUPSD-656
NEW PB(II) ADSORBENT MATERIALS BASED ON CROSSLINKED "ANGICO" POLYSACCHARIDE
Nascimento, R. F.;Paula, Regina Célia Monteiro;Oliveira, M. A.;
Crosslinked derivatives from angico gum and carboxymethylated angico gum were synthesized using epichlorohydrin (E) as crosslinking agent. The maximum uptake capacity of Pb(II) determined by Langmuir isotherm equation. The "angico" gels are seletive to Pb(II) even in presence of alkaline metal ions.

TUPSD-657
XRD, MICROHARDNESS, MAGNETIZATION AND AFM MEASUREMENTS IN AISI 301 LN COLTUPSD-ROLLED STEEL SHEETS
de Lima-Neto, Pedro;Silva, Paulo M.;Santos, Ricardo P.;Mendes, M. P.;Abreu, Hamilton F. G.;Junior, F. N. C. O.;Freire, V.N.;Freire, J. A. K.;
This work reports XRD, microhardness, magnetization and AFM measures in AISI 301 LN colTuPSD-rolled steel sheets. The results obtained showed the martensite formation with increase of the steel deformation

TUPSD-658
THE USE OF THERMAL ANALYSIS IN A COMPARATIVE CARBONATION STUDY OF MASONRY MORTARS CONTAINING SAND AND RECYCLED VIRGIN SCRAP OF THE CERAMIC INDUSTRY
Costa, Juzélia Santos da;Turssi, Maria Madalena;Martins, Celso Aparecido;Baldo, João Baptista;
The thermal gravimetric (TG) and differential scanning calorimetry (DSC) it was comparatively the carbonation behavior of masonry mortars containing sand and recycled aggregates of the ceramic industry (red brick and sanitary ware).Mortars were of similar (cement:lime:aggregate).The results indicate that the carbonation kinetics is faster for the mortar the recycled aggregates.

TUPSD-660
CORROSION BEHAVIOUR OF LASER REMELTING SPHEROIDAL GRAPHITE CAST STEEL
Pinto, M.A. , Cheung, N., Ierardi, M.C.F., Garcia, A.
Spheroidal graphite cast steels are characterized by spheroidal graphite from carbide decomposition due to the high concentration of carbon and silicon. The present work concerns with the laser surface melting on samples of a spheroidal graphite cast steel under different processing conditions in order to evaluate the effects of the treatment on the resulting microstructure and corrosion resistance

TUPSD-662
USE OF CHEMICAL SOLUTION TO REMOVE OXIDATIONS IN PUBLIC TELEPHONES
Euclides Leal Neto.
Abstract – The telephony companies appeal the maintenance services and one of the main problems is the oxidations in its electronic components; as circuit plates printed matter that hinder the electric chain ticket that annuls the transmission enters the telephone exchange with the too much devices of reception.

TUPSD-663
GREAT INFLUENCE OF HEATING RATE ON THE SINTERING OF GTUPSD-DOPED CERIA(CE0,85GD0,15O1,9)
Godinho M.J., Vila C., Gonçalves R.F., Longo E., Leite E.R.;
Ceramics synthesized by chemical methods generate strong agglomerates in its microstructure, as GTuPSD-doped ceria compounds. These agglomerates present a deleterious effect in the sintering process. Through a study of different heating rates, it was obtained dense body ceramics with final homogeneous microstructure, presenting improved properties.

TUPSD-664
CHARACTERIZATION OF TI-B ALLOYS PRODUCED BY SPLAT-COOLING METHOD
Lima, Gisele Ferreira de;Suzuki, Paulo Atsushi;Nunes, Carlos Angelo;
Discs of Ti-B alloys were produced by splat-cooling technique. The samples produced by rapid solidification shown fine microstructure formed by crystalline phases.

TUPSD-665
ADHESION EVALUATION BETWEEN GLASS FIBER/EPOXY AND ALUMINIM IN GLARE COMPOSITES BY LAP SHEAR TEST
Botelho, Edson C;Silva, Rogério A.;Pardini, Luiz C.;Rezende, Mirabel C.;
In this work, FMLs were produced by treating the aluminum foil to promote adhesion bonding by two methods: sulphonic-boric-oxalic acid treatment (SB) and chromic acid anodization (CAA). The adhesion between the polimeric composite material and aluminum was evaluated by lap shear test

TUPSD-666
EVALUATION OF CASTOR OIL POLYURETHANE ADHESIVE VERSUS PHENOL FORMALDEHYDE ADHESIVE FOR FABRICATION OF GLUED LAMINATED TIMBER
Dias, Antonio Alves;Azambuja, Maximiliano dos Anjos;
An experimental analysis with 12 beams of Glulam using the species Pinus and Eucaliptus were made, with a castor oil polyurethane adhesive and a phenol-formaldehyde adhesive. The structural performance was evaluated through static bending tests and the results obtained show the good performance of the castor oil polyurethane adhesive for use in Glulam

TUPSD-667
MECHANICAL PROPERTIES OF PEI/CARBON FIBER COMPOSITES USED IN AEROSPACE INDUSTRY
Botelho, Edson C.;Costa, Gustavo;Rezende, Mirabel C.;
Thermoplastic composite materials have received much interest in structural applications over the last 40 years, particularly in aerospace field. This work shows a study involving the manufacture of carbon fabric/PEI composites by compression molding system and its mechanical properties (compression and flexure properties).

TUPSD-668
MECHANICAL PROPERTIES OF PPS/GLASS FIBER COMPOSITES USED IN AEROSPACE INDUSTRY
Botelho, Edson C;Rezende, Mirabel C.;Costa, Gustavo;
Relationships between processing mechanisms, consolidation quality and the resulting mechanical properties of glass fiber reinforced poly(phenylene sulfide) have been investigated. A compression-molding procedure was applied to simulate the effects of different processing conditions on the quality of finished samples. Microscopic studies of cross-sections, flexural and compression properties were used to examine the quality of impregnation and consolidation.

TUPSD-669
THE PRESENCE OF THE PHOTOLUMINESCENCE EFFECT ON DISORDERED CA(MO,W)O4 COMPOUNDS
Adaci B. Campos;Márcia T. Escote;Miryan R. Joya;Mírzia Monteiro de Jesus;Iêdo. A. Sousa;Elson Longo;José Arana Varela;
Abstract – This work reports on the structural and photoluminescence properties of CaMo0.4W0.6O4 powders produced by the polymeric precursor method. The samples are single phase as verified by X-ray diffraction and Raman spectroscopy. Strong photoluminescence intensity was observed for the structurally disordered samples.

TUPSD-672
CHARPY TEST APPLIED IN MATERIALS THAT WORK AT HIGH TEMPERATURE AND SUBJECT TO THE LOAD IMPACT
Figueiredo, Kléber Mendes;Gomes, Samuel Irati Novaes;
Normally, the Charpy test is realized for to determine the transition ductile-brittle region. In pressure vessels that work at high temperature, under impact load, the fracture generally takes place in the ductile mode, it might to occur with absorbed energy drop, in such case, it requires more studies.

TUPSD-674
USE OF A GYPSUM BASE COMPOSITE FOR THE ATTAINMENT OF ECOLOGICAL WALL
Souza, Luiz guilmerme Meira de Souza;Carneiro, Andrea C.S;Lopes, Joice de Lima;Santos, Reginaldo Dias;Militão, Alessandro Couto;
To present a composite composed for gypsum,, expanded polystyrene, cement, sand and water, to be used in the attainment of a structural part in civil construction, aiming at mainly to the reduction of the constructions costs. It will be demonstrated the thermal, economic and of materials viabilities of the composite

TUPSD-675
COMPOSITE FOR MANUFACTURE OF TUBES FOR HOT WATER FLOW OF HEATING FOR SOLAR ENERGY
Souza, Luiz guilmerme Meira de Souza;Carneiro, Andrea C.S;Lopes, Joice de Lima;Pansard, Leonardo Araujo;Santos, Natanaeyfle R.G,;
Is presented a new type of thermal isolator for hot water conductor tubes to substitute the CPVC tubes conventionally used. It will be presented constructive details of the proposed isolator composite tube. It will be demonstrated that the considered tube presents thermal, economic and materials viabilities. Keywords: Composite, thermal resistance, thermal isolate, thermal efficiency, low cost

TUPSD-676
FIBER INFLUENCE IN THE PROPERTIES OF REACTIVE POWDER CONCRETE
Vanderlei, Romel Dias;Libório, Jefferson B. L.;Giongo, José Samuel;
Steel fibers present large influence on the mechanical properties of reactive powder concrete. The compressive strength was influenced in the early age, the Young's modulus values did not present significant changes and the flexural strength presented a broad increase with high fiber contents

TUPSD-677
LOW COST ALTERNATIVE SOLAR COLLECTOR WITH PVC TUBES
Souza, Luiz guilmerme Meira de Souza;Nascimento, Paulo R. Junior;Santos, Reginaldo Dias;Neto, Herminio Jacomé de Lima;Pansard, Leonardo Araujo;
A model of solar collector not conventional is presented, composed for multiple units of PVC tubes in parallel to absorb solar radiation. The box of the collector is made with a composite of matrix ceramic, and coated with resin, propitiating the elimination of the thermal isolation, usually glass wool. Key words: solar collector, PVC tubes, composite, matrix ceramic and low cost.

TUPSD-678
COPOLYMERIZATION OF ETHYLENE/1,5-CYCLOCTADIENE WITH METALLOCENE CATALYST
Moraes, Luanda S. de; Marques, Maria de Fátima V.; Alvaristo, Evandro L.;
The metallocene system ö2C(Flu,Cp)ZrCl2/MAO was evaluated in Ethylene/1,5-cycloctadiene copolymerizations. The comonomer concentration varied (6.5 M-26.7 M) and pressure of ethylene was constant (2.6 bar). All the produced polymers were characterized by DSC and the polymer density were determined. The results showed high values of catalytic activity in the studied conditions.

TUPSD-679
IONIC STRENGTH INFLUENCE ON THE VISCOSITIES OF BENTONITE/POLYMER SUSPENSION
Ferreira, Heber Carlos;Amorim, Luciana Viana;Barbosa, Maria Ingrid Rocha;Lira, Hélio de Lucena;
This work study the influence of the ionic strength on the viscosities of bentonita/polymer suspensions. The results showed that the increase in the salinity of has a great influence in the apparent and plastic viscosities of the studied suspension.

TUPSD-681
INFLUENCE OF THE STRUCTURAL ORDER-DISORDER ON THE ROOM TEMPERATURE PHOTOLUMINESCENCE OF BARIUM TUNGSTATE
Anicete dos Santos, Marcos;Longo, Elson;Sérgio Pizani, Paulo;Roberto Leite, Edson;A.M.A.Maurera, Maria;Arana Varela, José;Orhan, Emmanuelle;
The nature of intense visible photoluminescence at room temperature of BaWO4 non-crystalline thin films is discussed in terms of experimental results and theoretical calculations. For our study of the origin of visible photoluminescence at room temperature in disordered BaWO4, we performed quantum-mechanical calculations on crystalline and disordered BaWO4 periodic models.

TUPSD-683
ANALYSIS OF THE CONCRETE POST-PEAK BEHAVIOR WITH AND WITHOUT STEEL REINFORCING FIBERS BASED ON THE FRACTURE MECHANICS
Guetti. Paulo C.;Passos. Leonardo B.;Carvalho. Igor P. G.;Nogueira. Cláudio M.;Carrasco. Edgar M.;
The idea of understanding the behavior of the fiber reinforcing steel concrete constitutes the starting-point of this study. Several tests were made on three-point bend beams based on the fracture mechanics and the load displacement curve in post-peak regime results was analyzed.

TUPSD-685
INVESTIGATION APLICATION OF POLIMERS BIODEGRADABLE FOR PRODUCE FILMS
RICARDO ANTONIO FRASCISCO MACHADO;JOSÉ ADRIANO KIELLING;
The polymers, due to their features, are largely used for different applications and also for packaging. However, due to their difficult degradation and the exhaustion of the world petroleum reserves, the use of polymers brings significant environmental problems. Therefore, it is necessary to replace them for bioplastics, obtained from renewable natural sources, that degrade in a short time when exposed to biologically active environment. One example of bioplastics is the PHB (Poly (3-hydroxybutyrate)) deriving from sugar cane. The possibility of the use of PHB in food packaging was studied in the present work. The packages performance was evaluated by means of dimensional tests (dimensions, weight and thickness), mechanic tests (dynamic compression and impact resistance) and physical tests (light transmission), comparing them with other polymer (PP) Polipropilene, (PE) Polietilene packages of equal format.

TUPSD-686
WOOD PROCESSING - SAWN WOOD AND SHEET YIELD OF THE HYBRID EUCALYPTUS GRANDIS X EUCALYPTUS UROPHYLLA
Zangiácomo, André Luiz;Carvalho, Alexandre M.;Lahr, Francisco A. Rocco;
This work shows the conclusion of the study with the Eucalyptus grandis x Eucalyptus urophylla hybrid specie, specifically the yield of the wood processing to obtain sawn wood pieces and veneer sheets.

TUPSD-688
PROCESSING AND STUDY OF DIELECTRIC PROPERTIES OF CATIO3 – BIFEO3
Santos, M. R. P;Ferreira Jr. L. D;Sombra, A. S. B;Sasaki, J. M.;
Abstract – The synthesis of CaTiO3 (CTO), BiFeO3 (BFO) and x.BiFeO3-(1-x).CaTiO3 (x = 0.2, 0.4, 0.5, 0.6, 0.8) were prepared by mechanical activation and thermal treatment. These samples were studied using X-ray diffraction (XRD), infrared spectroscopy (IR) and electrical measurements.

TUPSD-689
MORTAR WITH RUBBER TIRE
Herman J. Cornelis Vorwald;Márcio J. Estefano de Oliveira;Fátima Cristina Torres de Souza;Durval Rodrigues Junior;Messias Borges Silva;
The aim of this work was to replace the fine aggregates by crumb rubber tire in a modified latex mortar. The Simplex Centroid Design was used as an instrument to optimize the mortar composition. The new composites were tested and showed the good potential for recycling of the rubber tire.

TUPSD-691
STUDY OF CURE KINETIC AND FLEXURE STRENGTH OF PHENOLIC COMPOSITE
Granado, Carlos J. F.;VORUBI JR, SELAUCO;TRAMONTIN, SANDRA M. K.;CANCIAN, PÉRICLES S.;
Cure kinetic and flexure strenght of phenolic composite were studied. Higher temperature of cure provided a higher cure degree and conversion rate. Flexure strength results confirmed the influence of cure temperature

TUPSD-693
EFFECT OF METALLIC FILLER IN A FRICTION COMPOSITE
GRANADO, CARLOS J. F.;CANCIAN, PÉRICLES S.;DEL´ÁRCO, ANTÔNIO P.;GOMES, J. L.;
In this work, the effect of metallic filler in a friction composite material made by phenolic resin as binder, oxidized polyacrylonitrile fibers as reinforcement, and others additives and mineral fillers was studied by a friction test machine.

TUPSD-694
INFLUENCE TALC LOADS IN COMPOSITES PROPERTIES OF SIC/AL
Nilson Biagini Sabino;Sandra Regina Masetto Antunes;Nilton de Freitas;Sidnei Antonio Pianaro;Filomena Nóbrega Nadal;Augusto Celso Antunes;Egon Antonio Torres Berg;
In this work CMC of SiC-Talc/Al was obtained by "Squeeze Casting" method and the influence of talc as an addictive in the mechanical properties of the ceramic matrixs was investigated, intending to obtain reduction of cost of total raw material of composite and improvement of its mechanical properties.

TUPSD-695
BENTONITIC CLAYS DOPED WITH LANTHANIDES FOR THE USE IN RADIATION DETECTORS – THERMAL CHARACTERIZING AND XRD
Ubaldo Mesquita, Elmer;Cunha Nascimento, Hallysson;Rodrigues Silva Morais, Crislene;F. L. Lucena, Luciana;
This work has the proposal of attaining and characterizing a bentonitic clay doped with lanthanidic ions through the techniques of thermogravimetry, differential thermal analysis and X-ray diffraction, aiming the development of luminescent powders to the use in radiation detectors.

TUPSD-697
BENTONITIC CLAYS DOPED WITH LANTHANIDES IONS (SM+3 AND ND+3) FOR THE USE IN RADIATION DETECTORS – THERMAL CHARACTERIZING AND XRD
Ubaldo Mesquita, Elmer;Cunha Nascimento, Hallysson;Rodrigues Silva Morais, Crislene;F. L. Lucena, Luciana;
This work has the proposal of attaining and characterizing a bentonitic clay doped with lanthanidic ions through the techniques of thermogravimetry, differential thermal analysis and X-ray diffraction, aiming the development of luminescent powders to the use in radiation detectors.

TUPSD-699
ALUMINA MEMBRANES MADE BY SLIP CASTING PROCESS AND THE EFFECTS OF SINTERING TEMPERATURE
Cela, Beatriz;Santos, João José Melo;Floreoto, Neyde Tomazin;Cortez, Hugo Roberto Rodrigues;
Alumina membranes made by Slip Casting process are used to filtration. Three differents temperatures were tested at the sintering, to pick the ideal one, that gets the membrane the phisics properties wanted. Ceramic membranes with high porosity, good for filtration, and cheaper is the objective of this study.

TUPSD-701
EVALUATING OSB PROPERTIES USING NONDESTRUCTIVE TECHNIQUE
Morales, Elen. Ap. M.;Nascimento, Maria Fatima do;Rocco Lahr, Francisco Antonio;
The aim of this paper is to confirm the possibility to evaluate OSB properties using the ultrasonic waves velocity of propagation. Different mean values were obtained in OSB perpendicular and longitudinal directions, showing the efficiency of this technique in OSB quality control.

TUPSD-706
ELASTO – PLASTIC MATERIALS BEHAVIOR EVALUATION ACCORDING TO DIFFERENT MODELS APPLIED IN INDENTATION HARDNESS TESTS
Feil, Adriano F.;Vargas, André L. M.;Hübler, Roberto;Blando, Eduardo;Fernandes, Jesum A.;
The aim of this work is to obtain materials mechanical properties in accordance with ISO 14577 universal hardness model, the Oliver – Pharr method and the approximation developed by Gong – Miao – Peng which are typically used on Indentation Hardness Tests (IHT), in order to find a possible relation among them.

TUPSD-708
MÖSSBAUER AND X-RAY DIFFRACTION STUDIES OF THE CORROSION PRODUCTS FORMED ON CARBON STEEL IN AN ANTARCTIC ATMOSPHERE
Caytuero Alexander;Baggio-Saitovich Elisa;Saint Clair Oliveira;Miranda Luiz;
The corrosion products of carbon steel in an Antarctic atmosphere have been studied by 57Fe Mössbauer spectroscopy and X- ray diffraction. The rust formed on the steel after 3 months of exposure shows, lepidocrocite, goethite and maghemite; for an exposure of ~20 years an additional proportion of magnetite was found.

TUPSD-709
MICROSTRUCTURE PROPERTIES OF ALFA AND BETA PLASTER
de Araujo, AEP;Milet, ERC;Montenegro, FC;
In this work we present a study of the differences in the microstructure of powdered plaster treated in ambient atmosphere (alfa-plaster) and in controlled atmosphere (beta-plaster). The results showed differences in the grains morphology the and in the mass loss.

TUPSD-711
POWDER MORPHOLOGY DURING NIAL INTERMETALLIC COMPOUND SYNTHESIS
Cintho, Osvaldo Mitsuyuki;Kubaski, Evaldo Toniolo;Moinhos, Cleverson;Capocchi, José Deodoro Trani;
Abstract –NiAl intermetallic compound was produced by high-energy ball milling and during its synthesis a self-propagating high temperature reaction took place immediately before compound formation. SEM analyses before and after the reaction showed different powder morphologies. After reaction, particles are agglomerates of small particles and before this reaction; the milling product shows layered and colTuPSD-welded type morphology.

TUPSD-712
EVOLUTION OF THE CRYSTALLINE PHASES OF PORTLAND CEMENT WITH EPOXY ADDITIVES STUDIED VIA X-RAY DIFFRACTION TECHNIQUE
E. G. Valerio, Mário;V. Conceição, Robrigo;F. Santos, Bento;C. F. Conceição, Antonio;
In this work the X-Ray diffraction technique was used to study the crystalline phase evolution during the curing process of Portland Cement, class G, CPP II F – 32, and class Special, without and with addition of 10% of epoxy resins in the starting mixture.

TUPSD-713
REACTION PARAMETERS EFFECTS ON WATER INCORPORATION IN THE SYNTHESIS OF WEPS (WATER EXPANDABLE POLYSTYRENE) VIA SUSPENSION POLYMERIZATION
Costa, L.A.;Lopes, C.N.;Gonçalves, O.H.;Oliveira, P.F.;Machado, R.A.F.;
In this study it was elucidated the relationship between reaction parameters and water incorporation, in the WEPS preparation. Suspension polymerizations were performed and the amounts of some components, which are related to the blowing agent incorporation, were changed. The results showed differences in the measure where the parameters were modified.

TUPSD-714
HIGH-ENERGY BALL MILLING OF NI25AL75 POWDERS BLEND
Kubaski, Evaldo Toniolo;Moinhos, Cleverson;Capocchi, José Deodoro Trani Capocchi;Cintho, Osvaldo Mitsuyuki Cintho;
Abstract – High-energy ball milling products of a Ni25Al75 elemental powders blend were studied. X ray patterns after 5h of milling showed NiAl3 intermetallic compound formation and Ni and Al peaks. No exothermic

reaction was detected during milling and the results suggest that NiAl3 formation occurs by gradual way.

TUPSD-719
AN APPROACH FOR LIFE CYCLE ANALYSIS OF A TWO STROKES ENGINE BY MONITORING OF THE WEAR
Lima, E. C. C.;Medeiros, J.T.N.;Costa, K.M.L.;
This work is part of a research line that aims to define a non-linear function which models the wear rate of materials as a function of the engine head temperature during the engine Life Cycle, contributing to validate the obtained results, making possible the use of this methodology in other works

TUPSD-721
EVALUATION OF ALTERNATIVE ADHESIVE APPLIED IN FINGER-JOINTED REFORESTATION LUMBER
Marin, Cristiane Prado;Dias, Antonio Alves;Azambuja, Maximiliano dos Anjos;
This work evaluated the glue efficiency of alternative adhesives in finger-jointed reforestation lumbers for the production of elements of glue laminated timber (Glulam) in Brazil. Tension tests had been carried out using lumber in structural size. The results prove the efficiency of the adhesives studied for Glulam.

TUPSD-722
RELIABILITY OF POROUS ALUMINA CERAMICS
Yoshimura, Humberto Naoyuki;Narita, Nilson Eiji;Molisani, André Luiz;Cesar, Paulo Francisco;
Flexural strength and fracture toughness (KIc) values of partially sintered alumina lowered with increasing porosity. Samples with higher porosity (³27%) presented higher Weibull modulus (12~15) than samples with lower porosity (£19%, m=8~10). Large defects related to the granule powders in the compacts were fracture origins that limited the strength.

TUPSD-723
PHOTO-ASSISTED METALORGANIC CHEMICAL VAPOR DEPOSITION OF [100] TEXTURED MGO THIN FILMS FOR YBCO COATED SUPERCONDUCTORS
Sanchez, Dalber;Zeng, JianMing;Ignatiev, Alex;
MgO thin films were deposited on single crystal LaAlO3 (100) and biaxially textured Ni (100) substrates by PhA MOCVD. X-ray experiments provided evidence that the MgO on LaAlO3 and Ni substrates were full textured with [100] orientation perpendicular to the substrate surface. The films had a very smooth surface morphology.

TUPSD-725
SYNTHESIS AND CHARACTERIZATION OF NIO/YSZ COMPOSITES FOR SOFC
Ceramic powders of NiO/YSZ, used as anodes in SOFCs were synthesized and characterized by three synthesis methods: physical mixture, Pechini and impregnation. The analyses evidenced the presence of different NiO species in the composites and a larger recovery of YSZ by NiO in the composite synthesized through impregnation.

TUPSD-726
INFLUENCE OF IMPREGNATION PRESSURE ON MECHANICAL PROPERTIES OF WPCS
Ortigosa Stolf, Denise;Rocco Lahr, Francisco Antonio;
Some mechanical properties of wooTuPSD-polymer composites, obtained from Pinus caribaea var. hondurensis and methyl methacrylate monomer, at some different impregnation pressures, were determined. Results show linear increase in the studied properties when impregnation pressure increases in the cited interval.

TUPSD-729
CORROSION PROTECTION OF STAINLESS STEEL BY PANI CONTAINING COATINGS
Martins, Cristiane Reis;Diniz, Flamarion Borges;De Azevedo, Walter Mendes;
In this study potentiodynamic polarization curves were obtained for stainless steel in contact with 10-2 M Na2SO4 solution in order to evaluate the capacity of PAni/PAA film to protect the surface against corrosion process. A high stability of the PAni coating was observed with a gain of the corrosion potential around 445mV more positive in the substrate covered with PAni as compared to bare steel.

TUPSD-731
PLASMA NITRIDING OF PLAIN IRON SAMPLES SINTERED WITH SUPERFICIAL CHROMIUM ENRICHMENT
Pavanati HC;Maliska AM;Klein, AN;Muzart JLR;
Samples of unalloyed iron were sintered in abnormal glow discharge with simultaneous chromium enrichment. This enriched layer could be interesting when high level of surface hardness is required. A posterior nitriding treatment improves the hardness of the compound layer as well as the depth significantly hardened as consequence of chromium nitrides precipitation.

TUPSD-733
RELATIONSHIPS BETWEEN STRUCTURE AND PROPERTIES FOR PORTLAND CEMENT CONCRETES OF DIFFERENT STRENGTHS SUBJECTED TO HIGH TEMPERATURES
Tolentino, Evandro;Vasconcelos, Wander L.;
An experimental study on the residual modulus of elasticity and thermal conductivity is reported. Concretes with characteristics compressive strength at 28 days of 20 MPa and 50 MPa were studied. The unsealed specimens were heat-treated at 180„aC, 300„aC and 600„aC. The geometry of the structure was described using MIP tests.

TUPSD-734
MECHANICAL BEHAVIOR OF NANOSTRUCTURED CERIA-ZIRCONIA CERAMICS
M.C.A. Nono
Abstract – In this work are reported and discussed the powder preparation and characterization, microstructures and mechanical properties of a tetragonal ceria-zirconia (Ce-TZP) ceramic obtained from a nanosized powder. The mechanical properties of the sintered ceramic were measured by Vickers indentation to obtain the surface hardness and fracture toughness, and 4-point bending test to get the rupture strength values. The results showed that the mechanical properties were strongly dependent of the CeO2 content, the microstructure and the fraction of tetragonal-to-monoclinic stress-induced transformation. Nanostructured ceria-zirconia ceramics showed higher mechanical parameters than microstructured ones.

TUPSD-735
BEHAVIOUR OF YTTRIA-ZIRCONIA NANOPOWDER DURING COMPACTION
Sergio L. Mineiro, Maria do Carmo de A. Nono and Carlos Kuranaga
The objective of this work is focused on the compaction behavior of an yttria-zirconia nanometric powder, with aim to determine an optimum compaction pressure adequate to obtain dense ceramics.

TUPSD-736
MERCURY POROSIMETRY OF PORTLAND CEMENT CONCRETES OF DIFFERENT STRENGTHS SUBJECTED TO HIGH TEMPERATURES
Tolentino, Evandro;Vasconcelos, Wander L.;
We analyzed the geometry of the structure of Portland cement concretes subjected to heat-treatments. We studied concretes of with characteristics compressive strength at 28 days of 20 MPa and 50 MPa. An increase of average pore diameter and critical diameter with the temperature raise were observed.

TUPSD-739
MICROCRACKING IN BLASTFURNACE SLAG CONCRETE SUBJECTED TO DIFFERENT CURING CONDITIONS
Camarini, Gladis;Ferreira Jr., Epaminondas Luiz;
This research observed microcracking in slag cement concretes. Slices from concrete (cover and core) were observed in SEM. Concretes were cured at 60ºC and in water for 7 days. The results showed microcracks around the aggregate and voids in concrete cover. The steam curing increased the concrete microcracks.

TUPSD-740
MORPHOLOGICAL AND CRYSTALLINE STUDIES OF ISOTATIC POLYPROPYLENE DURING PLASTICALLY DEFORMED BY WAXD, SAXS AND SEM
Rossi, L;Machado, G;Vargas, T;Denardin, E;Samios, D;Teixeira, S.R;
The aim of the present work is the investigation of the morphological and crystalline properties of semi-crystalline polymeric materials in i-PP specimens, before and after deformation by uniaxial compression process. The crystalline and morphological characterization were accessed by Wide Angle X-ray Diffraction, Small Angle X-ray Scattering, and Scanning Electron Microscopy.

TUPSD-741
STUDY OF ARGON PLASMA ETCHING OF POLY(N VINILCARBAZOLE)
Tais Aparecida de Assis Garcia Moreira;Shirley Possidonio;Wang Shu Hui;Roberto Koji Onmori;
Since the discovery of conductivity in polymers some applications required the conducting films. Conducting Polymers have been investigated extensively and a fabrication of line of conducting polymers by etching technique using argon plasma is present in this work. The paper is shared in 3 parts; the sintese of policarbazole; taking of film and its etching though plasma of Ar for constitution of conducted interconnection for aplication in device in microeletronic.

TUPSD-742
EFFECT OF COATING ON THE CREEP BEHAVIOR OF THE
D.A.P. Reis, C.R.M. Silva, M.C.A. Nono, M.J.R. Barboza, F. Piorino, E.B. Taddei
Abstract Not Available

TUPSD-743
SYNTHESIS OF TERPOLYMERS WITH CONJUGATED RIGID BLOCK ALTERNATING
Tunisia Eufrasino Schuler;Edmilson Braga;Wang Shu Hui;Roberto Koji Onmori;
The terpolymers with a rigid conjugated block interspaced with an inert octane-1,8-dioxy soft block has been synthesized by using a Wittig condensation reaction. The terpolymers were characterized with UV-vis and fluorescence techniques. A diode structures using this polymer as active layer were prepared to study the electronic and optical properties.

TUPSD-744
ANALYSIS OF FIRE EFFECTS ON THE ADHERENCE OF STEEL-CONCRETE PRODUCED BY RECYCLED AGGREGAT
Estefano de Oliveira, Márcio J.;Assis, Cássia S.;
Civil construction works, including new constructions, demolitions and reforms, produce a considerable amount of construction and demolition waste (CDW) that generally is discarded in inadequate way. The specimens were produced with reinforced concrete with partial natural aggregate substitution by recycled aggregate and the conventional reinforced concrete has been produced as reference.

TUPSD-745
PROPERTIES OF PHENOLIC MATRICES REINFORCED WITH NATURAL RAW MATERIAL.
Cristina Gomes da Silva, Edgar A. Sanches, Ademir G. Costalonga,Elisabete Frollini
In this work, it was studied the thermal stability, mechanical and morphological aspects of the composites of fenolic composites reinforced with natural fibers, which are used aiming to improve the fenolic thermorigid features and decrease the need for nonrenewable material providing both economical and environmental benefits

TUPSD-746
COPPER COMPLEX. STUDY OF THE THERMAL BEHAVIOR AND UTILIZATION AS PRECURSOR IN THE SYNTHESIS OF COPPER FERRITE
E. A. Sanches; A. G. C. Costalonga, Y. P. Mascarenhas
In this work, it was studied the thermal stability and thermal decomposition of copper complex in synthesis of copper ferrite. Methods by via chemistry generate a homogeneously dispersed material in low temperature. The thermal decomposition carry out with formation of cuprous oxide takes the formation of defects in the obtained final oxides

TUPSD-747
THE MASTER SINTERING CURVE DETERMINATION BY CHEMISTRY AND PHYSICS' METHODS FOR SNO2 SYSTEMS
Sequinel T.;Tebcherani S.M;Cava S.;Mendes J.B.E.;Jesus C.G.;Nobre M.A.L.;Pianaro S.;Varela J.A.;
In this work, tin dioxide was obtained by physical method of oxide mixture and chemical method of polymeric precursors. The oxide was sintered in a dilatometer using constant heating rates. The global sintering energy could be determined by applying the model of Master Sintering Curve1 on the results.

TUPSD-748
OBTENÇÃO E CARACTERIZAÇÃO DE POLIÉSTER TERMOFIXO CARREGADO COM BARITA PARA SER EMPREGADO NA FABRICAÇÃO DE PLACAS ISOLANTES PARA BARRAR A RADIAÇÃO-X
Masson, Terezinha Jocelen;Miranda, Leila Figueiredo;Munhoz Jr, Antônio Hortêncio;Naime, Virgínia;Saito, F. A.;Costa, Gustavo C.;
In this work were studied polyesters composites with barite to radiological protection, to substitute traditional barrier. To verify the efficiency of the composites it was used the lead as reference. To studied the effect in the variables was used experiment factorial 26 planning

TUPSD-750
NUMERICAL SIMULATION OF HFCVD PROCESS USED FOR DIAMOND GROWTH
Baldan, Maurício Ribeiro;Barbosa, Divani;Villa Nova, Hélcio F.;
Hot-filament chemical vapour deposition (HFCVD) is a common method employed for diamond deposition. Typically in this method a dilute mixture of carbon containing gas such as methane in hydrogen is thermally activated at sub atmospheric pressures by a hot filament. Due to the filament-substrate proximity, large temperature variation across the substrate is possible. In this work we investigate the role of fluid flow and heat transfer from the filament to substrate in determining the quality of diamond growth. The commercial software CFX was used to calculate velocity field, temperature distribution and fluid flow. A vortex was identified on the substrate.

TUPSD-751
RBS ANALYSES OF TIN FUNCTIONAL THIN FILMS DEPOSITED BY MAGNETRON SPUTTERING ON AISI M2 SPEED STEEL AND AISI D6 TOOL STEEL
Vieira, Rogério de Almeida;Nono, Maria do Carmo de Andrade;Oliveira, Ivo de Castro;
TiN functional thin films deposited at different Ti and N percentages in depth have been produced on the surface of AISI M2 speed steel and AISI D6 tool steel with a titanium interlayer by using magnetron sputtering. In this work, surface morphology, depth profile, chemical analyses and bonding of TiN functional thin film-steel substrate system are presented and discussed.

TUPSD-752
CERAMIC PRODUCTION BY USING THE ORGANIC RESIDUES WITH GELLING CAPACITY
Minatti, J. L;Santana, J. G. A;Santos, F. P;Campos, E;Melo, F. C. L.;
In this work, organic and inorganic residues were placed into a colloidal dispersion with the purpose of obtaining porous alumina ceramics. After sintering, these ceramics were characterized by mechanical strength, apparent porosity and verification using optical microscopy. The results confirmed the possibility of the use organic residues with gelling capacity.

TUPSD-754
HARD ANODIZING FOR ATTAINMENT OF CERAMIC MEMBRANES
Timoteo Jr., José Flávio;Floreoto, Neyde Tomazin;Gouveia, Priscila Siqueira de;Miranda, Auristela Carla de;Melo, José Lindon Jonhson de;
ABSTRACT – The fabrication of alumina membranes by electrochemical oxidation of annealed and unannealed aluminium was studied. Porous layers were grown in 1,5MH2SO4 at 5 ºC. The morphology of the layer anodic oxide was seen with SEM, and the composition with x-ray diffraction.

TUPSD-755
EFFECTS OF HYDROGEN ON THE MECHANICAL AND MICROSTRUCTURAL PROPERTIES OF HIGH HEAT RESISTANT STAINLESS STEEL
de Almeida, L. H.;dos Santos, D. S.;Gonzalez, C. S.;
This work shows the influence of hydrogen and aging on mechanical properties, specifically the reduction in the ductility of type HP-45 stainless steel modified with Nb, Ti and Y, associating these effects with microstructural changes.

TUPSD-756
INFLUENCE OF OXYGEN ON THE DAMPING PROPERTIES OF NB-1%ZR
Florêncio, Odila;Silva Jr, Paulo Sergio;Ishikawa, Tomaz Toshimi;Grandini, Carlos Roberto;
Mechanical spectroscopy measurements were performed between 300K and 650K in a polycrystalline Nb-1%Zr sample, using a torsion pendulum operating in frequencies at the hertz bandwidth and pressure about 2x10-5 mbar. Experimental spectra were obtained under two conditions of the samples with distinct amounts of oxygen with different internal friction strengths.

TUPSD-759
STABILIZATION OF COPPER BASED SHAPE MEMORY ALLOYS
Cabral Pina, Euclides;Gonzalez, Cesar Henrique;de Quadros, Ney Freitas;
Abstract – The objective of this work is to study the martensitic stabilisation in a Cu-Al-Mn SMA submitted to three types of thermal treatments: quenched in water, quenched at 100oC and air quenched. The results of the transformation temperatures behaviour and transformed fraction changes are analyzed in function of thermal treatments influences and stabilization processes.

TUPSD-760
DENSIFICATION EVOLUTION DURING THE SINTERING PROCESS WITH CONSTANT HEATING RATE
Migliorini D.W.;Lanfredi S.; Granado C;Mendes J.B.E.;Cava S.;Tebcherani S.M;Sequinel T.;Kupchak L.;Pianaro S.;Cintho O.M.;Varela J.A;
In this work, the relationship between linear shrinkage and compact density was verified for 1 mol% manganese doped SnO_2. The compact density can be estimated from resultant curves of linear shrinkage that are well fitted by a Boltzmann sigmoidal function

TUPSD-761
STUDY OF POROUS ZRO2-TIO2 CERAMIC AS SOIL HUMIDITY SENSOR FOR IDENTIFICATION OF RISK-AREAS
OLIVEIRA, Rodrigo de Matos;NONO, M.C.A.;KURANAGA, Carlos;WADA, Marcel;
The great importance of the soil humidity sensors is related to its use in the identification of areas of risk, specifically slope stability and landslide susceptibility, that in Brazil exist stories dated since 1671, and still have caused, mainly in last the two decades, accidents in some Brazilian cities.

TUPSD-762
CHARACTERIZATION OF ULTRA FINE GRAINED DUPLEX STAINLESS STEEL OBTAINED BY MECHANICAL ALLOYING
Moinhos, Cleverson;Kubaski, Evaldo Toniolo;Capocchi, José Deodoro Trani;Cintho, Osvaldo Mitsuyuki;
A elemental powders mixture of Fe19.5Cr5Ni was processed in an ATTRITOR type high energy mill during 15 hours. The milling product was atmosphere at different temperatures. These products were analyzed by x-ray diffraction analysis (XRD), optical microcopy to evaluate the alloying process.

TUPSD-763
PREPARATION OF COMPOSITE OBTAINED FROM INDUSTRIAL BY-PRODUCT OF PORCELAIN STONEWARE POLISHMENT AND GYPSUM
Ferraz, Andréa;Santa-Cruz, Petrus;
The by-product of Porcelain Stoneware Polishment, named SIPP by us, was analyzed, showing the presence of minerals with high SiO2 concentration and others, allowing the use as raw materials for composites. In this work, we will show SIPP/gypsum composites aiming the
improvement of its mechanical properties.

TUPSD-766
OBTAINING OF PIGMENT NANOGRAINS OF CHROMIUM-DOPED TIN DIOXIDE VIA CHEMICAL ROUTE
Cava, Sergio;Tebcherani, S. M.;Sequinel, T.;Jesus, C.G.;Martins, T.;Migliorini, D. W.;Pianaro, S.;Longo, E.;Varela, J. A.;
Chromium-doped tin dioxide was obtaining by chemical route. Calcination of the precursors were calcined in presence of oxygen at 900°C. A powder with spheric grains of SnO2 with average size of 600 nm was obtained. Spectroscopic analysis of the pigment shows a 2E band and an
intense pink color.

TUPSD-767
MECHANICAL BEHAVIOR OF CAST TI ALLOYS FOR BIOMEDICAL APPLICATION
Andrade, Protásio N.;Contieri, Rodrigo J.;Ferrandini, Peterson L.;Coelho, Adelino A.;Caram, Rubens;
Ti-Nb alloys were arc melted in a water-cooled copper hearth under inert atmosphere. After

preparation, samples were cast in copper molds in a centrifugal casting equipment. The results obtained show that the alloys had their mechanical behavior improved, due to the martensitic microstructure produced by the rapidly cooling.

TUPSD-768
SEARCH FOR A QUANTUM CRITICAL POINT IN YB FCC METAL UNDER HIGH PRESSURE
Fontes, Magda;Ramos, Scheilla;Continentino, Mucio;Baggio-Saitovitch, Elisa;Enderlein, Carsten;
Our actual interest is to explore the possibility of existence of non-Fermi liquid (NFL) behavior before this material undergoes a metal-to-semiconductor transition. We use from 1.5 to 300K, in a 35 kbar hydrostatic pressure cell (R(T,P)).

TUPSD-770
SYNTHESIS OF CERAMIC PIGMENTS OF TIN DIOXIDE VIA POLYMERIC PRECURSORS METHOD
Cava, S.;Tebcherani, S. M.;Migliorini, D. W.;Pianaro, S.;Paskocimas;Longo, E.;Varela, J. A.;
Tin dioxide was obtaining by polymeric precursor method and doped with Co, Cr and Fe. Calcination of the precursors were performed in kiln in temperature range of 700-1200°C. Spectroscopic analysis of the obtained pigments shows variety of colors that changes with the temperature and
cassiterite crystal growth.

TUPSD-772
THE EFFECT OF THE STRUCTURE OF STARCH IN THE MECHANICAL MORPHOLOGICAL AND THERMAL PROPERTIES OF POLY (E-CAPROLACTONE) WITH STARCH BLENDS
Blends of poly(e-caprolactone) (PCL) with three different starches, as well as from of proportions w/w% PCL/Starch: 100/0; 75/25; 50/50; 25/75 were prepared. Mechanical, morphological and thermal analyses were performed in order to compare the performance of these blends with
different types of starches.

TUPSD-777
STRESS-STRAIN MODELS FOR FATIGUE UNDER MULTIAXIAL LOADING
Meggiolaro, Marco;Castro, J.T.P.;
In this work, the main stress-strain models under multiaxial loading are reviewed and compared. The studied models correlate stresses and strains under proportional loading. Fatigue lives are calculated considering all combinations of the main stress-life, strain-life and stress-strain models from the literature, evaluating their performance.

TUPSD-778
THE MOISTURE ABSORPTION OF COCONUT SHELL FIBER
Mendes, J.U.L. , Souza, L.G.M., Silva, E.H. , Anunciação, E.B.B.;
In this study, the variation in the moisture percentage of the coconut shell fiber was analyzed through submittance to a number of superficial tests: thermal aging and bath with delayer fire. The coconut fiber in its natural state was considered as a standard parameter.

TUPSD-779
STUDY OF ADDITION PEGMATITES IN THE PROPERTIES OF RED CERAMICS PRODUCTS
Silva, N.F., Gomes, U.U., Acchar.W. and Silva, E.C
The raw materials studied is this work can'll be used by the red ceramics industry, depending on the adequace of the ceramic aspects through mixture and thermal processing, in order to get products with desired final characteristics. The results had shown that the pegmatite addition the clay increases the absorption and diminishes the retraction after the burning

TUPSD-781
PITS MICROSTRUCTURE AND MORPHOLOGY ANALYSIS ON STEEL ALLOYS
Wilson de Jesus Silva, José;Norberto Codaro, Eduardo;Rogerio de Oliveira Hein, Luis;
Pit corrosion is the most dangerous manner of localized attack and it occurs when there is a passive film breakdown in an electrolyte presence, resulting in local metal surface dissolution and then cavities.

TUPSD-783
STUDY OF FLAME ASSISTED CHEMICAL VAPOR DEPOSITION TECHNIQUE TO OBTAIN TIN DIOXIDE FILMS
Rafael M. Trommer, Antonio S. Takimi and Carlos P. Bergmann
Crystalline tin dioxide films were deposited onto a stainless steel substrate via Flame Assisted Chemical Vapor Deposition (FACVD) technique. A solution of stanous chloride was used as precursory solution. The acquired films are consisted of smalls aggregates and showed the presence of
cassiterite phase

TUPSD-786
LAMINATED TIMBER CLASSIFICATION BY NONDESTRUCTIVE TESTS
Zangiácomo, André Luiz;Morales, Elen A. M.;Lahr, Francisco A. Rocco;
Abstract – The aim of this paper is to confirm the possibility to classify laminated timber for glued laminated timber production using the ultrasonic and transversal vibration nondestructive methods and static bending test to compare the results and to show satisfactory performance.

TUPSD-788
OXIDATION OF THE AISI 304 AND AISI 439 STAINLESS STEELS
Resende, F.C.T.;Reckman, A.;Sabioni, A.C.S.;Huntz, A.M.;
It is shown a comparative analysis of the high temperature oxidation behaviour in AISI 304 and AISI 439 stainless steels, in four different atmospheres (O2, air, air/H2O, Ar/H2/H2O), at 850o, 900o, and 950oC. It was also investigated the role of the oxygen and chromium diffusion on the growth of chromia scale on these steels.

TUPSD-789
HOW TO RUN MIXTURE EXPERIMENTS OPTIMIZING COMPONENTS PERCENTAGES IN MECHANICAL PROPERTIES MAXIMIZATION.
Nardi, José Vidal;
A pozzolanic product can be understood as a ternary mixture where two components are ceramics solid particulates and the third components is liquid. In this work the experimental data of the measured properties were adapted to show how to run mixtures experiments optimizing compositions of the components using triangular surface.

TUPSD-791
MECHANICAL ALLOYING OF PBN
Arantes, V. L., Araújo, P. G., Arantes, A.
Abstract Not Available

TUPSD-792
INFLUENCE OF THE SIZE DISTRIBUTION, COMPACTING PRESSURE AND HEATING RATE ON THE PORES FORMATION IN CERAMIC BODIES BEARING CRUSHED GLASS AND FOAMING AGENT
Andrea Pokorny, Juliane Vicenzi and Carlos P. Bergmann
The possible use of waste glass to obtain foam glass has been studied. Soda-lime glass cullets from bottleswere used as starting raw materials. CaCO3 was chosen as the foaming agent. Foam glass has been prepared by mixing together waste glass with the foaming agent and fired at different temperatures.

TUPSD-793
DENSIFICATION OF SICF/SIC COMPOSITE BY CERAMIC PRECURSOR POLYMER INFILTRATION
M. Florian, M.L.A. Graça, W. Acchar,Yoshida, I.V.P, C. A.A. Cairo
Increasing the mechanical performance of SiCf/SiC composite was achieved by polymer infiltration and pyrolysis process. SiCf/SiC composite was obtained by CVR process from a C/C composite conversion and the results showed that infiltration with SiC polymer precursor increased densification, filling the voids both among the SiC fiber and fiber bundles.

Symposium E - Advances in Photonics Materials and applications

TUPSE-533
PHASE DIAGRAM STUDY OF BAF2 -YF3 SYSTEM
Correa, Fábio de Castro;Nakamura, Gerson Hiroshi Godoy;Mazzochi, Vera Lucia;Parente, Carlos Benedicto Ramos;Valério, Mário Ernesto Giroldo;Baldochi, Sonia Licia;
The phase diagram of the BaF2-YF3 system has been studied aiming to obtain information about the melting behavior of BaY2F8. It involved preparation of samples with varying proportions of the two component materials, and their characterization by DTA and XRD. The experimental x-ray patterns were analyzed by the Rietveld method.

TUPSE-535
COMPARATIVE INVESTIGATION OF THE LUMINESCENCE PROPERTIES IN EU3+ ION DOPED IN AL2O3 MATRICE OBTAINED BY COMBUSTION AND SOLID STATE METHODS
Monteiro, Maria Adriana Fraiha;Brito, Hermi F;Brito, Giancarlo E S;Teotonio, Ercules E S;Stefani, Roberval;
The Al2O3:Eu3+ system was prepared by solid state and combustion methods at different temperatures. The products formed are characterized by X-ray diffraction, scanning electron microscopy and infrared spectroscopy techniques. The photoluminescence spectra exhibit bands corresponding to 5D0□¨7FJ transitions (J=0-4) from Eu3+ ion with maximum at 612 nm.

TUPSE-537
PHOTOLUMINESCENCE STUDY OF EU3+ NANOCOATING IN Y ZEOLITE
Ieda L.V. Rosa, Adeilton P. Maciel, José A. Varela, Elson Longo, Edson R. Leite, Luís P. S. dos Santos
Nanocoating of Eu^{3+} in Y zeolite was prepared for the first time, and studied by Eu^{3+} luminescence spectroscopy. The emission spectra of this material presented the characteristic bands of the $^5D_0 \rightarrow {}^7F_J$ (J=0,1,2,3 and 4) Eu^{3+} transitions. The lifetime of the $^5D_0 \rightarrow {}^7F_2$ transition was also evaluated

TUPSE-539
ELECTRONIC CHARACTERIZATION OF CECL3.2,5(O-PHENANTROLINE).5H2O IN METHANOL
Lima, Francisco José Santos;Avelar, Karen Batista Pereira de;Silva, Ademir Oliveira da;Câmara, Maria Suely Costa da;
The present study aimed at evaluating polarizabilities from the electronic spectra of ErCl3(O-Phen)2,5.5H2O (O-Phen= orthophenantroline, C12H8N2), previously characterized in 0,01 mol L-1 methanolic solution using the POLAZ-F2 computer program. The effect of o-phen ligand is particularly significant in the electronic polarizabilities of systems containing cerium with potential application in molecular optical devices.

TUPSE-540
GLASS COMPOSITIONS OF THE PHOTONIC MATRIX LA2O3-NB2O5-B2O3
Wallace D. Fragoso;Celso de Mello Donegá;Ricardo L. Longo;
The final and nominal compositions of lanthanum boratTuPSE-niobate samples have been compared and the methodology using H3BO3 as the source of excess B2O3 was validated within 0.5mol%. From nine samples a partial phase diagram for glass formation was produced. The addition of niobate increased the range of lanthanum oxide.

TUPSE-541
EFFECT OF THE HIGH-PRESSURE ON THE PHOTOLUMINESCENCE OF QUANTUM DOTS
Jr. , Severino A.;Ferreira, Ricardo;Farias, Patrícia M. A.; Faustino, Wagner M.;Menezes, Frederico D.;Santos, Beate S.;Sá, Gilberto F.;
We show how the photoluminescence of CdS/Cd(OH)2 and CdTe/CdS colloidal nanocrystals modifies under high pressure (up to 250MPa).We observed that the systems show a distinct dependency with the pressure and discuss this behaviour in terms of the structural changes of the
core/shell nanocrystals.

TUPSE-543
THERMAL -LENS STUDY OF THERMO-OPTICAL PROPERTIES OF TELLURITE GLASSES
Pilla, Viviane; Fernandez, Enver; Rodriguez, Eugenio;César, Carlos Lenz;Barbosa, Luiz C.;
Thermal Lens characterizations were performed in Er3+ and Tm3+ codoped tellurite glasses. We determined parameters as: thermal diffusivity (D), thermal conductivity (K), the temperature coefficient of the optical path-length change (ds/dT) and the absolute nonradioative quantum efficiency in function of the variation of the concentration of the Tm3+ ion.

TUPSE-545
PREFORM FABRICATION FOR ERBIUM-DOPED TELLURIDE GLASS HOLEY FIBER
Sérgio Paulo Amaral Osório;
An Erbium-doped telluride glass preform for holey fiber was fabricated. The glass composition is 0.75 TeO2 - 0.2 Li2O – 0.05 TiO2, with 5000 ppm of Er2O3 , which has a refractive index of 1.997 at 1536 nm. As the vitreous transition temperature is around 270 ºC, extrusion is the most suitable method for preform fabrication. The extrusion die was fabricated by electro-erosion.

TUPSE-546
THE ROLE OF GA ON PHOTOINDUCED PHENOMENA IN GES BASED GLASSES
Ledemi Yannick;Sckripachev Igor;Messaddeq Sandra;Ribeiro Sidney José Lima;Messaddeq Younes;Magon Claudio;Lima José Fernando;
Amorphous Ge100-x-yGaxSy with 2<x<5 and 65<y<75 glasses were prepared by melt quenching. Light induced phenomena such as photoexpansion (PE), photodarkening (PD) and photobleaching (PB) were evaluated through the gallium content in such materials.

TUPSE-548
GROWTH OF YLF:YB:TM:ND FOR OPTICAL APPLICATIONS
Ranieri, Izilda Marcia;Cavalho, Adriana Ferreira;Gomes, Laércio;Baldochi, Sonia Licia;Courrol, Lilia Coronato;
In this work the objective was to study the behavior of Tm, Yb and Nd ions in the LiYF4 (YLF) crystal. One YLF crystal was successfully grown by the Czochralki method and segregation coefficients of the dopants and lattice parameters were determined. Spectroscopic properties of samples
with different compositions of Nd were obtained by absorption and emission studies.

TUPSE-550
STUDY OF THE FORMATION OF LIGDXLU1-XF4 (0.5<1) CONGRUENT-MELTING COMPOUNDS
Ranieri, I.M.;Castro, A.V.P.;Bressiani, A.H.A.;Baldochi, S.L.;
In this work it was studied the melting behavior of compounds of LiGdxLu1-xF4 (0.5<x<1). Samples with different compositions were synthesized under argon with a cooling rate of 50C/h. Structural characterization has been performed with MEV, EDS and X-ray diffraction analyses.

TUPSE-552
ER/ YB DOPED SOL-GEL SIO2:HFO2 AND SIO2:GEO2 MATCHING FIBER FILMS FOR PLANAR LIGHTWAVE CIRCUITS.
Sartorelli, Rafael C.;Sigoli, Fernando A.;Jordao, Maura H.;Gonçalves, Rogéria R.;Mendoza, Edgar A.;Messaddeq, Younes;Ribeiro, Sidney J.L.;
Sol-gel materials promised to revolutionize the field of planar lightwave circuits for applications telecommunications components. The ability of the sol-gel process to incorporate dopants, offer a complete solution for the preparation of highly integrated waveguides. This work presents the preparation of Er/Yb doped SiO2 matching fiber films for photonic applications

TUPSE-553
STUDY OF ELECTRICAL PROPERTIES OF BLENDS OF PANI WITH DEPDM
Daniela de Assis Alvares;Jose Carlos Moreira;Carlos Henrique Scurrachio;Roberto Koji Onmori;
In this work blends of polyaniline (PANi) doped with dodecylbenzene sulphonic acid (DBSA) - and ethylenTuPSE-propylenTuPSE-dienTuPSE-monomer (EPDM) rubber devulcanizated by microwave (dEPDM) were prepared from organic solvent solutions. Flexible, freTuPSE-standing and stretchable films were obtained by casting, which were characterized by conductivity measurements. As expected, the blends conductivity increases with increasing contents of the conducting polymer. The onset of the conductivity at low contents of conducting polymer indicates a low percolation threshold for the blends.

TUPSE-554
THE EFFECT OF PRECURSORS PARTICLE SHAPE IN THE SINTERING OF GD2SIO5:CE3+ SCINTILLATOR
Flor, Juliana;Pires, Ana Maria;Davolos, Marian Rosaly;Perazolli, Leinig Antonio;
The precursors particle shape effect in the Gd2SiO5:Ce scintillator sintering is reported. Based on XRD, FTIR, SEM, luminescence spectroscopy, and dilatometry data of the pellet or powder samples. It was established that precursors with spherical particle shape show the best sintering and luminescence intensity results.

TUPSE-556
ORGANIC-INORGANIC HYBRIDS FOR DFB LASERS
Gindre, Denis;Nunzi, Jean-Michel; Vesperini, Adrien;OLIVEIRA, DANIELA COELHO DE;Messaddeq, Younes;Ribeiro, Sidney J. L.;
Feedback Laser emission was observed in Rhodamine 6G containing organic-inorganic hybrid films based on siloxanTuPSE-polyoxyethilene ureasils and zirconium based sols. Optical pumping using a Lloyd Mirror interferometer creates dynamic Bragg mirrors on the active film and laser emission
was studied as a function of the refractive index and thickness

TUPSE-558
LUMINESCENCE OF THE EU(FOD)3PHEN-NO COMPLEX DOPED THERMOSETTING
Edjane R Santos;M. Eliane Mesquita;Marcos A Couto dos Santos;Marcelo A Macedo;
The luminescence of the Eu(fod)3Phen-NO complex doped thermosetting is studied with the aim of preparing a solid state device using a luminescent complex and keeping all its original luminescent properties.

TUPSE-561
GROWTH AND CHARACTERIZATION OF CAF2 AND BAF2 EPITAXIAL LAYERS ON SILICON(111) SUBSTRATES
R.P.C. Costa, P. H. O. Rappl, C. Boschetti

In this work the growth of CaF_2 and BaF_2 layers on Si(111), using MBE techniques and analysis "in situ" with RHEED, are studied. The goal is the fabrication of infrared detectors integrated with silicon substrates. In the characterization of the layers HRXRD, SEM, EDS and GIXR are used

Symposium F - Magnetic Materials: Preparation, Characterization and Applications

TUPSF-531
NEW ROUTE OF PREPARATION AND MAGNETIC PROPERTIES OF NICKEL FERRITE
Duque J. G. S.;Junior E. A. S;Menezes C. T.;
In this work nickel ferrite (NiFe2O4) powders have been obtained by a new chemical process using a precursor based on carbon. X-ray diffraction (XRD) conﬁrmed that spinel phase is formed at 400 0C. Magnetic properties are performed using a vibrating sample magnetometer (VSM). Curie temperature (TC) and saturation magnetization (MS) show a good agreement with bulk nickel ferrite.

TUPSF-532
SRFE12O19 PREPARED BY PROTEIC SOL-GEL PROCESS
BRITO, P. C. A.;MACÊDO, M. A.;Duque, J. G. S.;
SrFe12O19 powders had been prepared way proteic sol-gel process, consisting of the mixture of the Fe(NO3)3.9H2O and SrCl2.6H2O in coconut water. Analyses of XRD and VSM had shown resulted consistent with literature (Mr/Ms=0.5, Hc=2.6kOe), demonstrating that the route of the proteic sol-gel is viable for its preparation.

TUPSF-533
HIGH FREQUENCY PERMEABILITY OF FINEMET/CU MULTILAYERS
Viegas, Alexandre da Cas;Correa, Marcio Assolin;da Silva, Ricardo Barreto;Andrade, Antonio Marcos Helgueira de;Sommer, Rubem Luis;
The high frequency permeability spectrum were measured on multilayers of Cu/FeCuNbSiB using an inductive network analyzer technique. From this spectrum a full characterization of the high frequency dynamical properties are obtained, from which are obtained the ferromagnetic relation
dispersion and are identified the main dynamical mechanism of permeability for these systems.

TUPSF-535
STUDY OF THE GMI EFFECT IN FECUNBSIB THIN FILMS IN THE MONOLAYER, MULTILAYER AND SANDWICH FORM
M. A. Corrêa;A. D. C. Viegas;R. B. da Silva;A. M. H. de Andrade;R. L. Sommer;
In this work the results obtained in the study of GMI in thin film in the monolayer, multilayer and sandwich form will be presented,where the ferromagnetic element has the concentration of Fe73.5Cu1Nb3Si13.5B9 (FINEMET precursory) Percentile variations of 280% were reached in the MI for to the multilayer sample.

TUPSF-536
TOWARD CORE-SHELL COATING OF MAGNETIC NANOPARTICLES
Vono, Lucas L. R.;Rossi, Liane M.;Machado, Giovanna;
Preparation of magnetite silica core-shell particles with controlled morphology and size is our goal. Coating of magnetic particles with silica shells can enhance the stability and dispersibility of the magnetic core and also increase the functionality and reactivity of particles surfaces.

TUPSF-537
HIGH FREQUENCY GMI IN PERMALLOY BASED MULTILAYERS FOR READER/WRITER DEVICES APPLICATIONS
A. M. H. de Andrade;A. D. C. Viegas;R. B. da Silva;M. A. Corrêa;R. L. Sommer;
Multilayers involving permalloy are much used in reader and writer magnetic devices. Some these devices are performed in the multilayers form with silver or other metallic material. In this work, multilayers with silver and cooper were obtained by sputtering and the giant magnetoimpedance results compared.

TUPSF-538
XMCD STUDY OF THE MAGNETIC PROPERTIES OF A BOTTOM SPIN-VALVE
Miguel Tafur;A. D. Alvarenga;V. P. Nascimento;W. Alayo;P. Munayco;E. Baggio-Saitovitch;Actually several spin valves (SV) configurations are used and being developed, in order to achieve larger values of GMR. The GMR in layered nanostructures layered arises from a coherent interplay between the successive ferromagnetic layers of spin-dependent scattering phenomena occurring at the internal and outer interfaces and in the bulk of the ferromagnetic (FM) and non-magnetic layers of the structure. Here we report on the characterizations of SV systems where a nano-oxide layer (NOL) has been introduced into the free layer to enhance the GMR. We have studied the behavior of the moments magnetics in the spin valve with and without NOL by dichroism magnetic circular X-ray (XMCD) technique. We find that the insertion of the NOL in the SV is correlation the fast diminution of moments magnetics in this interface in comparison the spin valve
without NOL.

TUPSF-539
STUDY OF THE INTERFACIAL MAGNETIC MOMENTS IN FE/CR MULTILAYERS
Alayo Willian;Alvarenga Ana;Pedruzzi Valberto;Tafur Miguel;Munayco Pablo;Saitovitch Elisa;
The induced magnetism of the interfaces in Fe/Cr multilayers was studied by x-ray magnetic circular dichroism (XMCD) at the L2,3 absorption edges. A reduction of Fe moments values and an antiparallel alignment with the Cr moments were observed. The values of the magnetic moments were determined by applying the sum to the XMCD spectra.

TUPSF-540
TRICAMADAS NIFE/FEMN/NIFE
E. Baggio Saitovitch;W. Alayo;M. Tafur;A. D. Alvarenga;E. C. Passamani;A. Biondo;V. P. Nascimento;A. R. B. de Castro;F. Pelegrini;
Multicamadas NiFe/FeMn/NiFe foram depositadas por Magnetron Sputtering, sob campo magnético externo aplicado. O estudo do magnetismo local revelou que, com o aumento da rugosidade interfacial e da interdifusão atômica, spins da liga NiFeMn (formada na interface) podem se orientar perpendicularmente ao plano do filme.

TUPSF-541
GIANT MAGNETOCALORIC EFFECT IN THE MNAS0.95S0.05 COMPOUND
de Campos, A.;Rocco, D. L.;Gama, S.;Coelho, A. A.;dos Santos, A.O.;Cardoso, L. P.;

We present the results of magnetic investigation of MnAs compound with As replaced for S. The studied sample was MnAs0,95S0,05 and the results show that the S increases the hysteresis and Curie temperature (TC). It was observed a great increase of the magnetocaloric effect (MCE) from 47 to 84 J/Kg K.

TUPSF-542
SYNTHESIS AND CHARACTERIZATION OF A NEW IR-BASED SERIES OF DOUBLE-PEROVSKITES
Bufaiçal, L.;Mendonça Ferreira, L.;Azimonte, C.;Pires, M. A.;Agüero, O.;Torriani, I.;Granado, E.;Caytuero, C.;Baggio-Saitovich, E.;Pagliuso, P. G.;
We described systematic attempts to synthesized polycrystalline samples for the series of double perovskite, Ca2-xLaxFeIrO6. The electronic and magnetic properties of these ordered double perovskites were investigated by means of temperature dependent magnetic susceptibility, electrical resistivity, specific heat, high resolution x-ray powder diffraction, Electron Spin Resonance (ESR) and Mössbauer spectroscopy.

TUPSF-544
STRUCTURAL AND MAGNETIC PROPERTIES OF X2YZ-TYPE HEUSLER ALLOYS FE2+XMN1-XAL ALLOYS.
A. Migliavacca;C. Paduani;J. C. Krause;
The structural and magnetic properties of the Heusler alloys Fe+xMn1-xAl with the L21 structure are investigated with several experimental techniques. The effect on the ferromagnetic behavior of deviations from the stoichiometric composition is investigated. These alloys are
ferromagnetic at room temperature.

TUPSF-545
MAGNETOCALORIC EFFECT AND MAGNETORESISTIVITY IN THE LA0.6CA0.4MNO3 COMPOUND
Rocco, Daniel L.;Plaza, Edison J. R.;Campoy, Juan Carlos P.;Coelho, Adelino A.;Gama, S.;
We report results from transport and magnetic measurements on polycrystalline La0.6Ca0.4MnO3. First, a model to describe the magnetoresistivity behavior of this compound is presented. Second a qualitative relation between magnetoresistivity and the magnetocaloric potential defined by –
DSmag(T) = Smag(T,H) - Smag(T,0) is developed.

TUPSF-547
MÖSSBAUER STUDY OF MAGNETITES SYNTHETIZED IN PRESENCE OF CU2+
A.A.Velásquez, J.P. Urquijo, A.L. Morales, E. Baggio-Saitovitch and H.Yee. Madeira
Single phase magnetites in presence of Cu2+, Fe3-xCuxO4, were synthetized hydrotermally. Temperature and oxidant concentration were controlled in the experiment. The samples were characterized by Mössbauer Spectroscopy, FTIR and X ray difraction. Notable changes in the magnetic and chemical behavior of the octahedral sites with increasing copper concentration were evidenced.

TUPSF-548
INFLUENCE OF THE TEMPERATURE AND THE AGING TIME ON THE MAGNETIC PROPERTIES OF A MARAGING GRADE 300 STEEL
Pardal, Juan Manuel;Cindra Fonseca, Maria;da Silva , Manoel Ribeiro;Neto, Julio Maria;Abreu, Hamilton;Tavares, Sérgio Souto Maior;
The magnetic properties and hardness of a Ni-Co-Mo-Ti maraging steel 300 grade were measured as function of aging temperature and time conditions. The austenite and martensite phase quantification in different heat treatment conditions was carried out by X-rays diffraction using
direct comparison technique.

TUPSF-549
THIN FILMS DEPOSITIONS TECHNIQUES ON RARE EATH MAGNETS
Zampieron, João Vicente;Viana, Carlos Eduardo;Mansano, Ronaldo Domingos;Morimoto, Nilton Itiro;
The magnets properties were characterized before and after of the thin films depositions and evaluations as the thickness, superficial adherence and homogeneity of the films were accomplished by Scanning Electron Microscope SEM; Atomic Force Microscope, AFM and the interface film/bulk was evaluated through the nuclear technique Rutherford Backing Scattering (RBS)

TUPSF-550
MAGNETOCALORIC EFFECT OF ANNEALED GD5GE2SI2 AND GD5.09GE2.03SI1.88 COMPOUNDS PREPARED WITH COMERCIAL-GRADE GD AND REFRIGERANT CAPACITY ANALYSES FOR APPLICATION IN MAGNETIC REFRIGERATION
Carvalho, A. Magnus G.;Alves, C. S.;Coelho, A. A.;Gama, S.;
In this work, we are presenting the magnetocaloric effect (MCE) and refrigerant capacity analyses for the as-cast and annealed Gd5Ge2Si2 samples, whose giant MCE for the as-cast compound was discovered in 1997 [1]. The same analyses are presented for a similar compound, Gd5.09Ge2.03Si1.88.

Symposium G - Superconductor Materials

TUPSG-516
LA2-XSRXCUO4 CERAMIC SUPERCONDUCTOR OBTAINED BY THE WET-CHEMICAL METHOD
Gonzalez, Jorge L.;D. Fonseca, Marta;López, Ada;Giffoni, Mariana;Vieira, Fillipe;Loose, André;Souza Azevedo, Izabel;Baggio-Saitovitch, Elisa;
In this work two different processes to synthesize polycrystalline La2-xSrxCuO4 superconducting samples are explored and they are compared in order to determine the optimum conditions to obtain single-phase samples. The structural and superconducting properties of the samples were studied by x-ray powder diffraction and dc magnetization. The experimental results are discussed and compared.

TUPSG-517
STUDIES OF ELECTRICAL RESISTIVITY UNDER PRESSURE ON SUPERCONDUCTING SN-DOPED CECOIN5
Ramos, Scheilla;Continentino, Mucio;Baggio-Saitovitch, Elisa;Fontes, Magda;Pagliuso, Pascoal;Sarrao, John;
Experiments of electrical resistivity as function of hydrostatic pressure for single crystals of Sn-doped CeCoIn5 are reported. Due to the subtle Sn-doping, Tc is strongly supressed. A temperature-pressure phase diagram is constructed and compared with the properties of pure CeCoIn5 under pressure. Effects of Sn-doping are discussed.

TUPSG-518
STUDY OF THE PH INFLUENCY IN THE THIN FILMS SYNTHESIS OF LA 0,5SR 0,5COO3 (LSCO) OBTAINED BY POLIMERICS PRECURSORS METHODS.
Zampieri M., Paskocimas C. A. and Longo E.
This work presents a study about the morphologic and structural modifications besides the eletrical properties of the do La 0,5Sr 0,5CoO3 (LSCO) in powder and films way, caused because the variation of pH in his synthesis aquous fase obtained for Polimerics Precursors Methods.

TUPSG-520
RESISTIVITY UNDER HYDROSTATIC PRESSURE IN CECOGE2.1SI0.9 AT LOW TEMPERATURE
Camarena, Mariella;Borgues, Hortencio;Fontes, Magda;Baggio-Saitovitch, Elisa;Medeiros, Suzana;
Low temperature resistivity measurements under hydrostatic pressure has been applied to the antiferromagnetic intermetallic compound
CeCoGe2.1Si0.9. As the pressure increases, TN is suppressed. Our main interest is to search for a quantum critical point, map the phase diagram, and determine the exponents of the critical lines.

TUPSG-523
DOPING OF MGB2 SUPERCONDUCTOR WIRE WITH ZRO2
Rodrigues Jr., Durval;Rodrigues, Geovani;Rodrigues, Carlos;
The effect of ZrO2 addition on the critical temperature and critical current have been studied. The results show that ZrO2 did not decrease Tc. The Jc of MgB2/Nb/Cu wire reached 1.7x105 A/cm2 at 0T. Above 1T the superconductivity was destroyed due to the MgB2 phase low concentration formed after annealing.

TUPSG-526
SUPERCONDUCTING AND CONVENTIONAL HIGH GRADIENT MAGNETIC SEPARATION OF CELLULIGNIN: A COMPARISON
Pereira, M.L.;Machado, J.P.B.;Pinatti, D.G.;COnte, R. A.;Rodrigues Jr., D.;
Magnetic separation can not, as yet, be performed successfully simply on the basis of theoretical models and experience is still the foundation. In this work, it is presented two different magnetic separation techniques applied to beneficiate a cellulignin catalytic fuel. Our goal was to reduce
inorganic content of the fuel

TUPSG-527
THE INFLUENCE OF OXYGEN PARTIAL PRESSURE ON GROWTH OF THE (HG,RE)-1223 INTERGRAIN JUNCTION
Passos, Carlos A. C.;Passamai Jr, J. L.;Belich, H;de Medeiros, E. F;Orlando, M. T. D;Oliveira, F. D. C.;Fardin, J. F.;Simonetti, D. S. L.;Ferreira Jr, M. M.;
Hg0.82Re0.18Ba2Ca2Cu3O8+d samples were prepared with different oxygen content. The doping state was confirmed by observing distinct thermopower values at room temperature. The intergrain regions showed an improvement in the critical current density when using the precursor
preparation with 10% of O2 and 90% of Ar. This sample has presented the highest a exponent of the Jc ~ [1 – (T / Tc)²]á dependence. For the case of (Hg,Re)-1223 polycrystalline superconductor applications, the a exponent can be used as a junction quality parameter.

TUPSG-528
EVOLUTION OF ELECTRICAL AND MICROSTRUCTURAL CHARACTERISTICS OF BI-2223/AG COMPOSITE TAPES SUBJECTED TO CYCLIC DEFORMATION
Shigue, Carlos;Oliveira, Ulisses;Carvalho Jr, Francisco;Lamas, Jérika;Baldan, Carlos;Ruppert Filho, Ernesto;
The electrical characteristics of Bi-2223/Ag composite tapes with and without reinforcement were measured for the pre-stressed samples subjected to cyclic deformation and compared to the microstructure evolution. The Ic of the unreinforced tape degraded monotonically with the thermal shock cycles whereas the reinforced tape presented only an initial degradation

TUPSG-529
THE INFLUENCE OF THERMAL TREATMENTS IN THE ELECTRICAL CHARACTERISTICS OF THE SUPERCONDUCTOR THIN FILMS GROWTH ON CRYSTALLINE SUBSTRATES
Luiz, Claudio;Otávio, Raphael;
This is an study of the influence o thermal treatment in the electrical characteristics of the superconductor films of BSCCO system. Electrical resistivity and current density measurements have shown that thermal treatments around 835 ºC improve the increase of both.

TUPSG-534
PHASES SEQUENCE FORMATION IN (BI,PB)-SR-CA-CU-O SYSTEM ACCORDING TO THE ADIABATIC NUCLEATION MODEL
da Silveira, Maximo F.;Neves, Marcelo A.;
We evaluate the performance of Adiabatic Nucleation Model (ANM) in order to predict the sequence of phases to solidify from a melt of the Bi-Sr-Ca-Cu-O (BSCCO) system. Our results are in accordance with previous observed ones and to the influence of Pb to improve Bi2223 formation.

TUPSG-535
WEAK-FERROMAGNETISM AND SUPERCONDUCTIVITY IN RUCA(2)PRCU(2)O(8+D)
Jurelo, Alcione;Jardim, Renato;
A detailed study of the magnetic state and superconducting state of the ruthenocuprates RuCa2PrCu2O8 is presented. This new compound crystallizes with the orthorhombic distortion of the tetragonal Ru-1212. From of magnetization measurements under several fields H, we observed two important features : the suppression of a weak ferromagnetic component and huge diamagnetic contribution at magnetic fields as high as 1 kOe.

TUPSG-536
SIMULATION OF THE INTERACTION BETWEEN MTG SUPERCONDUCTORS AND PERMANENT MAGNETS
Neves, Marcelo A.;da Costa, Giancarlo C.;Pereira, Agnaldo S.;do Rosário, Marco A. P.;Bispo, Everton R.;da Silveira, Maximo F.;
We present a set of methodologies developed to simulate the behavior of melt-textured superconducting materials interacting with permanent magnets. Experimental measurements validate those methods. Our framework allows one to project devices in which the magnetic interaction between MTG superconductors and PM are relevant, i.e. magnetic bearings, gravimeters, accelerometers, etc.

Symposium H - Sol-Gel Materials

TUPSH-556
TAILORING THE MESOPOROSITY OF ZIRCONIA XEROGELS WITH SWOLLEN LIQUID CRYSTAL SYSTEMS TEMPLATE
Santos, Eduardo P.;Santilli, Celso V.;Pulcinelli, Sandra H.;Prouzet, Eric;Craievich, Aldo F.;
The stability and structure of swollen liquid crystals prepared with zirconia colloidal suspension were evaluated. Mesoporous zirconia formation conditions were studied. The results demonstrate the versatility of this swollen liquid crystal systems and its viability as templates to tailor mesopore structure of monolithic zirconia xerogel.

TUPSH-557
STRUCTURAL CHARACTERIZATION OF MEXMG2-XSNO4 SYNTHESIZED BY THE POLYMERIC PRECURSOR METHOD.
Miranda, Lydianne C O;Nascimento, Marcelo R;Santos, Maria Rita C;Santos, Ieda M G;Soledade, Luiz E B;Lima, Severino J G;Silva, Elson L;Souza, Antonio.G;
Magnesium stannate, Mg2SnO4, with a cubic spinel structure, was synthesized by the polymeric precursor method. Single phase Mg2SnO was successfully obtained according to thermal analyses, TG/DTA, and XRD, IR and SEM analyses.

TUPSH-558
CERAMIC PIGMENTS OF COBALT SILICATE OBTAINED BY SOL-GEL METHOD
E. Azevedo, J. H. G. Rangel, M. M. Oliveira, P. R. G. Gonçalves Jr., E. B. S. Pereira, J. M. R. Mercury, S. Cava, E. R. Leite, L. Gama, E. Longo, C. A.
Paskocimas
Ceramic pigments are constituted substances host lattice ceramic and an element cromophorus that it is responsible for the color[1-4]. In this work they were synthesized by Sol-Gel method[5] pigments of Co_2SiO_4, reducing temperature (1000ºC) in relation to the method of mixture of oxides used in the industry (1200ºC).

TUPSH-561
SOL-GEL PRODUCED AMORPHOUS ZNO AS EGFET - PH SENSOR
Batista, Pablo Diniz;Mulato, Marcelo;
In this work we study the amorphous ZnO thin films obtained by sol-gel and ultraviolet irradiation. These films were investigated by X-ray diffraction (XRD) and infrared spectroscopy (IR). The pH sensor was fabricated and characterized using the extended-gate filed-effect transistor (EGFET).

TUPSH-565
EVALUATION OF FREE CARRIER CONCENTRATION IN SB-DOPED SNO2, BASED ON NEAR INFRARED DATA - ELECTRICAL TRANSPORT EFFECTS.
Geraldo, Viviany;Scalvi, Luis V A;
Near infrared transmittance for SnO2:Sb thin films decreases with Sb concentration, in good agreement with Drude´s theory, yielding high free electron concentration. It leads to increasing the conductivity, but it is still low, suggesting a very low mobility, which agrees with the nanoscopic dimensions of grains.

TUPSH-566
INFLUENCE OF RESIN PH IN THE CRYSTALLIZATION OF FE-DOPED ZN2TIO4, OBTAINED BY THE POLYMERIC PRECURSOR METHOD
Lima, S J G;Santos, M R Cassia;Souza, A G;Santos, I M G;Souza, Soraia Carvalho;Longo, E;Santos, C C L;Xavier, C S;
Zn2TiO4 was synthesized, with addition of the chromophore ion Fe, substituting Zn. Synthesis was done using the polymeric precursor method, with variation of the resin pH. The use of the material was ceramic pigment was evaluated.

TUPSH-567
STRUCTURE AND THERMAL PROPERTIES OF SILOXANE-PMMA HYBRID MATERIALS DOPED BY ORGANIC DYES PRESENTING NLO POTENTIALITY
Dahmouche Karim;Guinancio Coelho Maria Rita;Dweck Jó;Menezes James;Rotondo Paes Tiago;De Souza Gomes Ailton;
The effect on the structure and thermal properties of Siloxane-Polymethylmethacrylate (PMMA) hybrid materials of their doping with two organic dyes presenting NLO potentiality has been investigated. Efficiencies of siloxane polycondensation and MMA polymerization are affected by dye incorporation, while the glass transition temperature of the hybrids is not affected by dye doping.

TUPSH-568
IONIC TRANSPORT IN A NEW TYPE OF HYDROGEL ELECTROLYTE
L.G. Mendes;A. Galembeck;M. Engelsberg;Flamarion B. Diniz;
Transparent aluminum polyphosphate hydrogels, aged under different humidity conditions, were characterized by NMR and complex impedance spectroscopy in order to elucidate the prevailing ionic transport mechanism. The ionic conductivity of these gels can reach the value 10-2 Scm-1 at room temperature in an ambient with relative humidity of approximately 70%.

TUPSH-569
SPECTROSCOPIC STUDY OF DI-UREASIL ORGANIC-INORGANIC HYBRIDS INCORPORATING NEW EU3+ AND GD3+ B-DIKETONATE COMPLEXES
Carlos, Luis;Jr., Severino;Lima, Patrícia;Sá Ferreira, Rute;Fu, Lianshe;Malta, Oscar;
Eu3+ and Gd3+ tris-β-diketonate complexes were incorporated in sol-gel derived organic-inorganic hybrids, named di-ureasils. The Eu3+-based di-ureasils have efficient emission quantum yields and are photostable under UV-A. Nevertheless, photodegradation occurs in the hybrids under UV-B excitation demonstrating their potential use in UV-B dosimeters and UV-A photostable light emitting devices

TUPSH-571
SYNTHESIS AND CHARACTERIZATION OF SR1-XEUXWO4 CERAMICS POWDERS BY PECHINI METHOD
Sasaki, J.M.;Lima, A.C.;Santos, A.S.;Gomes, D.K.S.;Melo, D.M.A.;Pedrosa, A.M.G.;Silva, Z.R.;Lemos, F.C.D.;
Sr1-xEuxWO4 ceramics powders with x = 0 and 0.01 were prepared by Pechini method. The resins were treated at 300°C for 2h. The precursor materials were calcined at 500 and 700°C. Thermogravimetric analysis, infrared spectroscopy and X-ray diffraction were used to characterize the materials.

TUPSH-575
CHARACTERIZATION OF ORMOSIL COMPOSITES OBTAINED BY SOL-GEL PROCESS USING POSITRON ANNIHILATION LIFETIME SPECTROSCOPY
G. L T. Nascimento, J. C. Machado, N. D. S. Mohallem
The changes in the textural and structural characteristics of hybrid inorganic/organic materials prepared by sol-gel process were analyzed by gas adsorption, infrared spectroscopy thermal analysis and compared with results obtained by positron annihilation lifetime spectroscopy

TUPSH-577
PREPARATION OF TI-DOPED LINBO3 THIN FILMS ON SI SUBSTRATE
Vasconcelos, N. S. L. S;Mercury, J. M. R;Vasconcelos, J. S.;Valerie, B.;Leite, E. R.;Longo, E.;Varela, J. A.;
In this work it was prepared Ti-doped LiNbO3 on Si(100) substrate by spin coating and the precursor polymeric method was used to prepare the solutions deposition. The films were treated at 500oC for 2h. The results demonstrated that the films were polycrystalline, single-phase and Ti ions controlled the grains growth.

TUPSH-579
SILICA-CONTAINING PROTON CONDUCTING MATERIALS FOR FUEL CELL APPLICATION
Santos, Marlon;Dias, Marcos;Azuma, Chiaki;
Preparation, characterization and performance evaluation of proton conducting membranes based on sol-gel silica and crosslinked poly(vinyl alcohol) (PVA) was investigated. Two routes were used. In the first, sulfonated-modified nanosilica synthesized from chlorotriphenylsilane-terminated TEOS sol-gel reaction and subsequent sulfonation was used as proton conducting elements in formaldehyde crossliked PVA/TEOS system. In the second route, poly(styrene sulfonic acid-co-maleic acid) was reacted with TEOS in a PVA solution. Membranes obtained by the second route containing about 30wt% of Si presented SEM detectable ionic domains and showed conductivity higher than Nafion at low hydration

TUPSH-578
NEW SYNTHETIC APPROACH OF VANADIA–SILICA MIXED OXIDE BY SOL-GEL PROCESS, CHARACTERIZATION AND CATALYTIC PROPERTIES
Figueriredo, M.A.;Faria, A.L.;Assis, M.D.;Oliveira, HP;
This work describes a new route to prepare V2O5-SiO2 mixed oxide with high vanadium content and high surface area. The incorporation of vanadium pentoxide into silica matrix was obtained by intimate mixing of two different inorganic. The catalytic activity was studied in oxidation of cyclooctene and styrene in the liquid-phase.

TUPSH-582
SIMULATION OF COMPOSITION OF SOME GES-BASED GLASSES FOR PHOTONIC APPLICATIONS
Igor V. Skripachev, Sandra H. Messaddeq, Reynaldo Putvinskis, Younes Messaddeq, Sidnei J.L. Ribeiro
Temperature conditions of preparation of Ge-S, Ge-S-Ga, Ge-S-Sb, Ge-S-As and Ge-S-Al glasses were optimized with the use of thermodynamic simulation of chemical equilibrium in the glass melts. Some properties of the glasses can be explained on the base of the results obtained

TUPSH-585
MORPHOLOGICAL CHARACTERIZATION OF RARE EARTH MODIFIED LEAD TITANATES
Lemos F. C. D.;Melo D.M.A;Martinelli A. E.;Carneiro C. E. J.;Lima P. S.;J.E.C. Silva;
Rare Earth modified lead titanate ceramics (PRET) (Pb1-xREx TiO3, with x = 0.01, 0.05, 0.07 and RE = Yb, Y) were prepared by the Pechini method. The materials were calcinated under flowing oxygen at different temperatures from 300 to 700 ºC. Nanostructured PRET obtained were investigated using X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM) and surface area analysis (BET).

TUPSH-587
PECULIARITIES OF BA2TI9O20 CERAMIC PROCESSING BASED ON BASO4 AND TIO2 MIXTURE
Yu. Koldayeva, M.C.A. Nono and P. J. Castro, S. T. Fonseca
Ba2Ti9O20 ceramics were prepared from BaSO4 and TiO2 mixture and their microstructures were investigated. Ba2Ti9O20 phase formation occurs at lesser temperatures (1000 – 1200 °C) that of the same ones based on BaCO3 and TiO2 mixture. But dense ceramics were not obtained at these temperatures. This phenomenon investigation is of great technological interest.

TUPSH-588
THE INFLUENCE OF TIO2 ADDITION ON THE STRUCTURAL PROPERTIES OF (CEO2)0,8(SMO1,5)0,2
Domingues, Sidney;Florentino, Ariovaldo de Oliveira;Saeki,Margarida Juri;
The structure of mixed oxides with the composition [(CeO2)0,8(SmO1,5)0,2]1-y(TiO2)y , where 0<y<0,5 was studied by XRD and DSC/TGA. It was observed that significant decreasing in the diffracted peaks intensity and angle shift, when Ti content is increased, indicating a symmetry violation in the structure. The solubility of titanium is around y@0.25 in and for y>0.25 the migration of cerium to the grain surface is observed.

TUPSH-590
STRUCTURAL FEATURES OF SILOXANE-PMMA HYBRIDS PREPARED BY SOL-GEL PROCESS
Santilli, Celso;Craievich, Aldo;Sarmento, Victor;Dahmouche, Karim;Pulcinelli, Sandra;
New transparent siloxane-PMMA hybrids were synthetized by the sol-gel process through hydrolysis of methacryloxypropiltrimethoxysilane (TMSM) and polimerization of methylmethacrylate (MMA) using benzol peroxyde (BPO) as initiatior, the effects of the pH and MMA on the structure of the dried
samples were analyzed by SAXS, DSC and TMA

TUPSH-593
PHOTOLUMINESCENCE IN ORDERED/DISORDERED BA(ZR0.25TI0.75)O3 POWDERS
Laécio S. Cavalcante;Luiz G. P. Simões;Iêda L. V. Rosa;Iêdo A. Souza;Maria R. M. C. Santos;Luiz S. S. Júnior;Elson Longo da Silva;Edson R. Leite;
In this work Ba(Zr0,25Ti0,75)O3 (BZT) disordered and ordered powders, were synthesized by the polymeric precursor method heat-treated at 300ºC
under oxygen atmosphere for diferrent times 8, 48, 96 and 192 h and at 700ºC for 2 hours. The disordered powders present photoluminescence at room temperature and ordered powders does not.

TUPSH-594
SYNTHESIS BY THE CITRATE SOL-GEL COMBUSTION METHOD AND CHARACTERIZATION OF BA2ZN2FE12O22
Costa Lima, Roberto;Silveira Pinho, Magali;Rocha Caffarena, Valeska;Leixas Capitaneo, Jefferson;Ribeiro da Silva, Manoel;Ogasawara, Tsuneharu;
Zn-substituted-Y-type hexaferrites were synthesised via sol-gel combustion method. The calcination temperature used were 850, 950 and 1000oC for 4 h. The resulting powders were investigated by XRD, VSM, SEM and EPR. The FMR curves indicated the use of Zn2Y-hexaferrite in microwave devices working at frequency above 10 GHz

TUPSH-596
CRYSTALLINE PHASES IN SOL-GEL SULFATED ZRO2 PREPARED BY TWO ROUTES INVESTIGATED BY THERMAL ANALYSIS AND RAMAN SPECTROSCOPY
Noda, Lúcia Kiyomi;Gonçalves, Norberto Sanches;Borba, Silvia Mariele;Silveira, Joyce Amaral;
Sulfated ZrO2 was preparated by two methods (one step and two steps). The beginning of sulfate decomposition and the amorphous to tetragonal phase transition and the tetragonal to monoclinic phase transition temperatures occurs at higher temperatures for one step sulfated ZrO2 than for two steps one.

TUPSH-597
POROSITY CHARACTERIZATION POROUS CERAMICS USING IMAGE ANALYSIS
T. G. Cruz and L.R.O. Hein
In this work, image analysis has been used to determine pores spatial distribution in porous ceramics. Volume fraction values have been determined from images obtained through light microscopy along the entire analyzed surface

TUPSH-598
SULFONATED SILICA NANOPARTICLES FROM SOL-GEL METHOD
Marlon S. Santos, Marcos L. Dias and Chiaki Azuma
Organically modified silica nanoparticles were prepared by sol gel process, using tetraethyl ortosilicate (TEOS) as monomer, triphenylchlorosilane (TPCS) as terminator and a basic catalyst. The nanoparticles were terminated by using different reaction times giving phenyl-modified surface with different aromatic group content. Sulfonated nanoparticles with about 30 nm average diameter were obtained by sulfonation reaction using concentrate sulfuric acid at 180ºC. The thermal properties of sulfonated and non sulfonated nanosilica are described.

TUPSH-600
EMISSION FEATURES AND ENERGY TRANSFER IN AMINE-FUNCTIONALIZED CROSS-LINKED SILOXANE-BASED HYBRIDS
O. L. Malta
The energy transfer process between distinct emitting centers of a series of organic/inorganic aminefunctionalized hybrids is presented and discussed.

TUPSH-601
DESIGN OF INORGANIC MATERIALS BASED ON DYNAMICS OF SOFT MATTER
Eric Prouzet, Cédric Boissière, Marco A.U. Martines, Eduardo Pena dos Santos, Celso Santilli, Miriam Tokumoto, André Larbot
We described a new approach to structure inorganic materials based on the organization of inorganic matter through dynamics of soft matter.

TUPSH-602
DFB EMISSION OF RHODAMINE CONTAINING ORGANIC-INORGANIC HYBRID MATERIALS
Sidney J.L. Ribeiro; Daniela C. Oliveira; Karim Dahmouche; Rogéria R. Gonçalves; Adrien Vésperini; Denis Gindre; Jean-Michel Nunzi and Younes Messaddeq
We present a study of Distributed Feedback (DFB) Laser emission in organic-inorganic thin films prepared from ureapropyltriethoxysilane and methacrylic acid modified zirconium(IV) n-propoxide (ZPO) precursors.

TUPSH-603
SOL-GEL COATINGS ON METALLIC SUBSTRATES
Wander L. Vasconcelos
We described the formation of different sol-gel coatings on metallic substrates and the structural characterization of the films

Wednesday October 19th
1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira I

WeSA - Synthesis and Characterization of Nanoparticles

WeSA I-3 8:00/9:00
PROPRIEDADES CATALÍTICAS E MAGNÉTICAS DE NANOPARTÍCULAS METÁLICAS DISPERSAS EM LÍQUIDOS IÔNICOS
Jairton Dupont, UFRGS, SP

WeSA - 604 9:00/9:15
SYNTHESIS OF SNS NANOPARTICLES USING A NEW SINGLE SOURCE PRECURSOR, TBU6SN3S3. RAMAN AND 119SN MÖSSBAUER SPECTROSCOPY CHARACTERIZATION
Sansiviero, Maria Terezinha Caruso;Coelho, Merces;Soares, Viviane F.;Costa, Vilma C.;Ardisson, Jose D.;
Nanoparticles of tin (II) sulfide have been obtained by pyrolysis of tBu6Sn3S3, at 300oC. The SnS was characterized by Raman by the presence of bands at 218,186, and 159 cm-1 and 119Sn Mössbauer fitting suggests the presence of on site with a duplet with isomer shift (IS) 3.27 mm.s-1 and quadrupole splitting (QS) of 0.89 mm.s-1, that is related to Sn(II).

WeSA-624 9:15/9:30
SYNTHESIS OF TITANIUM DIOXIDE NANORODS FOR HYDROTHERMAL METHOD
Flores I. C. at al.
Has been synthesized nanorods of titanium dioxide for the method "soft template", the morfology of the obtained nanorods was characterized for scanning electron microscopy, crystalline phases for difractometry of X rays and specific surface Brunauer-Emmett-Teller. The mechanism of synthesis is discussed in base to the experimental observations and published papers.

WeSA- 729 9:30/9:45
A COMPARISON BETWEEN HEMATITE AND MAGNETITE IN THE GENERATION OF ACIDIC SOLIDS
Hadma S. Ferreira, Lilian S. Costa, Antônia S. Oliveira, Sérgio G. Marchetti, Patrício Reyes e Marcelo Oportus e Maria do Carmo Rangel.
Sulfated iron oxides show acidic properties and are promising in several industrial reactions. Magnetite and hematite were compared in this work in order to state which one is more efficient in generating acidic solids. Magnetite was fund to be the most convenient oxide to produce acidic solids with high specific surface area.

WeSA-617 9:45/10:00
COMPARATIVE STUDY OF THE SINTERING PROCESS IN VACUUM FURNACE AND RESISTIVE FURNACE WITH ARGON ATMOSPHERE FOR THE COMPOSITE WC-10%CO.
J. B. Manuel1, U. U. Gomes1, H. R. Macedo2, F. A. De Macedo1, e A. G. P. da Silva
This work study, characterization and sintering the samples, WC-10%Co. The nanoestructured powders of WC and Co were prepared in planetary mill at many times, 2 hours, 100 h, 200 h and 300 h. Vicker hardness of the sample sintered in resistive furnace was minor who sintered in vacuum furnace.

WeSA-652 10:00/10:15
CORE-SHELL PARTICLES BY SUSPENSION POLYMERIZATION WITH IMPROVED CHEMICAL RESISTANCE
Machado, R. A. F.;Gonçalves, O. H.;F. Sanches, A. A.;Machado, Bárbara C.;
Structured particles consisting in monodisperse polystyrene cores and poly(methyl methacrylate) shells were obtained via seeded suspension polymerization in order to improve chemical resistance of polystyrene. Results have showed that the cores resistance toward several solvents was greatly improved. Also, their properties can be controlled by adjusting operational parameters.

Room Carlos Pena IV

WeSC - Biocompatible Materials

WeSC -I-5
8:00/9:00
To be announced
Radovan Borijevic, UFRJ, RJ

WeSC-544 9:00/9:15
BIORESORBABLE SCAFFOLDS PREPARED BY PARTICULATE LEACHING METHOD FOR TISSUE ENGINEERING
Barbanti, Samuel;Zavaglia, Cecília;Duek, Eliana;
This work evaluate the processing of porous and dense scaffolds of bioresorbable scaffolds prepared by casting and melting compression process. The salt addition shows that there was no significant effect on the properties of the scaffolds and the cell morphology on the surface indicated a good interaction.

WeSC – 571 9:15/9:30
PRODUCTION OF POROUS BIOCERAMICS SCAFFOLDS FOR BONE REGENERAT
Santos, Sílvia Rachel de Albuquerque;Rossi, Alexandre Malta;Prado da Silva, Marcelo Henrique;
This study presents interconnected porous bioceramic scaffolds produced by different techniques. These scaffolds are being developed to be used in bone regeneration. The samples were characterized by X-ray diffraction (XRD), Fourier transform infra-red spectroscopy (FT-IR) and scanning electron microscopy analyses.

WeSC-529 9:30/9:45
OPTIMIZATION OF THE HYDROXYAPATITE COATING PREPARED BY RF-MAGNETRON SPUTTERING TECHNIQUE
Nakagawa, Denny;Bustamante, Romulo;Vilcarromero, Johnny;
This work shows the preparation of calcium phosphate coatings over different substrates using rf magnetron sputtering technique. Optimization deposition parameters were determined to obtain calcium phosphate coatings with Ca/P ratio of 1.7 (near to hydroxyapatite), good adherence, structure and morphology. Preliminary studies of biocompatibility are presented.

WeSC-577 9:45/10:00
SYNTHETIC TOOTH ENAMEL: STUDY AND CHARACTERIZATION OF A FLUORIDE HYDROXYAPATITE COATING FOR ORTHODONTICS
Mansur,Herman;Oliveira,Marise;
An alternative to etching enamel for retention of an adhesive system to orthodontic accessories is to grow crystals on the enamel surface. The potential advantages of crystal growth include easier unbonding, less residual adhesive left on the tooth and less damage to the enamel. These crystals retain the adhesive.

WeSC-605 10:00/10:15
316-L STAINLESS STEEL BIOPSY FORCEPS OBTAINED BY POWDER INJECTION MOLDING
Schaeffer, Lirio;Milke, Eduardo Cristiano;Mundstock, Gustavo;
The aim of this work was the production of microPIM parts for use in the medical area. These parts are used in flexible endoscopy procedures for material retreat with the intention of accomplishing biopsies. Two different feedstocks are used. The microparts were evaluated through mechanical and corrosion tests.

Room Manuel Bandeira II e III

WeSD - Structural materials: Processing Properties and Applications

WeSD-I-4 8:00/9:00
PROCESSING VS. STRUCTURE VS. MECHANICAL AND CORROSION BEHAVIOUR OF ZRNXOY THIN FILMS
Luís Augusto Rocha, Universidade do Minho, Portugal

WeSD- 536 9:00/9:15
OPTIMIZATION OF OPERATIONAL PARAMETERS FOR ELECTRODEPOSITION OF CORROSION RESISTANT NI-CO-W ALLOY
Santana, R.A.C.;Medeiros, E.A.;Oliveira, AL.M.;Campos, A.R.N.;Prasad, S.;Silva, L.M.F.;
Tungsten alloys exhibit high corrosion resistance and good mechanical properties, which make them suitable for many engineering applications. Recently they have been deposited as barrier layers used for ultralarge-scale. The Ni-Co alloys were the first to be utilized in the production of magnetic-film memories just because of their desirable soft magnetic properties, and were widely used later. They also found application in surface micromachining. The introduction of tungsten to the alloys of this type improved their durability, hardness and resistance to high temperatures.

WeSD-602 9:15/9:30
THE INFLUENCE OF GRAIN REFINEMENT ON THE CORROSION RESISTANCE OF AN AL-7WT%SN ALLOY
Garcia, A.;Spinelli, J.E.;Osório, W.R.;Cruz, K.A.S.;
The purpose of this study is to investigate the influence of grain refinement and solute redistribution on the corrosion resistance of samples of an Al-7wt%Sn alloy. A water-cooled casting assembly promoting upward directional solidification was used in order to obtain controlled casting samples.

WeSD-782 9:30/9:45
THERMODYNAMIC MODELING OF NB-SI-B SYSTEM
Ferreira, Flávio;Coelho, Gilberto Carvalho;Nunes, Carlos Angelo;
The ternary system Nb-Si-B was thermodynamically modeled based on CALPHAD method (Calculation of Phase Diagrams), using the software Thermo-Calc. In this methodology the coefficients of the equations of Gibbs energy for each phase of the systems are determined from phase diagrams and thermodynamic experimental data.

WeSD-784 9:45/10:00
THE INFLUENCE OF THE MICROSTRUCTURE ON THIXOFORMING OF A356 ALLOY
Silva, B. M. A.;Robert, M. H.;
The work investigates the influence of the microstructure of thixotropic slurries of A356 alloy on their thixoforming behavior. Thixotropic material was produced by different techniques: controlled partial melting of coarse dendritic and of ultra-refined as-cast structures and by mechanical stirring of liquid during its solidification. The slurries were then submitted to thixoforming in metallic dies. Results showed significant influence of the original structure on required thixoforging forces and the quality of the product.

WeSD-780 10:00/10:15
STUDY OF THE SOLIDIFICATION STEPS STRUCTURE IN QUASICRYSTALLINE ALCUFE ALLOY
Tibério A. Passos;Francisco Riccelly P. Feitosa;Rodinei G Medeiros;Tadeu Antônio A. Melo;
Recent studies show that the analyses made in nanometric scale of the surface of the quasicrystalline phase present an aperiodicity following the Fibonacci series. In this work the microstructure in a micrometric scale during the solidification of the AlCuFe alloy also of evidences this behavior.

Wednesday October 19th
1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira IV

WeSG - Superconductor Materials

WeSG I-2 **8:00/8:30**

Title to be announced
Durval Rodrigues

WeSG – I-3 **8:30/9:00**

Title to be announced
José Albino Aguiar

WeSG-I-4 **9:00/9:30**

Title to be announced
Wilson Ortiz

WeSG- 508 **9:30/9:45**
EFFECT OF THE HEAT TREATMENTS IN THE ANELASTIC PROPERTIES OF THE SMBA2CU3O7 SAMPLES
Nascimento, Rodney M.;Grandini, Carlos R.;Gimenez, Juliana M.A.;Bernardone, Wemerson;Cunha, Alfredo G.;
For SmBa2Cu3O7 (SBCO), the possibility of variable stoichiometry and the high mobility of oxygen in the CuOx planes gives rise to a rich phase diagram. In this paper, it is reported the effect of the heat treatments in the anelastic properties of the SBCO samples.

WeSG-521 **9:45/10:00**
EFFECT OF SUBSTITUTION OF CUO BY ZNS AND NIS IN THE COMPOUND CA0,5LABA1,5CU3O7-D
Petrucio Barrozo;J Albino Aguiar;
The structural, microestructural, magnetic and transport properties of NiS and ZnS doped samples Ca0,5LaBa1,5Cu3O7-d (CLBCO) system have been study for NiS and ZnS contend of 1,0%, 3,0%, 5,0%, 7,5%, 10,0%, 15,0% and 20,0% at wt.

Room Carlos Pena I

WeSH - Sol-Gel Materials

WeSH-501 **8:00/8:15**
CUBIC MESOPOROUS SILICA FILMS PREPARED BY SOL-GEL AND DIP-COATING
Mantilla John;Brito Giancarlo;Maranhão Silvanna;Fantini Marcia;Matos Jivaldo;Carneiro Sylvia;
Nanostructured mesoporous silica films were prepared by sol gel (using triblock copolymer Vorasurf as template) and dip-coating methods. Monolayer thickness of ~600nm, with cage-like pores exhibiting fcc packing, were investigated by small angle X-ray diffraction, X-ray reflectometry and TEM images.

WeSH-572 **8:15/8:30**
SURFACTANTS EFFECTS ON THE SOLID STATE NITRIC OXIDE SENSOR PREPARED BY SOL-GEL PROCESS
J.P. Melo Jr*;C.A. Brunello*;H.S. Rodrigues+; C.F.O. Graeff*;
Abstract – We have studied the surfactants effects on the solid state nitric oxide sensor prepared by sol-gel process. The influence of the surfactants was evaluated, and the results showed the importance of the surfactants on the structure of solid sensor in what concerns the electron spin resonance (ESR) response.

WeSH-550 **8:30/8:45**
EFFECT OF OIL VOLUME ON THE POROSITY OF ZIRCONIA FOAMS PREPARED BY AQUEOUS SOL-GEL ROUTE
Santos, Eduardo P.;Alves, Marinalva A.;Santilli, Celso V.;Pulcinelli, Sandra H.;
We present in this work the main results obtained in the study of zirconia foams preparation by sol-emulsion-gel method. The aim was estabilish the conditions to control the porosity, pore size and shape. Zirconia foams monolith with porosity of 95% can be prepared without crack, with open and closed spherical pores

WeSH -562 **8:45/9:00**
SYNTHESIS OF TITANIUM DIOXIDE NANORODS FOR HYDROTHERMAL METHOD
Ismael Colque Flores
Has been synthesized nanorods of titanium dioxide for the method "soft template", the morfology of the obtained nanorods was characterized for scanning electron microscopy, the crystalline phases for difractometry of X rays, specific surface Brunauer-Emmett-Teller. The mechanism of synthesis is discussed in base to the experimental observations and published papers.

WeSH-530 **9:00/9:15**
CHARACTERIZATION OF SBA-15 MESOPOROUS SILICA USED AS DRUG DELIVERY SYSTEM
Sousa, Andreza;Sousa, Edesia Martins Barros;
Mesoporous materials like SBA15 posses a network of pores of well-defined size in the nanoscale range. This pore architecture makes them suitable candidates for hosting and further delivery of pharmaceutical molecules. SBA-15 was prepared in different temperatures. The behavior of this system regarding to microencapsulation of model drug were investigated.

WeSH-599 **9:15/9:30**
XEROGEL/NAPHTHANEDIIMIDE NANOHYBRID MATERIAL FOR PHOTOOXIDATION
Magali A. Rodrigues; Nelcy D. Mohallen and Mario J. Politi
In this work we report the synthesis of a nanohybrid N, N´-bis(2-phosphonoethyl)-1, 4, 5, 8-naphtalenodiimide (DPN)/Xerogel, obtained by doping Silica with DPN during the condensation reaction of the tetraorthosilane (TEOS) precursor. Chemical, photophysical and photochemical characterization as well as the interaction with a biological target (tryptophan) are presented

Wednesday October 19th
2nd Sessions (10:15am/12:30pm)

Room Carlos Pena IV

WeSC - Biocompatible Materials

WeSC-I-4 10:30/11:30
RAPID PROTOTYPING APPLICATIONS IN THE TREATMENT OF CRANIOMAXILLOFACIAL DEFORMITIES – UTILIZATION OF BIOMATERIAIS
Jorge L. Silva, CenPRA/Campinas/SP

WeSC-576 11:30/11:45
NANO-STRUCTURED CARBONATE APATITE: A BIOMIMETIC APPROACH
Moreira, Ana Paula Duarte;Eon, Jean Guillaume;Moreira, Elizabeth Lima;Caraballo, Mirta Mir;Mascarenhas, Yvone;Rossi, Alexandre Malta;Prado da Silva, Marcelo Henrique;
In this study, nano-sized carbonated hydroxyapatite powders were synthesized and characterized by X-ray diffraction (XRD) and Fourier transform infra-red spectroscopy (FT-IR) analyses. XRD and FT-IR results showed significant difference from those reported in the literature for carbonated hydroxyapatite.

WeSC-578 11:45/12:00
BIOMATERIALS: PROCESSING AND CHARACTERIZATION OF POROUS ALUMINA SCAFFOLDS
Mansur,Herman;Costa, Hermes S.;Perreira, Marivalda M.;
3-dimensional alumina scaffolds were fabricated with a replica of polymer foam by coating the polymer with ceramic slurry. Alumina scaffold fabricated were immersed in supersaturated simulated body fluid solution. At the end of immersion period the surface was analyzed by scanning electron microscopy, energy dispersive spectroscopy and X-ray diffraction.

WeSC-593 12:00/12:15
MAGNETRON SPUTTERED THIN FILMS OF HYDROXYAPATITE – PRODUCTION AND CHARACTERIZATION
Mello, A;Hong, Z;Rossi, A.M.;Ketterson, J.B.;Ellis, D.E.;Saitovitch, E.B.;Ferreira, C.F.;
We have produced hydroxyapatite (HA) thin films on SiO2 and Silicon oriented substrates using RF magnetron sputtering from two facing targets. This design greatly reduces negative-ion back sputtering effects caused by oxy-anions preserving the film stoichiometry. The annealed and as-sputtered films were characterized by XRD, XPS, FTIR and Raman spectroscopy.

WeSC-601 12:15/12:30
SOLUBILISATION IN AQUEOUS MICELLAR SOLUTIONS OF MIXED TRIBLOCKS
Nascimento, Rafaela;Pinho, Maria Elenir;Silva, Dráulio;Ricardo, Nagila;
Micellar solutions of E62P39E62 copolymers may be mobile at ambient temperature and form hard gels on warming to body temperature. Micellar solutions of E126B51E126 copolymer do not show this effect. This study combines the desirable gelation characteristics of solutions E62P39E62 copolymer with the greater solubilising capacities of solutions of E126B51E126.

Room Manuel Bandeira II e III

WeSD - Structural materials: Processing Properties and Applications

WeSD-776 10:30/10:45
STRESS AND STRAIN-LIFE MODELS FOR FATIGUE UNDER MULTIAXIAL LOADIN
Meggiolaro, Marco;Castro, Jaime;
In this work, the main fatigue crack initiation models under multiaxial loading are reviewed and compared. The studied models include stress and strain-based ones such as Brown-Miller, Fatemi-Socie and Smith-Watson-Topper. Modified formulations of the strain-based models are presented.

WeSD-765 10:45/11:00
ESTUDO DE TENSÕES RESIDUAIS EM COMPONENTES DO SILUMÍNIO POR DIFRAÇÃO DE RAIOS X
Assis, Joaquim Teixeira;Monin, Vladimir Ivanovitch;Filippov, Sergey;Marrero, Susana Iglesias;
In this work the mechanical of the silumínio manufactured by powder metallurgy had been determined and carried through properties of tensions in aluminum and silicon. The gotten data will be used for detailed analysis of the state of tensions for computational modeling.

WeSD-700 11:00/11:15
SYNTHESIS AND PROPERTIES OF POLYSTYRENE /GRAPHITE COMPOSITE PRODUCED BY SUSPENSION POLYMERIZATION
Moreira, R. F. P. M.;Lopes, C. L.;Oliveira, P. F.;Araujo, P.H. H.;Machado, R. A. F.;Costa, L. A.;
In this work, polystyrene/graphite composite is synthesized by suspension polymerization using a bifunctional initiator, 2,5-dimethyl-2,5-bis(2-ethyl henanoyl peroxide)hexane (L256). The composite was analyzed by transmission electron microscopy, thermogravimetric analysis and gel permeation chromatography. The percentage of graphite incorporated was determined by centrifugation. The particle size distribution was determined by sieving.

WeSD-519 11:15/11:30
GEOPOLYMERIC CEMENTS BASED ON AGRO-INDUSTRIAL AND AGRICULTURAL RESIDUES
BIGNO, Izabella Castro;SILVA, Felipe José;THAUMATURGO, Clelio;
This work presents the results obtained with the utilization of rice husk ash as source of SiO2 and calcined egg shell as source of CaO in the production of PSS geopolymeric cement. The results showed that is possible develop geopolymeric mortars with compression strength over 60 MPa with seven days aging.

WeSD-500 11:30/11:45
STABILITY AND VOLUMETRIC MODULE OF Å-FE3N NITRIDES AND F3C CEMENTITE OBTAINED WHEN HIGH SPEED STEELS ARE NITRIDED.
A. V. dos Santos;M. A. Tier;J. C. Krause;
For the calculation of band lattice we used the Linear Method of Atomic Orbital (LMTO), discussing the nitrides e-Fe3N and cementite F3C stability, obtained when high-speed steels are nitrided into plasma. We calculated lattice spacing dependent formation energy, obtaining, like this, their volumetric module.

WeSD-771 11:45/12:00
CHARACTERIZATION OF TITANIUM IMPLANTS THROUGH MICRO CT
Lima, Inayá; Lopes, Ricardo; Giraldes, Nathan; Pereira, Luis; Oliveira, Marize;Oliveira, Luis;
This paper presents results of titanium implant assessment for bone analyses using 3D microtomography. The aim of this work is investigate the internals structures of titanium samples and computing some parameters such as volume-fraction of pores and anisotropy. The results show the potential of this technique to analyze microstructures.

Wednesday October 19th
1st Sessions (08:00 – 10:15am)

Room Manuel Bandeira IV
WeSG - Superconductor Materials

WeSG-522 10:00/10:15
RESEARCH AND DEVELOPMENT OF HIGH-TC SUPERCONDUCTORS IN CEPEL
Polasek, Alexander;Serra, E.T.;
An overview of the main Research and Development activities undertaken in the Superconductivity Laboratory of CEPEL is presented. Our work has been focusing on the investigation and development of High Temperature Superconductor (HTSC) materials for electric power applications.

Room Carlos Pena I
WeSH - Sol-Gel Materials

WeSH-552 9:30/9:45
STRUCTURAL INVESTIGATION AND CONTROLLED RELEASE PROPERTIES OF ORGANIC-INORGANIC HYBRID MATRIX CONTAINING SODIUM DICLOFENAC PREPARED BY SOL-GEL METHOD
Chiavacci, L.A.;Santilli, C.V;Lopes, L;Pulcinelli, S.H.;Oliveira A.G.;Craievich, A.F.;
In this work we have correlated the POE molecular weight and structure with delivery properties of the sodium diclofenac (SDCF) incorporated to siloxane-polyoxyethylene hybrid matrix. The results have shown that both molecular weight and SDCF contents influences the structure and drug delivery properties of the hybrid systems.

WeSH-I-4 9:45/10:15
DESIGN OF NANOSTRUCTURED MATERIALS BASED ON DYNAMICS OF SOFT MATTER
Eric Prouzet IEM/CNRS/ Montpellier, França

Notes

Wednesday October 19th
2nd Sessions (10:15am/12:30pm)

Room Carlos Pena I

WeSH - Sol-Gel Materials

WeSH-I-5 10:30/11:00
Silica-Containing Proton Conducting Materials for Fuel Cell Application
Marcos Lopes Dias, IMA, RJ

WeSH-580 11:00/11:15
PREPARATION, CHARACTERIZATION AND PROPERTIES OF THE V2O5·NH2O/ALO(OH)·NH2O XEROGEL COMPOSITE
Zampronio, Elaine C.;Lassali, Tânia A.F.;Oliveira, Herenilton P.;
In this work, we report the preparation, characterization and electrochemical/conducting properties of a multicomponent material obtained from the polymerization of vanadium pentoxide in an inorganic matrix (alumina). The material has been characterized by X-ray diffraction, infrared spectroscopy, thermogravimetric analysis, electron microscopy, energy dispersive X-ray spectrometry, cyclic voltammetry and impedance spectroscopy.

WeSH-533 11:15/11:30
LITHIUM INTERCALATION IN V2O5 AND V2O5:ZR THIN FILMS
Priscilla Hellmeister;César O. Avellaneda;Agnieszka Pawlicka;
V2O5 and V2O5:Zr (5% mol of Zr) thin films were prepared using sol-gel process. The films were deposited by dip coating with a rate of 15 cm/min and heat treated at 300 oC during 1h. The feasibility for use these electrodes as ion storage for electrochromic devices was investigated.

WeSH-576 11:30/11:45
STUDY OF THE INFLUENCE SINTERING BY MICROWAVE IRRADIATION IN SNO2-BASED VARISTORS
Vasconcelos, N. S. L. S.;Cruz, D. M. P.;Vasconcelos, J. S.;Varela, J. A.;Longo, E.;
SnO2 varistors were obtained by microwave irradiation. A study of the influence of sintering in structural and electric characteristic was realized. The results indicate that is possible to obtain a no-ohmic characteristic with a reduced time. However, studies must be carried through to understand and to optimize the thermal processing.

WeSH-536 11:45/12:00
DECAY OF PHOTO-EXCITED CONDUCTIVITY OF ER-DOPED SNO2 THIN FILMS
Morais, Evandro A.;Scalvi, Luis V A;
Photo-excited conductivity decay for Er-doped SnO2 thin films is presented and reveals the thermally activated nature of electron trapping barrier. It also confirms the acceptor-like nature of Er3+ centers in SnO2 matrix. These results are fundamental to understand the electro-optical behavior of Er, in order to design electroluminescent devices.

WeSH-540 12:00/12:15
SYNTHESIS AND CHARACTERIZATION OF BIOCOMPATIBLE OF BASED SOLS IRON OXIDE SUPERPARAMAGNETIC NANOPARTICLES
Brito G.E.S.;Gamarra L.F.;Pontuschka W.M.;Goya G.F.;Santos L.R.B.;
Biocompatible superparamagnetic nanoparticles sols were prepared by sol-gel technique. SAXS results point to a particle mean size of about 10nm that was also verified by TEM. Mössbauer spectroscopy (MS) and XRD indicate that particles are composed by maghemite and magnetite. Besides, MS and EPR confirm the superparamagnetic properties.

WeSH-519 12:15/12:30
CITOTOXICITY AND INFLAMMATORY EVALUATION OF BIOACTIVE GLASS SCAFFOLDS
Salgado, C. L.; Pereira, M. M.Lopes, M. T. P.
The objective of this work was to evaluate the cytotoxicity and acute and chronic inflammatory response of a high porosity bioactive glass (BG60S), produced by sol-gel method. The BG60S analyzed by direct contact and elution tests showed cytotoxic levels compatible with international standards (ISO 10.993-5). The BG60S extract reduced by iÖ50% the cellular viability of L929, CHO and CPis cells measured by the MTT assay. We did not find edema induction in the rat paw test, nor cell migration to peritoneum, as measured by the inflammatory acute response. A BG60S implant did not induce chronic inflammation as observed on the histological analyses.

Social Program

Besides the welcome cocktail on Sunday 16, when all the delegates will have the opportunity to gather for a relaxing time, a conference banquet has been carefully prepared for the delegates which would like to participate in this optional event. The banquet will take place in a nice and modern style Bar, where special food, nice music and a warm atmosphere is waiting to all who wishes to enjoy a relaxing time and know a little more about the night life in Recife.

For those who wish to do some sightseeing, there are several excellent options, and the Wednesday afternoon is free for those who wish to do so. We strongly recommend to contact the **Luck Viagens** booth at the Meeting for tips and arrangements.

Tuesday Oct. 18	From 9:00pm	Gala Dinner - Musique Design Bar
Wednesday Oct. 19	From 2:00pm	Free afternoon

General Information

In alphabetical order

Banking and Exchange Facilities

A Bank of Brasil agency is located across the street close to the Hotel. Cashing machines are open until late in the evening. Exchange facilities are available at the Airport or, alternatively, you can contact the Meeting Secretariat.

Check in / check out times

The check in/ check out time at the Mar Hotel and most of the hotels in Recife is 12 noon. Please verify at other hotels for any other available times.

Credit Cards

The major credit cards (American Express, VISA and Mastercard) are accepted in most shops, restaurants and gas stations.

Currency

The Brazilian currency is the real (R$). 1 Real is approximately 0.42 US Dollars.

Disabled Requirements

If you need any assistance for accessibility, please contact the Meeting Secretariat.

Car Parking

A car parking facility is available at the Mar Hotel free of charge for those who are guests at the Hotel. Charges apply for non-guests. Please check the prices at the entrance of the parking lot.

Exhibition

A exhibition will run parallel to the Meeting. The exhibition times will be 9:00 am to 5:00 pm Monday and Tuesday, and 9:00 am to 12:00 noon on Wednseday.

Information Desk and Meeting Registration

The information desk and meeting secretariat are located at the mezzanine level. The opening times are the followings:

Sunday	14:00 pm to 18:00 pm
Monday	08:00 am to 17:00 pm
Tuesday	08:00 am to 17:00 pm
Wednesday	08:00 am to 12:00 noon

Internet point

Internet access for the conference participants will be available free of charge at the exhibition hall. For the benefit of the users, a time limitation will be indicated. The hotel offers Wi-Fi internet access at two spots, mezzanine and reception area. Please contact the Meeting Secretariat regarding the use of the Wi-Fi connection.

Language

The conference languages are Portuguese and English. All authors are strongly encouraged to deliver their talks in English, so that foreign participants can benefit from the presentations.

Lunch

The lunch for all the conference participants is included in the conference fee. Each participant will receive a ticket. Please verify the lunch time in the conference program.

Mobile Telephones

Please be aware that mobile telephones should be switched off during all sessions.

Public Transport

The main public transport in Recife is the bus system. For information, see the hotel reception.

Shopping

Shopping in Recife can provide a pleasant time. There are four main shopping centers (Recife, Guararapes, Tacaruna and Paço Alfandega). There is also an interesting "artesanato" shopping located at the Culture House, dowtown. Other "artesanato" shoppings can be found in Olinda.

Smoking policy

Designated smoking areas are indicated in the hotel facilities. Smoking is not allowed in the Meeting rooms.

Tourist Information

Tourist information can be obtained at the Luck Viagens booth or at the hotel reception.

Taxis

Taxis in Recife are not expensive and are the easiest way to get around. There are taxis available at the hotel entrance. Most of the taxis do not accept credit cards as form of payment.

Time Zone

Please be aware that as from today, the summer time is implemented in Brazil. There is a one hour difference between Recife and several other states, including Rio de Janeiro and São Paulo.

Useful Telephone Numbers

The public telephone system employs a telephone card for calling. These are available at any newspaper stand. Local and national collect calls can be placed from public telephones by dialing 9090 + number.

If you are outside the Hotel and require any urgent assistance, you may contact the Meeting Secretariat using the phone: 33024428, and asking to connect to the SBPMat meeting, mezzanine level.

Author Index

Cover Design

Fábio Vilela dos Santos

Printed at

Editora Universitária - UFPE