

Symposium 1

POSTER SESSION PI1- WEDNESDAY OCTOBER 11

1501 - COMPARATIVE STUDY BETWEEN RAW NATURAL RUBBERS FROM TWO NEW CLONES OF IAC SERIES AND THE COMMERCIAL ONE

Luiz Henrique Capparelli Mattoso (Embrapa Instrumentação Agropecuária), Aldo Eloizo Job (Departamento de Física, Química e Biologia - Faculdade de Ciências e Tecnologia - UNESP/P. Prudente), Paulo de Souza Gonçalves (Instituto Agrônômico) and Rogério Manoel Biagi Moreno (Embrapa Instrumentação Agropecuária)

The natural rubber from two new clones of *Hevea brasiliensis* and the commercial one was evaluated by TG-DTG and DMA to characterize the rubbers. The TG and DTG results indicated very small differences between the clones. DMA results suggest a possible variation in the average molecular mass of the polyisoprene and also a variation in its distribution in natural rubber.

1502 - ELASTIC MODULI OF CAST Ti-10Mo-xNb (3 ≤ X ≤ 9) ALLOYS

Carlos Angelo Nunes (EEL/USP), Sinara Borborema Gabriel (UFRJ) and Glória Almeida Soares (UFRJ)

This study investigated the elastic properties of the as-cast Ti-10Mo-xNb (x = 3, 6 and 9) alloys recently developed. The Young's moduli were determined by ultrasonic-pulse method. The density of each alloy was measured by the Archimedes principle. The densities of Ti-10Mo-xNb alloys increased with the concentration of niobium. The moduli of the Ti10Mo-6Nb and Ti-10Mo-9Nb alloys were similar while the Young's modulus of Ti-10Mo-3Nb was lower than those of Ti and Ti-6Al-4V. In conclusion, among the three alloys, the alloy Ti-10Mo-3Nb had lower density and modulus, so being a promising candidate for bone substitute.

1503 - STUDY OF THE INTERACTION OF PHYTASE WITH NANOSTRUCTURED LIPID FILMS BY HARMONIC OSCILLATION AND AXISYMMETRIC DROP SHAPE ANALYSIS

Maria Elisabete Darbellho Zaniquelli (FFCLRP - USP), Thatyane Morimoto Nobre (FFCLRP - USP), Maristela Ferreira (FCTPP - UNESP), Ubirajara Pereira Rodrigues Filho (IQSC - USP), Vantencir Zucolotto (IFSC - USP), Marli Leite Moraes (IFSC - USP), Luciano Caseli (IFSC - USP) and Osvaldo Novais Oliveira Junior (IFSC - USP)

The interaction of phytase, an enzyme that catalyzes the phytic acid hydrolysis, with Langmuir and Langmuir-Blodgett films of lipids is investigated. Surface tension and rheology studies showed that phytase interacts remarkably with lipid monolayers, increasing their dynamic surface elasticity and making it feasible to transfer mixed monolayers onto solid supports. The process of enzyme adsorption is quicker than the frequency imposed to the oscillating drop. It is likely that the relaxation process due to area variations should be related to protein molecular rearrangements.

1504 - INCORPORATION OF HORSERADISH PEROXIDASE USING DIFFERENT METHODS OF CO-SPREADING IN LIPID FILMS AT THE AIR-WATER INTERFACE

David Sotero do Santos Jr (Windsor University), Luciano Caseli (IFSC-USP), Thaís Fernandes Schmidt (IFSC-USP) and Osvaldo Novais de Oliveira Jr (IFSC-USP)

The interaction of horseradish peroxidase (HRP), an enzyme that catalyzes the hydrogen peroxide hydrolysis, with Langmuir monolayers of lipids is investigated. Surface Pressure-Area (p-A) isotherms of HRP-dipalmitoylphosphatidylglycerol (DPPG) mixed monolayers were studied, by using several techniques of enzyme-lipid co-spreading. We have found that interaction of HRP with DPPG depends on the method of co-spreading, which reflects the mechanism and dynamic of enzyme incorporation into the lipid film at the air-water interface.

1505 - NANOCAPSULE SUSPENSIONS AS A PHARMACEUTICAL BINDER SYSTEM: A COMPATIBILITY STUDY

Ruy Carlos Ruver Beck (UFSM), Adriana Raffin Pohlmann (UFRGS), Cristiane de Bona da Silva (UFRGS), Aline Ferreira Ourique (UFSM), Rossana Barcellos Friedrich (UFSM), Sílvia Stanisquaski Guterres (UFRGS) and Márcia Camponogara Fontana (UFSM)

In this study we evaluate the use of polymeric nanocapsule suspensions as a binder vehicle for the preparation of granules containing nanocapsules as an intermediate pharmaceutical product. Dexamethasone-loaded nanocapsules were prepared by interfacial deposition of preformed polymer [poly(ϵ -caprolactone)] using two different oily phases (capric/caprylic mixture or sunflower oil). They presented nanometric size (180-260 nm), negative zeta potential and encapsulation efficiency close to 90%. All binders studied showed a good compatibility with these suspensions in the range of 0.5 and 3.0%.

1506 - SYNTHESIS OF CALCIUM FLUOROALUMINOSILICATE BY A NON-HYDROLYTIC SOL-GEL ROUTE

Lilian Rodrigues Avila (UNIFRAN), Katia Jorge Ciuffi (UNIFRAN), Paula Fabiana dos Santos Pereira (UNIFRAN), Paulo Sérgio Calefi (UNIFRAN), Eduardo José Nassar (UNIFRAN) and Alexandre Cestari (UNIFRAN)

Calcium fluoroaluminosilicate glasses are used as restorative materials for dental applications. The nonhydrolytic sol-gel route allows for the production of inorganic polymers based on an Al-Si matrix. In this work, three different mass percentages of a glass composition were synthesized to improve physical and chemical characteristics of the cement. In conclusion, these materials synthesized by the nonhydrolytic sol-gel route presented structures similar to those of glass ionomer powders, as confirmed by our characterizations and literature references.

1507 - SOLID STATE NITRIC OXIDE SENSOR USING A LATEX RUBBER MATRIX

Carlos Alberto Brunello (FFCLRP), Rondinelli Donizetti Herculano (FFCLRP) and Carlos F. O. Graeff (FFCLRP)

The proposed sensor is a well known spin trap iron(II)-diethyldithiocarbamate complex (FeDETC) encapsulated in a latex rubber matrix. The Nitric Oxide

(NO) radical is trapped in FeDETC, which allows its detection by electron paramagnetic resonance (EPR). The latex was used as solid matrix due to excellent biocompatibility, natural angiogenesis properties; thus a promising biomaterial.

1508 - INTERACTION BETWEEN CHITOSAN AND CELL MEMBRANE MODELS: PHOSPHOLIPID LANGMUIR MONOLAYERS

Maria Elisabete Darbello Zaniquelli (USP - FFCLRP), Thatyane Morimoto Nobre (USP - FFCLRP), David Sotero Dos Santos Jr. (University of Windsor), Luciano Caseli (USP - IFSC), Adriana Pavinatto (USP - IFSC), Felipe José Pavinatto (USP - IFSC) and Osvaldo Novais De Oliveira Jr. (IFSC - USP)

The interaction of chitosan with DPPC and DPPG lipids was proved using Langmuir monolayers as a cell membrane model. Chitosan adsorbs at lipid monolayers, causing expansion of the monomolecular film and suppression of a plateau representing a phase transition. Regardless the initial lipid packing, when chitosan is introduced in subphase, surface pressure increases immediately. Dynamic surface elasticity shows that chitosan adsorption at the lipid monolayer changes the surface elasticity, inferring that chitosan has a remarkably effect at lipid monolayer structural characteristics.

1509 - USE OF DIAMOND-LIKE CARBON WITH TUNGSTEN (W-DLC) FILMS FOR ORTHOPEDICS IMPLANTS

Luiz Henrique Garcia-Amoedo (Universidade de São Paulo), Terezinha Andreoli Pinto (Universidade de São Paulo), Luis da Silva Zambom (Fatec-SP), Ana Paula Mousinho (Universidade de São Paulo), Ronaldo Domingues Mansano (Universidade de São Paulo), Marcos Massi (ITA) and Ronaldo Ruas (Universidade de São Paulo)

In this work, reactive magnetron sputtering was used to deposit W-DLC films on hard metallic implants for orthopedics applications. The W-DLC thin films obtained in the processes have very low roughness, high resistance to chemical attack and show a high biocompatibility when compared with other implants materials.

1511 - IN SITU BIODEGRADATION OF POLYURETHANE NANOPARTICLES MONITORED BY LASER LIGHT SCATTERING

Eric Cloutet (Un. BDX1), Henri Cramail (Un. BDX1), Valdir Soldi (UFSC), Elenara Lemos Senna (UFSC), Betina Giehl Zanetti Ramos (UFSC) and Redouane Borsali (Un. BDX1)

Nanoparticles biodegradation studies are very important for biomedical and pharmaceutical applications. Laser light scattering (LLS) has provided an accurate and efficient method to study polymer nanoparticles biodegradation in terms of the changes of the scattering intensity and the hydrodynamic size distribution of polymer nanoparticles. Using polyurethane (PU) nanoparticles as a typical example, we have shown that its biodegradation was time dependent. The decrease of the Rayleigh ratio and the hydrodynamic radius were the evidences of polyurethane nanoparticles degradation.

1513 - THERMAL AND MECHANICAL PROPERTIES OF NATURAL RUBBER/LEATHER COMPOSITES

Carlos José Constantino (FCT/Unesp), Rosângela Conrado (SENAI), Elton Aparecido Reis (FCT/Unesp) and Aldo Eloizo Job (FCT/Unesp)

The leather is a material used in the production of several products due to its properties. However, its applications require the treatment process (cure) using chrome 3. In the curtailment process are obtained a residue denominated leather powder that is one of the main environmental problems. This work has as main objective to prepare composites obtained through the mixture of natural rubber (NR) with leather powder (NR/Leather), seeking technological applications such as thermal isolation. The composites were obtained by compression at 60°C, 120°C and 180°C in different proportions.

1514 - OPTICAL CHARACTERIZATION OF GFP/OC10C6-PPV FILMS

Debora T Balogh (IFSC/USP), Osvaldo N Oliveira Jr. (IFSC/USP), José A Giacometti (FCT/UNESP), Marli L Moraes (IFSC/USP) and Clarissa A Olivati (FCT/UNESP)

The photoluminescence of a conjugated polymer and fluorescent protein has been studied for films fabricated using casting. For these films there is red shift in the spectra of the films in comparison to the pure OC10C6-PPV from ~590 nm to ~650 nm. This shift shows that it's possible to tune the photoluminescence spectra of the luminescent polymer using fluorescent proteins.

1515 - NANOSTRUCTURED FILMS CONTAINING LIPOSOMES FOR CONTROLLED RELEASE OF IBUPROFEN

Valtencir Zucolotto (USP), Marli L. Moraes (USP), Vananelia P.N. Geraldo (USP) and Osvaldo N. Oliveira Jr (USP)

In this study we immobilized liposomes incorporating an anti-inflammatory agent (ibuprofen) into layer-by-layer (LbL) films. In vitro experiments were performed to determine the kinetics of the release using fluorescence spectroscopy.

1516 - SUM-FREQUENCY VIBRATIONAL SPECTROSCOPY OF POLYELECTROLYTE LAYER-BY-LAYER (LBL) FILMS

Paulo Barbeitas Miranda (IFSC/USP) and Heurison de Sousa e Silva (IFSC/USP)

LBL films produced by electrostatic self-assembly of polyelectrolytes are finding many useful applications as biosensors and in optoelectronics. For optimizing their applications, we use Sum-Frequency Vibrational Spectroscopy to investigate at the molecular level how various adsorption parameters affect the polymeric film structure. Our preliminary results on PAH/PSS LBL films shows that adsorbed films in contact with the solution (in situ) are quite disordered but after the drying step (ex situ) some films become inhomogeneous and show some orientational order for the polymer backbone.

1517 - MECHANICAL PROPERTIES OF THE ZRO2 AND Al₂O₃ BIOCERAMICS

Claudinei dos Santos (DEMAR-EEL-USP), Juliana Kelmy Macário de Faria Daguano (DEMAR-EEL-USP), Luis Henrique Perdeão Teixeira (DEMAR-EEL-USP), Manuela Harue Koizumi (DEMAR-EEL-USP), Renato Chaves Souza (DEMAR-EEL-USP) and Kurt Strecker (DEM-UFSJ)

ZrO₂ and Al₂O₃ were studied, as material for infrastructure applications in dental prosthesis. Powder batches had been prepared, beyond samples of ZrO₂ and pure Al₂O₃, a composed mixture of 80% of ZrO₂ and 20% of Al₂O₃. Compacts were sintered at 16000C, with a isothermal holding time of 120 minutes. The mechanical properties of hardness, fracture toughness had been gotten by the method of Vickers indentation method. Furthermore, fracture resistance was gotten by the four-bending strength tests. To leave of these results, reliability analysis of samples were carried through Weibull statistics.

1518 - IMMOBILIZATION OF LIPID VESICLES IN NANOSTRUCTURED LAYER-BY-LAYER FILMS CONTAINING DENDRIMERS

Valtencir Zucolotto (IFSC), Mauricio Baptista (IQ), Marli Leite Moraes (IFSC) and Osvaldo Novais Oliveira Jr. (IFSC)

Liposomes were immobilized in nanostructured films using the layer-by-layer electrostatic self assembly technique in conjunction with poly(amidoamine) (PAMAM) dendrimers. The capability of the nanocomposites to bind biological species such as Bovine Serum Albumin (BSA) was investigated via Surface Plasmon Resonance (SPR) and vibrational spectroscopies.

1521 - NANOSTRUCTURED LAYER-BY-LAYER FILMS OF TETRASULPHONATED METALOPHTHALOCYANINES FOR DOPAMINE AND ASCORBIC ACID DETECTION

Valtencir Zucolotto (IFSC), Luiz Henrique S. Gasparotto (DQ), José Roberto Siqueira Jr. (IFSC) and Osvaldo Novais Oliveira Jr. (IFSC)

We report the fabrication and characterization of nanostructured Layer-by-Layer (LbL) films using chitosan (Ch), as a cationic polyelectrolyte, and tetrasulphonated metalophtalocyanines of nickel (NiTsPc), copper (CuTsPc) and iron (FeTsPc), as anionic polyelectrolytes. Electrodes with LbL films were used for detecting dopamine (DA) and ascorbic acid (AA), in the concentration range from 5 x 10⁻⁶ to 1.5 x 10⁻⁴ mol L⁻¹. The limit of detection of DA and AA was obtained using the calibration equation for each electrode, being of the order to 10⁻⁵ mol L⁻¹.

1522 - POLY (HYDROXYBUTYRATE)/PIROXICAM MICROPARTICLES PREPARED BY EMULSION/SOLVENT EVAPORATION: CHARACTERIZATION AND IN VITRO DRUG RELEASE

Alfredo Tibúrcio Nunes Pires (UFSC), Elenara M. T. Lemos-Senna (UFSC) and Giovana Carolina Bazzo (UFSC)

Microparticles containing piroxicam (PXC), an anti-inflammatory drug, were prepared using poly (hydroxybutyrate) [PHB], by emulsion/solvent evaporation technique. The microparticles were evaluated in terms of morphology, encapsulation efficiency, thermal analysis and in vitro drug release. The results obtained indicate that the PHB/PXC microparticles can be considered as a promising system for drug delivery applications.

1523 - SYNTHESIS OF POLYURETHANE NANOCAPSULES BY MINIEMULSION TECHNIQUE

Eric Cloutet (Un. BDX1), Henri Cramail (Un. BDX1), Valdir Soldi (UFSC), Elenara Lemos Senna (UFSC), Betina Giehl Zanetti Ramos (UFSC) and Redouane Borsali (Un. BDX1)

The miniemulsion process was used to synthesize polyurethane (PU) nanocapsules in aqueous medium with size ranging from 200 to 300 nm. The polyaddition between a natural polyol and isophorone diisocyanate (IPDI) used as monomers was monitored at 60°C, in the absence of catalyst and was followed by infrared spectroscopy (FT-IR) in the attenuated total reflection (ATR) mode. The morphology of nanocapsules was investigated by Transmission Electronic Microscopy (TEM) and the particles showed spherical morphology.

1524 - THE ROLE OF SURFACTANT IN THE MINIEMULSION POLYMERIZATION OF POLYURETHANE NANOCAPSULES

Henri Cramail (Un. BDX1), Eric Cloutet (Un. BDX1), Valdir Soldi (UFSC), Elenara Lemos Senna (UFSC), Betina Giehl Zanetti Ramos (UFSC) and Redouane Borsali (Un. BDX1)

The influence of surfactant type and concentration on particle size and formulation yield of the polyurethane (PU) nanocapsules synthesized by miniemulsion polymerization, was investigated. SDS, Tween 80 and Pluronic F68 were employed as a surfactant in concentration ranging from 5 to 20% (vs monomer concentration). The particle diameter slowly decreases from 292 nm to 261 nm as the amount of tween 80 surfactant increases from 5 to 20 wt%. The yield of the formulation was increased using higher surfactant concentration.

1525 - APPLICATION OF NANO-STRUCTURED DIAMOND-LIKE CARBON FILMS IN BIOPROSTHETIC HEARTH VALVE

Terezinha Andreoli Pinto (USP), Ronaldo Domingues Mansano (USP), Luiz Henrique Garcia-Amoedo (USP) and Ana Paula Mousinho (USP)

Abstract: In this work, we have deposited nano-structured Diamond-like Carbon films over collagen fibers to provide a sterile hindrance, where crystal growth might occur. The results are promising, it is necessary to evaluate a series of chemical, physical, biological parameters, considering many commercial and therapeutic applications. It was possible see the efficiency of the DLC films to decrease the calcification process in bioprosthetic hearth valves.

1526 - BIODEGRADABLE AMPHIPHILIC NANOSPHERES

Shirley Possidonio (USP), Walker Soares Drumond (USP) and Wang Shu Hui (USP)

This study describes the preparation and characterization of nanocontainers for drug delivery systems, from a series of amphiphilic triblock copolymers, poly(l,l-lactide)-block-poly(ethylene glycol)-block-poly(l,l-lactide) (PLA-PEG-PLA). The nanocontainer formation was characterized by 1H-NMR and UV techniques.

I527 - ULTRA-THIN FILMS OF NATURAL RUBBER LATEX

..Antonio Riul Jr. (UNESP)..Celina Massumi Miyasaki. (UNESP)..Mariselma Ferreira (USP), Aldo Eloizo Job (UNESP) and Carlos José Leopoldo Constantino (UNESP)

A fundamental study on the fabrication and characterization of ultra-thin films of natural rubber latex (NRL) is presented. Dip-coated films were evaluated according to the latex concentration, dipping time and pH of the solutions. A good linear growth of the films could be achieved in all pH values tested. Therefore, over a certain limit of NRL diluted in ultrapure water a disordered growth was observed. The latex adhesion onto quartz substrates was also checked throughout successive washings in distilled water. Ongoing studies are being undertaken combining NRL with chitosan and natural gums

I529 - STUDY OF MATERIALS FOR HYDROGEN PEROXIDE AND UREA HYDROGEN PEROXIDE BIOSENSORS

Laércio Gomes (IPEN), Ronaldo Domingues Mansano (EPUSP), Lilia Coronato Courrol (FATEC-SP), Flávia Rodrigues de Oliveira Silva (EPUSP) and Nilson Dias Vieira Junior (IPEN)

Complexation of Eu(III)-tetracycline was studied by luminescence. It was proposed to use the lanthanide complex as analytical forms for the determination of hydrogen peroxide and urea hydrogen peroxide in aqueous-solution. The absorption, fluorescence, and infrared spectra were obtained for the characterization of the better compositions of the complexes.

I530 - A SIMPLE METHOD TO SYNTHESIZE SILVER NANOPARTICLES BY PHOTO-REDUCTION

Ronaldo Domingues Mansano (EPUSP), Flávia Rodrigues de Oliveira Silva (EPUSP), Lilia Coronato Courrol (FATEC-SP) and Nilson Dias Vieira Junior (IPEN)

In this work photoinduced method for obtaining silver nanoparticles was investigated using UV LED excitation, Xenon lamp and Sodium lamp. The silver colloidal solutions were prepared using autopolymerization resin and AgNO3 into various solvents.

I531 - LANGMUIR FILMS OF LIGNINS EXTRACTED FROM SUGAR CANE BAGASSE THROUGH ORGANOSOLV-CO2 SUPERCRITICAL PULPING PROCESS

Antonio Aprigio Silva Curvelo (USP/IFSC), Daniel Pasquini (USP/IFSC), Patrícia Alexandra Antunes (Unesp/FCT), Bruna Arlotti Stracçalano (Unesp/FCT), Alvaro Augusto Pereira (Unesp/FCT), Gislaïne Felipe Martins (Unesp/FCT), Antonio Riul Junior (Unesp/FCT) and Carlos José Leopoldo Contantino (Unesp/FCT)

Lignins extracted from sugar cane bagasse using different alcohols in the organosolv-CO2 supercritical pulping process have been applied in the fabrication of Langmuir films. These films were characterized by surface pressure-mean molecular area (pi-A) isotherms to exploit information at the molecular level, which is a very important issue since even the molecular structure of lignins is still opened in the literature.

I534 - GAS SENSOR BASED ON DOPED NANO-PARTICLE OXIDE MATERIALS

Vladimir Sevastianov (RAS), Alexey Vasiliev (Kurchatov Institute), Leandro Lorenzelli (ITC-Irst) and Vittorio Guarnieri (ITC-Irst)

A new microhotplate for semiconductor and thermocatalytic gas sensors based on doped nano-particle oxides has been reported. The aim of this work is to discriminate different compounds in a gas mixture. In order to guarantee the sensor sensitivity, stability and low-cost a combined approach involving both micro- and nano technologies has been proposed. Concerning the sensing layers, we have chosen two different nano-powder materials: Yttria stabilized Zirconia (YSZ) as a support of thermocatalytic catalyst and Tin dioxide. The application field mainly concerns the building automation systems.

I535 - DETECTION OF PHOSPHATE IONS USING PHYTASE AMPEROMETRIC BIOSENSORS

Osvaldo N. Oliveira Jr (IFSC), Ubirajara P. Rodrigues Filho (IQSC), Marli Moraes (IQSC) and Marystela Ferreira (UNESP)

Phytase has been immobilized in Layer-by-Layer (LbL) films, adsorbed alternately with poly(allylamine) hydrochloride (PAH) layers, onto an ITO substrate modified with Prussian Blue (PB). This film was used to determine phytic acid using amperometric measurements. The results showed the presence of phosphate ions to confirm detection of phytic acid. Acknowledgments: FAPESP and CNPq.

I536 - PREPARATION AND CHARACTERIZATION OF A NEW TERPOLYMER OF POLY -{TRANS-[RUCL2(VPY)4]-4- VINILPYRIDINE -DIVINYLBENZENE WITH SILVER NANOPARTICLES FOR ANTIBACTERIAL

Eric Nunes Oliveira (UFSC), Karen Segala (UFSC), Rosilene Linhares Dutra (UFSC) and César Vitório Franco (UFSC)

The synthesis and characterization of a new terpolymer with nanosilver is described. The terpolymer was synthesized using the monomers in equimolar proportions. The system was maintained under reflux, with vigorous mechanical stirring, under inert atmosphere, at constant temperature. The nanometric dimension of silver nanoparticles was monitored by UV-visible and TEM and was found in the range of 9 to 16 nm. The terpolymer was characterized by SEM, TGA, DSC and GPC. The antimicrobial action was evaluated using S. aureus and E. coli were confirmed through the presence of an inhibitory halo in the culture media.

I540 - CURCUMIN IMPREGNATION ONTO CHITOSAN MICROSPHERES FOR NUTRACEUTICAL USE

Inês M. C. Brighente (UFSC), Tereza C. R. de Souza (UFSC), Alexandre L. Parize (UFSC), Valfredo T. de Fávère (UFSC) and Mauro C. M. Laranjeira (UFSC)

This study investigates curcumin impregnation onto chitosan microspheres in order to obtain samples with high nutraceutical potential. The material loaded with dye was characterized by DSC and SEM. Release studies of the dye were performed under different pH conditions, being observed a protection to the active material against adverse conditions.

1541 - ANALYSES OF BIOCOMPATIBLE AND HEMOCOMPATIBLE OF DENTAL IMPLANT WITH ALLOYS OF POROUS TITANIUM RECOVERED WITH CVD DIAMOND FILM

Rafaela Camilo de Camargo (FAP1)
and Teófilo Miguel de Souza (FEG - UNESP)

The CVD diamond was utilized for recover dental implant with alloys of porous titanium, with the objective of reduce the rejection upon implanting. The dental implants were clear with enzymatic detergent. The analyses used SEM and EDX. The film morphology showed not homogeneous, what is important for the bone one-integration.

1542 - SYNTHESIS AND CHARACTERIZATION OF THE IRON OXIDE MAGNETIC PARTICLES COATED WITH CHITOSAN BIOPOLYMER

Mauro César Marghetti Laranjeira (UFSC), Nelson Jhoe Batistela (UFSC),
Maurício Rigoni (UFSC), Valfredo Tadeu Fávere (UFSC)
and Karina Donadel (UFSC)

The objective of this study is the synthesis and characterization of the iron oxide magnetic particles coated with chitosan by spray-drying method and preparation of ferrofluids for biomedical applications. When the ferrofluid samples were submitted to an alternated magnetic field, it was observed variation in the temperature of 7°C in 40 minutes. Considering this variation in the temperature is significant given that body temperature is 37°C and that cancerous cells perish around of 42-46°C. The materials were characterized by scanning electron microscopy and energy dispersive X-ray.

1543 - PHBHV/PCL MICROSPHERES AS BIODEGRADABLE DRUG DELIVERY SYSTEMS (DDS) FOR PHOTODYNAMIC THERAPY (PDT)

Maria Ines Re (IPT-USP), Andreza Ribeiro Simioni (FFCLRP-USP),
Carolina Vaccari (FFCLRP-USP)
and Antonio Claudio Tedesco (FFCLRP-USP)

The potential use of PHBHV/PCL was investigated in this work to prepare drug-loaded microspheres by emulsification-solvent evaporation method. NzPC, a photosensitizer dye, whose application in photodynamic therapy (PDT) against cancer has been investigated, was incorporated into the PHBHV/PCL microspheres as a model drug. The biodegradation studies were done to investigate the effects of the incorporation of the NzPC and also to determine the profile release. The results showed that PHBHV/PCL blend may present good biodegradable properties to control the release of NzPC in biological medium.

1544 - INTERACTION OF FIBROBLAST GROWTH FACTORS (FGFS) WITH PHOSPHOLIPID SURFACE MONOLAYERS AT THE AIR-WATER INTERFACE

Oswaldo Novais Oliveira Jr. (USP), Wilker Caetano (UNESP), Mariselma Ferreira (USP) and Marystela Ferreira (UNESP)

In this work, Pi-A isotherms and hysteresis studies have been used to investigate the dynamic adsorption/desorption of the bFGF (basic fibroblast growth factor) in phospholipid Langmuir monolayers under a subphase containing protein. The results evidenced that the protein, even at nanomolar concentrations (10⁻⁹ up to 10⁻⁷ M), alters the monolayer properties differently for zwitterionic and anionic phospholipids, while the charge in the

molecules playing an important role in protein-phospholipid interactions.

1546 - INTERACTION BETWEEN NATURAL RUBBER AND POLYANILINE INVESTIGATED BY ELECTRIC CONDUCTIVITY AND RAMAN SCATTERING

Antônio Riul Junior (UNESP), Rebeca Delatore Simões (UNESP), Adriana Segato Cavalheri (UNESP), Carlos Leopoldo Constantino (UNESP)
and Aldo Eloizo Job (UNESP)

Conductive rubbery blends, produced using polyaniline (PANI) depend on several factors such as the type and size, as well as conditions as temperature and pressure. In this work blends of Natural Rubber and PANI were prepared and characterized by electrical properties and Raman scattering to check the miscibility of the materials in each sample, which may be applied as pressure sensor. The mixture was pressed at 180°C and films with thickness in the order of 0.5 mm were obtained with six different proportions (wt.%) which revealed an chemical interaction between both materials.

1547 - MEASURES OF ELECTRIC CONDUCTIVITY AS FUNCTION OF THE PRESSURE OF BLANKETS OF COTTON FABRIC TREATED WITH POLYANILINE

Gabriel Galbes Battistone (FCT - UNESP), Geusilange Santana Silva (FCT - UNESP) and Aldo Eloizo Job (FCT - UNESP)

Vegetable fibers have been used as reinforcements for polymeric matrix. The use of these fibers is quite advantageous, due to their properties of mechanical resistance, low cost and lightness. Blankets of cotton fabric were treated with conductive polyaniline using the in situ polymerization method varying the treatment time. The samples were characterized through measures of electric conductivity on the applied pressure and with accompaniment of the variation of the thickness. The blankets present conductivity in the order of 10⁻³ S.cm⁻¹ within the interval from 0.05 to 0.5 MPa.

1549 - IOTA CARRAGEENAN AS A MODIFIER OF PHOSPHOLIPID FILM FLUIDITY AND AS AN AGENT FOR ENZYME IMMOBILIZATION

Maria Elisabete Darbello Zaniquelli (FFCLRP-USP), Rosa dos Prazeres Melo Furriel (FFCLRP-USP), Francisco de Assis Leone (FFCLRP-USP),
César Vanderlei Nascimento (FFCLRP-USP)
and Thatyane Morimoto Nobre (FFCLRP-USP)

Phospholipid compositions can tailor the biomembrane fluidity, which is important for the enzymatic activity as well as other kinds of bioprocesses. Langmuir monolayers (LM) and Langmuir-Blodgett (LB) techniques provide the immobilization of enzymes on phospholipid films, with the advantage that allow fluidity modulations by changes the composition and packing of the matrix. In this work, we have studied the influence of iota carrageenan, a sulfated polysaccharide, on sodium dihexadecylphosphate (DHP) LM and LB films and subsequent immobilization of a soluble alkaline phosphatase.

I550 - REAL-TIME ATOMIC FORCE MICROSCOPY IMAGING OF DIBUCAINE-INDUCED CONFORMATIONAL CHANGES IN MODEL MEMBRANES

Eneida de Paula (IB/UNICAMP), Gabriela Simone Lorite (IFGW/UNICAMP) and Mônica Alonso Cotta (IFGW/UNICAMP)

We have investigated the effects of the interaction between the local anesthetic dibucaine and supported egg phosphatidylcholine bilayers in aqueous environment by atomic force microscopy. With increasing dibucaine concentration in the liquid cell during imaging, a progressive decrease in the size of the lipid domains was observed up to disruption of the bilayer.

I551 - BIOCOMPATIBILITY OF MULTI-WALLED CARBON NANOTUBES GROWN ON TITANIUM AND SILICON SURFACES

Anderson Oliveira Lobo (INPE/ITA), Erica Freire Antunes (INPE), Mariana Bernardes Palma (INPE/UNIVAP), Cristina Pacheco Soares (UNIVAP), Vladimir Jesus Trava-Airoldi (INPE) and Evaldo José Corat (INPE)

This work-studies cell adhesion and cell viability of multi-walled carbon nanotubes (MWCNTs) films grown on titanium and silicon surfaces. Microwave plasma was used to produce quite pure carbon nanotubes. Fibroblast L929 mouse cells were used for biocompatibility tests, such as MTT assay and cellular adhesion. The results show very high cell viability and many layers of cells on the surface formed by the nanotube tips.

POSTER SESSION P12 - THURSDAY OCTOBER 12

I552 - SODIUM ALENDRONATE-LOADED MICROPARTICLES: PREPARATION AND CHARACTERIZATION

Adriana Raffin Pohlmann (UFRGS), Sílvia Stanisçuaski Guterres (UFRGS) and Leticia Cruz (UFRGS)

Sodium alendronate (SA) is used in the treatment of osteoporosis and has also been associated with gastrointestinal side effects. Regarding the oral administration, microparticles (MP) were widely proposed to carry drugs in order to increase their efficacy and/or decrease their toxicity. The aim of this work was to prepare and to characterize MP containing SA using Eudragit S100 by spray-drying. The yield was 62 %, the encapsulation efficiency was 78 % and the mean particle size was 21 micrometers presenting Span of 1.9. SEM analysis showed that MP are collapsed and presented smooth surface.

I553 - SYNTHESIS AND CHARACTERIZATION OF NEW CEMENT USED FOR BONE REPAIR

Karoline Bastos Mundstock (UFSC) and Mauro Cesar M Laranjeira (UFSC)

The objective of this paper is the synthesis and characterization of a new cellulose fiber reinforced cement composites containing calcium phosphate(ACP/CPP), chitosan (QTS) and polyvinyl alcohol (PVA), which might be used as cement for bone repair. The samples were characterized by infrared spectroscopy, X-Ray Dispersive Energy Analysis and, X-ray diffraction analysis. The addition of cellulose fiber improved mechanical resistance to compression from 80% in the cylinder containing C-ACP -QTS, 200% in the cylinder containing C-ACP - QTS/PVA blend and 80% for cylinder containing CPP – QTS.

I554 - HEMIN AND HEMOGLOBIN MONOMER IMMOBILIZATION AND CHARACTERIZATION ON SiO₂/SI WAFER SURFACE

Hidetake Imasato (IQSC-USP), Pedro Augusto de Paula Nascente (UFSCar), Paulo Sérgio de Paula Herrmann Jr (Embrapa), Fábio de Lima Leite (IFSC-USP), Julio Carlos Ribelatto (IQSC-USP), Juliana Salvador Andresa (IQSC-USP) and Ubirajara Pereira Rodrigues-Filho (IQSC-USP)

This work describes a comparative study of the morphologies of the hemoglobin monomer and hemin films on SiO₂/Si wafer surface previously modified with 3-Imidazolylpropyltrimethoxysilane (3-IPTS) using Atomic Force Microscopy (AFM) and Scanning Electronic Microscopy (SEM). The hemoglobin monomer and hemin (iron protoporphyrin IX, FePPIX) adsorptions were confirmed due to the presence of Fe2p photoemission line in the long-scan XPS. The root-mean-square roughness (Rrms), measured by AM-AFM of monomer was 3.69nm at 3x3um scale.

I555 - MORPHOLOGICAL STUDY OF CALCIUM CARBONATE FILMS FORMED ON A POLYMERIC MATRIX

Maria Elisabete Darbello Zaniquelli (FFCLRP-USP), Fábio G. Doro (FFCLRP-USP), Elia Tfouni (FFCLRP-USP) and Ana Paula Ramos (FFCLRP-USP)

Organic-inorganic thin films were deposited on aluminum substrates employing the layer-by-layer technique combined with a chemical reaction using the reactant from vapor phase. Poly(acrylic acid) and chitosan were used as negatively and positively charged polyelectrolytes, respectively, forming an organic matrix in which calcium carbonate was deposited. The coatings are dense, homogeneous and results in hydrophilic surfaces, characterized by optical microscopy, scanning electron microscopy, X-ray diffraction, ATR-FTIR and dynamic contact angle measurements.

I557 - EFFECT OF FILM THICKNESS AND ELECTRODE GEOMETRY ON THE PERFORMANCE OF TASTE SENSORS MADE OF NANOSTRUCTURED CONDUCTING POLYMER FILMS

Fernando Josepeti Fonseca (Escola Politecnica da USP), Leonardo Giordano Paterno (Escola Politecnica da USP), Nadja Karolina Leonel Wiziack (Escola Politecnica da USP) and Luiz Henrique Capparelli Mattoso (Embrapa)

In this contribution, the effect of film thickness and electrode geometry on the performance of taste sensors made of nanostructured films of conducting polymer poly(o-ethoxyaniline)-POEA and sulfonated polystyrene-PSS was investigated. The thickness of POEA/PSS films and the interdigitated microelectrodes-IME geometry presented significant influence on the sensors response.

I558 - DSC STUDY OF DRUG-LOADED PHBHV/PCL BLEND MICROPARTICLES

Adriana Raffin Pohlmann (UFRGS), Sílvia Stanisçuaski Guterres (UFRGS), Maria Inês Ré (IPT-SP) and Maria Ismenia Lionzo (UnC)

DSC analyses were used to investigate the association mechanism of the hydrophobic drug models dexamethasone and dexamethasone acetate loaded in microparticles prepared with blends of poly(hydroxybutyrate-cohydroxyvalerate) [P(HBV)] and poly(ε-caprolactone) (PCL). The entrapped drug influenced the melting point and the glass transition

temperature of P(HBV) denoting that the drug is associated with the polymer.

1559 - MICROSTRUCTURAL CHARACTERIZATION OF THE ROLLED AND HOT FORGED TI-35NB-5TA-7ZR (TNZT) ALLOY

Volney Mattos Oliveira (UNICAMP), Itamar Ferreira (UNICAMP) and Maria Angelica Alves Mattos de Olivera (UNICAMP)

The purpose of this paper is to obtain a process conditions for refining the microstructure of the Ti-35Nb-5Ta-7Zr alloy from a casting condition. The start materials were ingotes fabricated in an arc voltaic furnace, in vacuum with addition of inert gas. The Ti alloy presents advantages in relation to the other Ti alloys because its low modulus of elasticity and all the used elements are biocompatible. By using hot rolling, at 1230o C, and swaging (radial forging), at 700°C, it was possible to obtain a good homogeneity and refining of the microstructure.

1560 - CORROSION RESISTANCE OF A DENTAL BIOMATERIAL BASED ON COPPER IN PRESENCE OF CARBONATE BUFFER

Luís Antônio da Silva (UFVJM), Alexandre Rossi (UFVJM), Êrmeson L. de O. Teixeira (UFVJM), Luís Fernando de Santos Faria (UFVJM) and Valéria Almeida Alves (UFVJM)

The corrosion resistance of CuZnAl odontological alloys in presence of carbonate buffer in presence of 0, 10 and 50 mM of chloride was evaluated. The polarization curves (in 0 and 10 mM of Cl-) presented an wide potential region of formation of a passive film on the alloy surface. At ~ +1.0V it was observed the transpassivation potential. The analysis of the polarization curve in 50 mM of Cl- shows that the potential region is comparatively narrower. Passivation is the main process for the copper-based in carbonate buffer (0 and 10 mM of chloride). The presence of 50 mM of Cl- difficults it.

1561 - LAYER BY LAYER NANOCOMPOSITES CONTAINING POLYANILINE AND CASHEW GUM

Carla Eiras (UFPI), Valtencir Zucolotto (IFSC/USP), Débora Gonçalves (IFSC/USP), Mauricio Foschini (IFSC/USP), Ana Cristina F. Brito (UFC) and Rodrigo Marques Oliveira (IFSC/USP)

In this work, we take advantage of the polyelectrolyte character of Brazilian native gum to fabricate electrically conductive, nanostructured films. Anacardium occidentale L. (cashew gum) was assembled in conjunction with polyaniline (PANI), using the layer-by-layer (LbL) technique. The adsorption process of the PANI/gum bilayers was monitored via quartz crystal microbalance.

1562 - FUNCTIONALIZATION OF CARBON NANOTUBES FOR BIOLOGICAL APPLICATIONS

Rodrigo G Lacerda (UFMG), Luiz O Ladeira (UFMG), Marcos A Pimenta (UFMG), Andre S Ferlauto (UFMG), Ariete Righi (UFMG), Sergio Oliveira (UFMG), Hallen D Rezende (UFMG) and Edelma E Silva (UFMG)

In recent years, carbon nanotubes (CNTs) have been recognized as potentially important biomaterials. In this work, it is demonstrated two methods of CNT functionalization, which represent the initial steps towards biological

applications. The first is a soft method for the dispersion of CNTs in water by using ammonium hydroxide. It results in the non-covalent attachment of NH3 groups to the CNT walls. The second method results in to the non-covalent attachment of l-alanine, which will enable the sub-sequent binding of peptides. In both methods, high solubility of CNTs in water is achieved.

1563 - EVALUATION OF OXIDATE POLYETHYLENE WAX (OPW) IN THE MECHANICAL, THERMAL, MORPHOLOGICAL AND BIODEGRADATION PROPERTIES OF PHB/LDPE BLENDS

Cristina das Graças Fassina Guedes (USF), Maria Regina Calil (USF), Flávia Gaboardi (USF) and Derval dos Santos Rosa (USF)

Blends of PHB and LDPE with and without 5 wt% of OPW were developed and characterized. The mechanical results showed that the addition of OPW increased the tensile strength and Young´s modulus but decreased the elongation at break of the. DSC showed that the addition of OPW caused a small decrease in Tg. The incorporation of OPW increased the mean values for the MFI. OPW altered the morphology of LDPE by decreasing the phase separation. In biodegradation experiments, the loss of mass by the was greater in the presence than in the absence of OPW.

1564 - EPR AND XRF STUDY OF THE ELIMINATION KINETICS IN BLOOD AND DISTRIBUTION IN LIVER OF BIOCOMPATIBLE FERROFLUIDS BASED ON FE3O4 NANOPARTICLES INJECTED IN RATS

Angela Maria Falleiros (UEL), Ernanni Damião Vieira (IFSC-USP), Antonio da Costa Filho (IFSC-USP), Edson Amaro Junior (INRAD-USP), Giancarlo Esposito Brito (IF-USP), Lionel Gamarra Contreras (IF-USP), Sylvia Mendes Carneiro (Ins. Butanta), Vera Lucia Salvador (IPEN), Doris Maribel Escriba (IF-USP) and Walter Maigon Pontuschka (IF-USP)

The elimination kinetics in blood and biodistribution in liver of ferrofluids administred are studied in rats using two alternative techniques: EPR and X-ray fluorescence (XRF). We found a 12 min half-life persistence of iron oxide nanoparticles in the blood stream, and maximum liver concentration was attained circa 95 min after administration.

1565 - THE EFFECT OF CORROSION ON NEODYMIUM IRON BORON MAGNETS USED IN THE ORTHODONTIA

Sisenando Itabaiana Sobrinho (UEMG), Sebastiana Bragança Lana (UEMG) and Nelcy Della Santina Mohallem (UFMG)

This investigation analyzed the effects of the corrosion in the structural and magnetic properties of NdFeB magnets used in orthodontic desimpaction. NdFeB magnets were preliminarily analyzed by electron microprobe, scanning electron microscopy and small angle X-ray diffraction. For the corrosion tests, the samples were immersed in a solution of lactic acid 1% and kept at 37°C for 70 days. The magnets had been removed from the acid solution in intervals of 7 days for analyses. The samples were structurally and morphologically characterized, and submitted to magnetic tests.

1566 - INFLUENCE OF THE FABRICATION PARAMETERS ON THE ELECTRICAL CONDUCTIVITY AND MORPHOLOGY OF PANI/PSS SELF-ASSEMBLED FILMS

John Paul Hempel Lima (EPUSP), Leonardo Giordano Paterno (EPUSP),

Guilherme de Souza Braga (EPUSP)
and Fernando Josepetti Fonseca (EPUSP)

PANI/PSS self-assembled films were fabricated to verify the influence of fabrication parameters (such as concentration and pH of the polymeric solutions; washing and drying steps) on their morphology and electrical characteristics. The effectiveness of the assembly methods (manual versus mechanical) were also studied, thereto, a homemade device was employed on the assembly procedure and the films assembled were compared with the ones assembled manually.

1567 - MECHANICAL AND BIODEGRADATION PROPERTIES OF PCL/PVC BLENDS

Flávia Gaboardi (USF), Derval dos Santos Rosa (USF), Maira de Lourdes Rezende (USF) and Adriana Costa (USF)

The mechanical properties of PCL/PVC blends and their biodegradation in simulated soil were evaluated. The blends showed a lower tensile strength, elongation at break and elasticity modulus than pure PCL. The biodegradation rate increased with increasing PCL content of the blends, and blends with the plasticizer DOA had the greatest biodegradability.

1569 - INTERACTION BETWEEN ANTIMICROBIAL PEPTIDES AND PHOSPHOLIPIDS VESICLES, INVESTIGATED BY SPECTROSCOPIC METHODS

Roseane Rigo (IFSC - USP), Rosângela Itri (IF - USP), Diana Müller (UNL), Georgina Tonarelli (UNL), José Luiz de Souza Lopes (IFSC - USP) and Leila Maria Beltramini (IFSC - USP)

In the search of understanding the mechanism of action of some members from bacteriocin group (Plantaricin 149, Pediocin A and modified forms), the interaction of these peptides with biomimetic systems composed of different phospholipids and detergents have been analyzed by CD, fluorescence, SPR, calorimetric and in vitro studies, showing a high conformational change due to the induction of a helicoidal content on the peptide's secondary structure that can occur by electrostatic interactions between the positively charged residues of Lys of the peptides and the anionic head of phospholipids.

1571 - STUDY OF SUBSTANCES DELIVERY FROM LATEX FILM USING SPECTROPHOTOMETRY LOWRY METHOD AND UV APPLIED TO BONE GUIDED REGENERATION

Cibele Ereno (USC), Carlos F. O. Graeff (FC - UNESP), Rondinelli Donizetti Herculano (FFCLRP - USP), Cecília Pereira Silva (FFCLRP - USP), Sérgio A. C. Guimarães (USC) and Angela M. O. Kinoshita (USC)

In this work, we characterized the release of substances from latex films by Spectrophotometry with the purpose of future use as a barrier membrane and a protein delivery system simultaneously for dental and orthopedic uses.

1573 - MODIFIED AFM PROBES FOR HIGH RESOLUTION IMAGES AND STUDY OF MOLECULAR INTERACTIONS BETWEEN DENGUE VIRUS AND AEDES AEGYPTI CELLS

Erivelton F Costa (UFC), Luciana M Rebelo (UFC), Marcelo R Oliveira (UFC), Maria Isabel F Guedes (UECE) and Jose A K Freire (UFC)

Dengue is an important disease caused by an arbovirus worldwide, especially in the tropical regions. We used AFM to investigate the molecular interaction between dengue virus and Aedes aegypti cells. For this, silicon tips functionalized with this virus and the tick-borne cells was used as a substrate for AFM analysis.

1574 - CELL ADHESION AND PROLIFERATION OF HUMAN FIBROBLASTS ON ALUMINA AND HYDROXYAPATITE BASED CERAMICS WITH DIFFERENT SUPERFICIAL TREATMENT

Ana Helena Almeida Bressiani (IPEN), Márcia Martins Marques (FOUSP), Juliana Marchi (IPEN), José Carlos Bressiani (IPEN) and Carina Sinclér Delfino (FOUSP)

The aim of this study is to investigate the influence of different ceramics (Al_2O_3 and HAp), submitted to different superficial treatments (as sintered, rectified and polished) on the biocompatibility. Sintering was accomplished and density was evaluated. The roughness was determined and after sterilization (Co60 Gammacell), 1×10^5 fibroblasts were plated. After 1, 2 and 3 days, the samples were prepared for SEM. It was concluded that the rectification influences negatively on the biocompatibility of the HAp, whereas the rectification and polishing improve the biocompatibility of the Al_2O_3 .

1575 - SYNTHESIS AND CHARACTERIZATION OF CAP/ COLLAGEN BIOCOMPOSITES DOPED WITH ZINC

Luis Guilherme Dias Heneine (FUNED), Maria Helena - Santos (UFVJM) and Herman Sander Mansur (UFMG)

Calcium phosphate/collagen composites are promising biomaterials however have a rapid bioresorbability. The addition of Zn^{+2} in these materials can be stimulated the osteoblast proliferation and bone formation. Composites were developed mixing calcium phosphates doped and undoped with zinc and pure collagen type I. The characterized samples presented morphologic and structural characteristics similar to their constituents and the biological evaluation in vitro showed cytocompatibility. Probably, the doped Zn^{+2} biocomposites can significantly influence the rate of bone reconstruction.

1577 - MODELING OF AGGREGATION PROCESSES IN NANOSTRUCTURED SYSTEMS

Helinando Pequeno de Oliveira (UNIVASF), Felipe Nascimento de Souza Leão (UNIVASF), Thiago Fernandes dos Santos (UNIVASF) and Celso Pinto de Melo (UFPE)

Electrical impedance spectroscopy has been established as a tool of fundamental importance for the study of molecular organization in aqueous and solid state systems in the presence of an external field. In this work we examine the process of micelle formation in an aqueous environment by use of a computational simulation based on first-neighbors charge transport by percolation through a 2-D mesh of surfactant and water molecules. By varying the concentration of the components we follow the evolution of the resistance of the circuit.

1578 - STUDY OF CHITOSAN EFFECTS IN LIPOSOMES

Nádyia P. da Silveira (UFRGS), Adriana R. Pohlmann (UFRGS), Marc Schmutz (Institut Charles Sadron), André Schroder (Institut Charles

Sadron), Carlos M. Marques (Institut Charles Sadron)
and Omar Mertins (UFRGS)

A structural study on nanoliposomes under chitosan influence was performed. Samples with increasing chitosan concentrations were analysed by scattering techniques. An increase in size and polydispersity upon the addition of chitosan was observed. Zeta potential was higher for samples with chitosan, whereas lamellar dimension was reduced. SAXS shows the presence of higher contents of multilamellae by increasing chitosan. Electronic microscopy corroborates some results. Results with giant liposomes and micropipette technique show the lamellar elastic properties of liposomes containing chitosan.

I579 - ELECTRIC CHARACTERIZATION OF NATURAL LATEX BIOMEMBRANES FOCUSING ON PHYSICAL PARAMETERS RELATED TO FABRICATION AND AGING

Mariselma Ferreira (FFCLRP-USP), Valtencir Zucolotto (IFSC-USP), Natália Destefano (FFCLRP-USP) and Marcelo Mulato (FFCLRP-USP)

The natural rubber polymer has been the object of interest for applications as biomaterial in view of its excellent bio-compatibility and the natural stimulation of angiogenesis. An initial study of the electric properties of this polymer has been developed and it showed that there are some fabrication parameters related to physical mechanisms that influence the final result obtained by Complex Impedance Spectroscopy. Electric measurements were carried through as a function of these parameters, like the thickness of the membranes and the aging of the films.

I580 - FTIR SPECTROSCOPY CHARACTERIZATION OF POLY (VINYL ALCOHOL) HYDROGEL WITH DIFFERENT HYDROLYSIS GRADE AND CHEMICALLY CROSSLINKED WITH GLUTARALDEHYDE

Herman Sander Mansur (UFMG), Carolina Sadahira (UFMG) and Wander Luiz Vasconcelos (UFMG)

The purpose of this study was to characterize through FTIR spectroscopy the chemical structure of PVA hydrogels crosslinked with glutaraldehyde and evaluate the influence of the Hydrolysis grade (GH) on the crosslinking and crystallinity of PVA films. It was found a curve correlating GH and the absorbance ratio between C-O (1145-1142 cm⁻¹) with C-O-C (1150-1085cm⁻¹)³. Based on the results obtained it was observed an increase of the crystalline phase with higher hydrolysis grade of PVA.

I583 - PHASE TRANSFORMATION IN POLYETHYLENE GLYCOL INDUCED BY ATOMIC FORCE MICROSCOPY

Margareth Spangler Andrade (CETEC), Vanessa Carla Mosqueira (UFOP), Elaine Amaral Leite (UFMG) and José Mário Vilela (CETEC)

This work was performed on an aqueous polyethylene glycol (PEG) solution placed on mica surface. Atomic force microscopy (AFM) images showed that the PEG chains appeared stretched, coiled or as planar lamellae. Partially crystalline spherulites and amorphous agglomerates, with a calotte shape, were also observed. When imaging the amorphous agglomerates they can change their shape to show the aspect of spherulites. This morphology change is attributed to a phase transformation from a meta-stable amorphous to a partially crystalline state induced by the forces between AFM tip and sample.

I584 - ENCAPSULATION OF ENZYME IN BIODEGRADABLE POLYMER BY DOUBLE EMULSION METHOD

Ana Luisa Bravo de La Corsa (UNICAMP), Priscyla Daniely Marcato (UNICAMP) and Nelson Durán (UNICAMP/UMC)

The aim of this work was to study the enzyme encapsulation by double emulsion method with and without salt in the external phase. The protein model was peroxidase. Nanoparticles with 230 nm of size were obtained with an encapsulation efficiency of 40%.

I586 - INFLUENCE OF (V) NIOBIUM PHOSPHATE ADDITION TO HYDROXYAPATITE BIOCERAMIC

André Vitor Chaves Andrade (UEPG), Sandra Regina Masetto Antunes (UEPG), Andressa Fantin (UEPG), Mariza Boscaci Marques (UEPG), Augusto Celso Antunes (UEPG), Lucas Anedino de Souza (UEPG) and José Caetano Zurita da Silva (UEPG)

The influence of niobium phosphate in hydroxyapatite (HAP) and its interference in the biomaterial behavior were studied in this work. The HAP was prepared through the chemical precipitation method. The samples were MEV and DRX characterized, and the phases quantified by the Rietveld Method. After characterizations, in-vitro tests were carried out to analyze the material biocompatibility. The X-ray analyses revealed that pure HAP presents two phases: HA e beta-TCP; however, by adding niobium phosphate a third phase is formed.

I587 - CHARACTERIZATION OF DRUG-INDUCED CHANGES ON MEMBRANE PHASE TRANSITION AND MOLECULAR MOBILITY

Maria Inês Bruno Tavares (UFRJ), André Avelino Pasa (UFSC), Miguel Soriano Balparda Caro (UFSC), Maximiliano Luis Munford (UFSC), Vânia Rodrigues de Lima (UFSC) and Tânia Beatriz Creczynski-Pasa (UFSC)

AFM, fluorescence and NMR techniques were used to investigate melatonin-induced modifications on membrane phase transition, molecular packing and mobility at selected phospholipids bilayer regions. NMR analysis suggests region-specific opposite melatonin effects. Fluorescence results show a melatonin-induced fluidizing effect on lipid acyl chain. Melatonin also seems to retard mica supported-lipid phase transition, as observed on the AFM images. The strategies handled in this work can contribute to the understanding of drug delivery systems and biosensors.

I588 - IMMOBILIZATION OF RS100A12 PROTEIN IN NANOSTRUCTURED LAYER-BY-LAYER FILMS

Ana Paula Ulian Araújo (IFSC-USP), Osvaldo N. Oliveira Junior (IFSC-USP), Valtencir Zucolotto (IFSC-USP) and Assuero Faria Garcia (IFSC-USP)

rS100A12 porcine was immobilized by layer-by-layer technique in poly(amidoamine) generation 4 (PAMAM G4) dendrimer matrices. Immobilization of rS100A12 was performed in the presence of Zn²⁺ ion and the bilayer adsorption was monitored by fluorescence spectroscopy. Circular dichroism (CD) analysis showed that the immobilized rS100A12 has the same -helical structure as presented when in solution.

I589 - STRUCTURAL CHARACTERIZATION OF A MIXED REVERSED MICELLAR SYSTEM: A SMALL ANGLE X-RAY SCATTERING (SAXS) STUDY

Rosangela Itri (IFUSP), José Fábio Gomes (IFUSP), Carmem Lúcia Amaral (Unicsul) and Leandro Ramos Barbosa (IFUSP)

In this work, we made use of small angle x-Ray scattering (SAXS) technique to get the structural features of mixed reverse micelles (MRM) composed of AOT and HDEHP. Resersed Micelles (RM) have been extensively used as a tool on protein extraction field, because of its ability on keep the protein biological activity. Our SAXS results give support to conclude that the MRM preserve their spherical shape but increase in size as the HDEHP ratio increases in the system. It means that the presence of HDEHP induces micellar growth, probably due to the excess of free water in the inner core of the MRM.

I591 - DENDRIMERS AS NANO-CONTROLLED RELEASE SYSTEM OF siRNA

Eder Lilia Romero (UNQ), Maria Jose Morilla (UNQ) and Ana Paula Perez (UNQ)

Abstract. Dendrimers have particular properties that make them useful as nano-controlled release system (nano-CRS) for siRNA. In this work, complexes formed by PAMAM dendrimers G4 and anti-GFP siRNA were characterized by electrophoresis retard, ethidium bromide displacement, size, cytotoxicity and gene silencing efficiency.

I593 - STRUCTURAL AND MORPHOLOGICAL INVESTIGATION OF MAGNETIC NANOPARTICLES BASED ON IRON OXIDES

Marcelo Knobel (IFGW-UNICAMP), Tatiana Midori Martins (IFGW-UNICAMP), Daniela Zanchet (LNLS) and Paula Silvia Haddad (LNLS)

This work reports the syntheses and properties of iron oxides nanoparticles covered by dimercaptosuccinic acid (DMSA). The XRD measurements of the resulting nanoparticles showed to be stoichiometric Fe₃O₄ magnetite, an inverted spinel structure, with crystalline domains in range of 4-10 nm. The systems were also characterized by SAXS and TEM. The results showed that the particles have a narrow size distribution and average sizes similar to the crystalline domain as shown by XRD. The magnetic measurements on all nanoparticles showed that the particles are superparamagnetic at room temperature.

I595 - STRUCTURAL INVESTIGATION OF THE LATEX AND NATURAL RUBBER MEMBRANE USED IN THE ANGIOGENESIS FORMATION

Carlos José Leopoldo Constantino (UNESP/FCT), Deuber Lincon da Silva Agostini (UNESP/FCT) and Aldo Eloizo Job (UNESP/FCT)

Hevea brasiliensis. The latex is a colloidal system of negative particles dispersed in an aqueous serum. An important application of the natural rubber is being accomplished in the biomedical area making possible angiogenesis induction leading to vascularization improvements and showing excellent biocompatibility and absence of any toxicity or allergic manifestations. Latex centrifuged solution and natural rubber films were characterized through the FT-IR technique with goal of identifying the active.

I596 - POLYMERIC NANOCAPSULES CONTAINING RETINYL PALMITATE FOR TOPICAL APPLICATION

Nelson Durán (IQ/UNICAMP), Sílvia Staniçuaski Guterres (FARMÁCIA/URGS) and Zaine Teixeira (IQ/UNICAMP)

Retinyl palmitate nanocapsules were prepared for the first time. It was employed the poly(D,L-lactide) biodegradable polymer functionalized with a fluorescent probe. The nanoparticles showed low polydispersion index and a high active load. The assays in abdominal human skin by Confocal Laser Scanning Microscopy showed a suitable permeation. These are promising results to technological applications, such as anti-aging creams.

I597 - STUDY ON THE CHEMICAL STABILITY OF POLYANILINE LAYER-BY-LAYER FILMS BY UV-VIS SPECTROSCOPY AND CYCLIC VOLTAMMETRY SIMULTANEOUS MEASUREMENTS

Luiz Henrique Capparelli Mattoso (Embrapa-CNPDIA), Ronaldo Censi Faria (DQ-UFSCar), Leonardo Giordano Paterno (EPUSP-USP), Humberto Hissashi Takeda (DQ-UFSCar) and Orlando Fatibello Filho (DQ-UFSCar)

In this contribution, polyaniline and sulfonated-lignin films are fabricated by the layer-by-layer technique and their chemical stability is evaluated by UV-Vis spectroscopy and cyclic voltammetry simultaneous measurements. The chemical structure of films reversibly changes during the cyclic voltammetry and no loss of polymeric mass is observed after a complete cycle.

I598 - SUPPORTED PHOSPHOLIPID MEMBRANES CHARACTERIZED IN-SITU WITH ATOMIC FORCE MICROSCOPY

Vânia Rodrigues de Lima (PósGrad. Química UFSC), Germano Heinzelmann (Dep. Física UFSC), André Avelino Pasa (Dep. Física UFSC), Tiago Opala Vieira (Dep.C. Farmacêuticas UFSC), Maximiliano Luis Munford (Dep.C. Farmacêuticas UFSC) and Tânia Beatriz Creczynski-Pasa (Dep.C. Farmacêuticas UFSC)

Supported phosphoolipid membranes prepared by vesicle fusion were characterized in-situ with AFM. The phase transition of lipid layers was observed varying the temperature. It was possible to obtain AFM images in contact mode of lipid membranes at the liquid-crystalline phase. A binary mixture of lipids was also investigated.

I600 - NANOSTRUCTURED FILMS CONTAINING CONDUCTING POLYMER AND BRAZILIAN NATIVE GUMS

Carlos Leopoldo Constantino (Unesp), Igor Lebedenco Kitagawa (Unesp) and Carla Eiras (UFPI)

In this work we have used some brazilian native gums to fabricate electrically conductive nanostructured films. Brazilian gums were assembled in conjunction with poly(o-methoxyaniline) emeraldine salt (POMA-ES) using the layer-by-layer (LbL) technique. The characterization of the films has been carried out using UV-vis and Raman spectroscopies.

I602 - DENDRIMERS: NANO-CONTROLLED RELEASED SYSTEM AGAINST TOXOPLASMA GONDII

Diana Bacigalupe (UNLP), Cecilia Venturini (UNLP), Maria Jimena Prieto (UNQ), Maria Jose Morilla (UNQ) and Eder Lilia Romero (UNQ)

Abstract: High doses of sulfadiazine (SDZ), used in synergistic combination with pyrimethamine, are mainly responsible for severe side effects and discontinuation of toxoplasmosis treatments. As part of our previous search for new strategies conducing to improve the efficacy of treatments by employing low doses of SDZ, we have determined citotoxicity, cell damage, uptake rate, as well as biodistribution and pharmacokinetics of dendrimeric-SDZ on healthy rats.

1603 - MORPHOLOGICAL CHARACTERIZATION AND INFRARED SPECTRA OF ASTAXANTHIN/CHITOSAN MICROPARTICULES

Roberto B. Derner (UFSC), Renata Avila Ozorio (UFSC), Jefferson Rotta (UFSC) and Pedro Luiz Manique Barreto (UFSC)

Astaxanthin is a highly unsaturated molecule, that can easily be damaged by heat or light, because of that astaxanthin must to be protect, in order to maintain its chemical structure and consequently its biological properties. Chitosan has been successfully used for the preparation microspheres which are currently used in the biomedical, cosmetic and food industries. Microparticule of chitosan with astaxanthin encapsulated was prepared. The SEM micrographs show a non-homogeneous size and a diameter of 33-52 m, with a rather smooth surface. The FTIR spectra of microparticules indicating a formation of an astaxanthin-chitosan complex.

1604 - A NOVEL APPROACH TO MONITOR BIOCOMPATIBLE MAGNETIC FLUIDS BIODISTRIBUTION IN BIOMEDICAL APPLICATIONS

Geraldo José da Silva (UnB), Francisco Augusto tourinho (UnB), Adriana Pereira Ibaldo (IFSC-USP/UnB) and Jerome Depeyrot (UnB)

We present an original propose of using differential pulse voltammetry to monitor in vitro the biodistribution of the nanoparticles in biomedical applications of B-MF through the identification of distinct species containg iron (III) from their respective peak potential and dosage relating the peak current and the concentration of the species.

1605 - FIRST-PRINCIPLES CALCULATIONS OF STRUCTURAL, ELECTRONIC, AND OPTICAL ABSORPTION PROPERTIES OF CaCO₃ POLYMORPHS

Francisco Franciné Maia Júnior (UFC), Ewerton Wagner Santos Caetano (UFC), Valder Nogueira Freire (UFC), Subenia Karime Medeiros (UFRN) and Eudenilson Lins Albuquerque (UFRN)

First-principles calculations are performed using the CASTEP code within the density functional theory (DFT) for the CaCO₃ polymorphs calcite, aragonite, and vaterite. The exchange correlation potential is considered in the LDA and GGA approximations using ultrasoft Vanderbilt-type pseudopotentials together with a plane-wave basis set. For the three polymorphs, we calculate in detail the structural parameters, charge transfers, bond populations, band structure, density of states, optical absorption, as well as effective masses for electrons and holes.

1606 - ANTICANCER DRUGS RELEASE FROM SYSTEMS BASED ON CALCIUM PHOSPHATE CEMENTS

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Calcium phosphate cements (CPC), particularly calcium hydroxyapatite (HA), dicalcium phosphate (DCP) and alfa-tricalcium phosphate (alfa-TCP), have been studied as potential candidates for anticancer drugs delivering. CPC-drug cements were previously prepared by solid-state reactions between mixtures of (i) (NH₄)₂HPO₄, CaCO₃ and NH₄OH (CFC 16), (ii) TCP, DCP and H₃PO₄ (CFC 21), and (iii)TCP, Ca(OH)₂, H₃PO₄ and hydroxy carbonate apatite (CFC 29), and four kinds of anticancer drugs solutions: cisplatin (2,5 mg.mL⁻¹), carboplatin (25 mg.mL⁻¹), etoposideo (20 mg.mL⁻¹) and mitoxantrone (2,0 mg.mL⁻¹). The mixtures were put into a mortar to obtain pastes of workable consistency. Next, cement samples were manually molding as small beads (300 mg), and maintained at physiological temperature and relative humidity of at least 90% during 2 days for drying. Twelve CFC-drug cements were obtained: CFC 16-cisplatin, CFC 21-cisplatin, CFC 29-cisplatin, CFC 16-carboplatin, CFC 21-carboplatin, CFC 29-carboplatin, CFC 16-etoposideo, CFC 21-etoposideo, CFC 29-etoposideo, CFC 16-mitoxantrone, CFC 21-mitoxantrone and CFC 29-mitoxantrone. Each sample was immersed in 50 mL of physiological serum (0.9 % NaCl aqueous solution) at 37 Celsius degrees under constant stirring. Aliquots of 5 mL were removed and replaced with fresh serum solution at predetermined intervals (0, 15, 30, 45, 60, 180, 360, 1440 and 2880 minutes). Concentrations of released drugs were measured in a UV-visible spectrophotometer Shimadzu 2401 by reading the absorbencies of cisplatin at 212.6 nm, carboplatin at 214.7 nm, etoposideo at 282.5 nm and mitoxantrone at 275 nm. Cements chemical and morphologic characteristics (molar reason Ca/P, superficial specific area and degree of porosity) as well as the kind of drug charged can have influenced in the kinetic profiles of release of the investigated systems. The cements charged with cisplatin presented release rates significantly faster, mainly in the first hours of experiment. On the other hand, the kinetic profiles of release of carboplatin indicate extremely slower release rates of the drug under the conditions examined. This suggests that the complex formed when carboplatin molecules are bound to crystals of CFC can be more stable due to a stronger affinity between their functional groups oppositely charged. Similar release profiles were found for the systems CFC-etoposideo and CFC-mitoxantrone according to intermediary release patterns. This behavior can be associated mainly to the molecular complexity of the structures of the both drugs and microstructural characteristics of the cements (particles superficial area, cement porosity and biodegradable behavior). However, additional similar studies using others physiological media and collagen-CFC composites are already in progress.

1607 - EVALUATION OF THE INFLUENCE OF THE PREPARATION OF THE TITANIUM SURFACE USED FOR COATED IMPLANTATIONS ODONTOLOGIC WITH TITANIUM DEPOSITED FOR THERMAL ASPERSION P

Ana Paula Vaz (UFPR), Ramon Cortés Paredes (UFPR) and Julio Cesar Silva (UFPR)

In this work we search to optimize the process of preparation of the surface through double abrasive jet and the covering through the titanium deposition in dust on titanium substratum through the process plasma spray the empty motivation is to increase the porosity and, to control the roughness and to guarantee the necessary tack with the substratum through the biggest superficial energy of adhesion thus allowing one better wetting and tack of the bone cells. The results mainly show that the morphology is significantly improved, for the presence of emptiness and fragmented titanium particles

I609 - NEW PMMA-CO-EHA COMPOSITES FOR BIOMEDICAL APPLICATIONS: DEVELOPMENT AND PRELIMINARY EVALUATION OF THE MECHANICAL PROPERTIES

Rui Nunes Correia (Universidade de Aveiro), Maria Vaz Fernandes (Universidade de Aveiro), Márcio Celso Fredel (UFSC), Nuno Fraga Almeida (Universidade de Aveiro), Bárbara Leite Ferreira (Universidade de Aveiro) and Marcelo Peixer Corbellini (UFSC)

New composites of PMMA-co-EHA were developed and their preliminary mechanical properties were obtained. The composites were based on commercial two-solution acrylic bone cements used commonly in the treatment of bone defects. One ceramic glass filler was used and the influence of different proportions of this filler was studied. The composites were obtained by the mixing of liquid and solid components though the polymerization was reached by the addition of an initiator and an activator. The composites were produced successfully and the filler was benefic to the flexural properties.

I610 - PREPARATION AND STUDY OF IN VITRO BIOACTIVITY OF PMMA-BASED COMPOSITES FILLED WITH CA3(PO4)2-SI-MG GLASS

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To improve fixation of PMMA with the host bone and to prevent the aseptic loosening of the cement, various composites with bioactive materials have been developed and studied during the last years. The results obtained are encouraging and suggest that this materials are bioactive, form an apatite-like surface layer in vivo or in contact with SBF in vitro. The aim of this work was to produce bioactive PMMA-co-EHA/glass composites and consequently follow the formation of the apatite-like layer on the surface of the prepared materials.

I611 - GLIADIN FILMS CROSS-LINKED WITH 1-(3-DIMETHYLAMINOPROPYL)-3-ETHYLCARBODIIMIDE HYDROCHLORIDE/N-HYDROXYSUCCINIMIDE: INFLUENCE ON RHEOLOGICAL AND THERMAL PROPERTIE

Valdir Soldi (UFSC), Rosane M.D. Soares (UFSC) and Patricia Rayas Duarte (OSU)

Prolamins are the storage proteins of cereal seeds. In wheat seed the prolamins, namely gliadins, are a family of heterogeneous polypeptides. These proteins are of relevant industrial interest as revealed by the numerous patents that have been developed in recent years by the food and nonfood industries. In this work films were prepared by adding the protein into distilled water with different amount of plasticizer. Different proportions of EDC/NHS were used. Gliadin films cross-linking with EDC/NHS was successfully obtained. Moreover the changes in secondary structure of gliadin induced by cross-linking agent are still under investigation prior to obtain more detailed understanding in this issue.

I612 - CHARACTERIZATION OF SELF ASSEMBLED PHOSPHOLIPID BILAYERS ON DITHIOHREITOL AND DITHIOERYTHRITOL TREATED GOLD SURFACES

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This work presents the characterization of self-assembled lipid bilayers on dithiothreitol (DTT) and dithioerythritol (DTE) treated gold thin films, evaporated on silicon. The interest on gold surfaces is to preserve this substrate as an electrode for detection of charge transfer processes for fundamental studies and biosensor applications. The isomers DTT and DTE were used in a tentative to elucidate the mechanism of the molecules binding on gold substrate. To obtain the lipid bilayers dimyristoylphosphatidylcholine (DMPC) was supported on gold by vesicle fusion. The morphology of the structures obtained were analyzed by in-situ atomic force microscopy inside a fluid cell with HEPES buffer (pH = 7.4), under contact mode with controlled cantilever forces. It was possible to observe the formation of large surface areas covered with lipid in the presence of both HS- molecules. No differences between bilayers on DTT or DTE were observed. The measured height of the lipid coverage was ~6 nm, which corresponds to the formation of a DMPC bilayer. The membranes obtained are softly supported on the Au treated substrates and can be easily scratched away by slightly increasing the force of AFM tip. This feature also opens the possibility of employing nanolithography methods with such systems. Additional electrochemical measurements were employed to evaluate the coverage of gold surfaces with DTE and DTE. The possible mechanisms of DTT and DTE binding onto gold surfaces were discussed.

I614 - PAMAM DENDRIMER MEMBRANES

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New poly(amidoamine) type membranes were prepared by reacting a generation 3 PAMAM dendrimer (32 amino groups at the surface) with sebacyl chloride using interface polymerization. Four different PAMAM: sebacyl chloride molar ratios and two different concentrations of reagents solutions were tested. Products were characterized by IR spectroscopy and atomic force microscopy (AFM). These membranes can be easily modified for use in filtration, molecular diagnostics and controlled release of drugs.

I615 - ORGANIZATION OF METHYLENE BLUE IN CARDIOLIPIN AND DOPC PHOSPHOLIPID MONOLAYERS: SURFACE PRESSURE AND ELECTRONIC ABSORPTION SPECTROSCOPY STUDIES

José Alberto Giacometti (FCT-UNESP), Carlos José Leopoldo Constantino (FCT-UNESP) and Wilker Caetano (FCT-UNESP)

The incorporation, binding moiety and molecular organization of Methylene Blue has been investigated in Langmuir monolayers containing the phospholipids Cardiolipin and DOPC, used as very simple model systems to mimetize the mitochondrion membrane microenvironment, a likely target during the drug photosensitization process in photodynamic therapy (PDT).

**I617 - FORMATION OF ORGANIC TERMINATED
SI-C LINKED MONOLAYERS
ON CRYSTALLINE SILICON SURFACES**

Cecilia Irene Vázquez (FCQ/UNC), Ma. Bernarda Quiroga Argañaraz
(FCQ/UNC) and Gabriela Inés Lacconi (FCQ/UNC)

The purpose of this work is the formation and characterization of hydrogen-terminated Si(111) surfaces functionalized with covalently attached alkyl chains and aromatic alkyl monolayers. The formation of the monolayers was performed using neat 1-octadecene or styrene, which react efficiently with the hydrogen-terminated Si(111) when heated at temperatures over 140°C or under exposition to UV radiation. The electrochemical characterization of the functionalized Si surfaces is based on the layer ability to passivate the oxide formation and the structural characterization was performed by SPM.

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**I620 - PROCESSING AND MICROSTRUCTURAL
CHARACTERIZATION OF NANOSTRUCTURED
ALUMINA-ZIRCONIA CERAMIC COMPOSITES WITH
MICROMETRIC PORE SIZE**

Roger R. Riehl (INPE), Maria do Carmo Andrade Nono (INPE),
Ana Cláudia Oliveira Hirschmann (INPE)
and Cosme Roberto Moreira Silva (IAE/CTA)

Porous materials are of significant interest due to their wide application in catalysis, separation, biomaterials and other applications. Porosity and pore size distribution can be carefully controlled by the choice of organic composite and the amount added. There are many methods for obtaining of porous ceramics, in general consisting in adding organic particles, which volatilize during the first heat-up, to the ceramic matrix. The objective of this study was to produce ceramic composite nanostructure of alumina and yttria stabilized zirconia (Y-TZP) with micrometric pore sizes.

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**I621 - EVALUATION OF THE TRANSCORNEAL
PENETRATION OF POLY (D,L-LACTIDE) (PLA) AND
POLY (D,L-LACTIDE)-POLY (ETHYLENE GLYCOL) (PLA-
PEG) NANOCAPSULES CONTAINING ANTITUMORAL
AGENT METHOTREXATE**

Elenara Lemos Senna (UFSC), Angela Machado de Campos (UFSC)
and Tatiany Jovita de Faria (UFSC)

Topical drug delivery to the eye is the most common treatment of ophthalmic diseases, and the cornea provides the dominant barrier to drug transport. The goals of this study were investigate the potential of these vehicles for delivering methotrexate across the cornea. Nanocapsules methotrexate in PLA and PEG-PLA polymer were prepared, characterized and investigated the potential of these carriers for delivering methotrexate across the cornea. The study retention corneal showed that amount of the drug kept in the corneas was significantly increased by the nanocapsules of PLA ($p < 0.05$) compared with nanocapsules of PLA-PEG after 2 hours of assay.

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