ACTIVITY REPORT 2006
and
ACTIVITY PLAN 2007

ASSOCIATED LABORATORY CENTRE FOR RESEARCH IN CERAMICS AND COMPOSITE MATERIALS

CICECO

universidade de aveiro

ACTIVITY REPORT 2006
and
ACTIVITY PLAN 2007

ASSOCIATED LABORATORY CENTRE FOR RESEARCH IN CERAMICS AND COMPOSITE MATERIALS

Director:
Professor Doctor João Carlos Matias Celestino Gomes da Rocha

Vice-Director:
Professor Doctor Joaquim Manuel Vieira

Universidade de Aveiro
Campus Universitário de Santiago
3810-193 Aveiro
Portugal

Phone: + 351 234 372 571
Fax: + 351 234 370 004
@: ciceco@ua.pt
URL: http://www.ciceco.ua.pt

APRIL 2007

CONTENTS


SECTION
1
ABOUT CICECO

S1
02

INTRODUCTION

The CENTRE FOR RESEARCH IN CERAMICS AND COMPOSITE MATERIALS (**CICECO**), is an interdisciplinary laboratory in the University of Aveiro (Portugal) with researchers from Chemistry, Ceramics and Glass Engineering and Physics Departments.

CICECO was created in 2000, as a result of the symbiosis of two research units of the University of Aveiro: *Centro de Química Inorgânica e de Materiais* and *Unidade de Investigação em Materiais Cerâmicos*.

On March 2002, CICECO received the status of Associated Laboratory from the Portuguese Ministry of Science, Technology and High Education, with the mission of:

Developing the scientific and technological knowledge necessary for the innovative production and transformation of ceramics and composite materials

Our main áreas of expertise are:

Area 1: Advanced micro- and nano-structured materials for communications technologies;
Area 2: Advanced materials for industrial applications; chemistry and technology of polymeric;
Area 3: Lignocellulosic materials and biomaterials.

In 2007 CICECO celebrates five years of activity as associated laboratory.

This document reports the main activities developed in 2006 as well as the actions aimed for 2007. More detailed lists of publications, theses, projects and activities are provided as annexes.

FACTS & NUMBERS

CICECO is the largest Portuguese institute in the field of materials science and engineering. On 31st December 2006 CICECO hosted 270 people, an increase of 10.7% over 2005 and 53.4% relatively to 2002 (Table 1).

Table 1: CICECO's Research Team, 2002-2006

	2002	2003	2004	2005	2006
Professors and Lecturers	47	47	50	53	**53**
Full Time Researchers	5	9	12	16	**20**
Post-Doctoral Associates	23	22	29	40	**46**
Collaborators	16	13	12	11	**23**
PhD Students	54	60	61	54	**67**
MSc Students and Other Students	26	44	54	60	**49**
Laboratory Technicians	4	8	5	5	**5**
Administrative Personel	1	3	5	5	**7**
	176	**206**	**228**	**244**	**270**

Almost 50% of the CICECO's Research Team in 2006 hold a PhD degree.

In 2006, our researchers were awarded to prizes and international recognition. Two of the youngest CICECO researchers, received the prestigious prizes *'Programa Gulbenkian de Estímulo a Investigação 2006'* and *'Prémio Celestino da Costa/ Jean'* - French Embassy.

We are also one of the most productive research institutes in the country in all scientific areas, with an average publication of 4.5-5 SCI papers per year per academic staff or full-time researcher:

** over 1400 SCI papers published since 2002 (many in top journals);*

** 382 SCI papers published in 2006, ca. 5% of the total Portuguese papers (7686) quoted in the Web of Science;*

** 27 patents published;*

** 71 PhD theses terminated in the last 5 years (2002-06);*

** Aveiro University is at the top 1% of the most cited World institutions in the fields of Chemistry and Materials Science (Essential Science Indicators, Web of Knowledge).*

Table 2 is a brief overview of the scientific activity outcome.

Table 2: CICECO's Scientific Output, 2002-2006

		2002	2003	2004	2005	2006	Total
Theses	**PhD**	**14**	**13**	**11**	**14**	**19**	**71**
	MSc	**10**	**8**	**7**	**17**	**16**	**58**
Books	**Editions**	**0**	**0**	**1**	**1**	**1**	**3**
	Chapters	**4**	**14**	**12**	**7**	**5**	**42**
SCI Papers	**IF≥5**	**1**	**3**	**4**	**6**	**7**	**21**
	IF<5	**203**	**225**	**287**	**297**	**372**	**1384**
	2≤ IF<5	n.a.	n.a.	n.a.	n.a.	*104*	*n.a.*
	0,6≤ IF<2	n.a.	n.a.	n.a.	n.a.	*184*	*n.a.*
	IF<0,6	n.a.	n.a.	n.a.	n.a.	*84*	*n.a.*

The number of projects in progress in 2006 was 95, similar to the last five years. The main source of funding continues to be FCT, *National Science Foundation* (75%) and the European Funding Agencies and Programmes, *European Commission, FEDER*, (14%).

Section 5 list all projects, terminated and in progress.

CICECO is a truly international research centre:

** 45% of full-time researchers and 65% of Post-docs are not Portuguese;*
** is part of the main stream materials research in Europe;*
** participates in Networks of Excellence.*

We are actively involved in the Network of Excellence 'Functionalised Advanced materials and Engineering of Hybrids and Ceramics' - FAME, and in the INTERREG IIIB 'Materials Network for the Atlantic Area' – MNAA, or in Integrated Projects such as 'Innovation and Sustainable Development in the Fibre Based Packaging Value Chain'. We are running two Erasmus Mundus MSc courses, the 'Joint European Masters Programme in Materials Science' with the universities of Aalborg and Hamburg, and a FAME programme. We harboured one of the first and very few Portuguese Marie Curie Training sites, 'Advanced Ceramic Materials: Synthesis & Structure'.

CICECO is also committed to knowledge transfer to industry, through our CENTRE FOR MATERIALS DESIGN AND TECHNOLOGY - **CDTM**.

CICECO is probably the best equipped institute in the country to perform research in materials science. In particular, we are the focal point of the Portuguese Electron Microscopy Network and house the top solid-state nuclear magnetic resonance facilities. We are also one of the best equipped national centres for X-ray diffraction.

X-Ray Diffraction
Transmission Electron Microscopy (High resolution)

CENTRE FOR MATERIALS DESIGN & TECNOLOGY

CDTM is CICECO's interface structure, responsible for promoting technology and knowledge transfer to society, and contributing to the economic and social growth of Portugal.
CDTM works closely with researchers, in order to support them in four main areas:
**management of R&DT projects developed in partnership with companies;*
**intellectual property protection;*
**creation of new companies (spin-offs);*
**commercialisation of technologies by licensing to existing companies.*

To organise training courses and technical workshops in order to transfer knowledge and best practices to society is also a major objective of CDTM, whose initiatives in this area have proved successful.

With a total income of about 140 000€, CDTM has managed several R&DT projects in partnership with companies and research institutes, aiming at the development of new materials, process enhancement and resolution of specific industrial problems. In 2006 we have worked with the following companies and research institutes:
- *Caima, Indústria de Celulose, SA,* 'Determinação de pontos amostragem, análise de elementos não processuais e análises química e fisico-química de lenhosulfonatos';
- *UNICER - Bebidas de Portugal SGPS, SA,* 'Caracterização química de um tipo de cerveja por Espectroscopia de Ressonância Magnética Nuclear';
- *Caima, Indústria de Celulose, SA,* 'Estudo preliminar sobre a extracção dos componentes dos condensados em sistemas "líquido-líquido", utilizando diferentes solventes orgânicos. Desenvolvimento de metodologias de análise dos componentes em diferentes fases';

- *Caima, Indústria de Celulose, SA,* 'Análise preliminar de elementos não processuais, polissacarídeos e lenhosulfonados no licor de cozimento';

- *Indasa - Indústria de Abrasivos SA,* 'Estudo de novas resinas em base aquosa para lixas';

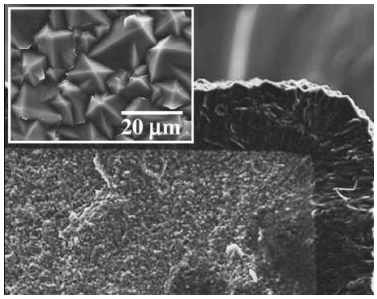
- *Caima, Indústria de Celulose, SA,* **'**Biorefinaria - Aproveitamento de condensados';

- *Caima, Indústria de Celulose, SA,* 'Biorefinaria - Elementos não processuais no circuito de recuperação e potencialidades do licor de cozimento';

- *Centro Tecnológico da Cerâmica e do Vidro,* 'Duramater - Degradação de coberturas de edifícios sob acção da intempérie marítima: conhecimento sobre o desempenho e inovação de produtos';

- *CERISOL - Isoladores Cerâmicos SA e MOTA - Pastas Cerâmicas SA,* Contrato de assistência técnica;

S1
08



CDTM is supporting the launching of a new company, ***Tetracarbon***, specialized in developing new solutions for mechanical wear problems, by four researchers of the University of Aveiro, Rui Silva and Filipe Oliveira (CICECO - Dep. Ceramics and Glass Engineering) and Florinda Costa and António Fernandes (Physics Department).

Advanced ceramics and diamond coated materials are the basis of the solutions developed, which may be in the future adopted by various end-users, such as ceramic, moulding, chemical, wood, and metal industries, among others. The promoters hope that Tetracarbon will enter into force commercializing their solutions in 2008, associated with a company well-known in the market, with the proper distribution channels.

FoodMetric was legally created in 2006, with the support of CDTM. After a period of incubation at the University of Aveiro, this CICECO spin-off moved to the newly built infrastructures of the Incubator of Beira Atlântico Park. FoodMetric provides solutions to food and drink companies through the implementation of fast and reliable methods to perform food analysis, replacing the conventional methods of analysis by instrumental ones. These solutions are systems composed by measurement instruments linked to software components able to meet exactly each customer's needs.

Several prizes in national entrepreneurial contests were awarded to FoodMetric:

** first prize at CONCURSO NACIONAL DE EMPREENDEDORES*

** first prize at 2º CONCURSO DE CRIAÇÃO DE EMPRESAS DE BASE TECNOLÓGICA DE MIRA*

** second prize at CONCURSO BIOEMPREENDEDOR*

Concerning the external image of the Laboratory, there was an effort to improve the Promotion and Awareness of CICECO. Several technical workshops and training programmes were held in 2006, focusing mainly in the scientific areas of the laboratory, which have been giving an important contribution to the dissemination of the research results obtained by CICECO staff. In 2006 the following seminars, workshops and long-term training courses were organised:

- *Revestimentos Rumo ao Futuro*, Mechanical Engineering Department, March 31, 2006
- *Nanotechnologies in Construction*, Mechanical Engineering Department, July 3, 2006
- *Lime Mortars, Past and Future*, Mechanical Engineering Department, October 11, 2006
- *Empreender: da Teoria à Prática*, Environment Department, December 14, 2006
- *Synthesis, Properties and Application of Polymers*, an IDPoR 40- hours course, Chemistry Department, February 7, to July 18, 2006
- *Colloids, Interfaces and Surfaces*, an IDPoR 40-hours course, Chemistry Department, November 7, 2006 (to end in 2007)

These training sessions were attended by a total of 487 participants, 26% of which from SME's, which indicates how our objectives of promoting CICECO and exchanging know-how with companies were achieved.

IDPoR (*Investigação e Desenvolvimento em Polímeros de Fontes Renováveis*) *Research and Development Platform* on Polymers from Renewable Resources, a cooperation platform between university and industry, was set up in September, 2006. Involving the creation of a consortium between a group of companies and the university research laboratories and departments, *IDPoR* focus on the area of Polymers from Renewable Resources, having the participation of major companies in this field, namely *CIN, CAIMA, Resiquímica, RAIZ and Euroresinas (Sonae Indústria). IDPoR* not only promotes a closer relation between these companies and the university, in the way that research may be driven by their specific industrial needs, but also encourages the development of training courses, workshops and, more importantly, an ambitious doctoral programme. The *IDPoR* associates have prior access to the research output of several PhD students, which will be available exclusively for them at the *IDPoR* webpage (http://idpor.ciceco.ua.pt). Associates are asked to pay a yearly fee to join *IDPoR* and to adhere for a period of five years. Its promoters are Professor Júlio Pedrosa, Professor Alessandro Gandini and Professor Carlos Pascoal Neto and *IDPoR* will hopefully respond to the needs of fundamental research and development in the area of Polymers from Renewable Sources, so as to improve technology transfer, offer training to its associates and develop a new idea of cooperation between University and Industry, increasing knowledge in this field and strengthening the Portuguese industrial competitiveness and innovation.

CDTM – CICECO perspective actions include the development of competitiveness poles between academia and industry, at national and international level, which will be of extreme importance in fostering the research and technology transfer among participants.

RESEARCH TEAM

PROFESSORS & LECTURES

ANA MARGARIDA M. V. BARROS TIMMONS
ANA MARIA BASTOS COSTA SEGADÃES
ANA MARIA DE OLIVEIRA ROCHA SENOS
ANA MARIA PISSARRA COELHO GIL
ANA MARIA VIEIRA SILVA VIANA CAVALEIRO
ANTÓNIO TOMÁS DE FONSECA
ARMANDO ANTÓNIO C. DOS SANTOS LOURENÇO
ARMANDO JORGE DOMINGUES SILVESTRE
ARTUR JORGE DE FARIA FERREIRA
AUGUSTO LUÍS BARROS LOPES
BRIAN JAMES GOODFELLOW
CARLOS MANUEL SANTOS SILVA
CARLOS PASCOAL NETO
DMITRY VICTOROVITCH EVTYUGIN
FERNANDO MANUEL BICO MARQUES
FILIPE MIGUEL HENRIQUE L. R. FIGUEIREDO
FRANCISCO AVELINO DA SILVA FREITAS
HELENA ISABEL SEGURO NOGUEIRA
HELENA MARIA C. SEIXAS CARAPUÇA
ISABEL MARGARIDA MIRANDA SALVADO
ISABEL MARIA BOAL PALHEIROS
ISABEL MARIA DE SOUSA GONÇALVES
ISABEL MARIA D. J. MARRUCHO FERREIRA
JOÃO ANTÓNIO LABRINCHA BATISTA
JOÃO CARLOS DE CASTRO ABRANTES
JOÃO CARLOS MATIAS C. G. ROCHA
JOÃO MANUEL COSTA ARAÚJO P. COUTINHO
JOAQUIM MANUEL VIEIRA
JORGE RIBEIRO FRADE
JOSÉ ANTÓNIO DA PURIFICAÇÃO MARTINS
JOSÉ JOAQUIM COSTA CRUZ PINTO
JOSÉ JOAQUIM CRISTINO TEIXEIRA DIAS
JOSÉ MARIA DA FONTE FERREIRA
JÚLIO DOMINGOS PEDROSA DA LUZ DE JESUS
LEONEL MARQUES VITORINO JOAQUIM
LUÍS ANTÓNIO FERREIRA M. DIAS CARLOS
MARIA CLARA FERREIRA MAGALHÃES
MARIA DE LOURDES GOMES PEREIRA
MARIA ELISABETE JORGE VIEIRA COSTA
MARIA GRACINDA FERREIRA DA SILVA
MARIA HELENA FIGUEIRA VAZ FERNANDES
MARIA INÊS PURCELL PORTUGAL BRANCO
MARIA MARGARIDA TAVARES LOPES ALMEIDA
MÁRIO GUERREIRO SILVA FERREIRA
PAULA MARIA LOUSADA S. VILARINHO
PAULO JORGE ALMEIDA RIBEIRO CLARO
PEDRO MANUEL LIMA QUINTANILHA MANTAS
RUI RAMOS FERREIRA E SILVA
TERESA MARGARIDA DOS SANTOS
TITO DA SILVA TRINDADE
VICTOR MANUEL SOUSA FÉLIX
VICTOR MIGUEL CARNEIRO S. FERREIRA
VITOR BRÁS SEQUEIRA AMARAL

FULL TIME RESEARCHERS

AIYING WU
ALESSANDRO GANDINI
ANA ISABEL DIAS DANIEL
ANABELA TAVARES AGUIAR VALENTE
ANDREI KHOLKIN
CARMEN SOFIA DA ROCHA FREIRE BARROS
FILIPE ALEXANDRE ALMEIDA PAZ
FILIPE JOSÉ ALVES DE OLIVEIRA
LUÍS MIGUEL MONTEIRO MAFRA
MARC-GEORG WILLINGER
MARIA RUTE DE AMORIM E SÁ F. ANDRÉ
MÁRIO DE SOUZA REIS JUNIOR
MARTYN PILLINGER
NICOLA ALESSANDRO PINNA
PAULA CELESTE DA SILVA FERREIRA
SÉRGIO MANUEL DE SOUSA PEREIRA
SUSANA ISABEL FONSECA A. S. BRAGA
VLADISLAV KHARTON
YEVGENIY NAUMOVICH
ZHI LIN

POST-DOCTORAL ASSOCIATES

ALEKSEY YAREMCHENKO
ALEXANDRE FERREIRA GALIO
ANA LUÍSA DANIEL DA SILVA
ANBALAGAN BALAMURUGAN
ANDREI KAVALEUSKI
ANTÓNIO ALEXANDRE DA CUNHA BASTOS
ANTÓNIO FRANCISCO MOREIRA DOS SANTOS
ARMANDINA MARIA LIMA LOPES
BAOSHAN LI
CLAUDIA CRISTINA LAGE PEREIRA
COLLIN MAXIMILLIAN KOWALCHUK
DILSHAT TULYAGANOV
DUNCAN PAUL FAGG
ERWAN RAUWEL
FA NIAN SHI
FENGYI LIU
GARDAS RAMESH LAXMINARAYAN
GONGBAO SONG
IGOR RAEVSKYI
IOLA MELISSA FERNANDES DUARTE
JINGZHONG XIAO
JOSÉ ANTÓNIO FERREIRA GAMELAS
KUZHICHALIL PEETHAMBHARAN SURENDRAN
LIANSHE FU
LUÍS MANUEL CUNHA SILVA
MARIA DE LA SALETE DA SILVA BALULA
MARIA PAULA DA SILVA SEABRA
MERCEDES VILA JUAREZ
MIKALAI VYSHATKA

MIKHAIL ZHELUDKEVICH
OLEKSANDR TKACH
PAULA ALEXANDRINA DE AGUIAR P. MARQUES
PAULA CRISTINA OLIVEIRA RODRIGUES PINTO
PAULA CRISTINA RAMOS SOARES E SANTOS
PROTIMA SINGH-RAUWEL
RU ZHONG HOU
SANDRA MARIA NUNES GAGO
SANJEEVI KANNAN
SERGEY YAKOVLEV
SERGIO NUNO MARTINS LIMA
STANISLAV FERDOV
SVIATLANA V. LAMAKA
VIVIANA POSSAMAI DELLA
VLADIMIR ANATOLYEVICH KHOMCHENKO
VLADIMIR BYSTROV
WEIDONG ZHANG

PhD STUDENTS

ANA CATARINA DE CARVALHO ESTEVES
ANA CATARINA DIAS MARTINS COELHO
ANA CRISTINA ESTRADA MORAIS G. SOUSA
ANA GIZELA GUEDES NUNES DA CUNHA
ANA LÚCIA HOROVISTIZ
ANA SOFIA MADUREIRA BRUNO
ANA SOFIA VAGUEIRO DE SOUSA DIAS
ANA SOFIA VILA MONA SANTIAGO
ANDRÉIA GERNISKI MACEDO
ANDREIA MARIANA VALINHO DIAS
ÂNGELA SOFIA DOS SANTOS PEREIRA
ANTÓNIO PAULO CERQUEIRA DUARTE
BÁRBARA JOANA MARTINS LEITE FERREIRA
BERNARDO RAMOS BATISTA MONTEIRO
CARLA MARIA BATISTA GONÇALVES
CARLA PATRÍCIA ALVES FREIRE MADEIRA CRUZ
CATARINA ALEXANDRA GONÇALVES PEREIRA
CATARINA GONÇALVES
CLÁUDIA MARIA BATISTA LOPES
CLÁUDIA PEREIRA PASSOS
CRISTINA MARIA DA SILVA FERNANDES
CRISTIANO ALEXANDRE ANDRADE DIAS
DMITRY KISELEV
DORA SALOMÉ CORREIA COELHO
FABIANE COSTA OLIVEIRA
FÁBIO GABRIEL NAZÁRIO FIGUEIRAS
FLÁVIA APARECIDA DE ALMEIDA
FLORENTINA VIOLETA MAXIM
FU ZHI
GUYLHAINE CLAVEL
HELENA CRISTINA CORREIA DE OLIVEIRA
JOANNA ASZTEMBORSKA KRAKOVIAK
JOÃO CUNHA DE SEQUEIRA AMARAL
JOÃO EDUARDO ALEIXO RODRIGUES
JOSÉ ANTÓNIO PEREZ DE LA TORRE
JOSÉ MANUEL GONÇALVES VENTURA
JOSÉ PEDRO TEIXEIRA DOMINGUES
KIRYL YASAKAU
LI JIAN
LUCIANA SARABANDO DA ROCHA
MARA GUADALUPE FREIRE MARTINS

MÁRCIA CARVALHO NEVES
MARGARIDA ISABEL DOS SANTOS AMARAL
MARIA GRÁCIA CORDEIRO COSTA
MARIA MANUELA JORGE E. RODRIGUES
MARIANA BELO DE OLIVEIRA
MARIANA ISABEL COUTINHO R. SARDO
MARIELA MARTINS NOLASCO
MARIYA HRISTOVA KOSTOVA
MOHAMED KARMAOUI
NADIA KHALED ZURBA
NELSON CHAMUSCA FONSECA
NELSON SIMÕES OLIVEIRA
NUNO MIGUEL DUARTE PEDROSA
OLENA IVANIVNA OKHAY
PATRÍCIA FERREIRA LITO
PAULA ANDREIA FERNANDES DE SOUSA
PENKA ILIEVA GIRGINOVA
RAJAMMA REJINI
RICARDO GIL HENRIQUES SERRA
SANDRA CRISTINA ALMEIA PINA
SANDRA CRISTINA PEREIRA CACHINHO
SARA ALEXANDRA BRUNHETA LISBOA
SÓNIA DE SOUSA NOBRE
SUSANA CRISTINA DE MATOS FERNANDES
SUSANA MARIA HENRIQUES OLHERO
TETYANA VALENTYIVNA MALYSH

MSc STUDENTS

ANA TERESA PAIVA
AURORA BRANCA AMORIM DE ARAÚJO
CARLOS MANUEL DOMINGUEZ MENDONÇA
CATARINA FERREIRA DOS SANTOS
EMMANUEL FRANCISCO CHIMA CHIMAMKPAM
ERMELINDA DA CONCEIÇÃO P. SALGUEIREDO
GERARDO GONZÁLEZ AGUILAR
HELENA MARIA DA COSTA PAIVA
JEAN CARLOS DE CONCEIÇÃO
JIE GAO
JÚLIO CÉSAR LONGO
LUÍS MIGUEL ALMEIDA AMARAL
PAULA MARIA DA COSTA TORRES
RAFAEL DA SILVA MARTINS

OTHER STUDENTS

ANA MARGARIDA BATISTA DA SILVA
ANDREIA FILIPA GOUVEIA MACHADO
ANA FILIPA SARAIVA DAS NEVES
ASHUTOSH GOEL
CARLA ANDREIA CUNHA VILELA
CARLA PATRÍCIA GONÇALVES SILVA
CARLOS MIGUEL CARDEAL ENES GRANADEIRO
CARLOS VICENTE
EDGAR PEREIRA NADAIS
EKATERINA TSIPIS
GABRIEL DUARTE ALMEIDA SOUSA
GIL ALBERTO BATISTA GONÇALVES
GONÇALO MIGUEL GOMES GRAÇA
GUSTAVO ANDRÉ CASTRO FERREIRA MARQUES
HELGA MARGARIDA CORREIA F. GRACIA
HUGO ALEXANDRE G. R. FERNANDES

HUMBERTO FERREIRA PLÁCIDO
JOÃO CARLOS ASCENÇÃO ALONSO
JOÃO NUNO SANTOS GONÇALVES
JOSÉ JOAQUIM BARROS MACHADO
MARCOS GOMES GHISLANDI
MICAELA FILIPA MOREIRA DE SOUSA
MIGUEL JOSÉ LOPES MIRANDA CARRAPIÇO
NUNO ALEXANDRE DIAS FERNANDES
PATRÍCIA DOS SANTOS NEVES
PAULO MANUEL MACHADO DE CARVALHO
PRISCILA TATIANA DOS SANTOS GONÇALVES
RICARDO JOÃO BORGES PINTO
RUI MANUEL COUTINHO RODRIGUES
RUI MIGUEL DE ANDRADE DOMINGUES
SANDRA PEREIRA MAGINA
SÓNIA PATRÍCIA MARQUES VENTURA
THERESA OBIAGELI CHIMAMKPAM
TSEVETELINA IVANOVA GERGANOVA
YEVHENIY VOLODIMIROVICH PIVAK

DIRECT COLLABORATORS

ANA MARGARIDA ALMEIDA JESUS
ANTONIO ALEXANDRE MARTINS
AVITO HERNÂNI DOS SANTOS REBELO
CLÁUDIO JOSÉ DE ALMEIDA C. DA CRUZ
DIANA MÓNICA DE MESQUITA S. FERNANDES
DUARTE ANANIAS MARQUES
ERIKA JUDITH CARDOSO RODRIGUES DAVIM
FILIPE MIGUEL DE ALMEIDA M. DOS SANTOS
JOAO MIGUEL MAIA CARRAPICHANO
JOAQUIM MANUEL DA GRAÇA SACRAMENTO
JOSE MARTINHO MARQUES DE OLIVEIRA
LUIS PEDRO FARIA RIBEIRO S. ESTEVES
MARIA ISABEL GOMES DE PINHO
MARIA ARLETE CARNEIRO R. CARVALHO
MARIA FERNANDA PEREIRA DA SILVA
MOISES LUZIA GONCALVES PINTO
NATÁLIA BRAZ BARROCA
PRISCILLA FILOMENA FONSECA AMARAL
RAQUEL SOFIA LINO FERREIRA DOS SANTOS
RUI NUNES CORREIA
SANDRA MANUEL SIMARIA DE O. LUCAS
SUSANA RAQUEL DE MELO TIAGO
TICIANA DE ASTRIOGILDO E TRÉZ

LABORATORY TECHNICIANS

ANA PAULA FIGUEIREDO ESCULCAS ZHU
MARIA CELESTE COIMBRA AZEVEDO
MARIA DO ROSÁRIO TEIXEIRA SOARES
MARTA ASCENSÃO CARMONA FERRO
PAULA CRISTINA FERREIRA DA S. BRANDÃO

ADMINISTRATIVE PERSONEL

CARLA PATRÍCIA COUTINHO RANITO
MÓNICA SOFIA FERREIRA TAVARES
DORA FÁTIMA DOS SANTOS
VERA MÓNICA DE ALMEIDA FERNANDES
MARIA ISABEL DE JESUS SANTOS
MARINA KHOLKINA
PAULA -CRISTINA DA SILVA PAIS

S1
16


SECTION 2
ACTIVITY REPORT 2006

S2
18

CICECO focuses its activities on three distinct research areas and nine lines of study:

Area 1 - ADVANCED MICRO- AND NANO-STRUCTURED MATERIALS FOR COMMUNICATIONS TECHNOLOGIES

Inorganic Multifunctional Materials and Organic-Inorganic Hybrids

Electroceramics

Magnetostructural Modulation of Strongly Correlated Electric Materials

Advanced Molecular and Supramolecular Materials

Area 2 - ADVANCED MATERIALS FOR INDUSTRIAL APPLICATIONS

Reactive Ceramic Components for Process Control

Ceramic Composites and Ultra-Hard Coatings for Mechanical Applications

Area 3 - CHEMISTRY AND TECHNOLOGY OF POLYMERIC AND LIGNOCELLULOSIC MATERIALS AND BIOMATERIALS

Macromolecular Materials and Lignocelullosics

Biomedical and Biomimetic Materials

Process Development and Optimisation

This secton will report the research activity of CICECO of 2006. An overwiev of the Actions for 2007 is exposed at section 3.

INORGANIC MULTIFUNCTIONAL MATERIALS AND ORGANIC-INORGANIC HYBRIDS

New Microporous Materials. The first example of a photoluminescent chiral microporous Ln silicate system $Na_3[(Y,Ln)Si_3O_9]\cdot 3H_2O$ (Ln=Eu, Tb, Er, Ce), in which discrimination between enantomeric domains was achieved by means of Eu^{3+} photoluminescence spectroscopy, using unpolarised light and in the absence of external fields, has been reported. This enantioselectivity phenomenon may be of importance in the context of fundamental interactions between light and condensed matter.

Polycrystalline NASICON (sodium silicon conductor) fast-ion conductors ($Na_5LnSi_4O_{12}$, Ln = Eu, Tb) were prepared via solid-state synthesis and characterised by photoluminescence spectroscopy. Two Eu^{3+} sites were detected: (i) in regular framework positions, and (ii) replacing Na^+ ions in the tunnels.

The hydrothermal synthesis of the small-pore framework sodium stannosilicate $Na_2SnSi_4O_{11}\cdot 2H_2O$ (Sn-AV-14) possessing the structure of the rare titanosilicate mineral penkvilksite-1*M* were reported. The synthesis of this material was optimised and shown to be very sensitive to the composition of the precursor gel, particularly the Si and water contents and seeding.

The thermal transformation of Eu^{3+}-doped and undoped microporous titanosilicate AM-3 was reported. AM-3 is stable up to 600 ºC and transforms into the analogue of the mineral narsarsukite at 800 ºC. The narsarsukite obtained from AM-3 is purer than that prepared from the titanosilicates ETS-10, ETS-4 and AM-1, and is suitable for hosting optically-active Ln^{3+} ions.

Eu and Eu-Gd silicates with apatite-type structure were synthesised under mild hydrothermal conditions. These materials are efficient room-temperature emitters with a maximum external quantum yield of ca. 21.4 %.

The hydrothermal synthesis and characterization of microporous mixed valent vanadium containing AM-2 have been reported. Titanium and silicon have been partly substituted by vanadium. The presence of octahedral V^{4+}, $V^{5+}$and tetrahedral V^{5+} was revealed by diffuse reflectance ultraviolet-visible spectroscopy and solid-state NMR.

Membranes of microporous stannosilicate and titanosilicate ($K_2MSi_3O_9.H_2O$, M= Sn and Si) with the umbite structure, prepared on porous alumina and TiO_2 tubular supports, are able to separate H_2 from N_2, CO_2 and propane. After 640 h under stream, they separate a H_2/N_2 mixture with selectivities larger than 30, and permeations of *ca.* 10^{-7} mol/($m^2\cdot s\cdot Pa$).

A study wasperformed aimed at exploring the ability of very small sized N-bearing molecules to generate and stabilize microporous aluminophosphates. Two new AlPO4-n materials, named IST-1 and IST-2, have been

obtained in aqueous media using, as main template, methylamine (MA), directly added, or generated in situ from methylformamide degradation. While IST-1 topology is novel, IST-2 is structurally related to AlPO4-53(A). The structure of the microporous aluminophosphate IST-1 was revisited using high-resolution heteronuclear/homonuclear solid-state NMR techniques based on FS-LG homonuclear decoupling and ^{31}P-^{31}P homonuclear recoupling allowed a complete assignment of the ^{1}H NMR spectra.

Aluminum methylphosphonate polymorphs (AlMePO's) are peculiar hybrid inorganic-organic porous materials with hydrophobic methyl groups on the inner surface and thus have low affinity for adsorbing highly polar molecules. A theoretical study of these materials was carried out to get some insight into the physicochemical characteristics of AlMePO-α by means of molecular simulations, and to provide test simulation tools to accurately describe the adsorption behaviour of nitrogen and water on this material.

Mesoporous Materials. MCM-48 membranes have been prepared on alumina supports. A battery of characterization techniques has been used to study the physical properties and the quality of these membranes. The membranes were tested in the separation of gas phase mixtures and a cyclohexane/O_2 selectivity higher than 270 was obtained.

A comparison of the pore structural properties and catalytic activity of MCM-41 containing aluminium, prepared at room temperature with different aluminium sources, was reported. In addition, they were compared with those of MCM-41 obtained by two conventional hydrothermal procedures and room temperature synthesised Al-MCM-48 grades. The room-temperature synthesis resulted in the preparation in a short time of well structured MCM-41 materials containing mainly four-coordinated Al and presenting acidic catalytic activity similar to or better than those prepared by the two hydrothermal procedures. Aluminium sulfate is a good alternative to isopropoxide in the room temperature. The most active sample is a MCM-48 grade also prepared at room temperature with the same precursor.

The complex $MoO_2Cl_2(THF)_2$ and methyltrioxorhenium were immobilised in a mesoporous silica functionalised with a pyrazolylpyridine ligand (MCM-41-L) ansd characterised. In the former case, two supported materials were prepared, one of which involved the postsynthesis trimethylsilylation of MCM-41-L to remove the residual surface silanol groups. Model complexes containing the ligand ethyl[3-(2-pyridyl)-1-pyrazolyl]acetate were also prepared. The data showed the formation of tethered complexes of the type MoO_2Cl_2L and CH_3ReO_3L, involving bidentate and monodentate coordination of the pyrazolylpyridine ligand, respectively. The former materials were active and selective heterogeneous catalysts for the epoxidation of olefins using t-BuOOH as the oxidant. Some activity was lost from the first to second runs, but thereafter the solids could be recycled without significant loss of activity.

$MX_2(CO)_3$(DAB) (M = Mo, W; X= I, Br) complexes with the 1,4-diazobutadiene ligand with two $Si(OEt)_3$ groups were immobilised in MCM-41 mesoporous silica. The modified materials were extensively characterised by several techniques and were tested as catalysts on the reaction of ring-opening metathesis polymerization of norbornene and norbornadiene at 328 K.

Novel mesoporous MCM-41 type hybrid materials were synthesised by co-condensation of 1,4-diazobutadiene ligand bearing two $Si(OEt)_3$ groups and tetraethyl orthosilicate in three different ratios (0.027, 0.05, and 0.20) and in the presence of cetyltrimethylammonium bromide. The surfact-free materials with low organic content present uniform 2D-hexagonal mesoporous arrays with pore diameter ranging from 2.0 to 4.0 nm and a surface area ranging from 693 to 803 m2/g. The increase of organic building block content on the materials reduces the order and the space available within the pore.

***Layered Materials*.** The synthesis and characterisation of layered materials continued to be studied, as well as the intercalation of metallo-organic complexes in layered double hydroxides (Mg-Al and Zn-Al LDHs). The photofunctional and catalytic properties of some of these materials was tested. Oxomolybdenum(VI) and oxotungsten(VI) complexes of 3,4-dihydroxybenzoic acid, with the general formula $[MO_2(3,4\text{-dhb})_2]^{n-}$, were incorporated into Mg-Al and Zn-Al layered double hydroxides by ion exchange with precursor materials in the nitrate form. Possible applications for these materials lie in the field of heterogeneous oxygen atom transfer reactions.

Two series of layered double hydroxides with compositions Mg,Al–CO_3 and Mg,Cr–CO_3 were prepared by microwave and conventional hydrothermal treatment to study the role of microwave radiation on their physicochemical properties. The hydrotalcite crystallinity is enhanced by microwave hydrothermal treatment. These samples also have larger amounts of interlayer water and smaller particle size than those prepared by conventional hydrothermal ageing. The textural properties of the solids are strongly modified during ageing, and large specific surface areas are observed at shorter times for samples subjected to microwave radiation.

Nanostructured Materials. The chemistry related to colloidal nanocrystals consisting of ZnO doped with Ln^{3+} cations was researched. Introducing the Tb^{3+} cations in ZnO nanosized hosts results in photoluminescent systems with wavelength emission which depends on the excitation line. Chemical surface modification of the doped ZnO nanocrystals and photoluminescence studies revealed that Tb^{3+} cations are located in the ZnO core, although the exact crystalline environment is still uncertain. Surface modification methods were investigated to find evidence for the mechanisms of inclusion of these cations in nanophase semiconductors, using inorganic and polymeric phases as cappings.

Silica-coated Bi_2S_3 nanofibers were synthesised and characterized. The nanofibers showed morphological properties which depend on synthesis conditions, such as temperature and solvent used. These nanomaterials were then investigated as nano-fillers in new nanocomposites prepared by in situ emulsion and suspension polymerization. TEM and SEM showed that in both cases the Bi_2S_3/SiO_2 nanoparticles were densely coated with poly(styrene). In situ emulsion polymerization afforded nanocomposites in which the nanofibers were coated with polymer spheres whilst suspension polymerization gives rise to a homogeneous polymer layer coat. The morphology of the poly(styrene) coating observed was discussed considering the surface modification of the nanofibers and the polymerization technique involved.

The potential of Surface-Enhanced Raman Scattering to study the interaction of metal nanocrystals with molecular adsorbates was explored, in particular for the investigation of adsorption modes and orientation of molecules on the surfaces with relevance in heterogeneous catalysis and nanoparticle assembly studies.

Magnetic studies in natural ferritin and iron oxide nanoparticles (ferrihydrite and other phases) in organic-inorganic hybrids and polymer matrices. Effect of partice size distributions on the magnetic properties/anisotropy. Simulation of magnetic properties (Monte-Carlo). Analysis of effect of magnetic dead layer. High Field (up to 50 Tesla) studies of Exchange Bias in nanoparticles (Grenoble, Niemegen and Toulouse).

The photoluminescence of di-ureasil hybrids containing homogeneously dispersed Ag nanoparticles, covered with silica shells was investigated and compared with emission of undoped hybrids. Metal-doped di-ureasils show a broad emission band in the blue spectral region similar to what has been observed in pure di-ureasils but with lower relative intensity. A broad minimum arises at *ca.* 438 nm for $Ag@SiO_2$-containing di-ureasils, which coincides with the peak of plasmon resonance band in the absorption spectrum. This behaviour may be attributed to an inner filtering effect, manifesting itself as absorption by metal nanoparticles of light emitted from the matrix. The lifetimes for Ag@SiO2-doped di-ureasils are smaller than those measured for the undoped host, suggesting that energy transfer may occur between the hybrid's emitting centres (NH groups and siliceous nanodomains) and the nanoparticles.

The nitride light emitting backplanes (in the form of semiconductor p-n junctions) was used as a platform to integrate other material systems, such as luminescent polymers, metallic nanocrystals and semiconductor quantum dots, creating new hybrid nanostructures that may be excited by an electric current. Namely, the interactions between Mott-Wannier (M-W) and Frenkel excitons in a family of organic/inorganic hybrid structures consisting of thin organic (polyfluorene) films placed in close proximity (systematically adjusted by GaN cap layer thickness) to single inorganic InGaN/GaN QWs were studied. It was demonstrated that non-radiative energy transfer may occur between inorganic and organic counterparts.

A new general non-aqueous sol-gel route was used for the preparation of rare earth (RE) ordered nanocrystalline hybrid structures. In a simple one-pot reaction process, RE(III) isopropoxides (RE= Y, Er, Gd, Sm, Nd) were dissolved in different alcohols and reacted in an autoclave between 250 and 300°C. This approach leads to very thin (~0.6 nm) crystalline lanthanide oxide layers regularly separated from each other by organic layers of intercalated organic carboxylate molecules derived from the oxidation of the alcohol used as solvent (the thickness of the organic part is typically between 1.2 – 2.0 nm). The optical properties of such nanohybrids were evaluated. It was found that an efficient charge transfer from the organic moieties (benzoates and 4-biphenolates) to the metal emitting centres takes place. By following such an excitation path the energy required in order to sensitize the luminescent ions is significantly lower that the one needed by similar pure inorganic compounds.

Polyoxometalates. The synthesis and study of new hybrid compounds with polyoxometalates and organic moieties were continued. New compounds were obtained through solid state reaction of commercial Keggin heteropolyacids $H_n[XM_{12}O_{40}]\cdot aq$ (M = Mo, W; X = P and n = 3; X = Si and n = 4) with the organic aromatic molecules 4-aminopyridine, 4-phenylpyridine e coumarin. The reactions were accompanied by loss of hydration water and probably by acid-base reaction between the oxonium cations and the basic organic moieties, with simultaneous change of the original lattice. A similar study was performed with $H_3[PW_{12}O_{40}]\cdot 6H_2O$ and the above-mentioned organics, 1,10-phenanthroline and 2-amino-5-nitropyridine. The resulting compounds had very little hydration water and presented the original body centred cubic lattice typical of the hexa-hydrated heteropolyacids. In this case all evidence points to the isomorphic substitution of water by the organic molecules.

Studies were continued on the homogeneous catalytic oxidation of hydrocarbons with H_2O_2 in the presence of the iron- or manganese-substituted polyoxotungstates $[XW_{11}M(H_2O)O_{39}]^{n-}$ M= Mn^{III}, Fe^{III}, X = P, Si and B, namely the oxidation of indan, indene, 1,2,3,4-tetrahydronaphtalene and 1,2-dihydronaphtalene. Identification of reaction products is now complete and the more convenient reaction conditions determined. The preparation of silica

supported transition metal-substituted polyoxotungstates to be evaluated as oxidative heterogeneous catalysts was started, but only preliminary results were obtained so far.

Preparation and structural characterization of lanthanide complexes of lacunary polyoxomolybdates or polyoxotungstates was continued. A new family of luminescent materials has been prepared by treatment of a Zn–Al layered double hydroxide in nitrate form with different polyoxotungstoeuropate anions, $[EuW_{10}O_{36}]^{9-}$, $[Eu(BW_{11}O_{39})(H_2O)_3]^{6-}$ and $[Eu(PW_{11}O_{39})_2]^{11-}$. The host-guest interaction has a strong influence on the nature of the final intercalated species. The photoluminescence and structural studies afforded a detailed picture of the nature of the intercalated anions.

A layer-by-layer assembly method was employed to fabricate multilayered films containing the terbium heteropolyanions $K_6[Tb(BW_{11}O_{39})(H_2O)_3]\cdot 32H_2O$ and $K_y[Tb(XW_{11}O_{39})_2]\cdot nH_2O$ (X = Si and P) and the polyelectrolytes poly(4-styrenesulfonate) and poly(allylamine hydrochloride). A comparative study on the optical properties of the films containing distinct polyoxometalates and different types of multilayers was carried out. The photoluminescence of the solid polyoxometalates and of the resulting films was investigated.

New lanthanotungstocobaltates with the Keggin structure and general formula $K_xH_y[Ln(CoW_{11}O_{39})(H_2O)_3]\cdot nH_2O$ or $K_xH_yLn[Ln(CoW_{11}O_{39})(H_2O)_3]\cdot nH_2O$, Ln(III) = Ce, La, Eu, Sm, Tb, were prepared and characterized. Hybrid silica materials, with the polyoxoanions anchored to spherical silica particles, were also prepared. Their characterisation suggests that the structure of the Keggin-type polyanions is maintained when they are immobilized in the silica material.

The first member of a new family of monolacunary Keggin-type polyoxotungstates containing Ag(I) metallic centres, $H_2Ag_{0.33}K_{3.67}[AgPW_{11}O_{39}]\cdot 8.25H_2O\cdot CH3OH$, was reported. A novel chain-like silver polyoxotungstophosphate forms when Ag(I) metal centres, exhibiting an unusual eight-coordination fashion, bridge a monolacunary $[PW_{11}O_{39}]^{7-}$ anion to four bridging μ_2-oxygen atoms of a neighbouring lacunary α-Keggin anion.

The effects of organic ligands and POMs on the luminescent properties of hybrid materials have been investigated, in particular, considering the possibility that they may act as sensitizers of the lanthanide luminescence. Novel polynuclear tungsten and Mo(VI) complexes with 3-hydroxypicolinic acid (HpicOH) and Eu(III) $[M_4O_{12}Eu(picOH)_3]$ (M(VI) = W, Mo) were prepared by hydrothermal methods. The photoluminescent properties of the materials were investigated, showing sensitization of the Eu(III) luminescence by both the 3-hydroxypicolinate ligand and the polyoxometalate moiety.

Novel ruthenium tetra-substituted polyoxometalate compounds $K_6Na[SiW_9O_{37}Ru^{III}{}_4(H_2O)_3Cl_3]\cdot nH_2O$ (α and β SiW_9O_{37} isomers, **1** and **2**) were synthesised via the reaction of sodium salts of trilacunar Keggin α- and β-

$[SiW_9O_{34}]^{9-}$ heteroanions with $RuCl_3$ in aqueous solution. The characterization of compounds **1** and **2** by wet chemistry, thermal analysis and spectroscopic techniques are in course. These POMs were preliminary considered as potentially interesting redox catalysts.

Novel Luminescent Systems. Research on novel lanthanide luminescent systems based on lanthanide complexes and its incorporation in nanomaterials was continued. Research concerned the coordination chemistry of lanthanides with aromatic ambidentate ligands, exploring the possibility of formation of multidimensional lanthanide compounds. The incorporation of those lanthanide compounds into nanosized SiO_2 and other substrates was explored. The luminescence and structural properties were studied.

Unusual full-colour phosphors, in the system $Na_3LnSi_3O_9$, have been prepared and their structure and photoluminescence properties characterized. $Na_3(Y_{1-a}Ln_a)Si_3O_9$ (Ln = Eu, Tb, Tm) materials are primary emitters, with chromaticity colour coordinates comparable or better than properties of the standard phosphors recommended by EBU for display devices, resulting from the emission of red (Eu^{3+}), green (Tb^{3+}) and blue (Tm^{3+}) light.

Crystal Engineering of Organic-Inorganic Hybrids. A number of novel multi-dimensional magnetic materials combining N-(phosphonomethyl)iminodiacetic acid (H_4pmida) and transition metal centres were isolated. The first example of a neutral 1D coordination polymer featuring Fe^{2+} centres and H_2pmida^{2-} was reported, with this material being also the first of its kind with H_4pmida residues exhibiting one uncoordinated carboxylic acid group. With 4,4'-bipyridine (2,2'-bpy) and H_4pmida, two isostructural compounds were isolated in the solid-state, (4,4'-bpyH)$_2$[M(4,4'-bpy)$(H_2O)_4$][V_2O_2(pmida)$_2$]·$2H_2O$ (where M = Mn^{2+} or Co^{2+}). These compounds are formed by the close packing of 1D $[M(4,4'\text{-bpy})(H_2O)_4]_n^{2n+}$ cationic polymers and 4,4'-bpyH^+ cations, along with dimeric centrosymmetric $[V_2O_2(pmida)_2]^{4-}$ anionic moieties located in the crystal interstices. From the reaction of Cu^{2+} and H_4pmida along with diethylenetriamine (det), a new complex-type material was isolated in the solid-state, [Cu(Hpmida)(Hdet)], and characterized by single-crystal XRD. The magnetic properties were also investigated, revealing that interactions between neighbouring metal centres are minimal with the bulk materials being best characterized by the magnetic properties of isolated metallic centres.

A series of three Sm(III) one-dimensional coordination polymers containing picolinic acid (Hpic), 3-hydroxypicolinic acid (HpicOH) and 2-hydroxynicotinic acid (H_2nicO) was isolated in the solid state and characterised structurally: $K_2[Sm_2(pic)_6(\mu\text{-pic})_2]\cdot 7.5H_2O$ (1), $[Sm(picOH)_2(\mu\text{-HpicO})(H_2O)]\cdot 3H_2O$ (2) and $[Sm(HnicO)_2(\mu\text{-HnicO})(H_2O)]\cdot 5H_2O$. All compounds show room-temperature photoluminescence which was investigated.

A poorly crystalline organic-inorganic hybrid oxovanadium(V) phosphate complex, $\{[V_2O_4(Phen)_2(PO_4)]_2VO(OH)\}_{3/4}\{[V_2O_4(Phen)_2\text{-}(HPO_4)]_2\}_{1/4}\cdot 4.5H_2O$ (where Phen = 1,10-phenanthroline), was shown to contain two markedly similar binuclear dioxovanadium(V) moieties. ^{51}V and ^{31}P solid-state NMR proved unequivocally the presence of these two coordination environments. A simulation of the ^{51}V spectrum unveiled the relative populations of the ^{51}V sites plus additional information of their coordination geometries.

The anionic $[Ge_2(pmida)_2(OH)_2]^{2-}$ complex, a potential secondary building block for the construction of metal-organic frameworks, was isolated in the solid state from hydrothermal synthesis as $(C_4H_{12}N_2)[Ge_2(pmida)_2(OH)_2]\cdot 4H_2O$ [where $pmida^{4-}$ = N-(phosphonomethyl)iminodiacetate and $C_4H_{12}N_2^{2+}$ = piperazinedium]. Several high-resolution solid-state ^1H NMR techniques, have been employed for the first time in the study of this type of hybrid crystalline materials.

The $(HL)_6[Ge_6(OH)_6(hedp)_6]\cdot 2(L)\cdot nH_2O$ system, where L is 8-hydroxyquinoline (hqn) or 1,10-phenanthroline (phen**)**, was shown to be composed by π-π columns of the organic aromatic residues which pack with hexameric anionic $[Ge_6(\mu_2\text{-}OH)_6(C_2H_4O_7P_2)_6]^{6-}$ moieties leading to the formation of porous supramolecular structures with large amounts of water filling up the available voids. The photoluminescence properties of these compounds were studied in the solid state. High-resolution solid-state ^1H NMR techniques have been used to study the complex hydrogen-bonding networks.

Organic-Inorganic Hybrids Lacking Activating Centers. Two organo-bridged photoluminescent silsequioxanes derived from the same precursor $(EtO)_3Si(CH_2)_3\text{-}C_6H_4\text{-}(CH_2)_3Si(OEt)_3$ were synthesised under acid and basic hydrolysis. Crystalline lamellar bridged silsesquioxane with long-range ordering (acid hydrolysis) and amorphous hybrids (basic hydrolysis) were obtained. In both hybrids, the emission arises from a mixture of components due to the aromatic rings (short-lived and high-energetic band), and recombinations occurring at the NH groups (long-lived and low-energetic). A di-ureasil hybrid (d-U(600)) was successfully incorporated into the channels of mesoporous silica MCM-41, MCM-41, preserving therefore the hexagonal symmetry of the MCM-41 support. The emission spectrum of MCM-41-d-U(600) exhibits the intrinsic green emission of MCM-41, which is selectively excited in the UV spectral range. For excitation wavelengths lying in the visible the spectra is a convolution of the MCM-41 intrinsic emission with that characteristic of d-U(600). Time-resolved spectroscopy unequivocally demonstrates MCM-41-to-d-U(600) energy transfer and the di-ureasil contribution to the overall emission features.

New Hybrid Materials. Di-ureasils incorporating $Eu(TPI)_3\cdot 3H_2O$ or $Eu(TPI)_3\cdot 2TOPO$ (where TPI and TOPO stand for 3-phenyl- 4-(4-toluoyl)-5-isoxazolone and tri-*n*-octylphosphane oxide, respectively) were synthesised by both

acetic acid solvolysis and conventional hydrolysis sol-gel route. The photoluminescence spectra display the typical Eu^{3+} red emission, and a larger $^5D_0$ quantum efficiency (η = 13% vs. 32%) and $^5D_0$ lifetime (τ = 0.30 *vs.* 0.42 ms) were measured for the hybrid incorporating the $Eu(TPI)_3{\cdot}3H_2O$ complex, compared with the isolated complex. The enhancement was explained by the coordination ability of the organic counter part of the host structure, which is strong enough to displace the water molecules of the $Eu(TPI)_3{\cdot}3H_2O$ complex from the Eu^{3+} neighborhood in the hybrids. The ability of the di-ureasil host to coordinate tris-β-diketonate complexes and the energy transfer processes involving the hybrid host emitting levels and those of the complexes were also studied in a series of di-ureasil hybrids incorporating Ln(btfa)3-(4,4'-bpy)(EtOH) (Ln=Eu, Gd; 4,4'-bpy=4,4'-bipyridine; btfa=4,4,4-trifluoro-1-phenyl-1,3-butanedione) complexes. The calculated quantum yield (*ca.* 46%) is in fair agreement with the experimental value (38 ±4%). For the Eu^{3+}-based di-ureasils a 50% quantum yield enhancement compared to the Eu^{3+} complex is observed, suggesting an effective hybrid host–metal ion interaction and an active energy-transfer channel between the hybrid host and the Eu^{3+} complex. The Eu^{3+}-based di-ureasils are photostable under UVA (360 nm) excitation, while degradation occurs under UVB (320 nm) and UVC (290 nm).

S2
28

Materials with different concentration of zinc and lithium triflate incorporated into sol–gel derived di-ureasils were synthesised as transparent and flexible thin monolithic films. Depending on the salt concentration, the Zn-doped hybrids were produced as amorphous or crystalline $POE/Zn(CF_3SO_3)_2$ complexes of unknown stoichiometry. At 30 and 100 ºC, the most conducting di-ureasils have ionic conductivities of 3×10^{-6} and 7×10^{-5} $S.cm^{-1}$, respectively. The highest ionic conductivity found for Li-based di-ureasil is 4.0×10^{-6} and 6.7×10^{-5} Scm^{-1} (at 35 and 104 ºC, respectively) and the electrochemical stability domain spans 7 V versus Li^+.

Integrated Optical Devices. The development of organic-inorganic di-ureasils modified by zirconium n-propoxide (ZPO) stabilized with metacrilic acid to produce cost effective integrated optics (IO) devices was continued. Waveguide channels with Gaussian profile and low surface damage rugosity (below 1 nm) were produced through the exposure to an Ar-ion laser (244 nm) of the di-ureasils modified with $Zr(i\text{-}OPr)_4$. The existence of guided modes within the channel was demonstrated. A diffraction grating was written using a modified Talbot interferometer. One phase mask was used to split the incident beam in the ±1 orders signals. The grating was characterised though atomic force microscopy revealing 500 nm pitch and low rugosity values (below 1 nm).

Semiconductor Heterostructures. The correlations between the nanostructure and optical properties on epitaxial thin films and low dimensional heterostructures of wide-bandgap semiconductors with technological interest for light emission were investigated. Device structures, which include single- and multiple-quantum wells (MQWs) were studied, in order to gain insight on the effects of strain and composition on various material physical properties which are relevant in terms of device performance and functionality.

The controlled integration of colloidal nanocrystals and semiconductor thin films was started. With such a dual approach, where flexible wet chemistry is combined with traditional semiconductor processing, this work aims to develop the fundamental knowledge to pursue alternative ways to create novel heterostructures that incorporate colloidal nanocrystals. Specifically, InGaN-based MQWs and various nanocrystals and quantum dots (QDs) were combined in such a way that the most favourable properties of each material system can be exploited. Preliminary results indicate that nanometer-scale control of the position of various colloidal nanocrystals at the surface of the nitride-based heterostructures can be achieved.

C60 Phase Transitions Under High-Pressure. The search for new C60 phases above 100 kBar, the characterisation of their corresponding pressure-temperature phase diagrams and the determination of their structures were carried out. Preliminary studies on metal-doped carbon clathrates and on the polymerisation of C60 molecules inside carbon nanotubes (peapods) were performed.

ELECTROCERAMICS

Microwave dielectric materials. The crystal structure of dielectric ceramics in the (1-x)La(Mg1/2$Ti_{1/2}$)O_3 - x$Ba(Mg_{1/2}W_{1/2})O_3$ [(1-x)LMT-xBMW] system was studied by powder XRD. LMT and BMW form solid solutions in the whole compositional range. Increase of BMW content results in two structural transformations: continuous P21/n $\rightarrow$ I2/m, at x about 0.2, and discontinuous I2/m $\rightarrow$ $Fm\bar{3}m$, at x 0.4 - 0.5. The sequence of the phase transitions was compared with structural transformations in other solid solutions between dielectric complex perovskites.

The microwave dielectric characteristics of the LMT-BMW ceramics were evaluated as a function of their composition. The observed structure sequence and structure-dependent dielectric behaviour were considered and analyzed in respect to an order of the transition between anti-phase tilted and untilted configurations as well as a probable clustering in the system.

The (1-x)$La(Mg_{1/2}Ti_{1/2})O_3$ - x$(Na_{1/2}Bi_{1/2})TiO_3$ perovskite ceramics, [(1-x)LMT-xNBT] ($0 \le x \le 1$), were prepared by the conventional mixed oxide method and Pechini route, and their dielectric properties were investigated. The crystal structure of the solid solutions was investigated by XRD and the sequence of composition-driven structure

S2
30

transformation was revealed: *P*21/*n* ($0 \le x \le 0.2$), a coexistence of *Pnma* and $R\bar{3}c$ (in the vicinity of x=0.3), and $R\bar{3}c$ ($0.4 \le x \le 0.90$). The crystal structure symmetry of the NBT-rich compositions ($0.95 \le x \le 1$) was described with the polar *R3c* space group, which allows accounting for both antiphase oxygen octahedral tilting and A-site cation displacements.

The dielectric response of the ceramics was measured as a function of temperature and composition. The range between x=0.3 and 0.4, where the temperature coefficient of the resonant frequency passes zero, is associated with a discontinuous phase transition between orthorhombic and rhombohedral structure modifications. The compositional variation of the fundamental dielectric parameters, estimated at different frequency ranges, was analyzed in relation to the crystal chemistry of the system. The LMT-NBT solid solutions sided with sodium bismuth titanate exhibit the features typical of relaxor ferroelectrics. The temperature of their dielectric permittivity maximum does not change with increasing substitution rate. As the NBT content increases, the frequency-dependent dielectric peaks flatten. The compositional evolution of structure and dielectric characteristics of the ceramics were discussed in respect to size, charge and polarizability of the cations involved.

Dielectric properties of (1-x)$La(Mg_{1/2}Ti_{1/2})O_3$ – x$La_{2/3}TiO_3$ [(1-x)LMT-xLT] ceramics ($0 \le x \le 0.52$) were studied at radio, microwave and far infrared (FIR) frequency ranges. The crystal structure sequence in (1-x)LMT-xLT reported by different authors was revisited. FIR spectroscopy was used to characterize the lattice contribution to

the dielectric response at microwave frequencies. The complex dielectric function was evaluated from the reflectivity data and extrapolated down to a gigahertz range. Compositional variations of the fundamental microwave dielectric parameters estimated by different methods were compared and discussed. The dependence of the quality factor on the composition in LMT-LT was interpreted in terms of the reduction of spatial phonon correlations originated from the increasing amount of La vacancies. This approach accounts for the compositional behaviour of the dielectric loss commonly observed in a number of microwave mixed systems.

The mixing of compounds with different crystalline structures and dielectric characteristics and its effect on the electrical properties was one of the targets last year. The perovskite structure adapts to all the performed manipulation of the cations, leading to complete solid solutions in the whole compositions range by reconstructing the crystal structures and, thus, the lectrical properties undergo smooth variations, except when phase transitions are first-order.

The other target was to explore compounds with modified crystalline structures. In this case, it was possible to prepare compounds with crystal structures with comparable characteristics (superstructures) and a new family of compounds was produced. La6$Mg_4Ta_2W_2O_{24}$ is representative of this family, $A_{3n}B'_{2n}B''_{2n}O_{12n}$ homologous series with n = 2.

Ferroelectric Ceramics. A model for the calculation of spontaneous polarization of Bi layered structure ferroelectric (BLSF) ceramics as a function of their texture degree was developed. The model uses a general formalism based on the texture analysis via an orientation distribution function. The March-Dollase equation fits the measured texture distribution because its fitting parameters can be related to experimentally-measurable stereological values obtained from SEM images. The results were applied to the $SrBi_2Ta_2O_9$ (SBT) system, a well known member of the BLSF family. For this purpose, textured SBT ceramics were produced by templated grain growth. Enhanced ferroelectric properties were measured in specific directions revealing the effects of texture development. The model predicted values for spontaneous polarization as a function of the degree of texture were compared with those measured from the hysteresis loops.

The dielectric response in the THz spectral range of the following Bi-layered ferroelectrics with Aurivillius structure was sutied: $Bi_4Ti_3O_{12}$, $SrBi_2Ta_2O_9$, $SrBi_2Nb_2O_9$, a relaxor ferroelectric $BaBi_2Nb_2O_9$, and intermediate-type compound $Sr_{0.5}Ba_{0.5}Bi_2Ta_2O_9$. The lowest-frequency polar phonons were studied by means of the time-domain THz transmission spectroscopy in the frequency range 0.1–2 THz at temperatures 10–950 K. Although previous structural studies suggested a displacive character of the structural phase transitions, no soft-mode anomalies were observed in our THz spectra near T_c in any of the investigated compounds. A gradual and only partial softening of

the lowest-frequency polar phonon was revealed during heating. Dielectric anomalies near T_c in all the compounds are caused by slowing down of relaxations, directly observed in some cases below the polar-phonon range. The ferroelectric transitions are, thus, not classically displacive. In analogy to other relaxor ferroelectrics, the existence of dynamic polar clusters is suggested to be the origin of such relaxations. Ferroelectric transitions are connected with an abrupt freezing and rise of these clusters into domains and the classical division of phase transitions into displacive and order-disorder is not sufficient.

Ferroelectric Fibers, Single Crystals and Films. The hybrid sol-gel method was used to deposit piezoelectric layers on optical fibers. To overcome the problem of mechanical stress, special buffer and electrode layers were designed that allow crack-free films to be deposited. The used hybrid sol-gel route allowed incorporating of pre-sintered PZT particles that are 'glued' by the sol-gel solution. Multiple infiltration procedure was applied to remove undesired porosity and decrease the roughness of the coating. The films demonstrated high dielectric, ferroelectric and piezoelectric properties. Driving of the fibers by the applied electric field to the PZT film was demonstrated.

The domain structure of high-quality SBT single crystals obtained via a high-temperature self flux solution method was investigated by XRD and piezoelectric force microscopy. Two types of domains were revealed at room temperature, 180º domains and ferroelastic 90º domains (twins), forming a well-defined 'herringbone' structure with flat 90º walls. This SBT complex domain pattern was attributed to separate ferroelastic and ferroelectric phase transitions occurring as a two-stage process.

SBT seeds were used to produce SBT thin films with improved properties. The comparison of the results obtained by characterizing seeded and unseeded films via Rutherford Backscattering and Particle Induced X-Ray Emission techniques revealed an effective modification of the substrate-thin film interface by the presence of the seeds. The films synthesized without seeds show the formation of an interface of variable content and/or shape, whereas the use of seeds contributes to a higher stability of the film and electrode constituents, thus suggesting an inhibition effect of the seeds regarding interface reactions. The seeds also improve the homogeneity of the thin-film surface microstructure as well as the ferroelectric properties: the macroscopic P-E hysteresis loops and the local piezoloops showed that seeded films present larger remnant polarization and larger average remanent d33 than their unseeded counterparts. The barrier-like role of the seeds, while preventing the inter-diffusion between films/Pt-layer, helps preserving the thin film composition improving the electrical properties.

Thin PZT films 0.5-1.0 μm thick were deposited on substrates of glass ceramics and silicon by magnetron sputtering, at a low temperature, and then annealed at 550 °C. The studies were carried out for films sputtered from

targets of stoichiometric composition and targets with an additional content of 10% PbO and 3% Nb_2O_5. Only films sputtered from non-stoichiometric targets possess polarization asymmetry and self-polarization, which was investigated by several techniques including SFM. These studies revealed the existence of an internal field created by negative charges on the lower interface with self-polarization vector directed toward the lower electrode. These data suggest that the PZT film has *n*-type conductivity, which is due to oxygen vacancies caused by the excess of either PbO or Nb in the film. An increase in the substrate temperature from 200 to 300 °C during the film deposition resulted in the reversal of self-polarization due to the change from the *n*- to *p*-type conductivity. The dependence of self-polarization with the composition was explained based on the space-charge model.

$BaNd_2Ti_5O_{14}$ (BNT) films 12 to 52 mm-thick were fabricated on platinum metallic foils by electrophoretic deposition (EDP). A 52 μm-thick BNT film exhibit a dielectric constant and a loss tangent of 107 and 0.0006 (Q of 1600) at 1 MHz, respectively. The variation in permittivity was less than 0.02 % at a bias voltage ±8 kV/cm. The change of film permittivity with the temperature in the range 30-120 °C is below +58.5 ppm/°C, indicating a good thermal stability. The higher dielectric constant, high Q, good bias and temperature stability make EPD derived BNT thick films on metallic foils attractive candidates for new microwave communication devices.

Incipient Ferroelectrics. It was shown that the microscopic mechanism of the dielectric relaxation in Mn-doped strontium titanate ($SrTiO_3$, ST) ceramics is associated with the off-center displacements of Mn^{2+} ions. This was accomplished by studying dielectric properties and electron spin resonance spectroscopy in combination with XRD and SEM of $Sr_{1-x}Mn_xTiO_3$ samples sintered in air, oxygen and nitrogen, at 1500 ºC. It was shown that manganese is incorporated into the perovskite lattice of ST, preferably as Mn^{2+} at Sr sites. A small amount of Mn^{4+} at Ti sites is also detected when samples are fired in air or oxygen flow. The concentration of Mn^{4+}(Ti) is the highest for sintering in oxygen. Firing in a reducing atmosphere (nitrogen), results solely in incorporation of Mn^{2+} at Sr sites. Correspondingly, the dielectric relaxation observed in $Sr_{1-x}Mn_xTiO_3$ markedly increases in intensity and slightly shifts towards higher temperature for ceramics sintered in nitrogen as compared to those fired in air or oxygen.

The effect of Ca doping (x = 0.003-0.30) on the structural properties and dielectric response was investigated for ST ceramics, prepared by conventional method. No second phases and linear decrease of the lattice parameter with increasing x were detected for the studied samples. Dense microstructure with multimodal grain size distribution and monotonic increase of the average grain size with increasing x were observed by SEM. The dielectric anomaly at 22 K and enhanced tunability at 30-85 K were induced by Ca doping in $Sr_{1-x}Ca_xTiO_3$ ceramic samples with x = 0.10. For ceramics with $Sr_{0.99}Ca_{0.01}TiO_3$ composition the tunability was found to enhance and/or the driving electric field to reduce at 10-30 K. Samples with x = 0.003 and 0.01, show a monotonous increase of low temperature

dielectric permittivity, transforming to an anomaly just at x = 0.04. Such 'late' formation of the dielectric anomaly, comparing with $Sr_{1-x}Ca_xTiO_3$ single crystals may be explained by the grain boundary effect on the dielectric properties. The boundary effect should decrease with increasing x, due to monotonous increase of the grain size, however more detailed sintering, microstructure and dielectric studies are required to confirm this hypothesis.

Dense and homogeneous $Sr_{1-1.5x}Bi_xTiO_3$ films were prepared by sol-gel on $Pt/TiO_2/SiO_2/Si$ substrates. The solid solubility limit of Bi on ST lattice of thin films was determined by RX to be < 3%. For compositions with $x \geq 0.0267$, $Bi_4Ti_3O_{12}$ starts to appear as an extra-phase. This limit of solid solubility is similar to the one determined for identical $Sr_{1-1.5x}Bi_xTiO_3$ ceramic compositions. The lattice parameter of Bi doped ST films was observed to increase with the increasing of the Bi content. The dielectric permittivity of $Sr_{1-1.5x}Bi_xTiO_3$ films at room temperature increases with increasing of the dopant content from x=0.002 to 0.1. This suggests the appearance of a dielectric maximum for Bi doped ST films at low temperature. The loss tangent for Bi doped $SrTiO_3$ films is smaller than for undoped $SrTiO_3$ films. These preliminary results indicate that similar structural and dielectric behaviour at room temperature was observed between Bi doped ST films and ceramics.

S2 34

Multifunctional Ceramic Films and Composites. The effect of processing conditions on the phase separation and crystal structure of $(x)La_{0.625}Sr_{0.375}MnO_3–(1−x)LuMnO_3$ multifunctional composite system was studied. The results confirmed a there is a solid solution of monoclinic phase ($P1121/a$), i.e. $(La_{0.625}Sr_{0.375})x\ Lu_{1-x}MnO_3$ is formed for x = 0.980–1.0. For $0 < x \leq 0.975$, the immiscibility region shows a clear separation of La-rich and Lu-rich phases. The optimal preparation conditions are: sintering at 1250 ºC and 1350 ºC for samples of monoclinic La-rich phase and for the immiscibility region, respectively.

Another approach was to use SFM to observe mutual conversion of magnetic and electric variables by applying high electric field to the sharp tip. This allows the direct conversion of the mechanical/magnetic/electric energy and will pave the way for 'universal' memory applications. Consider the electric field writing on LSMO-based single crystals with low Sr content where the material is in the insulating antiferromagnetic state. In the initial state, no piezoelectric contrast is observed due to centrosymmetric structure of LSMO, but after the writing with the voltage +30 V a white stripe appears due to the locally induced piezoelectric effect. The hysteresis observed by sweeping the applied bias field attests the material to the ferroelectric class signifying effective local Jan-Teller phase transition into the polar phase. The existence of ferroelectricity was confirmed by the measurements of piezoresponse hysteresis.

Nanoscale Properties of Ferroelectrics. Local poling of ferroelectrics by a sharp conducting tip of the scanning force microscope was studied experimentally and theoretically. The formation of the inverse domains under the SFM tip, where the polarization is oriented in the direction *opposite* to that of the poling field, was observed for the first time in bulk ferroelectrics (single crystals of solid solutions $PbZn_{1/3}Nb_{2/3}O_3$-$PbTiO_3$). This result confirms earlier findings by others on ferroelectric films, thus proving the universality of the anomalous polarization inversion in ferroelectric media. It is shown that the inverse domain grows with the increase of the poling voltage and duration and remains stable for a long time after the removal of electric field. The growth process was described by a dynamic model assuming that the appearance of inverse domains is due to a local internal electric field directed against the poling one. This field was attributed to the space charge formed beneath the SFM tip due to the injection of charge carriers and their subsequent drift and trapping. Poling voltage and poling time dependences of the domain size were found to be correctly described by the presented model. The observed effect has important implications for the domain engineering and dense data storage in ferroelectric materials.

Epitaxial heterostructures YBa_2Cu_3Ox(YBCO)/CeO_2/$NdGaO_3$ were prepared on tilted-axes $NdGaO_3$ substrates using laser ablation technique. Morphology, crystal structure and electrical properties of the obtained films were characterized. The seeding mechanisms are affected by the tilt angle, resulting in superior YBCO films on $NdGaO_3$ substrates in an intermediate range of tilt angles of 6–14º. The introduction of CeO_2 layer leads to change of the YBCO film orientation: at low deposition rate c-oriented films are formed, while at high deposition rates the film grows with c-axis tilted along the [110] $NdGaO_3$ direction. Bi-epitaxial films and structures were prepared by removal of part of the CeO_2 layer using ion-beam milling. SFM was used to characterize the surface morphology of the films.

Local piezoresponse of individual grains was studied in polycrystalline PLZT 9.75/65/35 relaxor ceramics using SFM technique. The piezoelectric contrast consisting of irregular (labyrinth-type) domain patterns was attributed to the compositional disorder and quenched random fields caused by high La concentration. A measure of this disorder, the correlation length is readily determined via an autocorrelation analysis function incorporated in SFM software. The analysis of experimental data showed that the correlation length determined at the mesoscale (~200×200 nm^2) size varies as a function of the position within the grain notably decreasing upon approaching the grain boundary. As a result, the average correlation length was found to increase with increasing lateral grain size saturating at about 100 nm. The nature of the observed grain size effect and its relation with the macroscopic dielectric and ferroelectric properties of polycrystalline relaxors was delineated.

Nanoscale piezoelectric measurements were done on P(VDF-TrFE) films prepared by Langmuir-Blodgett (LB) technique. Polarization mapping, local switching, piezoelectric hysteresis and aging after poling were studied.

High quality ultra-thin P(VDF-TrFE) films with copolymer content of P(VDF-TrFE) 70:30 were fabricated using horizontal Schaefer monolayer transfer setup permitting precise control of the film microstructure. The thickness of the films as confirmed by ellipsometry was ~64 nm. Local switching resulted in the domain patterns with lateral size in the range 50-300 nm depending on the applied voltage and time. Local hysteresis loop (at fixed tip position) demonstrated clear ferroelectric switching with the coercive voltages in the range 10-15 V. Relatively slow aging after poling was observed with the characteristic relaxation time of the order of 1000 s. The obtained results clearly demonstrate that the stable polarization patterns can be created in LB P(VDF-TrFE) films that can be used in memory devices and as nanopatterned templates.

MAGNETOSTRUCTURAL MODULATION OF STRONGLY CORRELATED ELECTRIC MATERIALS

Colossal Magnetoresistive Materials. A main topic of study is the complex interplay of lattice structure, oxygen vacancy, defects and doping on the properties of CMR manganites. This leads to phase segregation at different length scales: charge or orbital ordered; insulator vs metallic. Ferroelectricity driven by magnetic order or charge/orbital order: multiferroic hexagonal manganites: $REMnO_3$ (RE=Er, Lu, Eu ferroelectric) and composites $LaSrMnO_3$-$REMnO_3$ (ferromagnetic/ferroelectric). Thin film preparation (sputtering) and structural studies (XRD) for phase purity, lattice parameters and temperature study of structural phase transitions were carried out. Hyperfine local probe using implanted radioactive isotopes at ISOLDE-CERN, with Perturbed Angular Correlation Spectroscopy and Emission Channeling, was performed to provide local and element selective information on doping mechanisms. Other studies include: magnetic properties in the vicinity of phase transitions; application of Landau theory of phase transitions; magnetostructural coupling and application of mean field approaches to the study of magnetic interactions.

Magnetocaloric effect and application to magnetic cooling on manganite samples as La-(Ca,Sr)MnO_3 and Er, Eu doped and derived with vacancies in the A and B sites; effect of lanthanides substitution on the cooling power for near-room-temperature applications. Study of magnetic entropy in competing phase systems (ferromagnetic and charge-order). Intermetallic alloys: Pr (Ni-Co), NiMnGa and metal/metalloid Gd-Si-Ge martensitic transitions and electronic density coupled to magnetic entropy changes. Modelling of magnetocaloric properties with mean field theory.

Theoretical Approaches to Magnetic Materials Using Generalized Thermodynamics. Description of complex systems with long-range interactions or distributed characteristic parameters using Tsallis non-extensive statistics. Connection to Griffiths phase and disordered inhomogeneous systems.

High Temperature Superconductors. Magnetic studies of oxide superconductor materials prepared by LFZ, phase studies, critical current and their relation with structural and phase characteristics in BSCCO fibres. Magnetic and electrical studies in new MgB2-type superconductors, superconducting fraction and critical currents. Hyperfine studies on Hg-HighTc superconductors and role of oxygen defects in fluorinated compounds.

ADVANCED MOLECULAR AND SUPRAMOLECULAR MATERIALS

Cyclodextrins. New inclusion systems were produced from the reaction of previously synthesised and characterised Ru(II)-thioether/polypirydilic complexes and cyclodextrins. Synthesis of new Ru(II) compounds with aminoacids and/or organometallic fragments was also attempted, in order to obtain new compounds to be tested with cyclodextrins.

A 1:1 inclusion compound between $Eu(NTA)_3 \cdot 2H_2O$ (NTA=1-(2-naphthoyl)-3,3,3-trifluoroacetonate) and octakis(2,3,6-tri-*O*-methyl)-γ-cyclodextrin (TRIMEG) was prepared and characterised. The quantum efficiency of the ligand-to-metal energy transfer pathway increased upon inclusion complexation. Although a similar increase was previously found for the corresponding native γ-CD adduct, the efficiency of the Eu^{3+} sensitisation was significantly higher with the TRIMEG host. Replacement of the water molecules in $Eu(NTA)_3 \cdot 2H_2O$ by other ligands may help to reduce the non-radiative relaxation of the Eu^{3+} centres. The complex $Eu(NTA)_3 \cdot$(2,2'-bipyridine) was prepared and encapsulated in β-CD to give a 2:1 (host:guest) inclusion compound. Photoluminescence studies showed a change in the emission features upon inclusion complexation, possibly due to a reorganisation of the ligands into a geometry more favourable for interaction with two host molecules.

The carbonyl complexes $CpFe(CO)_2Cl$, $CpMo(CO)_3Cl$, $CpMo(CO)_3CH_2CONH_2$, $[CpMo(NCMe)_2(CO)_2](BF_4)$ and $[CpMo(2,2'\text{-biimidazole})(CO)_2](BF_4)$ were immobilised in β-cyclodextrin (β-CD) and permethylated β-CD (TRIMEB) by tailored methods. In general, adducts with a 1:1 (host:guest) stoichiometry were obtained. Powder XRD indicated that the crystal packing arrangements for the TRIMEB adducts of $CpMo(CO)_3X$ and $[CpMo(NCMe)_2(CO)_2](BF_4)$ were similar. A hypothetical structural model of $TRIMEB \cdot CpMo(CO)_3Cl$ was obtained by global optimisation using simulated annealing. The inclusion compounds containing $CpMo(CO)_3CH_2CONH_2$ were used as precursors to catalysts for the liquid-phase epoxidation of cyclooctene using t-BuOOH. The results indicate that the β-CD adduct has potential to be used in heterogeneous solid-liquid systems, while the TRIMEB inclusion compound is more suited to homogeneous or liquid-liquid biphasic systems.

Research was carried out on the competition between the hydrated fluoride anion and hexanoic acid for inclusion in β-Cyclodextrin in aqueous solution using ^{1}H-NMR. How β-cyclodextrin affects oxygen solubility in aqueous solutions of sodium perfluoroheptanoate was an issue also studied.

Oxomolybdenum Catalysts. Molybdenum(VI) oxides bearing 1,4,7-triazacyclononane and 1,1,1-tris(aminomethyl)ethane ligands with the general formula $[MoO_2Cl(L)]Y$ (Y = Cl, BF_4^-) were prepared and examined as catalysts for the liquid phase epoxidation of various olefins, using *tert*-butyl hydroperoxide as the oxidant. Tricarbonyl complexes of the type $LM(CO)_3$ (M = Mo, Cr) bearing tridentate ligands (L) were also prepared and evaluated as catalyst precursors for the epoxidation reaction. In related studies, the 4-coordinate (tetrahedral) compound $MoO_2(OSiPh_3)_2$ and the 6-coordinate (distorted octahedral) complexes $MoO_2X_2L_2$ [X = Cl, $OSiPh_3$; L_2 = 2,2'-bipyridine or a chiral bis(oxazoline) ligand] were prepared and examined as catalysts for the epoxidation of olefins such as cyclooctene and *trans*-β-methylstyrene. Direct grafting of the bis(chloro) complex containing the chiral bis(oxazoline) ligand onto the ordered mesoporous silica MCM-41 gave a recyclable heterogeneous catalyst for the epoxidation of cyclooctene.

Metal Complexes of Bio-Inorganic Interest. The fragmentation patterns and the identification of the hapticity changes in solution of Ru(II) complexes, when N-N = trispyrazolylmethane, were studied by mass spectrometry, mainly by ESI-MS, and a mechanism was proposed. The interaction of different Ru(II) complexes with tetramer duplexes have been also studied and the type of DNA-bases interactions has been assigned.

In order to assess the mechanisms of the carcinogenicity and mutagenicity of chromium, some chromium compounds were synthesised, characterized and in vivo tested.

REACTIVE CERAMIC COMPONENTS FOR PROCESS CONTROL

Materials for High-Temperature Electrochemical Applications. The activities were focused on studies of solid electrolytes, electrodes and other materials for fuel cells, and other high temperature electrochemical applications. Mechanisms of ionic conduction on oxide materials were examined with an emphasis on oxygen ion conductors with fluorite, pyrochlore and apatite types, and also cerate protonic conductors. The work on fluorites was mainly dedicated to ceria-based materials with different lanthanide additives and sintering additives to lower the sintering temperature and change the grain boundary behaviour. For silicate-based apatites we attempted to prevent long term degradation in fuel atmospheres by partial substitution in the La-site (*e.g.* Ce) or Si-site (Al, Fe, Ti, Zr). The use of protecting layers is being considered. Different experimental methods were used to re-examine the transport properties of protonic conductors, namely the co-existence of protonic and oxygen ion conduction, and the onset of electronic contributions. Work on potential electrodes for solid electrolyte cells included novel concepts of cathodes with high oxygen storage ability ($YBa(Co,Fe)_4O_7$, $Ce(Pr,Zr)O_{2-d}$), and materials with two co-existing redox pairs ($Sr_{1-x}Ce_xMn_{1-y}Al_yO_{3-d}$). Work on mixed conducting components of anodes included nanostructured materials. Glass-ceramic seals were prepared and characterized in terms of crystallization and sealing ability, electrical short-circuiting and electrochemical permeation.

Mixed Conducting Materials and Catalysts For Oxygen Separation or Partial Oxidation of Hydrocarbons. Work comprised a wide range of mixed conducting materials based on K_2NiF_4-type nickelates and perovskite-type $LaFeO_3$, $LaCoO_3$, $SrFeO_{3-d}$, $LaAlO_3$, $LaGaO_3$, with partial substitution in A- and/or B-sites by acceptor or donor-type additives, including co-additives. The main effort was focused on interrelations between transport properties, redox behaviour, chemical and thermomechanical stability, phase transformations, and electrocatalytic activity. A wide range of experimental techniques was used, as well as structural refinement and atomistic simulations for selected materials. Less common features were also explored in mixed conductors and potential catalysts, including off-stoichiometry to the onset of minor second phases (e.g $La_{1-x}Ni_{0.5}Ti_{0.5}O_{3-d}$) and interactions between different co-existing mixed valency species (e.g $CeNbO_{4+d}$).

Microsctructural Effects. Microstructural effects in solid electrolyte materials and mixed conductors were evaluated both as single phase and composite materials (e.g. $Ce_{0.8}Gd_{0.2}O_{2-d}$ + $La_{1-x}Sr_xMnO_{3-\delta}$). Double layer dense/porous membranes were also prepared, (e.g. $SrFeO_{3-d}$-$SrAl_2O_4$, $La_{0.5}Sr_{0.5}FeO_3$–$SrAl_2O_4$, $La_{0.5}Sr_{0.5}FeO_3$-Sr_{1-}

$_x$Fe(Al)O_3). Different powder preparation methods (glycine-nirate and spray pyrolysis), ceramic processing or layers with different sinterability were used for this purpose. We also attempted to improve the thermomechanical behaviour (thermal shock, toughness, hardness) and stability under reducing conditions, without affecting the permeability and electrocatalytic activity. Materials interactions in composites were also studied, from modest compositional changes (addition of sintering additives) to formation of new phases with major changes in composition. One analysed effects of powder or ceramics processing conditions on phase preservation, and ability to adjust compositional gradients at grain size level (e.g. core-shell structures).

Materials For Other Electrochemical Technologies. Electronic ceramic conductors such as $Ln_{1-x}A_xCo_{1-y}M_yO_3O_{3-d}$ cobaltites, with Ln= Pr, Nd, Sm and A= Sr, Ca, Ba, M=Fe, Ni, Ti and nickelates $La_2Ni_{1-y}M_yO_{4+d}$ have been studied as potential electrodes for aqueous electrochemical applications in alkaline conditions. One attempted to establish correlations between the electrode performance and the transport properties, oxygen stoichiometry, and stability of these materials. One also studied the oxygen evolution activity on hydroxide or oxy-hydroxide layers deposited onto metallic substrates.

S2
40

CERAMIC COMPOSITES AND ULTRA-HARD COATINGS FOR MECHANICAL APPLICATIONS

Diamond Cotings. The work was directed towards the production and characterization of nanocrystalline diamond coatings (NCD) for tribological and bio-tribological applications. These studies were based on the optimization of NCD, physical and tribological characterization. Some work was also done on CVD microcrystalline diamond films for mechanical applications and on ceramic-metal composites produced by melt infiltration.

NCD was produced both by microwave plasma-assisted chemical vapour deposition (MPCVD) using $Ar/H_2/CH_4$ gas mixtures on Si_3N_4 by a conventional continuous, and by a new pulsed regime and by hot-filament chemical vapour deposition (HFCVD). Optimization of NCD growth parameters was done for commercial MPCVD and for an in-house built HFCVD reactor, for coating Si_3N_4 ceramics. Growth rates of up to 1.6 μm h^{-1} were obtained for NCD coatings with 28 nm crystallite size. The influence of argon content on the deposition atmosphere was directly related to the formation of nondiamond phases, trans-polyacetylene and graphite at the grain boundaries. These lowered tensile stresses, diminishing the risk of delamination.

Tribological characterization of the NCD/Si_3N_4 samples was carried out using self-mated pairs without lubrication, in samples obtained by MPCVD and HFCVD. Friction values reached a steady-state minimum of 0.02 following a short period with a peak at 0.44. Calculated wear coefficient denoted a very mild regime ($K \sim 10^{-8}$ mm^3 N^{-1} m^{-1}) for the self-mated NCD coatings. The predominant wear mechanism was identified as self-polishing by micro-abrasion. The

critical loads of 35-40 N were further optimized by hydrogen plasma etching of the substrates prior to NCD growth by HFCVD, as was demonstrated by the high threshold loads (60 N; 3.5 GPa) for film delamination. A bioactive Si_3N_4-bioglass composite was also combined with NCD of low intrinsic surface roughness in the range 5 to 15 nm and crystallite sizes of 1 to 30 nm. Depositions were conducted below the bioglass crystallization temperature (637 °C), allowing a highest growth rate of 1 μm h^{-1}, with Ar /H_2=0.1. Slow cooling rates after deposition (2 °C min^{-1}) prevented film delamination under Brale tip indentations up to 200 N.

CVD diamond was also studied for sharpenable directly coated cutting tool for hard materials. Thick CVD diamond films (150 μm) could be sharpened to the desired geometry using grinding wheels. The tools were tested in dry turning of three types of hardmetal at a cutting speed of 20 m min^{-1}, feed of 0.1 mm rev^{-1} and DOC of 0.2 mm. Wear by micro-chipping of the CVD diamond, results in abrasion of the rake and flank faces by diamond debris changing the cutting edge geometry and increasing the cutting force to values above which the tool fails (F_d~700 N). Up to 2000 m dry machining length per tool could be achieved before the re-sharpening operation had to be performed. The use of a cutting fluid increases tool life due to reduction of Co adhesion and enhancement of diamond debris removal from the cutting edge. When using smoother CVD diamond films as direct coatings on Si_3N_4 tool substrates, the turning performance is the best for the more even surface, as a consequence of morphology and surface roughness characteristics, with reduced cutting forces being obtained.

Other Hard and Ultra-Hard Materials. Most work on hard materials was related to processing of nitride, carbide or corresponding composite materials as detailed below. The tribological properties of selected materials were evaluated by using sliding tests against steel under dry and unlubricated conditions qualified these materials for wear applications. Some work was performed on ceramic-metal composites produced by melt infiltration.

Processing Methods. Colloidal processing studies on oxide ceramics focused on the dispersing ability of Cu_2O, CuO and Al_2O_3 powders to access the aqueous slip casting processing conditions of the oxides. Some effort were also put on optimising the tape casting process of cordierite-based glass ceramic substrates of low dielectric constant. A significant research activity was devoted to glass-ceramics of different compositions. Anorthite-diopside-apatite materials were studied as multilayer substrates for microelectronic applications, co-fired at low temperatures. CaO-MgO-SiO_2 materials with B_2O_3, Na_2O, CaF_2 and P_2O_5 were prepared as candidates for biomaterials applications. Monomineral glass-ceramics of akermanite were also developed.

Innovative methods for protecting AlN powders against hydrolysis and for preparing stable and high concentrated (≥ 50-vol.% solids) aqueous suspensions for colloidal processing (slip casting, tape casting, pressure casting, etc.)

and for granulation of powders for dry pressing technologies have been developed. The formulations include the AlN powders and sintering additives, types and amounts of the processing aids (dispersants, binders, plasticizers) required for each consolidation technique. Green densities higher than 70% of the theoretical density was obtained by slip casting, and full dense ceramics were obtained by pressureless sintering at 1750 ºC for 2 hours.

Ceramic bodies of α- and β-sialon were colloidally processed in organic media. The same organic media proved to be suitable for the fabrication of Si_3N_4-SiC nano-composite ceramics through temperature induced gelation and for enabling liquid phase sintering at 1850 ºC. Rod-like α-SiAlON and of β-SiAlON powders stabilised with single and multi-cations were prepared by combustion synthesis (CS) and used as reinforcing elements of structural sialon-based ceramics densified by pressureless sintering. CS was also used to study the factors affecting the morphology of AlN and of TiN microcrystals.

Additional contributions were related to processing of traditional ceramics and recycling of industrial wastes. This comprised effects of sodium hexametaphosphate on the rheological behaviour of kaolin dispersions, the influence of Li_2O-doping as auxiliary flux on the properties and firing of triaxial porcelain bodies, formulation of cordierite ceramics based on Al-rich anodising sludge, and insulating foams based on glass residues.

Corrosion Protection Methods. The activity was devoted to different aspects of the corrosion protection for various metallic products. Different components of the protective system, such as surface pre-treatments, anti-corrosion inhibitors, organic polymer coatings and the surface modification top layers were investigated in terms of their applicability for specific metals and alloys. Special attention was paid to the deeper mechanistic understanding of the coatings degradation and the corrosion and inhibition processes. Another topic started last year was the application of localized techniques to study the corrosion processes on nano- and micro-scale.

The main direction of the research activity of the group was focused on the development of novel environmental-friendly active corrosion protection systems based on the self-healing provided by intelligent release systems incorporated into the coatings. The polyelectrolyte, in-situ formed oxidenanoparticles and nanostructured porous layers impregnated with corrosion inhibitors were used to produce controllable nano-containers preventing a negative effect of the inhibitor species on the stability of the coating matrix. The use of nano-scaled reservoirs helps in uniform distribution and controllable release of the corrosion inhibiting species. This allows the introduction of different inhibitors in the polymer matrixes without the negative effect of the inhibitor on the stability of the coating and without the deactivation of inhibitor originated from its interaction with polymer. Much attentioon was payed to the development of ‘intelligent’ reservoir systems which may be used in different coatings.

The permeability of polyelectrolyte shells strongly depend on pH and can confer the controllable release of the inhibitor triggered by the corrosion induced change of pH.

Hybrid organosilane and the sol-gel derived composite thin films were investigated as pre-treatments for aluminium alloys and galvanized steel. Sol-gel films were doped by the in-situ formed oxide nanoparticles which enhance the corrosion protection of hybrid coatings. Organosilane and hybrid sol-gel films developed provide long-term corrosion protection. Doping of the hybrid films with different active components offers additionally the active corrosion protection component to the developed coatings. These coatings are promising candidates to substitute chromates in many corrosion protection systems.

A set of organic compounds was investigated for corrosion inhibition of aluminum and magnesium alloys, to replace carcinogenic chromate, which will be banned in Europe by 2007. 8-hydroxyquinoline was found to be very effective corrosion inhibitor for aluminum alloy 2024 and magnesium alloy AZ31. Corrosion mechanisms of aluminum alloys demonstrated crucial role of cathodic intermetallic inclusions in the localized corrosion attack, and contributes to the search of new corrosion protection approaches.

The weathering stability of the plasma polymer films deposited to tailor the surface properties of coil coatings was investigated demonstrating strong dependence of the plasma polymer films stability on the film composition. The plasma parameters such as pressure and power play a role in the stability of the obtained layers. Deposition of thin plasma polymer layer leads to partial degradation of barrier properties of coil coatings. Atomic oxygen in plasma plays a critical role on barrier degradation.

Weldable primers for automotive applications were developed. One studied effect of organic corrosion inhibitors on corrosion processes on the galvanized steel coated with zinc-rich weldable primers. Benzotriazole and mercaptobenzothiazole were very effective corrosion inhibitors and will be introduced to primer formulations to improve self-healing ability.

MACROMOLECULAR MATERIALS AND LIGNOCELLULOSICS

Lignocellulosics. A study was performed on the use of chitosan, with different degrees of deacetylation and different molecular weights, in the processing of polymer blends (*e.g.* with other natural polymers or their derivatives), complexes (*e.g.* with paper) and composites (*e.g.* with natural fibres) and on the preparation of unexplored chitosan derivatives. The inclusion of commercial chitosans in paper through diffusion from aqueous solution, was carried out and the properties of the ensuing complexes assessed. In order to establish the extent of insertion and actual mapping of the chitosan molecules in the paper sheet, a fluorescent material was synthesized by appending an appropriate chromophore to about 4% of the primary amino groups of chitosan. In a different vein, chitosan was oxypropylated in a bulk heterogeneous process, yielding a viscous polyol mixture whose structure and properties are being evaluated.

Another new project focuses on the application of the reversible Diels-Alder reaction to the synthesis of novel polymeric materials bearing furan moieties. The working hypothesis behind this approach is that a number of promising macromolecular architectures may be built using monomers incorporating complementary diene (furan) and dienophile (maleimide) functions through multiple adduct formation and that all of them can then either be turned into thermally stable structures by the aromatization of the adduct or, more interestingly, be subject to thermal reversibility (i.e. back to the starting monomeric entities) for recycling or other more technical applications like solvent-free printing inks, self-mendable materials, etc. Bifunctional monomers have thus been synthesized, both of the A-A (difuran) and B-B (bismaleimide) and of the A-B type. Their structure has been confirmed in all instances and their larger scale synthesis and purification are in progress.

The search for original ways of valorizing suberin has entered a critical phase with a systematic approach of the different routes leading to polyesters based on the long-chain components bearing OH and COOH moieties in different numbers and molecular distribution. Suberin components can be isolated with free COOH groups or their corresponding methyl esters, depending on the fragmentation technique adopted. The polycondensation methods tested were therefore based on both direct esterification and transesterification. Model compounds, *viz.* long-chain diacids, diols and hydroxyacids, were used to assess the viability of each method before switching to the actual suberin monomer mixture. It was thus found that a number of procedures, like polytransesterification, direct polycondensation catalyzed by acidic surfactants or enzymes, gave good results, albeit with polyesters of modest molecular weights of a few thousand. The chemical characterization of other by-products from cork processing

was pursued, including low molecular mass components (mostly terpenes and polyphenols), lignin and polysaccharides.

The studies on the controlled heterogeneous modification of cellulose fibers with fluorinated reagents (eg. trifluoroacetic anhydride, pentafluorobenzoyl chloride and trifluoropropanoyl chloride) for the development of highly hydrophobic cellulose-based materials were pursued. All reaction systems were optimized and the new fluorinated cellulose fibers derivatives were extensively characterised. The hydrolytic stability of these new cellulose derivates was also assessed. New routes for the controlled heterogeneous modification of cellulose fibers were also initiated, including reaction with reagents bearing isocyanate and silane groups and the enzymatic esterification with fatty acids.

Research on the synthesis, characterization and assessment of properties of nanoparticles/cellulose hybrids was pursued. The photocatalytic activity of TiO_2 based materials started to be evaluated. The degradation of some dyes (methylene blue, methyl orange) in aqueous solution in the presence of the hybrids under UV radiation was evaluated. Preliminary results show that these materials are effective in the dyes degradation. The potential antibacterial activity of these materials started to be studied in cooperation. Due to the photoactive semiconductor nature of TiO_2, the direct contact between this oxide and cellulose may limit the applications of these materials for long periods, in particular if they are exposed to light sources. Because of this, a new strategy for the preparation of these hybrid materials was initiated. Cellulose fibres were coated using silane coupling agents (PTMS and OTMS) followed by deposition of TiO_2 nanoparticles. These new hybrids showed a high hydrophobicity, opening the possibility for higher compatibility between hybrids and polymeric matrixes in composites preparation.

Silver nanoparticles generated *in situ* in the presence of cellulose (vegetal or bacterial) were prepared, with different particle sizes and loads. These materials were tested for surface enhanced Raman spectroscopy and antibacterial applications, with very promising results.

The optimization of $CaCO_3$/cellulose hybrids preparation is also under investigation. The control of synthesis parameters and the influence of the carboxylic content in the modified cellulose fibres are being assessed. Scale-up procedures are being implemented in order to test the possible application of these hybrids in paper and polymer-based materials.

The work on polyoxometalate (POM) catalysis in oxygen delignification of kraft pulp using the laccase as biocatalyst for the POMs re-oxidation was continued. New polyoxometalate-laccase integrated system (PLIDS) employing polyoxometalate $[SiW_{11}V^{V}O_{40}]^{5-}$ and laccase of *Trametes versicolor* for the continuous delignification of eucalypt kraft pulp was developed. Pulp was delignified in a batch reactor containing catalytic amounts of $[SiW_{11}V^{V}O_{40}]^{5-}$ at *ca.* 90 ºC under atmospheric pressure. Re-oxidation of reduced POM with laccase was carried

out at 45 ºC in a separate aerated bioreactor coupled with an ultrafiltration tubular ceramic membrane. The later allowed separation of laccase from re-oxidized POM, which was supplied in turn continuously to the delignification reactor. PLIDS allowed sustainable pulp delignification with minimal degradation of polysaccharides. The implementation of PLIDS, replacing the first chlorine dioxide stage (D) in conventional DEDED bleaching sequence, showed almost 60 % of chlorine dioxide savings with strength properties of the bleached pulp (90% ISO) similar to those obtained after the conventional bleaching.

The preliminary research work was performed on the kinetics of the oxidation of substituted phenols with either vanadium polyoxotungstate, $[\alpha\text{-}SiV^{V}W_{11}O_{40}]^{5-}$ (viz. *$SiW_{11}V$*), or manganese polyoxotungstate, $[\alpha\text{-}SiMn^{III}W_{11}(H_2O)O_{39}]^{5-}$ (*viz. $SiW_{11}Mn$*), in aqueous solution at pH 4.

Aiming to promote a better understanding of the oxidative delignification mechanisms with polyoxometalates and its re-oxidation mechanisms, the electronic tongue multisensor system waspproposed for the detection of metal-oxygen cluster anions (polyoxometalates) containing vanadium (IV/V) atoms. Sensitivity of a variety of potentiometric chemical sensors with plasticized polyvinyl chloride and chalcogenide glass membranes was evaluated with respect to vanadyl/vanadate anions, decavanadates and a series of Keggin-type polyoxometalates (POM) such as $\alpha\text{-}[SiW_{11}V^{IV}O_{40}]^{6-}$, $\alpha\text{-}[SiW_{11}V^{V}O_{40}]^{5-}$, $\alpha\text{-}[BW_{11}V^{IV}O_{40}]^{7-}$, $\alpha\text{-}[BW_{11}V^{V}O_{40}]^{6-}$, $\alpha\text{-}[PW_{11}V^{IV}O_{40}]^{5-}$ and $\alpha\text{-}[PW_{12-n}V^{V}{}_{n}O_{40}]^{(3+n)-}$ (n=1,2,3). Such sensor array was able to distinguish different vanadium complexes allowing their simultaneous quantification in binary (V(IV)/V(V)) mixtures.

S2
46

The study on the paper surface modification by deposition of *in situ* formed inorganic pre-polymers obtained with sol-gel process was initiated. The main attention was paid to the optimization of synthesis of sol-gel formulations composed of tetraethylortosilicate (TEOS) and a series of its monosubstituted analogs (alkyl and amine moieties among others) in aqueous solutions and to the characterization of organic-inorganic hydrids (OIH) obtained. The methods for the deposition of these formulations on the paper surface were developed (using impregnation press, by spray and using sizing press) and treated papers were analysed (image analyses for ink jet printing, contact angle, surface energy, etc.).

Work was done on the chemical analysis and structural characterization of macromolecular components and extractives from different morphological parts of banana plant (*Musa acuminata* Colla var. *cavendish*) aiming to promote the valorisation of this important regional (Madeira) agricultural waste material. Particularly, the study on chemical composition and structure of components from different morphological parts of ‘Dwarf Cavendish’ banana plant (petioles/midrib, leaf blades, floral stalk, leaf sheaths and rachis) was carried out aiming to evaluate their potential as eventual raw materials for the chemical processing.

A study was carried out on the decolourisation and detoxification of kraft effluent by *Trametes versicolor*. It was proved that this fungus possess an excellent capacity of development in toxic environments once its cell growth was observed and oxidative enzymatic activity was remarkably increased in presence of effluent and both high decolourization and detoxification parameters were attained.

The studies on ESI-MS application for the structural characterization of lignin were continued. Several fractions of synthetic dehydrogenation polymer (DHP) were fractionated by GPC and analysed by ESI-MS/MS aiming to provide a MS/MS spectra database on the lignin oligomeric structures. ESI-MS/MS technique was used for the first time to assess the molecular mass of hardwood (eucalypt) lignosulphonates (LS) and for their structural characterization.

The investigation of different approaches or process modifications to improve the retention of polysaccharides during *Eucalyptus globulus* kraft pulping was pursued. Particular attention was devoted to the rational addition of antraquinone to the kraft process as a mean to improve pulping yield and, simultaneously, decrease the amount of hydrogen sulphide in the process. Pulps produced with such process modifications were fully bleached and tested for their mechanical properties.

Investigations aiming to understand/improve the retention of polysaccharides during *Eucalyptus globulus* kraft pulping on the pulp fibres surface have been performed. Current research was focused on the analysis of pulps obtained after cooking under different pulping conditions (active alkali (12-17%), sulfidity, etc.) along the last delignification period aiming to estimate the proportion of xylan adsorbed on pulp surface and how this xylan retention is affected by pulping conditions. The amount of glucans in *Eucalyptus globulus* wood (about 4.5 %) was estimated using sawdust extraction with 0.5M NaOH solution at 90 - 120 ºC and the structural features were elucidated in glucans-enriched polysaccharide fraction isolated by hot water extraction (120 ºC, 2 h). Isolated glucans were characterized by wet chemistry methods and by different 1D and 2D NMR techniques. The major proportion of glucans was comprised by linear (amylose, 20 %) or ramified at *O*-6 (amylopectin, 80 %) α(1→ 4)-linked glucans though a small proportion of β-(1→3)-glucan (< 0.2% on wood weight) have been also detected.

Two new research projects related to the utilization of by-products from the acid sulphite pulping of *E. globulus* wood were started this year. One is related with the production of acetic acid and furfural from condensate of pulping liquor evaporation, while the other deals with the analysis of industrial circuits and utilization of lignosulphonates.

The study on the chemical composition of macromolecular components of the natural hybrid of *Paulownia elongata* and *Paulownia fortunei* was continued. The work concentrated on the study of hemicelluloses structure

(xylan and glucomannan). The preliminary kraft pulping experiments on *Paulownia* wood were carried out aiming to optimize the conditions.

Work was performed on the structural features of pectic polysaccharides of olive pulp cell walls that remained entrapped in the cellulosic residue after sequential extraction of the cell wall material (CWM) with imidazole, carbonate and KOH aqueous solutions. These polymers, obtained after neutralisation and dialysis of an aqueous suspension of the residue (sn-CR fraction), were arabinan-rich pectic polysaccharides. Size-exclusion chromatography showed that sn-CR fractions possessed a bimodal molecular weight distribution. The smaller molecular weight fraction of sn-CR (M_w=82-135 kD) was independent on the ripening stage of olive fruit, whereas the higher molecular weight fraction showed values of 1.1, 0.9 and 0.7 MDa, respectively, for green, cherry and black olives. De-complexation of sn-CR pectic polysaccharides with a 2 M imidazole solution disrupted the CPPC crystalline network showing the molecular weight decrease to half thus indicating that pectic polysaccharides of sn-CR fraction occurred in olive pulp cell walls as calcium bridged macrodimers.

Work was started on the elucidation of minor structural features in wood hemicelluloses employing ESI-MS/MS and MALDI-TOF/TOF. The main objects were glucomannan and glucuronoxylan from *E. globulus* wood and glucoronoxylan from the natural hybrid of *Paulownia elongata* and *Paulownia fortunei*.

A PhD thesis was completed on the oxypropylation of cork residual powder to obtain polyols to be used in the synthesis of polyurethanes.

Other Polymer Systems and Materials. The PhD programme on the preparation of functional polymer based nanocomposites (NCs) using *grafting from* strategies has been concluded including the preparation of block copolymers. The PhD programme on polysaccharides NCs has been extended to chitosan and locust bean gum (LBG). The preparation of films has started.

A joint (UA/TUHH) MSc thesis on the preparation of DWCNTs/ poly(methyl methacrylate) NCs and the study of the mechanical properties was concluded. The results obtained were superior to those reported in the literature due to the *grafting from* strategy followed. Three new joint (UA/TUHH) MSc theses started: (i) on the preparation of SiO_2 @Fe_2O_3/PANI NCs; (ii) on CNFs/poly(acrylic acid) and *(iii)* a thesis in collaboration with Weber Cimenfix which aims at studying the influence of polymer ageing on the properties of cement mortars. One MEng thesis has been started on dimensional stability and permeability studies of flexible PUs.

Contributions were made to (i) the demonstration that crystallization from sheared polymer melts saturates; (ii) the demonstration that the polymer melt state responsible for this saturation is the steady state in steady shear flows; (iii) the demonstration of a significant entanglement loss during the transition to the steady state and iv) the

demonstration that a basic assumption of current flow theories is lacking experimental support and that these theories need to be revised.

The predictive, analytical (non-simulative) cooperative segmental theory of materials dynamics continued to be applied to the dynamic behaviour of polymers. The dynamic crossover and the corresponding temperature were shown to be predictable by the theory for amorphous polymers from creep data. The installation of the Laboratory of Thermal Analyses was continued, namely in what concerns the facilities for dynamic mechanical analysis (DMTA) and simultaneous calorimetry and thermogravimetry (DSC/TG).

BIOMEDICAL AND BOIOMIMETIC MATERIALS

Biological, Structural and Identification FTIR, NMR and Other Studies. On the mechanisms of chromium toxicity, chromium compounds, including Cr(V), with biologically relevant ligands were synthesised and characterised. Mice, previously intoxicated with controlled levels of different metal complexes, were used as pre-clinical models, in order to evaluate the role of the chromium compounds, and the intermediates, following their routes in the so-called 'chromium reduction toxicity mechanisms'. The adverse effects of these compounds were investigated using slices of target organs (kidney, liver and testis), prepared for histological, histochemical and ultrastructural methods. Complementary approaches, such as flow cytometry that allows, in real time, a multiparametric assay of cells, were also used to get more complete insights into the underlying mechanisms of toxicity. The possibility of recovery of these lesions was also investigated. Lesions induced by those compounds were described in mice organs, obviously reflecting changes on the physiology. For example, some hyaline and granular casts and desquamation of tubular epithelium within the renal cortex and hyaline casts in the medulla were revealed in these groups of mice.

The NMR characterisation of biofluids and biological tissues waspursued, involving the construction of compositional databases and determination of 'healthy' profiles for subsequent detection of several disorders under study. Potential biomaterials of interest based on magnetic nanoparticles (magnetite/carrageenan) and on biopolymer/inorganic scaffolds have been prepared and characterised.

NMR-based models for the routine control of beers and brewing process were developed and should be shortly implemented as a service for a national brewing company. Projects on detection of beer ageing and contamination were initiated. Solid state NMR and FTIR have been used to determine the degree of polymerisation and hydrolysis in hydrogels based on vinylacrylate grafted dextrin (highly biocompatible gels). The role of several depolymerising enzymes on the nanostructure of cork was studied by NMR and FTIR methods.

Using NMR pseudocontact shifts for the Ni and Zn/Ni forms of Desulforedoxin the residues involved in structural changes and in the H-bonding network at the metal centre were identified. Using this approach contact shift contributions were estimated and the importance of the H-bonding network at the metal centres for distribution of the unpaired electron density was highlighted. It was found that the *Dv*Rd(Ni) PCS tensor is more isotropic than that for Dx(Ni) possibly be due to the higher symmetry of the *Dv*Rd centre compared to Dx.

The 3D structure of the novel Heme Binding Protein p22HBP was determined by NMR. Previous work indicating that the protein does not undergo large structural modification on binding was confirmed by the determination of the structure of the bound form.

Glass and Ceramic-Based Biomaterials. The work carried out along the past year was focused on the wet chemical preparation and characterisation of pure calcium phosphate powders, namely hydroxyapatite (HAP) and its derivatives (F-HAP, Cl-HAP, β-TCP), and HAP doped with several cations (sodium, magnesium, strontium, and anions, fluorine, chlorine) as well as their biphasic mixtures in different ratios, including nano-sized powders and their in-situ stabilization. Hydrothermal treatments were also used to transform nacreous materials into HAP-based materials. The as prepared powders were used to produce scaffolds with tailored pore size distributions. Following a different route, scaffolds for bone restoration were also produced from cuttlefish bones hydrothermally transformed into HAP-based biomaterials. A new model formulation of a biocompatible glass of the system SiO_2-Al_2O_3-B_2O_3-MgO-CaO-Na_2O-F was developed and revealed to have interesting bioactive properties *in vitro*.

All glasses and glass-ceramics studied have compositions within the 3 main Si-based systems SiO_2-CaO-P_2O_5-MgO, SiO_2-P_2O_5-CaO-MgO-K_2O and SiO_2-Na_2O-MgO and in the Si-free system TiO_2-CaO-P_2O_5. The research carried out on the above systems had the purposes of (i) studying their structure and establish the relationship with surface reactivity in simulated physiological plasma (ii) understanding the mechanisms of adhesion of apatite layers in acellular media and (iii) controlling the *in vitro* mineralization in physiological fluids. The development of porous glass scaffolds by the salt sintering method was started in a project where the study of the processing variables is one of the key tasks.

Si-based glasses that indicated *in vitro* bioactive behaviour were added to different polymeric matrices (PMMA, PE, SEVA, PHB, PLLA) to obtain novel composites for bone regeneration, cement substitution and drug delivery systems. Organic-inorganic Si-based materials were prepared by the sol-gel process using different silicon precursors.The structure of the hybrid gels and the resulting materials were studied with the aim of obtaining nanocomposites to be used as carriers for cell immobilisation.

A new system for the local delivery of chemotherapy to malignant solid tumours was developed based on apatite particles. The adsorption of the drug 5-Flourouracil (5-FU) on hydroxyapatite (Hap) porous granules produced by spray drying suspensions of Hap nanoparticles was studied at 37 ºC. Nanostructured and porous apatite granules produced by spray drying showed a good ability for adsorbing the chemotherapeutic drug 5-FU. The dynamics and equilibrium of the 5-FU adsorption process were suitably described by pseudo-second order kinetic model and Langmuir isotherm respectively. Porous chitosan/brushite composite scaffolds prepared by a freeze-drying technique, starting from brushite suspensions in chitosan solutions showed a regular macroporous and interconnected structure with brushite particles uniformly distributed in the chitosan matrix. Their in vitro bioactivity was revealed by the formation of a hydroxyapatite layer after 24 h of ageing in SBF (simulated body fluid) solutions.

Other New Biomaterials. Our activities addressed the enhanced production of lipase in two phase reactors. This is a project related with our activities in studying non conventional solvents, namely fluorocarbon compounds that are here used for oxygenation of bioreactors.

Using a particular type of *Yarrowia lipolytica* it was possible to identify an anomalous behaviour on its adhesion to organic phases and a production of a biosurfactant. The biosurfactant was characterized and studies of surface that lead to the characterization of the Yeast surface were lead.

PROCESS DEVELOPMENT AND OPTIMISATION

A new UNIQUAC based model was proposed for the description of wax formation in conventional petroleum based fuels and crudes. This model was shown to be superior to the previous versions proposed by us. Other fluid properties where also addressed and a corresponding states model was used to describe speeds of sound, viscosities and surface tensions of hydrocarbons with success. Together with a British consulting company, INFOCHEM UK, a new approach to the prediction of wax formation for flow assurance was developed and reported. A new focus was placed on biofuels. Water solubilities on these fules and their behaviour under low temperatures were investigated.

The thermal characterization of phase change materials (PCM) was carried out. A patent for composites of paraffins and cellulose or cork derivatives was filled. Studies concerning other phase change materials than n-paraffins, such as fatty acids and esters have been conducted.

The studies of unconventional solvents for the development of chemical products and processes focusing on the fluorinated compounds were extended to ionic liquids. Particular emphasis was given to the surface properties, gas solubility and mutual solubilities with water or aqueous solutions.

On polymers and polymer solutions, two main distinct areas were studied: in the laboratory, gas solubility in biodegradable polymer films data were measured in order to define possible modifications to use them in packaging films; a new molecular level model for polymer systems and polymeric solutions was programmed and tested with excellent results.

Several perfluorocarbon systems were experimentally characterized: liquid-liquid equilibria of perfluorocarbons + n-alkanes and perfluorcarbons + water, vapour-liquid equilibria of carbon dioxide + perfluoroalkanes. The structure of the perfluorocarbon liquid phase was addressed by measuring surface tensions and by ab initio calculations to pin point specific interactions. The study of the stability of perfluorocarbon emulsions with several surfactants was also continued.

Furfural is a basic nonpetroleum chemical readily accessible from renewable resources, arising from the acid-catalysed dehydration of pentoses, and has a broad industrial application profile, both as a solvent and as a building block for the preparation of tetrahydrofuran, pharmaceuticals, agrochemicals, fragrances and furan based chemicals. The industrial use of sulfuric acid as the catalyst poses serious operational, safety and environmental problems, and therefore its replacement by alternative ‘green’ non-toxic catalysts is of high priority. Our recent research has been directed towards finding solutions to this problem.

Aggregates of acid nanosheets prepared by exfoliating crystalline layered metal oxide cation exchangers, such as titanates, niobates and titanoniobates, were found to be more active and somewhat more selective catalysts than microporous AM-11 crystalline niobium silicates, which in turn yielded more furfural than zeolites, such as HY and mordenite (Si/Al ≅ 6), under similar reaction conditions. Furfural yields remained practically the same in recycling runs and no water leaching of metals from these catalysts to the reaction mixtures was detected.

On the hydrodynamic behaviour of process-relevant liquid-liquid dispersions, a detailed quantitative description of the drop interaction (breakage and coalescence) processes in a real column extractor was coupled with the flow of both phases, to accurately describe its experimental behaviour.


SECTION
3
ACTIVITY PLAN 2007

MULTIFUNCTIONAL MATERIALS AND ORGANIC-INORGANIC HYBRIDS

Novel Microporous Materials. The M-doped (M=Y, Eu) microporous zirconosilicate AV-3 materials, possessing the structure of mineral petarasite and with Zr/M ratio of 4, will be prepared via hydrothermal synthesis and their structure determined. This is expected to be a suitable system to create new multifunctional photoluminescent (PL) materials.

The potential of synthetic microporous (ETS-10, ETS-4 and AM-2) and layered (AM-4) materials will be evaluated for the decontamination of natural waters polluted with low Hg^{2+} levels, in the presence of the competitive Cl^-, Ca^{2+}, Na^+ and Mg^{2+} ions.

Microporous lanthanide silicates $K_7Ln_3Si_{12}O_{32}\cdot 3H_2O$ (Ln = Sm, Eu, Gd and Tb) will be prepared and characterised (structure and PL properties). Preliminary work suggests that these materials are unique because they possess Ln-O-Ln dimmers, which confers them unusual PL properties.

Vinyl chloride (VC) is the primal compound in the production of polyvinylchloride. Normally, ethyl chloride (EC) is an impurity present in low levels in the VC effluent stream, inhibiting the polymerization reaction. The challenge is to come out with a clean and safe technology, which empowers a cheaper and efficient separation of these compounds in gas phase by means of an appropriate adsorbent that also minimizes undesired emissions. The adsorption of EC and VC on microporous aluminum methylphosphonate polymorph-α will be investigated by performing Grand Canonical Monte Carlo simulations in order to explore the possibility of using this adsorbent for the purification of VC, upholding the selective adsorption of the EC, and eventually to find the best conditions for EC/VC separation. Experimental data will be used to validate the molecular model of the fluid used in the simulations, with the model for this adsorbent taken from our previous work.

Work on zeolitic membranes will continue. The optimization of ETS-10 and AM-2 membranes will be studied in order to improve membrane quality. The work will also be extended to aluminosilicates. Zeolite Y membranes and their silver-modified form will be prepared for the selective separation of olefin and paraffin.

Mesoporous Materials. In previous work carried out at CICECO, the ordered mesoporous silica MCM-41 was derivatised with dioxomolybdenum(VI) species by direct grafting with the complexes $MoO_2X_2(tetrahydrofuran)_2$ (X = Cl, Br). Depending on the synthesis conditions used, the materials were effective as catalysts for the oxidation of either olefins or alcohols. In an extension of this work, materials prepared using $MoO_2X_2(dimethylformamide)_2$

as the grafting agent will be characterised by various techniques including EXAFS, and examined as heterogeneous catalysts for the liquid-phase oxidation of organic compounds. The synthesis and characterisation of periodic mesoporous organosilicas containing organometallic groups as an integral part of the structure will also be undertaken. Fragments such as $(\eta^6\text{-}C_6H_4)Cr(CO)_3$ will be introduced into these structures by either one-step surfactant-templated hydrolytic polycondensation of functionalised trialkoxysilane precursors or post-synthesis derivatisation.

Work will continue on the preparation of new organic-inorganic precursors aiming the development and design of new periodic mesoporous organosilica (PMO) hybrids with molecular-scale periodicity in the walls. The thermostability, energy and length of the Si-C bond will be studied as a function of the organic group. PMO materials will be prepared, in which the silicon atoms are bounded to one or two organic groups in both powder and oriented film morphology for low dielectric applications.

Layered Materials. Work will proceed on the dehydratation of layered lanthanide silicates $K_3[LnSi_3O_8(OH)_2]$, Ln=Y, Eu, Tb, Er, and the structural characterisation of the obtained small-pore framework ($K_3LnSi_3O_9$), Ln=Y, Eu, Tb, Er solids, named AV-23, will be been reported. Both materials have a similar chemical makeup and structures sharing analogous building blocks, hence providing an unique opportunity for rationalising the evolution of the PL properties of lanthanide silicates across dimensionality.

Nanoparticles of layered $Ln_2(SiO_4H)(OH)_2(H_2O)Cl$, Ln= Eu, Gd will be prepared and characterised. These materials are expected to display efficient and tuneable PL properties, for example energy transfer between different Ln^{3+} centres, such as Gd^{3+} and Eu^{3+}.

In an extension of previous work, the intercalation of oxomolybdenum complexes of dihydroxybenzoic acids into the layered double hydroxide (LDH) $[LiAl_2(OH)_6]Cl$ will be studied. A dioxomolybdenum(VI) complex of 2,5-pyridinedicarboxylic acid will also be prepared and incorporated into LDHs by ion-exchange reactions with precursor materials in nitrate or chloride form. In related work, LDHs pillared by 2,2'-bipyridine-5,5'-dicarboxylate anions will be examined as solid-state complexation materials for the compounds $MoO_2(OSiR_3)_2$ (R = methyl, phenyl). Selected materials will be tested as catalysts for the oxidation of organic compounds. In another study, LDHs intercalated by anionic pyrene derivatives will be prepared and their photophysical properties studied.

Study the potential catalytic application of the molybdenum eta3-allyldicarbonyl complexes on the cyclooctene epoxidation with tert-butyl hydroperoxide in homogeneous phase and after immobilisation in pillared clays. We will prepare porous clay heterostructures with organosilica precursors. The solids will be characterised from the point of view of structure and application as adsorbents.

Nanostructured Materials. Research on the synthesis and surface modification of quantum dots will be continued, now extended our work to the synthesis of doped nanocrystals of ZnO and ZnS. Also the optical/magnetic properties of several inorganic nanoparticles will be investigated as isolated nanostructures or incorporated in several polymers (natural and synthetic) having in mind diverse applications such as in the paper industry and nanomedicine.

The preparation of novel lanthanide luminescent systems at the molecular or supramolecular level together with systems supported on a nanosized material will be performed. Research will be continued on the synthesis of photoactive lanthanide complexes with aromatic ambidentate ligands, exploring the possibility of formation of multidimensional coordination compounds. The luminescence and structural properties will be thoroughly studied. The possibility of the ligands to sensitize the lanthanide emission will be investigated. The incorporation of those lanthanide compounds into nanosized SiO_2 and other substrates will be explored.

The use of SERS (Surface-Enhanced Raman Scattering) in the study of the interaction of metal nanocrystals with molecular adsorbates will be continued, in particular to explore it as a tool for trace detection using natural substrates. SERS will also be used to characterize systems with potential interest in heterogeneous catalysis. Techniques of infrared spectroscopy applied to surface studies will also be explored.

Polyoxometalates. The synthesis by several synthetic procedures and the study of new hybrid compounds with polyoxometalates and organic aromatic moieties, either as cationic species or incorporated in metal complexes, will be continued. Following the studies with pyridine derivatives and aminoacids performed in the last years, the work will proceed with other N,O supporting molecules, like caffeine and others. The obtained compounds will be assessed for their electrochemical or optical properties. Solid-solid solvent free reactions will be extended to the incorporation of inorganic cations (namely group 2 or lanthanide cations) in salts with Keggin polyoxometalates. Studies on homogeneous catalysis will be continued with new substrates, namely 1-ethylnaphtalene, 2-ethylnaphtalene, *p*-cymene, cumene and sec-butylbenzene. The studies on the preparation of silica supported transition metal-substituted polyoxotungstates, to be evaluated as oxidative heterogeneous catalysts, will be continued.

We will continue to investigate the preparation of new organic-inorganic hybrid coordination compounds containing lanthanides, POMs and an organic ligand. The effects of the organic ligand and the POMs on the luminescent properties will be investigated in particular, considering the possibility that they might act as sensitizers of the lanthanide luminescence. The application of the compounds in the preparation of POM based

materials will be explored, namely by the preparation of mono or multilayered nanostructured films, incorporation into nanosized SiO_2 and preparation of polyoxometalate-anion-pillared layered double hydroxides.

The characterization of novel ruthenium tetra-substituted polyoxometalate compounds of general formulae $K_6Na[SiW_9O_{37}Ru^{III}_4(H_2O)_3Cl_3]\cdot nH_2O$ (α and β SiW_9O_{37} isomers, **1** and **2**) synthesised via the reaction of sodium salts of trilacunar Keggin α- and β-$[SiW_9O_{34}]^{9-}$ heteroanions with $RuCl_3$ in aqueous solution will be accomplished.

Crystal Engineering of Organic-Inorganic Hybrids. Research efforts towards the isolation of novel multi-dimensional organic-inorganic frameworks will be continued, with the main synthetic strategy still being hydrothermal synthesis. Future work will contemplate a change in the ideology of the metallic nodes. While in previous years the selected metal centres were mainly d-block elements, from now on lanthanide centres will be preferred so to introduce functionality at the basic level of the primary building blocks of the networks. These cations will be combined with organic ligands which contain carboxylic acid groups (such as N-(phosphonomethyl)iminodiacetic acid, glutaric acid, 2,6-pyridinedicarboxylic acid and picolinic acid), and with molecules composed essentially by phosphonic acid groups [for example, etidronic acid, *N*-(Carboxymethyl)iminodi(methylphosphinic acid), and nitrilotri(methylphosphonic acid)]. Particular attention will be given to materials which can only be isolated as microcrystalline powders, and structure elucidation will be attempted from systematic combined studies of powder X-ray data (either collected at a high-resolution station such as a synchrotron source, or at the laboratory scale) with structural information derived from high-resolution solid-state NMR investigations. Particular attention will be given to the information which this latter technique can provide concerning the location of the hydrogen atoms. Lanthanide-containing materials will be further studied for their photoluminescence properties.

In previous work carried out at CICECO, the structural and catalytic properties of organotin metalates with the general formula $[(R_3Sn)_2MO_4]$ (M = Mo or W; R = methyl, n-butyl, cyclohexyl, phenyl and benzyl) were studied. The catalytic results with these materials depend on the nature of the tin-bound R groups. In future work, the introduction of chirality into the system $[(Me_3Sn)_2MoO_4]$ will be attempted by the substitution of one of the methyl groups by the (–)-menthyl group. The resultant materials will be characterised by vibrational spectroscopy and EXAFS, and tested as catalysts for the liquid-phase epoxidation of model substrates such as cyclooctene and prochiral olefins such as *trans*-β-methylstyrene. The synthesis of organotin vanadates of the type $[R_3SnVO_3]$ will also be undertaken. To date, only the trimethyltin derivative $[Me_3SnVO_3]$ has been reported in the literature, and therefore a considerable effort will be made to prepare and structurally characterise new derivatives.

Organic-Inorganic Hybrids Lacking Activating Centers. Development of new functional hybrids hierarchically ordered with potential applications in integrated optics devices. In particular, highly ordered mono-amide cross-linked alkylene/siloxane hybrid (mono-amidosil) will be synthesised and its local structure and photoluminescence characterised. These hybrids consist of a highly organized bilayer of 2D siliceous domains, separated by perpendicularly oriented alkyl chains, self-assembled through (i) intermolecular hydrogen bonding; (ii) partially interdigitated van der Waals packing, and (iii) an entropic term related to the phase separation. The investigation of the mechanism of self-organization and the relationship between the ordered nanostructures and the corresponding emission properties will be addressed. The emission decay curves of several organic-inorganic hybrids will be modeled as a function of the temperature, emission and excitation wavelengths. Several decay models typical of disordered structures (*e.g.* stretched exponential) and semiconductor materials involving mechanisms typical of donor-acceptor pairs will be employed.

New Hybrid Materials. With the goal of enhancing the luminescence features and the chemical stability under ultraviolet (UV) radiation exposure, different lanthanide based complexes will be incorporated in organic-inorganic hybrids, such as di-ureasils and poly(beta-caprolactone)siloxane biohybrids. The ability of the hybrid host to efficiently incorporate different lanthanide complexes will be investigated together with the hybrid host contribution in the decrease of the non-radiative paths accessible to the lanthanide ions. The absolute emission quantum efficiency will be quantified. The chemical mechanisms behind the typical photobleaching of the isolated lanthanide based tris-beta-diketonate complexes will be addressed. The quantitative description of the energy transfer processes occurring in the organic-inorganic hybrids incorporating different concentrations of lanthanide ions will be addressed. In particular, for di-ureasils, the energy transfer between the hybrid host emitting centers (urea-cross linkages and siliceous nanodomais) and the intra-4f levels of the Ln^{3+} ions and the triplet excited levels of the organic ligands will be quantitatively estimated generalizing the ideas proposed recently for the intramolecular energy transfer between singlet and triplet ligand levels and ligand-to-metal charge transfer states in lanthanide coordination compounds.

The magnetic and structural properties of organic-inorganic nanostructured hybrids or polymer matrices incorporating Fe-based nanoparticles will continue. The effects of inhomogeneous distributions will be also addressed.

The possibility of integrating luminescent polymers and nitride heterostructures will be studied in detail. The ultimate goal is create novel inorganic/organic electroluminescent heterostructures where the flexibility and low

cost of the polymeric materials is combined with the ease of electric excitation via bipolar semiconductor structures.

The work on lanthanide-based ordered nanocrystalline hybrid structures will continue especially by intercalating new organic moieties, performing advanced structural and optical characterization. By changing the intercalated species we expect to add new functionalities to these materials. Furthermore, other types of luminescent hybrids and inorganic nanoparticles will be synthesized by similar methods. For example, lanthanide doped strontium aluminates are a promising class of luminescent materials for application ranging from luminescent displays to biological labeling.

Integrated Optical Devices. The studies on organic-inorganic hybrids modified by zirconium (IV) n-propoxide stabilized with methacrylic acid to produce low cost effective integrated optics devices will continue, namely: (i) the structure-properties relationship; (ii) the investigation of the influence of the processing of the materials as thin films and monoliths on the optical features and (iii) the implementing enabling solutions for access optical networks, such as low cost optical power splitters and optical filters.

Semiconductor Heterostructures. The manipulation of various nanocrystals (NC) at the surface of In-containing nitride heterostructures will continue. This platform will be exploits to integrate various nanomaterials and experiments at a single NC or quantum dot level and study cross coupling effects among different material systems will be attempted. The development of novel multifunctional hybrid nanomaterials (ex. magnetic-optical-electric) and new device concepts is a medium term objective.

The correlations between the nanostructure and the optical properties on epitaxial thin films and low-dimensional heterostructures will be done. Here the focus will be on characterization and modelling of the strain relaxation phenomena, and its relation to the compositional uniformity in thins films and device structures. This know-how will be extended to other material systems, namely towards oxide semiconductors, multiferroic and ferroelectric thin films.

C60 Phase Transitions Under High-Pressure. The structural mechanism by which C60 amorphises to carbon sp^2-phase will be addressed and new attempts to determine the structure of new carbon clathrates will be done, including complementary computer simulations. Also metal-doped carbon clathrates will be studied.

Development of Spectroscopic Techniques. The structure of microporous alumino-phosphate AlPO4-40 will be revisited using advanced one- to two- and three-dimensional MAS NMR solid state experiments involving ^{31}P and ^{27}Al (particularly ^{27}Al-^{31}P MQ-HMQC).

ELECTROCERAMICS

Microwave Ceramic Dielectrics. The temperature variations of the dielectric permittivity and loss of the perovskite ceramics $(1-x)La(Mg_{1/2}Ti_{1/2})O_3 - x(Na_{1/2}Bi_{1/2})TiO_3$ [(1-*x*)LMT-*x*NBT] ($0 \leq x \leq 0.6$) estimated by different methods (radio-frequency, microwave and far infrared measurements) will be compared and analyzed. Contributions of extrinsic and intrinsic factors to the microwave dielectric loss of the ceramics will be evaluated. The low-temperature dielectric relaxation recently revealed in LMT-NBT will be considered in the context of similar effects observed in other Bi-containing, *A*-site disordered oxygen-octahedral compositions.

Perovskite ceramics in the solid solution system $(1-x)La(Mg_{1/2}Ti_{1/2})O_3$ - $xBi(Mg_{1/2}Ti_{1/2})O_3$ [(1-*x*)LMT-*x*BMT] ($0<x<0.3$) will be examined using an Evanescent Microwave Probe. The maps of distribution of dielectric permittivity and quality factor will be obtained and compared with the surface topography. In order to estimate the lattice (intrinsic) contribution to the permittivity and loss observed in LMT-BMT, far infrared spectroscopy will be performed. These experiments allow ascertain if the observed microwave dielectric properties of the LMT-BMT ceramics are determined by the crystal chemistry or their microstructure.

The characterisation of the electrical properties of the compounds of the new family, $La_6Mg_4Ta_2W_2O_{24}$, will be performed. Using the mixing of compounds methodology, a new set of mixtures with cation ordering will be explored, in order to understand the contribution of this ordering to the dielectric characteristics, particularly the dielectric losses.

$MgTiO_3$ thin films will be prepared by sol gel. Different precursors and stabilizers will be used in order to prepare dense, crack free and monophasic $MgTiO_3$ films.

Ferroelectric Fibres, Single Crystals and Films. The interface characterization studies of SBT thin films have revealed significant differences between seeded and unseeded thin films. A similar study will be undertaken using SBN thin films. For obtaining the bottom electrode and/or buffer layer elements profiles and film components (Bi, Sr, Nb) in seeded and unseeded SBN films techniques such as Rutherford Backscattering and Particle Induced X-Ray Emission will be used. This interface thematics is expected to contribute to a better understanding of SBN ferroelectric properties.

The work on PZT thick films on Cu foils will continue aimimg at decreasing the sintering temperature on the films. These studies will be focused on the selection of ideal sintering aids and their effects on the properties.
The fabrication of thick films of $BaNd_2Ti_5O_{14}$-based high Q dielectrics prepared by electrophoretic deposition for microwave communications will continue. The main objectives are the characterization of the dielectric properties at high frequencies and the improvement of tunability. The origin of the microstructure differences between BNT thick films and BNT ceramics will also be investigated.
The preparation of thick films of Bi based compositions for microwave applications will be initiated.

Incipient Ferroelectrics. The work on incipient ferroelectrics will continue along the following lines. Structural and dielectric properties of Y and Cr doped $SrTiO_3$ ceramics, prepared by conventional mixed oxide method. The possible mechanisms of dielectric relaxations and the structure-microstructure-dielectric properties relation in SYT and SCT ceramics will be addressed in detail. Sintering and dielectric studies of the effect of non stoichiometry on the incipient ferroelectric behaviour of ST. Continuation of the studies of the stress effect on the dielectric response of doped and undoped ST thin films.

Nanoscale Properties of Ferroelectrics. PZT seeded films show improved macroscopic dielectric properties. Systematic studies of the local switching polarization during fatigue in unseeded and seeded films PZT thin films will be conducted by piezoresponse force microscopy (PFM). Local PFM loops which characterize domain switching will be acquired and compared with macroscopic hysteresis loops. The observed fatigue behaviour will be discussed based on domain wall pinning induced by injected electrons. The role of nano-seeds in the fatigue behaviour will be analised.
nanodomain switching of PZT thin films at reveals different features of the polarization behavior. The piezoresponse force microscopy (PFM) observation of abnormal domain switching of PZT seeded and unseeded thin films of morphotropic boundary composition will be studied.
The study of the local properties of ferroelectric thin films, single crystals and ceramics will be continued, including also PZT single crystals and commercial PZT ceramics. We plan to investigate the local properties under varying electric field and temperature (up to 250 ºC). Polarization patterns prepared by nanolithography will be studied as a function of temperature and time to verify their stability for memory applications. The investigations will be extended to lead-free KNN and NBT systems. Multilayer actuators based on the commercial PZT ceramics will be investigated at the nanoscale with the aim of improving their electromechanical performance (with Siemens). The domain wall motion studies (creep and activation mechanisms) will be studied in detail. The SFM

programs to acquire piezoelectric signal will be modified to measure additional parameters (inaccessible so far). This work will be done in collaboration with Agilent Technologies.

Work on ferroelectric relaxors will be extende to new materials, such as lead-free relaxors to understand the nature of ferroelectric disorder at the nanoscale. PMN and PZN single crystals and their solid solutions with $PbTiO_3$ will be studied to determine the role of the nanoscale domains in high piezoelectric performance of these crystals. Pure PMN and PLZT that freeze at low temperatures will be investigated using new AFM setup. The comparison with the results of macroscopic measurements will be done in order to reveal information delivered by AFM. The study will be extended to the smallest domains created by nature using a liquid measurement cell available in the new setup.

Multifunctional Ceramic Films and Composites. The magnetoelectric coupling, conductivity and local PFM/MFM measurements of the LSMO-$LuMnO_3$ system will be studied. Optimal composition will be scaled down in order to transfer useful ceramics properties to the thick film level using a hybrid technique. $BiFeO_3$ with different dopants (Ca, Pb, Sr, Zn, etc) will be sintered to reduce the amount of second phases and to cause uncompensated magnetization of canted magnetic moments. Novel composites such as PZN-PT/Terfenol D will be sintered and investigated. Novel composite thick film materials ($BiFeO_3$-PZT) will be fabricated by a hybrid sol-gel method. Magnetoelectric measurement setup will be built. The preparation by sol gel of nanosized nickel ferrite and bismuth ferrite powders and thin films will be undertaken. Different metal alkoxides and nitrates or acetates as Ni, Bi and Fe sources, together with the use of alkoxides stabilizers and nitrates and acetates solvents will be evaluate to obtain stable, transparent sols. Subsequent chemical and heat treatments will be performed for the preparation of powders. Alternatively, the sols will be used to thin films deposition. The heat treated powders and films will be characterized in terms of the desired properties.

Bioferroelecticity and Polarization-Induced Self-Assembly. We will explore an innovative approach that allows controlling the local reactivity and physico-chemical absorption of organic molecules on the ferroelectric surface due to variation of atomic polarization and electronic structure of ferroelectric polymers. The method consists on the nanoscale polarization patterning of ultrathin Langmuir-Blodgett films based on P(VDF-TrFE) copolymer by scanning force microscopy and subsequent exposure of the patterned surface to several chemical species including amphipilic merocyanine molecules and different glicolipids that possess glucose polar hydrophobic head group and a hydrophobic alkyl chain. The obtained complex self-assembled nanostructures will be investigated by a variety of analytical and spectroscopic techniques including macroscopic (dielectric constant, polarization, switching current, pyrocoefficient, optical spectroscopy, exoelectron emission, XPS, etc) and local ones (electric potential,

charge, electric field, conductivity, piezoresponse). The switching and recognition phenomena related with the dynamics of ferroelectric domains during application of external electric field will be also studied. The measurements will be complemented with extensive modelling of the nanostructures including configuration of molecular units, cooperative phenomena, molecular dynamics, and local electronic structure.

Nanoscale Materials. Work will continue on the laboratory scale preparation of a broad range of ferroelectric, piezoelectric and quantum paraelectric perovskites 1D nanostructures, namely, nanotubes, nanorods and nanowires, by soft chemical methods. The optimal processing conditions, thermodynamics and kinetics for the hydrothermal synthesis of each crystallographic phase in a certain 1D morphology will be studied. The method of synthesis of mesoporous perovkites will be investigated.

MAGNETOSTRUCTURAL MODULATION OF STRONGLY CORRELATED ELECTRIC MATERIALS

Colossal Magnetoresistive Materials. Work on thin film prepared with the new RF sputtering deposition system for oxide thin films, structural (X-ray), magnetic and electrical properties. Studies using implanted radioactive isotopes at ISOLDE-CERN. Charge/orbital order electronic phase segregated systems: competition and interface effects. Multiferroic materials (as hexagonal manganites $REMnO_3$, RE=Er, Lu) and composites $LaSrMnO_3$-$REMnO_3$ and $BaTiO_3$-$LaBaMnO_3$ manganites.

Theoretical Approaches to Magnetic Materials Using Generalised Thermodynamics. Application of non-extensive statistics to manganites and other complex inhomogeneous magnetic systems. Critical phenomena, Griffiths phase, Yang-Lee zeros, diluted Ising model, Monte-Carlo simulations and non-extensive statistics. Specific heat of fractal systems. Thermodynamics of two-level magnetic system. Magneto-electro-elastic coupling effects. Mean-field approaches for data analysis.

High Temperature Superconductors. Physical characterization studies of oxide superconductor materials prepared by LFZ. Studies on new MgB_2-type superconductors, preparation and processing. Superconducting thin films. Epitaxy and Microstructure. Magnetic and electrical properties studies.

Other Developments. RE-metalloid (RE-Si-Ge and others, RE stands for rare-earth metals), intermetallic compounds (RE-M, M is a transition metal) and manganite systems. Influence of interstitial hydrogen and nitrogen on the magnetocaloric properties of metals. Modelling of magnetic entropy contributions.

Development of new experimental techniques: VSM magnetometer, AC susceptibility, electrical measurements, specific heat and thermal-magneto-expansion up to 10 T and temperature 1.9-300 K. Development of a new process to optimize the thermomagnetic Brayton cycle, in the sense of the magnetocaloric effect. Construction of a prototype for magnetocaloric refrigeration near room temperature. Use of a second rf power supply in the sputtering system for sequential and/or co-deposition of thin films. Experimental set-up for electric measurements, with thermal-magneto expansion and magneto-resistance, from 77 to 473 K (and magnetic field up to 1 T, rotating from 0º to 360º).

ADVANCED MOLECULAR AND SUPRAMOLECULAR MATERIALS

Cyclodextrins. Studies on cyclodextrins (CDs) as second sphere ligands for organometallic compounds with interesting catalytic properties or biological chemistry will continue. The complexes $CpFe(CO)_2Cl$ and $CpMo(CO)_3Cl$ encapsulated in native β-CD and permethylated β-CD (TRIMEB) during 2006 will be tested as catalysts for the liquid-phase epoxidation of cyclooctene.

Metallocene dichlorides Cp_2MCl_2 (M = Ti, V, Nb, Mo) have attracted considerable interest due to their anti-tumour activities against a range of tumour cell lines. While the encapsulation of the Ti, V and Mo derivatives in CDs has already been studied, CD inclusion compounds containing Cp_2NbCl_2 have not yet been described. In another study, the inclusion of the biomimetic complex $Mo(\eta^3\text{-}C_3H_5)CpCOO\text{-}Phen\text{-}CH_3$ (Phen = Phenylalanine) and its precursor $Mo(\eta^3\text{-}C_3H_5)CpCOOH$ in the hosts β–CD and TRIMEB will also be attempted. The cytotoxic and antiproliferative activity of these compounds towards human adenocarcinoma cells will be screened. All of the inclusion compounds prepared will be characterised in detail. Powder XRD studies will be complemented by *ab initio* calculations to elucidate preferential organometallic-cyclodextrin inclusion geometries. Finally, in an extension of previous work, the encapsulation of $[CpMo(NCMe)_2(CO)_2](BF_4)$ and [CpMo(2,2'-biimidazole)$(CO)_2$](BF_4) in heptakis-2,6-di-*O*-methyl-β-CD (DIMEB) will be performed.

New compounds with potential anti-tumoral activity find, in general, difficulties to reach their targets, mainly due to non-compatibility with the physiological medium (hydrolysis or enzymatic inactivation) or to toxicity. The inclusion of those compounds may permit to overcome these problems. Inclusion into cyclodextrins will be attempted using previously synthesised and characterized ruthenium(II)-thioether/polypirydilic complexes or new synthesised ones. The newly designed complexes will possess suitable ligands for in vivo media, such as aminoacids, or organometallic fragments, which efficacy has already been demonstrated.

Studies are planned to investigate the influence of the cyclodextrins concentration in inclusion/micellization processes in the system β-cyclodextrin and TRIMEB with sodium decanoate in water.

Metal Complexes of Bio-Inorganic Interest. New binuclear Ru(II)-thioether systems will continue to be studied by mass spectrometry, mainly ESI-MS, in order to elucidate their fragmentation mechanisms. The interaction of mononuclear Ru(II)-thioether-polypirydylic complexes with DNA-base sequences will be completed and their intercalation modes assigned.

New chromium compounds taken as models for relevant intermediates in the intracellular-Cr(VI) reduction will continue to be studied by several techniques (EPR, for example). Additionally, other chromium compounds, considered important from a nutritional point of view, will be synthesised and tested (in vivo), as they have become suspicious to provoke damages *in vivo*.

New compounds for DNA molecular recognition, with transition metal and polypyridyl and/or thioether ligands will continue to be synthesised and characterised. Studies directed to the syntheses of 'square' metal transition systems will continue to be undertaken.

Oxomolybdenum Catalysts. Novel cis-dioxomolybdenum(VI) complexes of the type MoO_2L and MoO_2Cl_2L, with tetradentate $[N_2(imine)O_2]$ and bidentate $[N_2(imine)]$ salen-type ligands (L), respectively, will be synthesised and characterised. The complexes will be examined as catalysts for the epoxidation of a series of olefins using *tert*-butyl hydroperoxide as the oxidant. In a related study, cyclopentadienyl molybdenum(II) carbonyl complexes with the general formula $Cp'Mo(CO)_2(\eta^3\text{-}C_3H_5)$ (Cp' = Cp, CpMe, Cp*) will be prepared using an optimised method. Previous work carried out at CICECO has shown that these types of compounds can be used directly as precursors to oxomolybdenum(VI) catalysts for the epoxidation of olefins because they undergo oxidative decarbonylation in the presence of the oxidant t-BuOOH. The new $Cp'Mo(CO)_2(\eta^3\text{-}C_3H_5)$ compounds will therefore also be tested as precatalysts for the epoxidation reaction.

COMPONENTS FOR PROCESSING CONTROL

Materials For High-Temperature Electrochemical Applications. The main activities will be dedicated to novel ionic conductors, mixed conductors and electrocatalysts for fuel cells and other high- or intermediate-temperature electrochemical applications. Some of these studies will be directed to detailed assessment of limitations of known materials in terms of insufficient or non-optimized transport properties, stability and other requirements imposed by processing, or operation conditions, including electrocatalytic effects. Stability issues will be directed to apatite and other novel electrolyte types and their interactions with prospective electrode materials. Attention will be given to stability issues related to reducing conditions, high gradients of chemical potential, materials interactions, chemically or thermally induced changes and stresses developed from processing to operating conditions and to maintenance at room temperature. One will investigate the advantages and restrictions imposed by transport properties of electrolyte and electrode materials on prospective applications under OCV (gas sensors), power generation (fuel cells), and electrochemically driven conditions (electrolysers).

Continuing our previous work on electrodes and electrocatalysts we will extend the studies of materials with oxygen storage ability and its effects on electrode performance; this will be extended to include a new concept of incipient phase transformation to boost oxygen storage/release, and corresponding effects on electrode kinetics, under OCV conditions and also under cathodic or anodic polarization. A number of potential anode materials are being considered for silicate based electrolytes, including some mixed conducting materials containing silica.

Microstructural Effects. Studies of processing and microstructural effects will comprise work on single phase and composite materials. Work on single-phase materials will be mainly related to improving the grain boundary behaviour of solid electrolytes, especially for intermediate temperature applications. Different types of ionic conductors will be studied, including materials with the fluorite structure (*e.g.* cerias), perovskites, apatites and pyrochlore materials. A revision of space charge effects and their dependence on temperature, composition and sintering additives will be considered. We will also attempt to distinguish the ionic and electronic contributions of grain boundaries and to attain a better understanding of their role on bulk transport properties and surface processes, including electrocatalytic effects or surface exchange.

Mixed Conducting Materials and Catalysts for Oxygen Separation or partial Oxidation of Hydrocarbons. The work on mixed conducting materials and their potential use in oxygen separation and fuel processing will continue,

taking advantage of a very wide range of materials studied by our group. We will continue the assessment of materials characteristics (composition, structure, incipient phase change, and other factors) determining preferential formation of partially or fully oxidized species, even in oxygen lean conditions. New studies of fuel processing or conversion directed to lower grade fuels (biogas) requiring specific methods (reforming of methane+carbon dioxide), and/or with very demanding requirements of tolerance to contaminants (sulphur tolerance) will be started. This work will involve novel material formulations, possibly including potential non-oxide electrocatalysts (carbides ou nitrides).

Materials for Other Electrochemical Processes. We will also extend our work on electrode materials for low temperature electrochemical technologies, with emphasis on electrolytic processes under alkaline aqueous media. The work will include the development of ceramic and metal based anodes and their surface modification with electroactive layers (hydroxide or oxy-hydroxide layers). We will attempt to find a comprehensive interpretation for the similarities between ceramic and metal-based anodes, including a detailed examination of the role of different hydroxide layers (single component or binary layers) obtained by chemical or electrochemical methods on ceramic and metallic substrates. The range of working conditions will be extended to more extreme conditions, such as temperatures approaching boiling conditions, higher alkalinity in aqueous solutions or suspensions, and stirring, to obtain guidelines for optimized materials and operation conditions in terms of electrocatalytic activity, degradation and prospective regeneration.

CERAMIC COMPOSITES AND ULTRA-HARD COATINGS FOR MECHANICAL APPLICATIONS

Diamond Coatings. The tribological characterization of nanocrystalline diamond (NCD) will be completed by the use of lubricant fluids, namely for bio-tribological purposes using adequate loads and fluids for screening tests aiming hip-joint implant applications. The machining of abrasive materials such as sintered ceramics, graphite and aluminium alloys will be another line of development for the CVD diamond coated silicon nitride ceramics. The NCD coating of other materials such as ultra-fine or nano-sized hardmetals will also be started. This work will include the production of such substrate materials and the study of the surface treatments needed to enhance the adhesion of CVD diamond coatings. A new pilot plant size HFCVD reactor for the deposition of areas up to 25×25 cm^2 will be designed and constructed, aiming its use for proof of concept of products for the international hard tools market.

Other Hard and Ultra-Hard Materials. Another research area, also related to functional coatings, is being carried out, aiming the aluminium injection industry. ‘Duplex hard coatings on steels for aluminium injection’ is an industry-

oriented research subject where the adhesion, thermochemical and thermomechanical properties of the new materials will be tested and improved. Similarly, industry related research will be focused on technologies and business opportunities, namely unconventional heat treating to improve the wear resistance and on-service dimensional stability of tools and mechanical components such as gears.

Processing Methods. The work plan for the next year is a natural continuation of the research lines started before and will be focussed on the following topics:

(i) Colloidal processing of advanced ceramics in aqueous and non-aqueous environments. New direct shaping methodologies are under development, which will enable de consolidation of large and homogeneous ceramic parts. Well dispersed systems of nanoparticles will be developed aiming at rapid manufacturing and ink-jet printing.

(ii) Development of new glass and glass-ceramic compositions for different applications (structural, optical, biomedicine, electronics, sealants for SOFC, etc.), and study the nucleation and crystallization processes and the properties of the resulting glass-ceramics.

(iii) Preparation of macroporous ceramic bodies with tailored porous microstructures for bone-ingrowth in biomedical applications. Mechanical and *in vitro* and *in vivo*, characterization of the macroporous materials will be carried out in collaboration with other specialized research centres and hospitals.

(iv) Studies of recycling industrial wastes and by-products to prepare new added-value materials. The current research works will be extended to other types of residues in order to find suitable solutions to clean the environment, preserve natural and non-renewable resources, save energy, while improving some of the actually existing products or developing new ones with new functionalities.

A new non-aqueous sol-gel approach applied to the atomic layer deposition technique will be pursued in order to synthesize high-K dielectric materials on different substrates. Such a novel approach will bring several advantages compared to ordinary deposition techniques namely a very low deposition temperature, the ability to avoid a SiO_2 interfacial layer during the growth of an oxide on a silicon substrate and the possibility to precisely control the film thickness. Furthermore, this approach will be extended in order to grow multiferroic nanostructure.

Corrosion Protection Methods. The work will be a continuation of the liness started in recent years. The main studies will be concentrated on the development of active corrosion protective coatings with self-healing ability for different metallic substrates. Novel nanocontainers will be developed in order to incorporate organic corrosion inhibitors into the different coatings. The new nanoreservoirs using layer-by-layer assembly of polyelectrolyte

shells will be developed. Another approach for creation of ‘smart’ nanocontainers will based on employment of layered double hydroxides as controllable release systems for corrosion inhibitors. The new effective corrosion inhibitor explored during last year will be impregnated to the different developed nanocontainers and then introduced to the coatings.

The work on the development of novel nanostructured hybrid sol-gel films for corrosion protection of aluminum and magnesium alloys will be continued. The new more effective sol-gel films for magnesium alloys will be developed. Although magnesium alloys are becoming more important for many industrial applications their high susceptibility to corrosion limits their present use. Therefore, development of new corrosion protection approaches for magnesium alloys is an issue of primer importance. The new functional organosiloxane with high affinity to the magnesium will be used to create novel hybrid sol-gel films.

The work on investigation of the mechanism of corrosion processes and corrosion inhibition will be continued. The aluminum alloy 5083 and magnesium alloys AZ31 and AZ91 will be in main focus. New organic and inorganic corrosion inhibitors will be tested.

The Scanning Vibrating Electrode Technique (SVET) and related techniques (SIET) will be employed to get a fundamental understanding of the localized corrosion processes in the micro-scale. The corrosion processes will be studied in the induced microdefects in the coatings as well as on the bare alloys. The effect of corrosion inhibitors using SVET and SIET methods will be also investigated. Active corrosion protection of weldable primers doped with corrosion inhibitors will be investigated using a wide range of the experimental techniques in the macro- and micro-scale.

MACROMOLECULAR MATERIALS AND LIGNOCELLULOSICS

Lignocellulosics. The chitosan project will focus on the study of the use of the polyols arising from its oxypropylation as macromonomer in the synthesis of polyurethanes and polyesters. Modified chitosans bearing furan and maleimide moieties in modest percentages will be prepared and characterized with the aim of studying the formation of thermally reversible chitosan networks. Work will also begin on the self-assembly of chitosan monolayers with complementary polyelectrolytes bearing negative charges, *e.g.* carboxymethylcellulose.

The Diels-Alder study will enter its 'macromolecular' phase with the synthesis of linear and hyperbranched polymers, the study of the equilibria associated with forward and retro-reactions and the characterization of the materials. The systematic use of UV and NMR spectroscopy, as well as of viscosity and GPC measurements will provide precious information about the physical chemistry of these systems. Among the different points of interest here, the growth and backward steps in the synthesis of dendrimers, applied to each generation, will represent an important aspect of this project.

The polymerization of the suberin monomer mixture will enter an intensive phase with the extension of the catalytic systems to be tested and the optimization of those giving the most promising results. The ensuing materials will receive a thorough characterization in terms of both structure and physical properties. The applications of these polyesters are also a key point of this phase, notably as adhesives and coatings, with particular emphasis on natural substrates like cellulose fibres, cork particle and panels. The study of polymer syntheses involving suberin in the presence of these substrates will also be explored with the aim of generating covalently bound supramolecular architecture.

Within the scope of the controlled heterogeneous modification of cellulose fibers, future studies will focus on the investigation of new strategies and on the application of the new cellulose derivatives already obtained. Composites materials with fatty acids modified cellulose fibers and different polymeric matrices (polyethylene and biodegradable polymers namely polylactic acid and polycaprolactone) will be prepared and characterized in collaboration. The approaches developed and optimized for the modification of plant cellulose fibers will be extended to other natural polymers (chitin, chitosan and starch) and as well as to other cellulose substrates (bacterial cellulose and microfibrillated cellulose).

As far as inorganic nanoparticles/cellulose hybrids are concerned, future work will be focused on the study of possible applications including photocatalysis, antibacterial activity and incorporation in polymeric matrixes.

Depending on the results obtained, different strategies such as the deposition of silver nanoparticles at TiO_2/cellulose surfaces to enhance the photocalytic behaviour and antibacterial properties will be investigated. The use of bacterial cellulose as template for the controlled growth of metallic nanoparticles will be assessed.

The work on polyoxometalate (POM) catalysis in oxygen delignification of kraft pulp, using POMs with relatively high redox potential, will be continued. The special emphasis will be placed on the study of the electrochemical re-oxidation of POMs instead of biocatalytic re-oxidation with laccase aiming to improve the process efficiency.

The study of the detail mechanisms of substituted phenols oxidation with $[\alpha\text{-}SiV^{V}W_{11}O_{40}]^{5-}$ and $[\alpha\text{-}SiMn^{III}W_{11}(H_2O)O_{39}]^{5-}$ will de carried out..

The development of a new electronic tongue (ET) multisensor system for the detection of particular structures of polyoxometalates containing vanadium (IV/V) atoms and for the monitoring of their behaviour in redox catalysis will be continued.

The study of the paper surface modification with perspective formulations prepared by sol-gel will continue. The formulations of optimised composition will be deposited on different types of papers using novel sophisticated equipment installed in RAIZ (double roll sizing press) and the printing properties of coated paper will be evaluated (ink jet and off set printing). The synthesis of new formulations with specific catalytic properties for the pulp/paper coating (functional materials) will be started this year.

The ESI-MS studies for the structural characterization of lignin will continue. The studies on specific structural features of hardwood hemicelluloses employing ESI-MS/MS and MALDI-TOF/TOF will be continued.

The study of the chemical composition of macromolecular components of the natural hybrid of *Paulownia elongata* and *Paulownia fortunei* will be further developed. Special attention will be paid to the evaluation of pulp properties and papermaking potential of this new fast growing wood.

Two research projects on the utilization of by-products from the acid sulphite pulping of *E. globulus* wood (condensates from pulping liquor evaporation and the components of sulphite spent liquor) will be carried out. Special attention will be paid to the bioprocessing of sulphite spent liquor for the production of ethanol, xylitol and microbial proteins.

Work on the preparation of polymer based NCs via living polymerisation mechanisms in miniemulsion will be developed. Attempts will be made to prepare block copolymers and to functionalise end groups for use as bio labels as well as to investigate further the photoluminescent properties of those materials.

As regards the polysaccharide NC project, exopolysaccharides produced by *Rhyzobium sp* will be tested and the preparation of thin films from such composites will receive significant attention. The effect of $SiO_2@Fe_2O_3$ nanoparticles will also be investigated.

The modelling and scale-up studies of the oxypropylation reaction of cork residual powder will be continued.
The joint (UA/TUHH) MSc theses will continue along the following lines: (i) the conducting properties of the NCs prepared will be investigated; (ii) the modified CNFs will be dispersed in a polyamide matrix and the mechanical properties studied; (iii) upon understanding the role of the polymer in cement mortars new formulations will be tested including CNTs in collaboration with Weber cimenfix.

Other Polymer Systems and Materials. Work will continue on the shear-induced solidification effect on melt morphology developed by amorphous and semicrystalline polymers. Three papers will be submitted soon on: size of precursor structures in critically sheared polymers melts; effect of melt memory on the shear-induced non-isothermal crystallization of polypropylene and evaluation of the size of precursor structures; shear induced non-isothermal crystallization of low density polyethylene. Other work dealing with the physical meaning of oscillatory shear and steady shear flow activation energies, the estimation of chain dimensions at the steady-state and on the physical nature of entanglements is in progress.
The predictive, analytical (non-simulative) cooperative segmental theory of materials dynamics (CSTMD) will continue to be developed and applied to the dynamic behaviour of polymers. The installation of the Hyper DSC instrumentation in the Laboratory of Thermal Analyses will be carried out.

BIOMEDICAL AND BIOMIMETIC MATERIALS

Biological, Structural and Identification FTIR, NMR and Other Studies. Chromium compounds, in different oxidation states, will continued to be tested in *in vivo* studies with mice in order to localise degenerative damages in animal target organs and quantify the amounts of this element in those organs, using. histology, histochemistry and ultra-structural techniques. Chromium picolinate, a dietary supplement suspict of causing health damage, will be used for *in vivo* studies with mice, in order to evaluate possible effects on target organs. The toxic effects of titanium compounds frequently used as chemotherapeutic agents will be investigated, namely on the male mice reproductive system. Traditional diagnostic techniques (biopsies) will continued to be compared with faster, reliable and cheaper ones (flow citometry and fluorescence microscopy) in order to quantify ‘dose-effect’ relationships.
The NMR characterisation of biofluids and biological tissues will be pursued, with extension and applications to (i) study of pregnancy disorders, (ii) breast and thyroid cancer, (iii) heart failure and diabetes incidence, (iv) detection of inborn errors.

Recently developed biomaterials based on magnetic nanoparticles (magnetite/carrageenan) will be chemically derivatised and tested in near-physiological conditions.

NMR-based models for the routine control of beers and brewing process should be implemented as service for the brewing company. Projects on spectroscopic detection of beer ageing and contamination will be carried out.

The role of several depolymerising enzymes and fungi on the detailed nanostructure of cork will be continued, with strong emphasis on the direct characterisation of the complex material by NMR and FTIR methods.

The interaction of the heme-binding proteins murine p22HBP and human SOUL with functional porphyrins will be studied using NMR and fluorescence quenching in order to assess their binding characteristics. The X-ray and NMR structures of hSOUL will be initiated. Functional studies of mHBP and hSOUL will be started. Molecular modelling of these systems will also be initiated.

Glass and Ceramic-Based Biomaterials. Continuing current research lines, we will address the colloidal processing of calcium phosphate-base ceramics, including well dispersed systems of nanoparticles aiming at rapid manufacturing techniques, and the development of new glass and glass-ceramic compositions for biomedical applications, and study of the nucleation and crystallization processes and the properties of the resulting glass-ceramics. The preparation of macroporous ceramic bodies and ceramic-biopolymer composites with tailored porous microstructures for bone-ingrowth in biomedical applications, and the mechanical, *in vitro* and *in vivo* characterization of the macroporous materials will be carried out in collaboration with other specialized research centres and hospitals.

Research on the developed glasses and glass-ceramics will progress this year with a main emphasis on the study of the polymer-based composites where those materials provide the reinforcing phase. *In vitro* tests in simulated physiological fluids will be performed in all composites to assess their mineralization capability. A number of selected composites will be loaded with therapeutic agents to study the drug leaching rate of various medicals. *In vitro* tests in osteoblast cell cultures will also start this year, aiming at studying cell adhesion and proliferation on those materials.

The releasing behaviour of the spray dried porous granules for drugs and bioactive substances in solutions will be studied at physiological conditions, as well as the evaluation of the influence of the porosity of the material on the release profiles. The in-vitro release of 5-Flourouracil will be tested by immersing the granules in phosphate buffered solution with pH 7.4 at 37 ºC. The measurement of the released amount of 5-FU will be performed by UV-Vis spectroscopy.

Other New Biomaterials. Using the surfactant production characteristic of the *Yarrowia lipolytica* and its ability to degrade paraffins a study concerning its use on biodegradation of fuels will be conducted.

Studies of the biodegradation of non-conventional solvents such as ionic liquids and studies of their toxicity on model organisms will also be conducted.

PROCESS DEVELOPMENT AND OPTIMISATION

Phase Behaviour and Transport Properties Relevant in Environmental Protection, Chemical Processing and New Materials Production. On fuels and biofuels, our work will be moving from conventional fuels towards biofuels or blends of biofuels with conventional fuels. Modelling phase equilibria during conventional biodiesel production by transesterification will be carried using the CPA-EoS. Measurements of water solubility in fuels and ternary liquid liquid equilibria of oils alcohols and water or glycerol, esters and alcohols have been carried and will be modelled. Concerning the formulation of biodiesels studies will be lead to study the acceptable regions of mixture of different types of oil to meet the iodine index and the cloud point specifications.

The models previously developed for the wax formation in conventional fuels will be extended to the description of biofuels. Studies of wax formation in biodiesels and conventional diesel plus biodiesel mixtures will be carried out.

Concerning bioethanol, studies will be carried out of their blends with hydrocarbons to evaluate the limits of their mixture in the formulation of new fuels. Surface tensions and liquid liquid equilibria will be addressed.

On phase change materials, alternatives to paraffins from renewable sources will be investigated. Special emphasis will be given to fatty acids and their esters as secondary products from biofuels production. Thermophysical characterization of these compounds and mixtures will be carried out.

The studies with ionic liquids will be continued into two different directions. One is the attempting to better understand the liquid structure of these compounds. Studies of enthalpies of vaporization will be published and mixtures with other solvents such as water and alcohols will also be investigated to reveal about the molecular interactions in the liquid phase. The second direction is their environmental impact. The new REACH regulations require that producers have a good understanding of the toxicity, biodegradability and dispersion into the environment of new chemicals. Since these compounds have negligible vapour pressures their release into the environment can only take place through liquid effluents. Their solubility in water and in aqueous solutions will be measured. Studies will also be conducted of the octanol-water partition coefficients and of their toxicity towards industrial microorganisms.

On the field of polymers and polymeric solutions, the encapsulation of hydrophilic and hydrophobic drugs using biodegradable polymers will be addressed. The study of biodegradable polymers in non conventional solvents such as ionic liquids will be measured in the laboratory and modelled with the models developed in the previous year. Films with oxygen scavengers will also be prepared and the barrier properties (diffusion and sorption) will be measured.

The systematic characterization of the perflurocarbon systems will be continued, by measuring viscosities. The study of the water in fluorocarbon (cyclic and aromatics) will be performed by both measuring the liquid-liquid equilibria and modelling it with COSMO-RS. A study of the phase equilibria of systems involving flurocarbons and ionic liquids will be carried out.

New Chemical Processes. We will continue to study the transformation of carbohydrates into furfural and 5-hydromethyl furfural using nanoporous acid catalysts. Several bulk and ordered mesoporous silica-supported zirconias will be prepared and examined as acid catalysts for the dehydrocyclisation of xylose into furfural. Concerning the catalyst preparation we will investigate the influence of promoters (*e.g.* Al) and the sulfating agent. Attempting to improve the textural properties and acid site distribution, modified zirconias will be supported on ordered mesoporous silica or prepared using surfactants as structure-directing agents. These catalytic results will be compared to those obtained with H_2SO_4. In a further study, zeolite-like materials will be used as precursors to prepare materials presenting strong acidity in an open porosity for the dehydrocyclisation of hexoses and pentoses. The preparation method will involve the exfoliation of lamellar aluminosilicates.

Glucose is an important monomer unit of the abundant natural polysaccharide cellulose and is likely to become one of the most important starting chemicals as a result of the increasing dependence of society on biomass resources for sustainability. One of the primary reactions of glucose is base-catalyzed isomerization into fructose. Work will be initiated on the isomerization of glucose over microporous zeolite-like solids containing non-framework and/or framework alkali metals, including some materials that were discovered at CICECO. The catalytic results will be compared to those obtained with commercial zeolite Na-X or aqueous NaOH.

SECTION 4 SCIENTIFIC PRODUCTION

UNTIL 31ST DECEMBER 2006

PhD THESES

DEVELOPMENT AND CHARACTERIZATION OF NOVEL HYDROPHILIC, PARTIALLY DEGRADABLE AND BIOACTIVE ACRYLIC BONÉ CEMENTS (HDBCS)
BOESEL, LF
REIS, R; FERNANDES, MHV
UNIVERSITY OF MINHO 2006

ENCAPSULAÇÃO DE COMPLEXOS METÁLICOS EM CICLODEXTRINAS. SÍNTESE E ANÁLISE ESTRUTURAL
FERNANDES, JA
RIBEIRO CLARO, PJA; GONÇALVES IS
UNIVERSITY OF AVEIRO 2006

ESTUDO DO COMPORTAMENTO HIDRÁULICO, MECÂNICO E QUÍMICO DE BARREIRAS HIDRÁULICAS VERTICAIS, COMPOSTAS POR SOLO RESIDUAL, BENTONITA E CIMENTO SOB AÇÃO DE SUBSTÂNCIAS AGRESSIVAS
LEMOS, RG
CONSOLI, NC; HEINECK, KS; FERREIRA, JMF
FEDERAL UNIVERSITY OF RIO GRANDE DO SUL, BRASIL 2006

ESTUDOS DE DISTORÇÕES DA REDE E CORRELAÇÕES ELECTRÓNICAS EM MANGANITES UTILIZANDO SONDAS LOCAIS/ LOCAL PROBE STUDIES ON LATTICE DISTORTIONS AND ELECTRONIC CORRELATIONS IN MANGANITES
LOPES, AML
AMARAL, VS; CORREIA, JG
UNIVERSITY OF AVEIRO 2006

ESTUDOS MAGNÉTICOS E ESTRUTURAIS EM NANOPARTÍCULAS DE ÓXIDOS DE FERRO EM MATRIZES HÍBRIDAS/ STRUCTURAL AND MAGNETIC STUDIES ON IRON OXIDE NANOPARTICLES IN HYBRID MATRICES
OLIVEIRA E SILVA, NJ
AMARAL, VS; CARLOS, LD
UNIVERSITY OF AVEIRO 2006

HETEROGENEIZAÇÃO DE COMPLEXOS METÁLICOS COM ACTIVIDADE CATALÍTICA OU FOTOQUÍMICA EM DIVERSOS SUPORTES
GAGO, SMN
SANTOS, TM; GONCALVES, IMS
UNIVERSITY OF AVEIRO 2006

INFLUÊNCIA DAS CONDIÇÕES DE RECRISTALIZAÇÃO NAS PROPRIEDADES SUPERCONDUTORAS DE FIBRAS CERÂMICAS CRESCIDAS POR FUSÃO DE ZONA COM LASER ASSISTIDO POR CORRENTE ELÉCTRICA
CARRASCO, MFG
COSTA, FM; AMARAL, VS
UNIVERSITY OF AVEIRO 2006

MODELAÇÃO ESTATÍSTICA DA COMPOSIÇÃO GRANULOMÉTRICA DE UM BETÃO REFRACTÁRIO DE ALUMINA AUTO-ESCOANTE SEM CIMENTO
SILVA, AP
SEGADÃES, AM; DEVEZAS, TC
UNIVERSITY OF BEIRA INTERIOR 2006

NICKEL- AND COBALT-CONTAINING MIXED CONDUCTORS FOR SOFC ELECTRODE APPLICATIONS: RELATIONSHIPS BETWEEN TRANSPORT, PHYSICOCHEMICAL AND ELECTROCHEMICAL PROPERTIES
TSIPIS, EV
FRADE, JR; KHARTON, VV
UNIVERSITY OF AVEIRO 2006

NMR OF CRYSTALLINE INORGANIC-ORGANIC HYBRID MATERIALS: METHODS AND APPLICATIONS
MAFRA, LMM
ROCHA, JCMCG; FERNANDEZ, C
UNIVERSITY OF AVEIRO 2006

NOVEL IRON-CONTAINING MATERIALS WITH FAST OXYGEN IONIC TRANSPORT
SHAULA, AL
MARQUES, FMB; KHARTON, VV
UNIVERSITY OF AVEIRO 2006

OXIPROPILAÇÃO DE PÓ DE CORTIÇA - PROCESSO E MODELAÇÃO CINÉTICA
GUEDES, AMFM
CRUZ PINTO, JJC
UNIVERSITY OF AVEIRO 2006

PREPARAÇÃO E CARACTERIZAÇÃO FÍSICA DE VIDROS E VIDROS CERÂMICOS CONTENDO NANOCRISTAIS DE NIOBATO DE LÍTIO (LINBO3
GRAÇA, MPF
VALENTE, MA; FERREIRA DA SILVA, MG
UNIVERSITY OF AVEIRO 2006

PROCESSAMENTO DE NITRETO DE ALUMINIO (ALN) EM MEIO AQUOSO
OLHERO, SMH
FERREIRA JMF
UNIVERSITY OF AVEIRO 2006

PRODUÇÃO DE LACASE PARA POTENCIAL APLICAÇÃO COMO OXIDANTE NA INDÚSTRIA PAPELEIRA
TAVARES, APM
COUTINHO, JAP; XAVIER, AMB
UNIVERSITY OF AVEIRO 2006

SOLUBILIDADE DE GASES EM POLÍMEROS BIODEGRADÁVEIS
OLIVEIRA, NS
MARRUCHO, IM; FERREIRA, A
UNIVERSITY OF AVEIRO 2006

STRUCTURAL AND MAGNETIC STUDIES ON IRON OXIDE NANOPARTICLES IN HYBRID MATRICES
SILVA, NJO
AMARAL, VS; CARLOS, LD
UNIVERSITY OF AVEIRO 2006

VALORIZAÇÃO DE LAMAS GALVÂNICAS POR VIA HIDROMETALÚRGICA
SILVA, JE
CASTRO, F; SOARES, D; LABRINCHA, JA
UNIVERSITY OF MINHO 2006

VALORIZAÇÃO DE RESÍDUOS INDUSTRIAIS COMO FONTE ALTERNATIVA MINERAL: COMPOSIÇÕES CERÂMICAS E CIMENTÍCEAS
RAUPP-PEREIRA, F
LABRINCHA, JA; SEGADÃES, AM
UNIVERSITY OF AVEIRO 2006

MSc THESES

DESENVOLVIMENTO DE VITROCERÂMICOS CO-SINTERIZADOS DO SISTEMA ANORTITE-DIOPSITE-APATITE PARA APLIAÇÕES À MICROELÉCTRONICA
MARQUES, VMF
FERREIRA, JMF
UNIVERSIDADE DE AVEIRO 2006

DESIGN DE COMUNICAÇÃO PARA RECICLADOS NO DOMÍNIO AGRÍCOLA
LOPES, JMPB
VIEIRA, JM; COELHO DIAS, LN
UNIVERSIDADE DE AVEIRO 2006

DESIGN E SELECÇÃO DE MATERIAIS: NOVOS CONTRIBUTOS DIGITAIS PARA UMA ESCOLHA FUNDAMENTADA
RAMALHETE, PM
SENOS, AMR; AGUIAR, C
UNIVERSIDADE DE AVEIRO 2006

EFEITO DA CERAMIZAÇÃO NA REACTIVIDADE SUPERFICIAL DE VIDROS DE CA-P-SI-MG
ALMEIDA, NAF
FERNANDES, MHV
UNIVERSIDADE DE AVEIRO 2006

ELÉCTRODOS MODIFICADOS COM FILMES DE CLORETO DE POLIALILAMÓNIO
SILVA, CP
CARAPUÇA, HMS
UNIVERSIDADE DE AVEIRO 2006

ESTUDO COMPARATIVO DE ARGAMASSAS INDUSTRIAIS
PAULO, RN
FERREIRA, VM; FONSECA, AT
UNIVERSIDADE DE AVEIRO 2006

ESTUDOS DA TOXICIDADE DE CHITOSANO MODIFICADO: AVALIAÇÃO NO RATINHO
ANDRADE, AC
PEREIRA, ML; BARROS, M
UNIVERSIDADE DE AVEIRO 2006

HÁBITOS ALIMENTARES/ESTILOS DE VIDA: CONHECER E INTERVIR PARA PREVENIR, UMA PROPOSTA EDUCACIONAL
DIAS, ML
PEREIRA, ML; MATOS, MM
UNIVERSIDADE DE AVEIRO 2006

HEPATOXICIDAE DE COMPOSTOS DE ORIGEM VEGETAL: ESTUDOS IN VITRO
RAMOS, A
PEREIRA-WILSON, C; PEREIRA, ML
UNIVERSIDADE DE AVEIRO 2006

HIGH CYCLE FATIGUE INVESTIGATION OF CARBON FIBRE REINFORCED MODEL COMPOSITES
WAQAS BIN NAJIB
LOPES, AB; PYRZ, R; SCHJØDT-THOMSEN, J
UNIVERSIDADE DE AVEIRO AND UNIVERSIDADE DE AALBORG (EMMS) 2006

INCORPORAÇÃO DE SUBPRODUTOS DA INDÚSTRIA DE CELULOSE EM MATERIAIS DE CONSTRUÇÃO CIVIL
MODOLO, RE
LABRINCHA, JA; FERREIRA, VM
UNIVERSIDADE DE AVEIRO 2006

MATERIAIS FOSFO-CÁLCICOS PARA UTILIZAÇÃO EM SISTEMAS DE LIBERTAÇÃO DE FÁRMACOS
SANTOS, C
ALMEIDA, MM; COSTA, MEV
UNIVERSIDADE DE AVEIRO 2006

NOVAS APLICAÇÕES DE POLIOXOMETALATOS: MATERIAIS HÍBRIDOS ORGÂNICO/INORGÂNICOS COM POSSÍVEIS PROPRIEDADES DE ÓPTICA NÃO LINEAR
SANTOS, FMA
CAVALEIRO, AMV
UNIVERSIDADE DE AVEIRO 2006

O DESTINO FINAL DOS (RESÍDUOS DE) METAIS PESADOS: O CASO DOS COMPOSTOS DE CRÓMIO
SARABANDO, CMF
SANTOS, TM; MAGALHÃES, MCF
UNIVERSIDADE DE AVEIRO 2006

PREPARAÇÃO DE HIDROXIAPATITE NANOMÉTRICA COM CARACTERÍSTICAS ADEQUADAS AO PROCESSAMENTO COLOIDAL PARA APLICAÇÕES BIOMÉDICAS
REBELO, AHS
FERREIRA, JMF
UNIVERSIDADE DE AVEIRO 2006

SYNTHESIS AND CHARACTERIZATION OF FUNCTIONALIZED DOUBLE-WALLED CARBON NANOTUBE/POLY(METHYLMETHACRYLATE) NANOCOMPOSITES
TRENGGONO, A
BARROS-TIMMONS, A; SCHULTE, K
UNIVERSIDADE DE AVEIRO AND TECHNISCHE UNIVERSITAT HAMBURG-HARBURG 2006

EVAPORATION-INDUCED SELF-ASSEMBLY (EISA) AT ITS LIMIT: ULTRATHIN, CRYSTALLINE PATTERNS BY TEMPLATING OF MICELLAR MONOLAYERS
BREZESINSKI, T; GROENEWOLT, M; GIBAUD, A; PINNA, N; ANTONIETTI, M; SMARSLY, BM
ADVANCED MATERIALS, 18 (17): 2260 SEP 5 2006

LAYER-BY-LAYER ASSEMBLED NANOCONTAINERS FOR SELF-HEALING CORROSION PROTECTION
SHCHUKIN, DG; ZHELUDKEVICH, M; YASAKAU, K; LAMAKA, S; FERREIRA, MGS; MOHWALD, H
ADVANCED MATERIALS, 18 (13): 1672 JUL 4 2006

NANOSCALE FERROELECTRICS: PROCESSING, CHARACTERIZATION AND FUTURE TRENDS
GRUVERMAN, A; KHOLKIN, A
REPORTS ON PROGRESS IN PHYSICS, 69 (8): 2443-2474 AUG 2006

OPTICAL DETECTION OF SOLID-STATE CHIRAL STRUCTURES WITH UNPOLARIZED LIGHT AND IN THE ABSENCE OF EXTERNAL FIELDS
ANANIAS, D; PAZ, FA; CARLOS, LD; GERALDES, CFGC; ROCHA, J
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION, 45: 7938-7942 2006

SUBERIN: A PROMISING RENEWABLE RESOURCE FOR NOVEL MACROMOLECULAR MATERIALS
GANDINI, A; PASCOAL, C; SILVESTRE, AJD
PROGRESS IN POLYMER SCIENCE, 31 (10): 878-892 OCT 2006

SURFACTANT-MEDIATED GENERATION OF ISO-ORIENTED DENSE AND MESOPOROUS CRYSTALLINE METAL-OXIDE LAYERS
BREZESINSKI, T; GROENEWOLT, M; PINNA, N; AMENITSCH, H; ANTONIETTI, M; SMARSLY, BM
ADVANCED MATERIALS, 18 (14): 1827 JUL 18 2006

THE FIRST STRUCTURE FROM THE SOUL/HBP FAMILY OF HEME-BINDING PROTEINS, MURINE P22HBP
DIAS, JS; MACEDO, AL; FERREIRA, GC; PETERSON, FC; VOLKMAN, BF; GOODFELLOW, BJ
J BIOL CHEM, 281: 31553-31561 2006

ACUTE EFFECTS OF 3,4-DICHLOROANILINE ON BIOMARKERS AND SPLEEN HISTOLOGY OF THE COMMON GOBY POTAMOCHISTUS MICROPS
PASTORINHO, M; PEREIRA, ML; MORGADO, F; GUILHERMINO, L
CHEMOSPHERE, 62(8), PP 1333-1339 2006

AIN CERAMICS PROCESSED BY AQUEOUS SLIP CASTING
OLHERO, SM; MIRANZO, P; FERREIRA, JMF
JOURNAL OF MATERIALS RESEARCH, 21 (10): 2460-2469 OCT 2006

BIS- AND TRIS-(3-AMINOPROPYL) DERIVATIVES OF 14-MEMBERED TETRAAZAMACROCYCLES CONTAINING PYRIDINE: SYNTHESIS, PROTONATION AND COMPLEXATION STUDIES
GUERRA, KP; DELGADO, R; DREW, MGB; FELIX, V
DALTON TRANSACTIONS, (34): 4124-4133 2006

BROAD-BAND DIELECTRIC SPECTROSCOPY ANALYSIS OF RELAXATIONAL DYNAMICS IN MN-DOPED SRTIO3 CERAMICS
TKACH, A; VILARINHO, PM; KHOLKIN, AL; PASHKIN, A; VELJKO, S; PETZELT, J
PHYSICAL REVIEW B, 73 (10): ART. NO. 104113 MAR 2006

CALIX[4]AZACROWNS AS NOVEL MOLECULAR SCAFFOLDS FOR THE GENERATION OF VISIBLE AND NEAR-INFRARED LANTHANIDE LUMINESCENCE
OUESLATI, I; FERREIRA, RAS; CARLOS, LD; BALEIZAO, C; BERBERAN-SANTOS, MN; DE CASTRO, B; VICENS, J; PISCHEL, U
INORGANIC CHEMISTRY, 45 (6): 2652-2660 MAR 20 2006

CELL SURFACE CHARACTERIZATION OF YARROWIA LIPOLYTICA IMUFRJ 50682
AMARAL, PFF; LEHOCKY, M; BARROS-TIMMONS, AMV; ROCHA-LEAO, MHM; COELHO, MAZ; COUTINHO, JAP
YEAST, 23 (12): 867-877 SEP 2006

CHARACTERIZATION OF MICROPOROUS ALUMINOPHOSPHATE IST-1 USING H-1 LEE-GOLDBURG TECHNIQUES
MAFRA, L; ROCHA, J; FERNANDEZ, C; PAZ, FAA
JOURNAL OF MAGNETIC RESONANCE, 180 (2): 236-244 JUN 2006

COMPARATIVE STUDY OF AL-MCM MATERIALS PREPARED AT ROOM TEMPERATURE WITH DIFFERENT ALUMINIUM SOURCES AND BY SOME HYDROTHERMAL METHODS
CARROTT, MMLR; CONCEICAO, FL; LOPES, JM; CARROTT, PJM; BERNARDES, C; ROCHA, J; RIBEIRO, FR
MICROPOROUS AND MESOPOROUS MATERIALS, 92 (1-3): 270-285 JUN 20 2006

COMPOSITION OF BEER BY H-1 NMR SPECTROSCOPY: EFFECTS OF BREWING SITE AND DATE OF PRODUCTION
ALMEIDA, C; DUARTE, IF; BARROS-TIMMONS, A; RODRIGUES, J; SPRAUL, M; GIL, AM
JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, 54 (3): 700-706 FEB 8 2006

COMPUTATIONALLY-ASSISTED APPROACH TO THE VIBRATIONAL SPECTRA OF MOLECULAR CRYSTALS: STUDY OF HYDROGEN-BONDING AND PSEUDO-POLYMORPHISM
NOLASCO, MM; AMADO, AM; RIBEIRO-CLARO, PJA
CHEMPHYSCHEM, 7 (10): 2150-2161 OCT 13 2006

CRYSTAL STRUCTURE OF LA6MG4TA2W2O24 OXIDE: A REPRESENTATIVE OF A NOVEL A(3N)B ' 2NB " O-2N(12N) HOMOLOGOUS SERIES WITH N=2
KHALYAVIN, DD; LOPES, AB; SENOS, AMR; MANTAS, PQ
CHEMISTRY OF MATERIALS, 18 (16): 3843-3849 AUG 8 2006

CRYSTAL STRUCTURE OF METASTABLE PEROVSKITE BI(MG1/2TI1/2)O-3: BI-BASED STRUCTURAL ANALOGUE OF ANTIFERROELECTRIC PBZRO3
KHALYAVIN, DD; SALAK, AN; VYSHATKO, NP; LOPES, AB; OLEKHNOVICH, NM; PUSHKAREV, AV; MAROZ, II; RADYUSH, YV
CHEMISTRY OF MATERIALS, 18 (21): 5104-5110 OCT 17 2006

CRYSTAL STRUCTURE, SOLID-STATE NMR AND PHOTOLUMINESCENCE STUDIES OF ORGANIC-INORGANIC HYBRID MATERIALS (HL)6[GE6(OH)6(HEDP)6]·2(L)·NH2O, L=HQN OR PHEN
MAFRA, L; PAZ, FA; SHI, FN; FERREIRA, RAS; CARLOS, LD; TRINDADE, T; FERNANDEZ, C; KLINOWSKI, J; ROCHA, J
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, 4741-4751 2006

DEFECT FORMATION IN LAGA(MG,NI)O3-DELTA: A STATISTICAL THERMODYNAMIC ANALYSIS VALIDATED BY MIXED CONDUCTIVITY AND MAGNETIC SUSCEPTIBILITY MEASUREMENTS
NAUMOVICH, EN; KHARTON, VV; YAREMCHENKO, AA; PATRAKEEV, MV; KELLERMAN, DG; LOGVINOVICH, DI; KOZHEVNIKOV, VL
PHYSICAL REVIEW B, 74 (6): ART. NO. 064105 AUG 2006

DEPENDENCE OF DIELECTRIC PROPERTIES OF MANGANESE-DOPED STRONTIUM TITANATE CERAMICS ON SINTERING ATMOSPHERE
TKACH, A; VILARINHO, PM; KHOLKIN, AL
ACTA MATERIALIA, 54 (20): 5385-5391 DEC 2006

DESULFOVIBRIO GIGAS FERROEDOXIN II: REDOX STRUCTURAL MODULATION OF THE [3FE-4S] CLUSTER
RODRIGUES, PM; MACEDO, AL; GOODFELLOW, BJ; MOURA, I; MOURA, JJG
JOURNAL OF BIOLOGICAL INORGANIC CHEMISTRY, 11: 307-315 2006

DEVELOPMENT OF NOVEL BRUSH-TYPE CHIRAL STATIONARY PHASES BASED ON TERPENOID SELECTORS: HPLC EVALUATION AND THEORETICAL INVESTIGATION OF ENANTIOSELECTIVE BINDING INTERACTIONS
MOITEIRO, C; FONSECA, N; CURTO, MJM; TAVARES, R; LOBO, AM; RIBEIRO-CLARO, P; FELIX, V; DREW, MGB
TETRAHEDRON: ASYMMETRY, 17: 3248–3264 2006

DIOXADIAZA- AND TRIOXADIAZA-MACROCYCLES CONTAINING ONE DIBENZOFURAN UNIT SELECTIVE FOR CADMIUM
LI, F; DELGADO, R; DREW, MGB; FELIX, V
DALTON TRANSACTIONS, (45): 5396-5403 2006

DIOXOMOLYBDENUM(VI) MODIFIED MESOPOROUS MATERIALS FOR THE CATALYTIC EPOXIDATION OF OLEFINS
BRUNO, SM; FERNANDES, JA; MARTINS, LS; GONCALVES, IS; PILLINGER, M; RIBEIRO-CLARO, P; ROCHA, J; VALENTE, AA
CATALYSIS TODAY, 114 (2-3): 263-271 MAY 15 2006

EFFECT OF SEED LAYER THICKNESS ON TEXTURE AND ELECTRICAL PROPERTIES OF SOL-GEL DERIVED (BA0.8SR0.2) TIO3 THIN FILMS
FU, Z; WU, AY; VILARINHO, PM
CHEMISTRY OF MATERIALS, 18 (14): 3343-3350 JUL 11 2006

EVALUATION OF THE EFFECT OF MELT MEMORY ON SHEAR-INDUCED CRYSTALLIZATION OF LOW-DENSITY POLYETHYLENE
ZHANG, WD; MARTINS, JA
MACROMOLECULAR RAPID COMMUNICATIONS, 27 (13): 1067-1072 JUL 5 2006

EXFOLIATED TITANATE, NIOBATE AND TITANONIOBATE NANOSHEETS AS SOLID ACID CATALYSTS FOR THE LIQUID-PHASE DEHYDRATION OF D-XYLOSE INTO FURFURAL
SHCHUKIN, DG; ZHELUDKEVICH, M; YASAKAU, K; LAMAKA, S; FERREIRA, MGS; MOHWALD, H
JOURNAL OF CATALYSIS, 244 (2): 230-237 DEC 10 2006

EXPERIMENTAL DETERMINATION OF THE NONEXTENSIVE ENTROPIC PARAMETER Q
GRUVERMAN, A; KHOLKIN, A
PHYSICAL REVIEW B, 73 (9): ART. NO. 092401 MAR 2006

FAST SHAPE EVOLUTION OF TIN MICROCRYSTALS IN COMBUSTION SYNTHESIS
LIU, GH; CHEN, KX; ZHOU, HP; TIAN, JJ; PEREIRA, C; FERREIRA, JMF
CRYSTAL GROWTH & DESIGN, 6 (10): 2404-2411 OCT 4 2006

FEEDBACK ACTIVE COATINGS BASED ON INCORPORATED NANOCONTAINERS
SHCHUKIN, DG; ZHELUDKEVICH, M; MOEHWALD, H
JOURNAL OF MATERIALS CHEMISTRY, 16 (47): 4561-4566 2006

FERROELECTRIC DOMAINS AND TWINNING IN HIGH-QUALITY SRBI2TA2O9 SINGLE CRYSTALS
AMORIN, H; SHVARTSMAN, VV; BDIKIN, IK; COSTA, MEV; KHOLKIN, AL; PERTSEV, NA
APPLIED PHYSICS LETTERS, 88 (6): ART. NO. 062903 FEB 6 2006

FORMATION OF BETA-SIALON MICROPALINGS CONSISTING OF NANORODS DURING COMBUSTION SYNTHESIS
LIU, GH; CHEN, KX; ZHOU, HP; REN, KG; LI, JT; PEREIRA, C; FERREIRA, JMF
SCRIPTA MATERIALIA, 55 (10): 935-938 NOV 2006

FORMATION OF HYDROXYAPATITE ONTO GLASSES OF THE CAO-MGO-SIO2 SYSTEM WITH B2O3, NA2O, CAF2 AND P2O5 ADDITIVES
AGATHOPOULOS, S; TULYAGANOV, DU; VENTURA, JMG; KANNAN, S; KARAKASSIDES, MA; FERREIRA, JMF
BIOMATERIALS, 27 (9): 1832-1840 MAR 2006

GAS PERMEATION PROPERTIES OF POLY(LACTIC ACID) REVISITED
BAO, L; DORGAN, JR; KNAUSS, D; HAIT, S; OLIVEIRA, NS; MARRUCHO, IM
JOURNAL OF MEMBRANE SCIENCE, 285 (1-2): 166-172 NOV 15 2006

GLASSY CARBON ELECTRODES COATED WITH POLY(ALLYLAMINE HYDROCHLORIDE), PAH: CHARACTERIZATION STUDIES AND APPLICATION TO ION-EXCHANGE VOLTAMMETRY OF TRACE LEAD(II) AT COMBINED PAH/MERCURY FILM ELECTRODES
SILVA, CP; CARAPUCA, HM
ELECTROCHIMICA ACTA, 52 (3): 1182-1190 NOV 12 2006

GRAIN BOUNDARY CONDUCTIVITY OF CE(0.8)LN(0.2)O(2-DELTA) CERAMICS (LN = Y, LA, GD, SM) WITH AND WITHOUT CO-DOPING
PEREZ-COLL, D; MARRERO-LOPEZ, D; NUNEZ, P; PINOL, S; FRADE, JR
ELECTROCHIMICA ACTA, 51 (28): 6463-6469 SEP 15 2006

HEPTA-COORDINATE HALOCARBONYL MOLYBDENUM(II) AND TUNGSTEN(II) COMPLEXES AS HETEROGENEOUS POLYMERIZATION CATALYSTS
GIMENEZ, J; NUNES, CD; VAZ, PD; VALENTE, AA; FERREIRA, P; CALHORDA, MJ
JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL, 256 (1-2): 90-98 AUG 18 2006

HOMOMETALLIC FERRIMAGNETISM IN THE ZIG-ZAG CHAIN COMPOUND NA2CU5SI4O14
REIS, MS; DOS SANTOS, AM; AMARAL, VS; BRANDAO, P; ROCHA, J
PHYSICAL REVIEW B, 73 (21): ART. NO. 214415 JUN 2006

HOW DOES BETA-CYCLODEXTRIN AFFECT OXYGEN SOLUBILITY IN AQUEOUS SOLUTIONS OF SODIUM PERFLUOROHEPTANOATE?
DIAS, AMA; ANDRADE-DIAS, C; LIMA, S; COUTINHO, JAP; TEIXEIRA-DIAS, JJC; MARRUCHO, IM
JOURNAL OF COLLOID AND INTERFACE SCIENCE, 303 (2): 552-556 NOV 15 2006

HYDROTHERMAL GROWTH OF HYDROXYAPATITE SCAFFOLDS FROM ARAGONITIC CUTTLEFISH BONES
ROCHA, JHG; LEMOS, AF; AGATHOPOULOS, S; KANNAN, S; VALERIO, P; FERREIRA, JMF
JOURNAL OF BIOMEDICAL MATERIALS RESEARCH PART A, 77A (1): 160-168 APR 2006

HYDROTHERMAL SYNTHESIS, STRUCTURAL INVESTIGATION, PHOTOLUMINESCENCE FEATURES, AND EMISSION QUANTUM YIELD OF EU AND EU-GD SILICATES WITH APATITE-TYPE STRUCTURE
FERDOV, S; FERREIRA, RAS; LIN, Z
HEMISTRY OF MATERIALS, 18 (25): 5958-5964 DEC 12 2006

IMMOBILISATION OF METHYLTRIOXORHENIUM ON FUNCTIONALISED MCM-41
GAGO, S; FERNANDES, JA; ABRANTES, M; KUHN, FE; RIBEIRO-CLARO, P; PILLINGER, M; SANTOS, TM; GONCALVES, IS
MICROPOROUS AND MESOPOROUS MATERIALS, 89 (1-3): 284-290 FEB 24 2006

IMPROVED CONDUCTIVITY OF CE1-XSMXO2-DELTA CERAMICS WITH SUBMICROMETER GRAIN SIZES
PEREZ-COLL, D; NUNEZ, P; FRADE, JR
JOURNAL OF THE ELECTROCHEMICAL SOCIETY 153 (3): A478-A483 2006

INCORPORATION OF MIXED VALENCE VANADIUM IN THE MICROPOROUS TITANOSILICATE AM-2
FERDOV, S; LIN, Z; FERREIRA, RAS
MICROPOROUS AND MESOPOROUS MATERIALS, 96 (1-3): 363-368 NOV 26 2006

INFLUENCE OF MICROWAVE RADIATION ON THE TEXTURAL PROPERTIES OF LAYERED DOUBLE HYDROXIDES
BENITO, P; LABAJOS, FM; ROCHA, J; RIVES, V
MICROPOROUS AND MESOPOROUS MATERIALS, 94 (1-3): 148-158 SEP 8 2006

INFLUENCE OF SOLVENTS ON THE MICROSTRUCTURE AND DIELECTRIC PROPERTIES OF BA0.5SR0.5TIO3 THIN FILMS PREPARED BY A DIOL-BASED SOL-GEL PROCESS
GONZALEZ, MB; WU, AY; VILARINHO, PM
CHEMISTRY OF MATERIALS, 18 (7): 1737-1744 APR 4 2006

ION TRANSPORT AND THERMOMECHANICAL PROPERTIES OF SRFE(AL)O3-DELTA-SRAL2O4 COMPOSITE MEMBRANES
YAREMCHENKO, AA; KHARTON, VV; SHAULA, AL; SNIJKERS, FMM; COOYMANS, JFC; LUYTEN, JJ; MARQUES, FMB
JOURNAL OF THE ELECTROCHEMICAL SOCIETY, 153 (6): J50-J60 2006

ION-EXCHANGE VOLTAMMETRY WITH NAFION/POLY(SODIUM 4-STYRENESULFONATE) MIXED COATINGS ON MERCURY FILM ELECTRODES: CHARACTERIZATION STUDIES AND APPLICATION TO THE DETERMINATION OF TRACE METALS
ROCHA, LS; PINHEIRO, JP; CARAPUCA, HM
LANGMUIR, 22 (19): 8241-8247 SEP 12 2006

LANTHANIDE-BASED LAMELLAR NANOHYBRIDS: SYNTHESIS, STRUCTURAL CHARACTERIZATION, AND OPTICAL PROPERTIES
KARMAOUI, M; FERREIRA, RAS; MANE, AT; CARLOS, LD; PINNA, N
CHEMISTRY OF MATERIALS, 18 (18): 4493-4499 SEP 5 2006

LANTHANUM SUBSTITUTED CENBO4+DELTA SCHEELITES: MIXED CONDUCTIVITY AND STRUCTURE AT ELEVATED TEMPERATURES
PACKER, RJ; SKINNER, SJ; YAREMCHENKO, AA; TSIPIS, EV; KHARTON, VV; PATRAKEEV, MV; BAKHTEEVA, YA
JOURNAL OF MATERIALS CHEMISTRY, 16 (34): 3503-3511 2006

LIQUID-PHASE DEHYDRATION OF D-XYLOSE OVER MICROPOROUS AND MESOPOROUS NIOBIUM SILICATES
DIAS, AS; LIMA, S; BRANDAO, P; PILLINGER, M; ROCHA, J; VALENTE, AA
CATALYSIS LETTERS, 108 (3-4): 179-186 MAY 2006

LOCAL STRUCTURE OF LUMINESCENT INGAN ALLOYS
KACHKANOV, V; O'DONNELL, KP; MARTIN, RW; MOSSELMANS, JFW; PEREIRA, S
APPLIED PHYSICS LETTERS, 89 (10): ART. NO. 101908 SEP 4 2006

LUMINESCENT POLYOXOTUNGSTOEUROPATE ANION-PILLARED LAYERED DOUBLE HYDROXIDES
SOUSA, FL; PILLINGER, M; FERREIRA, RAS; GRANADEIRO, CM; CAVALEIRO, AMV; ROCHA, J; CARLOS, LD; TRINDADE, T; NOGUEIRA, HIS
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, (4): 726-734 FEB 20 2006

MEASUREMENTS OF TOLUENE-WATER DISPERSIONS HOLD-UP USING A NON-INVASIVE ULTRASONIC TECHNIQUE
RIBEIRO, MMM; GONCALVES, C; REGUEIRAS, RF; GUIMARAES, MML; PINTO, JJCC
CHEMICAL ENGINEERING JOURNAL, 118 (1-2): 47-54 MAY 1 2006

MECHANISM OF CORROSION INHIBITION OF AA2024 BY RARE-EARTH COMPOUNDS
YASAKAU, KA; ZHELUDKEVICH, ML; LAMAKA, SV; FERREIRA, MGS
JOURNAL OF PHYSICAL CHEMISTRY B, 110 (11): 5515-5528 MAR 23 2006

MESOPOROUS SILICA-SUPPORTED 12-TUNGSTOPHOSPHORIC ACID CATALYSTS FOR THE LIQUID PHASE DEHYDRATION OF D-XYLOSE
DIAS, AS; PILLINGER, M; VALENTE, AA
MICROPOROUS AND MESOPOROUS MATERIALS, 94 (1-3): 214-225 SEP 8 2006

METHANE OXIDATION OVER NANOCRYSTALLINE CE0.45ZR0.45LA0.10O2-DELTA/PT AND CE0.9SM0.1O2-DELTA/PT ANODES
YAREMCHENKO, AA; KHARTON, VV; VALENTE, AA; FROLOVA, EV; IVANOVSKAYA, MI; KOVALEVSKY, AV; MARQUES, FMB; ROCHA, J
CATALYSIS LETTERS, 112 (1-2): 19-26 NOV 2006

MICROSTRUCTURAL STUDIES OF PZT THICK FILMS ON CU FOILS
WU, A; VILARINHO, PM; SRINIVASAN, S; KINGON, AI; REANEY, IM; WOODWARD, D; RAMOS, AR; ALVES, E
ACTA MATERIALIA, 54 (12): 3211-3220 JUL 2006

MIXED POLYELECTROLYTE COATINGS ON GLASSY CARBON ELECTRODES: ION-EXCHANGE, PERMSELECTIVITY PROPERTIES AND ANALYTICAL APPLICATION OF POLY-L-LYSINE/POLY(SODIUM 4-STYRENESULFONATE) COATED MERCURY FILM ELECTRODES FOR THE DETECTION OF TRACE METALS
MONTERROSO, SCC; CARAPUÇA, HM AND DUARTE, AC
TALANTA, 68, 5: 1655-1662 2006

MOLYBDENUM(VI) OXIDES BEARING 1,4,7-TRIAZACYCLONONANE AND 1,1,1-TRIS(AMINOMETHYL)ETHANE LIGANDS: SYNTHESIS AND CATALYTIC APPLICATIONS
PETROVSKI, Z; VALENTE, AA; PILLINGER, M; DIAS, AS; RODRIGUES, SS; ROMAO, CC; GONCALVES, IS
JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL, 249 (1-2): 166-171 APR 18 2006

NEW CHLORO AND TRIPHENYLSILOXY DERIVATIVES OF DIOXOMOLYBDENUM(VI) CHELATED WITH PYRAZOLYLPYRIDINE LIGANDS: CATALYTIC APPLICATIONS IN OLEFIN EPOXIDATION
BRUNO SM, PEREIRA CCL, BALULA MS, NOLASCO M, VALENTE, AA, HAZELL A, PILLINGER, M; RIBEIRO-CLARO P, GONCALVES, IS
JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL 261: 79–87 2006

NEW DIOXADIAZA-, TRIOXADIAZA- AND HEXAAZA-MACROCYCLES CONTAINING DIBENZOFURAN UNITS
LI, F; DELGADO, R; COELHO, A; DREW, MGB; FELIX, V
TETRAHEDRON, 62 (36): 8550-8558 SEP 4 2006

NEW POLYNUCLEAR MO-FE COMPLEXES WITH FERROCENYLAMIDOBENZIMIDAZOLE LIGANDS
MARTINHO, PN; QUINTAL, S; COSTA, PJ; LOSI, S; FELIX, V; GIMENO, MC; LAGUNA, A; DREW, MGB; ZANELLO, P; CALHORDA, MJ
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, (20): 4096-4103 OCT 16 2006

NITROGEN AND WATER ADSORPTION IN ALUMINIUM METHYLPHOSPHONATE-ALPHA: A MOLECULAR SIMULATION STUDY
HERDES, C; LIN, Z; VALENTE, A; COUTINHO, JAP; VEGA, LF
LANGMUIR, 22: 3097-3104 2006

NOVEL CHARGE TRANSFER SUPRAMOLECULAR ASSEMBLIES WITH KEGGIN ANIONS AND 2-AMINO-5-NITROPYRIDINE
GAMELAS, JAF; SANTOS, FM; FELIX, V; CAVALEIRO, AMV; GOMES, ED; BELSLEY, M; DREW, MGB
DALTON TRANSACTIONS (9): 1197-1203 2006

NOVEL SYNTHESIS AND STRUCTURAL CHARACTERIZATION OF FLUORINE AND CHLORINE CO-SUBSTITUTED HYDROXYAPATITES
KANNAN, S; REBELO, A; FERREIRA, JMF
JOURNAL OF INORGANIC BIOCHEMISTRY, 100 (10): 1692-1697 OCT 2006

ONE-DIMENSIONAL SILVER(I) CHAIN OF LACUNARY ALPHA-KEGGIN ANIONS
NOGUEIRA, HIS; PAZ, FAA; TEIXEIRA, PAF; KLINOWSKI, J
CHEMICAL COMMUNICATIONS, (28): 2953-2955 2006

OPTICAL PROPERTIES OF LANTHANIDE-DOPED LAMELLAR NANOHYBRIDS
FERREIRA, RAS; KARMAOUI, M; NOBRE, SS; CARLOS, LD; PINNA, N
CHEMPHYSCHEM, 7 (10): 2215-2222 OCT 13 2006

OPTICALLY FUNCTIONAL NANOCOMPOSITES WITH POLY(OXYETHYLENE)-BASED DI-UREASILS AND MESOPOROUS MCM-41
FU, LS; FERREIRA, RAS; VALENTE, A; ROCHA, J; CARLOS, LD
MICROPOROUS AND MESOPOROUS MATERIALS, 94 (1-3): 185-192 SEP 8 2006

PERCOLATIVE TRANSITION ON FERROMAGNETIC INSULATOR MANGANITES: UNCORRELATED TO CORRELATED POLARON CLUSTERS
LOPES, AML; ARAUJO, JP; RAMASCO, JJ; AMARAL, VS; SURYANARAYANAN, R; CORREIA, JG
PHYSICAL REVIEW B, 73 (10): ART. NO. 100408 MAR 2006

PHASE EQUILIBRIA CALCULATIONS OF POLYETHYLENE SOLUTIONS FROM SAFT-TYPE EQUATIONS OF STATE
PEDROSA, N; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
MACROMOLECULES, 39 (12): 4240-4246 JUN 13 2006

PHASE TRANSITIONS IN BI-LAYERED FERROELECTRICS WITH AURIVILLIUS STRUCTURE
NUZHNYY D, KAMBA S,KUZEL P, VELJKO S, BOVTUN V, SAVINOV M, PETZELT J, AMORIN H, COSTA MEV, KHOLKIN AL, BOULLAY P, ADAMCZYK M
PHYSICAL REVIEW B, 74:134105-5 2006

PHOTOLUMINESCENCE OF LANTHANIDE NASICONS: NA(5)LNSI(4)O(12), LN = EU, TB
DOS SANTOS, AM; MARQUES, FMB; CARLOS, LD; ROCHA, J
JOURNAL OF MATERIALS CHEMISTRY, 16 (30): 3139-3144 2006

PHOTOLUMINESCENT LAYERED Y(III) AND TB(III) SILICATES DOPED WITH CE(III)
KOSTOVA, MH; FERREIRA, RAS; ANANIAS, D; CARLOS, LD; ROCHA, J
JOURNAL OF PHYSICAL CHEMISTRY B, 110 (31): 15312-15316 AUG 10 2006

PROCESSING AND CHARACTERIZATION OF LA0.5SR0.5FEO3-SUPPORTED SR1-XFE(AL)O-3-SRAL2O4 COMPOSITE MEMBRANES
KOVALEVSKYA, AV; KHARTON, VV; MAXIM, F; SHAULA, AL; FRADE, JR
JOURNAL OF MEMBRANE SCIENCE, 278 (1-2): 162-172 JUL 5 2006

RECOGNITION OF DICARBOXYLATE ANIONS BY A DITOPIC HEXAAZAMACROCYCLE CONTAINING BIS-P-XYLYL SPACERS
CARVALHO, S; DELGADO, R; FONSECA, N; FELIX, V
NEW JOURNAL OF CHEMISTRY, 30 (2): 247-257 FEB 2006

RESIDUAL STRESS MINIMUM IN NANOCRYSTALLINE DIAMOND FILMS
VILA, M; AMARAL, M; OLIVEIRA, FJ; SILVA, RF; FERNANDES, AJS; SOARES, MR
APPLIED PHYSICS LETTERS, 89 (9): ART. NO. 093109 AUG 28 2006

REVERSIBLE HYDROPHOBIZATION AND LIPOPHOBIZATION OF CELLULOSE FIBERS VIA TRIFLUOROACETYLATION
CUNHA, AG; FREIRE, CSR; SILVESTRE, AJD; NETO, CP; GANDINI, A
JOURNAL OF COLLOID AND INTERFACE SCIENCE, 301 (1): 333-336 SEP 1 2006

SATURATION OF SHEAR-INDUCED ISOTHERMAL CRYSTALLIZATION OF POLYMERS AT THE STEADY STATE AND THE ENTANGLEMENT-DISENTANGLEMENT TRANSITION
MARTINS, JA; ZHANG, WD; BRITO, AM
MACROMOLECULES, 39 (22): 7626-7634 OCT 31 2006

SELECTIVITY OF BIS(CALIX[4]DIQUINONE) IONOPHORES TOWARDS METAL IONS IN SOLVENT DIMETHYLSULFOXIDE: A MOLECULAR MECHANICS AND MOLECULAR DYNAMICS STUDY
FELIX, V; DREW, MGB; WEBBER, PRA; BEER, PD
PHYSICAL CHEMISTRY CHEMICAL PHYSICS, 8 (4): 521-532 JAN 28 2006

SPECTROSCOPIC STUDY OF A UV-PHOTOSTABLE ORGANIC-INORGANIC HYBRIDS INCORPORATING AN EU3+ BETA-DIKETONATE COMPLEX
LIMA, PP; FERREIRA, RAS; FREIRE, RO; PAZ, FAA; FU, LS; ALVES, S; CARLOS, LD; MALTA, OL
CHEMPHYSCHEM, 7 (3): 735-746 MAR 13 2006

STABILITY OF THIN PLASMA POLYMER FILMS APPLIED ON COIL COATINGS
SERRA, R; ZHELUDKEVICH, ML; FERREIRA, MGS
PLASMA PROCESSES AND POLYMERS, 3 (8): 618-626 OCT 11 2006

STRUCTURAL AND MAGNETIC STUDIES IN FERRIHYDRITE NANOPARTICLES FORMED WITHIN ORGANIC-INORGANIC HYBRID MATRICES
SILVA, NJO; AMARAL, VS; CARLOS, LD; RODRIGUEZ-GONZALEZ, B; LIZ-MARZAN, LM; MILLAN, A; PALACIO, F; BERMUDEZ, VDZ
JOURNAL OF APPLIED PHYSICS, 100 (5): ART. NO. 054301 SEP 1 2006

STRUCTURAL CHARACTERIZATION OF LIGNIN FROM LEAF SHEATHS OF "DWARF CAVENDISH" BANANA PLANT
OLIVEIRA, L; EVTUGUIN, DV; CORDEIRO, N; SILVESTRE, AJD; SILVA, AMS; TORRES, IC
JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, 54 (7): 2598-2605 APR 5 2006

STRUCTURAL PROPERTIES OF CARBON PEAPODS UNDER EXTREME CONDITIONS STUDIED USING IN SITU X-RAY DIFFRACTION
CHORRO M; ROLS S; CAMBEDOUZOU J; ALVAREZ L; ALMAIRAC R; SAUVAJOL J-L; HODEAU J-L; MARQUES L; MEZOUAR M; KATAURA H
PHYSICAL REVIEW B, 74: 205425_1-205425_5 2006

STRUCTURAL STUDIES OF [CPMOL2(CO)(2)](+) (L = NCME, L-2 =,2,2 '-BIIMIDAZOLE) COMPLEXES AND THEIR INCLUSION COMPOUNDS WITH CYCLODEXTRINS
PEREIRA, CCL; BRAGA, SS; PAZ, FAA; PILLINGER, M; KLINOWSKI, J; GONCALVES, IS
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, (21): 4278-4288 NOV 6 2006

STRUCTURAL STUDIES OF BETA-CYCLODEXTRIN AND PERMETHYLATED BETA-CYCLODEXTRIN INCLUSION COMPOUNDS OF CYCLOPENTADIENYL METAL CARBONYL COMPLEXES
BRAGA, SS; PAZ, FAA; PILLINGER, M; SEIXAS, JD; ROMAO, CC; GONCALVES, IS
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, (8): 1662-1669 APR 13 2006

STRUCTURE AND DIELECTRIC PROPERTIES OF THE (1-X)LA(MG1/2TI1/2)O3-X(NA1/2BI1/2) TIO3 MICROWAVE CERAMICS
SALAK, AN; FERREIRA, VM
JOURNAL OF PHYSICS-CONDENSED MATTER, 18 (24): 5703-5713 JUN 21 2006

STRUCTURE REFINEMENT, FAR INFRARED SPECTROSCOPY, AND DIELECTRIC CHARACTERIZATION OF (1-X)LA(MG1/2TI1/2)O-3-XLA(2/3)TIO(3) SOLID SOLUTIONS
SALAK, AN; KHALYAVIN, DD; FERREIRA, VM; RIBEIRO, JL; VIEIRA, LG
JOURNAL OF APPLIED PHYSICS, 99 (9): ART. NO. 094104 MAY 1 2006

SURFACE CHARACTERIZATION BY XPS, CONTACT ANGLE MEASUREMENTS AND TOF-SIMS OF CELLULOSE FIBERS PARTIALLY ESTERIFIED WITH FATTY ACIDS
FREIRE, CSR; SILVESTRE, AJD; NETO, CP; GANDINI, A; FARDIM, P; HOLMBOM, B
JOURNAL OF COLLOID AND INTERFACE SCIENCE, 301 (1): 205-209 SEP 1 2006

SURFACE ESTERIFICATION OF CELLULOSE FIBERS: CHARACTERIZATION BY DRIFT AND CONTACT ANGLE MEASUREMENTS
PASQUINI, D; BELGACEM, MN; GANDINI, A; CURVELO, AAD
JOURNAL OF COLLOID AND INTERFACE SCIENCE 295 (1): 79-83 MAR 1 2006

SYNTHESIS AND CATALYTIC PROPERTIES IN OLEFIN EPOXIDATION OF CHIRAL OXAZOLINE DIOXOMOLYBDENUM(VI) COMPLEXES
BRUNO, SM; MONTEIRO, B; BALULA, MS; PEDRO, FM; ABRANTES, M; VALENTE, AA; PILLINGER, M; RIBEIRO-CLARO, P; KUHN, FE; GONCALVES, IS
JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL, 260 (1-2): 11-18 DEC 15 2006

SYNTHESIS AND CHARACTERISATION OF A STANNOSILICATE WITH THE STRUCTURE OF PENKVILKSITE-1M
LIN, Z; ROCHA, J
MICROPOROUS AND MESOPOROUS MATERIALS, 94 (1-3): 173-178 SEP 8 2006

SYNTHESIS AND CHARACTERISATION OF HYBRID MESOPOROUS MATERIALS WITH THE 1,4-DIAZOBUTADIENE LIGAND
NUNES, CD; VAZ, PD; BRANDAO, P; ROCHA, J; FERREIRA, P; BION, N; CALHORDA, MJ
MICROPOROUS AND MESOPOROUS MATERIALS, 95 (1-3): 104-111 OCT 18 2006

SYNTHESIS AND CHARACTERIZATION OF MCM-48 TUBULAR MEMBRANES
DE LA IGLESIA, O; PEDERNERA, M; MALLADA, R; LIN, Z; ROCHA, J; CORONAS, J; SANTAMARIA, J
JOURNAL OF MEMBRANE SCIENCE, 280 (1-2): 867-875 SEP 1 2006

SYNTHESIS AND MECHANICAL PERFORMANCE OF BIOLOGICAL-LIKE HYDROXYAPATITES
KANNAN, S; LEMOS, AF; FERREIRA, JMF
CHEMISTRY OF MATERIALS, 18 (8): 2181-2186 APR 18 2006

SYNTHESIS AND THERMAL STABILITY OF HYDROXYAPATITE-BETA-TRICALCIUM PHOSPHATE COMPOSITES WITH COSUBSTITUTED SODIUM, MAGNESIUM, AND FLUORINE
KANNAN, S; FERREIRA, JMF
CHEMISTRY OF MATERIALS, 18 (1): 198-203 JAN 10 2006

SYNTHESIS AND THERMAL STABILITY OF SODIUM, MAGNESIUM CO-SUBSTITUTED HYDROXYAPATITES
KANNAN, S; ROCHA, JHG; FERREIRA, JMF
JOURNAL OF MATERIALS CHEMISTRY, 16 (3): 286-291 JAN 21 2006

SYNTHESIS, CHARACTERIZATION, AND LUMINESCENCE, PROPERTIES OF EU3+ 3-PHENYL-4-(4-TOLUOYL)-5-ISOXAZOLONATE BASED ORGANIC-INORGANIC HYBRIDS
LIMA, PP; JUNIOR, SA; MALTA, OL; CARLOS, LD; FERREIRA, RAS; PAVITHRAN, R; REDDY, MLP
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY, (19): 3923-3929 OCT 2 2006

SYNTHESIS, CHARACTERIZATION, AND SEPARATION PROPERTIES OF SN- AND TI-SILICATE UMBITE MEMBRANES
SEBASTIAN, V; LIN, Z; ROCHA, J; TELLEZ, C; SANTAMARIA, J; CORONAS, J
CHEMISTRY OF MATERIALS, 18 (10): 2472-2479 MAY 16 2006

SYNTHESIS, SURFACE MODIFICATION AND OPTICAL PROPERTIES OF TB3+-DOPED ZNO NANOCRYSTALS
PEREIRA, AS; PERES, M; SOARES, MJ; ALVES, E; NEVES, A; MONTEIRO, T; TRINDADE, T
NANOTECHNOLOGY, 17 (3): 834-839 FEB 14 2006

TIOX SELF-ASSEMBLED NETWORKS PREPARED BY TEMPLATING APPROACH AS NANOSTRUCTURED RESERVOIRS FOR SELF-HEALING ANTICORROSION PRE-TREATMENTS
LAMAKA, SV; ZHELUDKEVICH, ML; YASAKAU, KA; MONTEMOR, MF; CECILIO, P; FERREIRA, MGS
ELECTROCHEMISTRY COMMUNICATIONS, 8 (3): 421-428 MAR 2006

TISSUES AND HAIR RESIDUES AND HISTOPATHOLOGY IN WILD RATS (RATTUS RATTUS L.) AND ALGERIAN MICE (MUS SPRETUS LATASTE) FROM AN ABANDONED MINE AREA (SOUTHEST PORTUGAL)
PEREIRA R, PEREIRA ML, RIBEIRO R, GONÇALVES F
ENVIRON POLLUT , 139(3): 561-575 2006

TITANIUM DIOXIDE/CELLULOSE NANOCOMPOSITES PREPARED BY A CONTROLLED HYDROLYSIS METHOD
MARQUES, PAAP; TRINDADE, T; NETO, CP
COMPOSITES SCIENCE AND TECHNOLOGY, 66 (7-8): 1038-1044 JUN 2006

TRANSPORT NUMBERS AND OXYGEN PERMEABILITY OF SRCE(Y)O-3-BASED CERAMICS UNDER OXIDISING CONDITIONS
KHARTON, VV; MAROZAU, IP; MATHER, GC; NAUMOVICH, EN; FRADE, JR
ELECTROCHIMICA ACTA, 51 (28): 6389-6399 SEP 15 2006

TRITERPENIC AND OTHER LIPOPHILIC COMPONENTS FROM INDUSTRIAL CORK BYPRODUCTS
SOUSA, AF; PINTO, PCRO; SILVESTRE, AJD; NETO, CP
JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, 54 (18): 6888-6893 SEP 6 2006

TWO NEW ALUMINOPHOSPHATES, IST-1 AND IST-2: FIRST EXAMPLES OF A DUAL TEMPLATING ROLE OF WATER AND METHYLAMINE IN GENERATING MICROPOROUS STRUCTURES
FERNANDES, A; RIBEIRO, MF; BORGES, C; LOURENCO, JP; ROCHA, J; GABELICA, Z
MICROPOROUS AND MESOPOROUS MATERIALS, 90 (1-3): 112-128 MAR 20 2006

WATER SOLUBILITY IN LINEAR FLUOROALKANES USED IN BLOOD SUBSTITUTE FORMULATIONS
FREIRE, MG; GOMES, L; SANTOS, LMNBF; MARRUCHO, IM; COUTINHO, JAP
JOURNAL OF PHYSICAL CHEMISTRY B 110 (45): 22923-22929 NOV 16 2006

X-RAY DIFFRACTION AND SOLID-STATE NMR STUDIES OF A GERMANIUM BINUCLEAR COMPLEX
MAFRA, L; PAZ, FAA; SHI, FN; ROCHA, J; TRINDADE, T; FERNANDEZ, C; MAKAL, A; WOZNIAK, K; KLINOWSKI, J
CHEMISTRY-A EUROPEAN JOURNAL, 12 (2): 363-375 2006

"GREENING" THE SYNTHESIS OF SRBI229TAO THIN FILMS
GONZALEZ-AGUILAR, G; SALVADO, IMM; COSTA, MEV
ATERIALS LETTERS, 60 (1): 28-30 JAN 2006

A NEW PREDICTIVE UNIQUAC FOR MODELING OF WAX FORMATION IN HYDROCARBON FLUIDS
COUTINHO, JAP; MIRANTE, F; PAULY, J
FLUID PHASE EQUILIBRIA, 247 (1-2): 8-17 SEP 15 2006

A NOVEL COBALT(II)-MOLYBDENUM(V) PHOSPHATE ORGANIC-INORGANIC HYBRID POLYMER
SHI, FN; PAZ, FAA; GIRGINOVA, PI; NOGUEIRA, HIS; ROCHA, J; AMARAL, VS; KLINOWSKI, J; TRINDADE, T
JOURNAL OF SOLID STATE CHEMISTRY, 179 (5): 1497-1505 MAY 2006

A PENTANUCLEAR OXOVANADIUM(V) PHOSPHATE COMPLEX WITH PHENANTHROLINE
MAFRA, L; PAZ, FAA; SHI, FN; FERNANDEZ, C; TRINDADE, T; KLINOWSKI, J; ROCHA, J
INORGANIC CHEMISTRY COMMUNICATIONS, 9 (1): 34-38 JAN 2006

A PRELIMINARY STUDY OF POLYUREAS AND POLY(PARABANIC ACID)S INCORPORATING FURAN RINGS
ABID, S; MATOUSSI, S; EL GHARBI, R; GANDINI, A
POLYMER BULLETIN , 57 (1): 43-50 MAY 2006

A THEORETICAL INTERPRETATION OF THE ABNORMAL 5D0→7F4 INTENSITY BASED ON THE EU3+ LOCAL COORDINATION IN THE NA9[EUW10O36].32H2O POLYOXOMETALATE
FERREIRA, RAS; NOBRE, SS; GRANADEIRO, CM; NOGUEIRA, HIS; CARLOS, LD; MALTA, OL
JOURNAL OF LUMINESCENCE, 121: 561-567 2006

ACIDIC CESIUM SALTS OF 12-TUNGSTOPHOSPHORIC ACID AS CATALYSTS FOR THE DEHYDRATION OF XYLOSE INTO FURFURAL
DIAS, AS; LIMA, S; PILLINGER, M; VALENTE, AA
CARBOHYDRATE RESEARCH, 341: 2946-2953 2006

ACRYLATED VEGETABLE OILS AS PHOTOCROSSLINKABLE MATERIALS
PELLETIER K, BELGACEM N, GANDINI A
JOURNAL OF APPLIED POLYMER SCIENCE 99 (6): 3218-3221 MAR 15 2006

ANNEALING TIME EFFECT ON BI-2223 PHASE DEVELOPMENT IN LFZ AND EALFZ GROWN SUPERCONDUCTING FIBRES
CARRASCO, MF; AMARAL, VS; SILVA, RF; VIEIRA, JM; COSTA, FM
APPLIED SURFACE SCIENCE, 252 (14): 4957-4963 MAY 15 2006

APPLICABILITY OF EMF MEASUREMENTS UNDER EXTERNAL LOAD RESISTANCE CONDITIONS FOR ION TRANSPORT NUMBER DETERMINATION
FRADE, J; KHARTON, VV; YAREMCHENKO, AA; TSIPIS, EV
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (2): 96-103 FEB 2006

AQUEOUS TAPE CASTING PROCESSING OF LOW DIELECTRIC CONSTANT CORDIERITE BASED GLASS CERAMICS - SELECTION OF BINDER
MEI S; YANG J; XIN X; QUARESMA S; AGATHOPOULOS S; FERREIRA JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26, 67–71 2006

BARRIER PROPERTIES OF POLYURETHANE COIL COATINGS TREATED BY MICROWAVE PLASMA POLYMERIZATION
ZHELUDKEVICH ML, SERRA R, GRUNDMEIER G, YANG LH, FERREIRA MGS
SURFACE & COATINGS TECHNOLOGY, 200: 4040-4049 2006

BETA-CYCLODEXTRIN INCLUSION OF EUROPIUM(III) TRIS(BETA-DIKETONATE)-BIPYRIDINE
FERNANDES, JA; BRAGA, SS; PILLINGER, M; FERREIRA, RAS; CARLOS, LD; HAZELL, A; RIBEIRO-CLARO, P; GONCALVES, IS
POLYHEDRON, 25 (6): 1471-1476 APR 17 2006

BI-SR-CA-CU-O SUPERCONDUCTING FIBRES PROCESSED BY THE LASER FLOATING ZONE AMAM TECHNIQUE UNDER DINERENT ELECTRICAL CURRENT INTENSITIES
CARRASCO, MF; SOARES, MR; AMARAL, VS; VIEIRA, JM; SILVA, RF; COSTA, FM
SUPERCONDUCTOR SCIENCE & TECHNOLOGY, 19 (4): 373-380 APR 2006

CARBON DIOXIDE, ETHYLENE AND WATER VAPOR SORPTION IN POLY(LACTIC ACID)
OLIVEIRA, NS; GONCALVES, CM; COUTINHO, JAP; FERREIRA, A; DORGAN, J; MARRUCHO, IM
FLUID PHASE EQUILIBRIA 250 (1-2): 116-124 DEC 20 2006

CATALYTIC PROPERTIES OF THE DIOXOMOLYBDENUM SILOXIDE MOO2(OSIPH3)(2) AND ITS 2,2 '-BIPYRIDINE ADDUCT MOO2(OSIPH3)(2)(BPY)
BRUNO, SM; MONTEIRO, B; BALULA, MS; LOURENCO, C; VALENTE, AA; PILLINGER, M; RIBEIRO-CLARO, P; GONCALVES, IS
MOLECULES, 11 (4): 298-308 APR 2006

CERAMIC FORMULATIONS PREPARED WITH INDUSTRIAL WASTES AND NATURAL SUB-PRODUCTS
RAUPP-PEREIRA, F; HOTZA, D; SEGADAES, AM; LABRINCHA, JA
CERAMICS INTERNATIONAL, 32 (2): 173-179 2006

CHARACTERIZATION AND MECHANICAL PERFORMANCE OF THE MG-STABILIZED BETA-CA-3(PO4)(2) PREPARED FROM MG-SUBSTITUTED CA-DEFICIENT APATITE
KANNAN, S; LEMOS, AF; ROCHA, JHG; FERREIRA, JMF
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (9): 2757-2761 SEP 2006

CHARACTERIZATION OF Y ZEOLITES DEALUMINATED BY SOLID-STATE REACTION WITH AMMONIUM HEXAFLUOROSILICATE
PIRES, J; CARVALHO, A; PINTO, M; ROCHA, J
JOURNAL OF POROUS MATERIALS, 13 (2): 107-114 APR 2006

CHARACTERIZING THE SETTING OF CEMENT WHEN MIXED WITH CORK, BLUE GUM, OR MARITIME PINE, GROWN IN PORTUGAL - I: TEMPERATURE PROFILES AND COMPATIBILITY INDICES
PEREIRA, C; JORGE, FC; IRLE, M; FERREIRA, JM
JOURNAL OF WOOD SCIENCE, 52 (4): 311-317 AUG 2006

CHARACTERIZING THE SETTING OF CEMENT WHEN MIXED WITH CORK, BLUE GUM, OR MARITIME PINE, GROWN IN PORTUGAL - II: X-RAY DIFFRACTION AND DIFFERENTIAL THERMAL ANALYZES
PEREIRA, C; JORGE, FC; IRLE, M; FERREIRA, JM
JOURNAL OF WOOD SCIENCE, 52 (4): 318-324 AUG 2006

COMPETITION BETWEEN THE HYDRATED FLUORIDE ANION AND HEXANOIC ACID FOR INCLUSION IN BETA-CYCLODEXTRIN: AN H-1-NMR STUDY IN AQUEOUS SOLUTION
LIMA, S; GOODFELLOW, BJ; TEIXEIRA-DIAS, JJC
JOURNAL OF INCLUSION PHENOMENA AND MACROCYCLIC CHEMISTRY, 54 (1-2): 35-40 FEB 2006

CONTROLLED HETEROGENEOUS MODIFICATION OF CELLULOSE FIBERS WITH FATTY ACIDS: EFFECT OF REACTION CONDITIONS ON THE EXTENT OF ESTERIFICATION AND FIBER PROPERTIES
FREIRE, CSR; SILVESTRE, AJD; NETO, CP; BELGACEM, MN; GANDINI, A
JOURNAL OF APPLIED POLYMER SCIENCE, 100 (2): 1093-1102 APR 15 2006

COORDINATION MODES OF 3-AMINOSALICYLIC AND 3-HYDROXYANTHRANILIC ACIDS IN PALLADIUM(II), PLATINUM(II) AND RHENIUM(V) COMPLEXES. THE CRYSTAL STRUCTURE OF CIS-[PT(HSALNH)(PPH3)(2)] (.) 0.25C(2)H(5)OH
QUINTAL, SMO; FELIX, V; DREW, MGB; NOGUEIRA, HIS
POLYHEDRON, 25 (3): 753-758 FEB 13 2006

COORDINATION MODES OF PYRIDINE-CARBOXYLIC ACID DERIVATIVES IN SAMARIUM (III) COMPLEXES
SOARES-SANTOS, PCR; PAZ, FAA; FERREIRA, RAS; KLINOWSKI, J; CARLOS, LD; TRINDADE, T; NOGUEIRA, HIS
POLYHEDRON, 25 (12): 2471-2482 AUG 21 2006

CORRESPONDING-STATES MODELING OF THE SPEED OF SOUND OF LONG-CHAIN HYDROCARBONS
QUEIMADA, AJ; COUTINHO, JAP; MARRUCHO, IM; DARIDON, JL
INTERNATIONAL JOURNAL OF THERMOPHYSICS, 27 (4): 1095-1109 JUL 2006

CORROSION PROTECTIVE PROPERTIES OF NANOSTRUCTURED SOL-GEL HYBRID COATINGS TO AA2024-T3
ZHELUDKEVICH, M.L.; SERRA, R; MONTEMOR, M. F; MIRANDA SALVADO, IM; FERREIRA, MGS
SURFACE & COATINGS TECHNOLOGY, 200: 3084-3094 2006

CVD DIAMOND COATED SILICON NITRIDE SELF-MATED SYSTEMS: TRIBOLOGICAL BEHAVIOUR UNDER HIGH LOADS
ABREU, CS; OLIVEIRA, FJ; BELMONTE, M; FERNANDES, AJS; GOMES, JR; SILVA, RF
TRIBOLOGY LETTERS, 21 (2): 141-151 FEB 2006

DEFECT FORMATION AND TRANSPORT IN LA0.95NI0.5TI0.5O3-DELTA
YAKOVLEV, SO; KHARTON, VV; NAUMOVICH, EN; ZEKONYTE, J; ZAPOROJTCHENKO, V; KOVALEVSKY, AV; YAREMCHENKO, AA; FRADE, JR
SOLID STATE SCIENCES, 8 (11): 1302-1311 NOV 2006

DEFECT FORMATION AND TRANSPORT IN MIXED-CONDUCTING LA0.90SR0.10AL0.85-XFEXMG0.15O3-DELTA
TSIPIS, EV; WAERENBORGH, JC; KHARTON, VV; NAUMOVICH, EN; FRADE, JR
JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS, 67 (8): 1882-1887 AUG 2006

DEFECT INTERACTIONS IN LA0.3SR0.7FE(M ')O3-DELTA (M ' = AL, GA) PEROVSKITES: ATOMISTIC SIMULATIONS AND ANALYSIS OF P(O-2)-T-DELTA DIAGRAMS
NAUMOVICH, EN; PATRAKEEV, MV; KHARTON, V; ISLAM, MS; YAREMCHENKO, AA; FRADE, JR; MARQUES, FMB
SOLID STATE IONICS , 177 (5-6): 457-470 FEB 2006

DEMODULATING THE RESPONSE OF OPTICAL FIBRE LONG-PERIOD GRATINGS: GENETIC ALGORITHM APPROACH
ANDRE, PS; FERREIRA, RAS; CORREIA, CML; KALINOWSHY, H; XIN, XJ; PINTO, JL
CHINESE PHYSICS LETTERS, 23 (9): 2480-2482 SEP 2006

DEVELOPMENT AND PROPERTIES OF A GLASS MADE FROM MSWI BOTTOM ASH
MONTEIRO, RCC; ALENDOURO, SJG; FIGUEIREDO, FML; FERRO, MC; FERNANDES, MHV
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (2): 130-135 FEB 1 2006

DIFFUSION AND CONDUCTIVITY PROPERTIES OF CERIUM NIOBATE
PACKER, RJ; TSIPIS, EV; MUNNINGS, CN; KHARTON, VV; SKINNER, SJ; FRADE, JR
SOLID STATE IONICS , 177 (19-25): 2059-2064 OCT 15 2006

DIFFUSION PROCESSES IN SEEDED AND UNSEEDED SBT THIN FILMS WITH VARIED STOICHIOMETRY
AGUILAR, GG; WU, A; REIS, MA; RAMOS, AR; SALVADO, IMM; ALVES, E; COSTA, MEV
SURFACE SCIENCE, 600 (9): 1780-1786 MAY 1 2006

DIMERIC CALCIUM COMPLEXES OF ARABINAN-RICH PECTIC POLYSACCHARIDES FROM OLEA EUROPAEA L. CELL WALLS
FERREIRA, JA; MAFRA, I; SOARES, MR; EVTUGUIN, DV; COIMBRA, MA
CARBOHYDRATE POLYMERS, 65 (4): 535-543 SEP 13 2006

EFFECT OF GLUCURONOXYLAN ON THE HORNIFICATION OF EUCALYPTUS GLOBULUS BLEACHED PULPS
REBUZZI, F; EVTUGUIN, DV
MACROMOLECULAR SYMPOSIA, 232: 121-128 2006

EFFECT OF OXYGEN, OZONE AND HYDROGEN PEROXIDE BLEACHING STAGES ON THE CONTENTS AND COMPOSITION OF EXTRACTIVES OF EUCALYPTUS GLOBULUS KRAFT PULPS
FREIRE, CSR; SILVESTRE, AJD; NETO, CP; EVTUGUIN, DV
BIORESOURCE TECHNOLOGY, 97 (3): 420-428 FEB 2006

EFFECT OF SINTERING TEMPERATURE ON MECHANICAL AND MICROSTRUCTURAL PROPERTIES OF BOVINE HYDROXYAPATITE (BHA)
GOLLER, G; OKTAR, FN; AGATHOPOULOS, S; TULYAGANOV, DU; FERREIRA, JMF; KAYALI, ES; PEKER, I
JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY, 37 (2): 111-115 FEB 2006

EFFECT OF SODIUM HEXAMETAPHOSPHATE AND AGEING ON THE RHEOLOGICAL BEHAVIOUR OF KAOLIN DISPERSIONS
ANDREOLA, F; CASTELLINI, E; FERREIRA, JMF; OLHERO, S; ROMAGNOLI, M
APPLIED CLAY SCIENCE, 31 (1-2): 56-64 JAN 2006

EFFECTS OF A WATER-RETAINING AGENT ON THE RHEOLOGICAL BEHAVIOUR OF A SINGLE-COAT RENDER MORTAR
PAIVA, H; SILVA, LM; LABRINCHA, JA; FERREIRA, VM
CEMENT AND CONCRETE RESEARCH, 36 (7): 1257-1262 JUL 2006

ELECTRICAL AND DIELECTRICAL PROPERTIES OF SIO2–LI2O–NB2O5 GLASS AND GLASS-CERAMICS OBTAINED BY THERMOELECTRIC TREATMENTS
GRAÇA MPF; FERREIRA DA SILVA, MG; SOMBRA, ASB; VALENTE, MA
JOURNAL MAT SCI, 42-49, (352): 5199-5204 2006

ELECTRICAL CHARACTERISATION OF CORDIERITE BODIES CONTAINING AL-RICH ANODISING SLUDGE
LABRINCHA, JA; ALBUQUERQUE, CM; FERREIRA, JM; RIBEIRO, MJ
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (4-5): 825-830 2006

ELECTROCHEMICAL CHARACTERIZATION OF GLASSY CARBON ELECTRODES MODIFIED WITH HYBRID INORGANIC-ORGANIC SINGLE-LAYER OF ALPHA-KEGGIN TYPE POLYOXOTUNGSTATES
CARAPUCA, HM; BALULA, MS; FONSECA, AP; CAVALEIRO, AMV
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (1): 10-17 JAN 2006

ELECTRONIC CONDUCTIVITY, OXYGEN PERMEABILITY AND THERMAL EXPANSION OF SR0.7CE0.3MN1-XALXO3-DELTA
MAROZAU, IP; KHARTON, VV; VISKUP, AP; FRADE, JR; SAMAKHVAL, VV
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (8): 1371-1378 2006

ELECTROPHORETIC DEPOSITION OF LEAD ZIRCONATE TITANATE FILMS ON METAL FOILS FOR EMBEDDED COMPONENTS
WU, AY; VILARINHO, PM; KINGON, AI
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (2): 575-581 FEB 2006

ENHANCED PERFORMANCE OF HFCVD NANOCRYSTALLINE DIAMOND SELF-MATED TRIBOSYSTEMS BY PLASMA PRETREATMENTS ON SILICON NITRIDE SUBSTRATES
ABREU C S; AMARAL M; OLIVEIRA F J; FERNANDES A J S; GOMES J R AND SILVA R F
DIAMOND AND RELATED MATERIALS, 15: 2024-2028 2006

ENHANCEMENT OF BI-2223 PHASE FORMATION BY ELECTRICAL ASSISTED LASER FLOATING ZONE TECHNIQUE
CARRASCO, MF; LOPES, AB; SILVA, RF; VIEIRA, JM; COSTA, FM
JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS, 67 (1-3): 416-418 JAN-MAR 2006

ETHYLENE POLYMERIZATION OVER TRANSITION METAL SUPPORTED CATALYSTS. III. VANADIUM
MATOS, I; ZHANG, YJ; FONSECA, I; LEMOS, F; LEMOS, M; FREIRE, F; FERNANDES, AC; DO REGO, AMB; VALENTE, AA; MANO, JF; HENRIQUES, RT; MARQUES, MM
E-POLYMERS, ART. NO. 075: 1-20 2006

EXTRUSION OF ALUMINA AND CORDIERITE-BASED TUBES CONTAINING AL-RICH ANODISING SLUDGE
ANANIAS, D; PAZ, FA; CARLOS, LD; GERALDES, CFGC; ROCHA, J
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (4-5): 817-823 2006

FABRICATION OF (CA+YB)- AND (CA+SR)-STABILIZED ALPHA-SIALON BY COMBUSTION SYNTHESIS
GANDINI, A; PASCOAL, C; SILVESTRE, AJD
MATERIALS RESEARCH BULLETIN, 41 (3): 547-552 MAR 9 2006

FABRICATION OF SI3N4-SIC NANO-COMPOSITE CERAMICS THROUGH TEMPERATURE-INDUCED GELATION AND LIQUID PHASE SINTERING
BREZESINSKI, T; GROENEWOLT, M; PINNA, N; AMENITSCH, H; ANTONIETTI, M; SMARSLY, BM
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (3): 337-341 2006

FABRICATION OF YTTRIUM-STABILIZED ALPHA-SIALON POWDERS WITH ROD-LIKE CRYSTALS BY COMBUSTION SYNTHESIS
DIAS, JS; MACEDO, AL; FERREIRA, GC; PETERSON, FC; VOLKMAN, BF; GOODFELLOW, BJ
JOURNAL OF MATERIALS SCIENCE, 41 (18): 6062-6068 AUG 2006

FACTORS WHICH AFFECT THE MORPHOLOGY OF ALN PARTICLES MADE BY SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS (SHS)
FU, R; CHEN, K; AGATHOPOULOS, S; FERREIRA, JMF
JOURNAL OF CRYSTAL GROWTH, 296 (1): 97-103 OCT 15 2006

FERROMAGNETISM AND FERROMAGNETIC RESONANCE IN MN AND AS CO-IMPLANTED SI AND GAAS
SOBOLEV, NA; OLIVEIRA, MA; AMARAL, VS; NEVES, A; CARMO, MC; WESCH, W; PICHT, O; WENDLER, E; KAISER, U; HEINRICH, J
MATERIALS SCIENCE AND ENGINEERING: B, 126: 148-150 2006

FIRST OBSERVATION OF THE REVERSIBLE O3 ↔ P2 PHASE TRANSITION. CRYSTAL STRUCTURE OF THE QUENCHED HIGH-TEMPERATURE PHASE NA0.74NI0.58SB0.42O2
SMIRNOVA, OA; AVDEEV, M; NALBANDYAN, VN; KHARTON, VV; MARQUES, FMB
MATERIALS RESEARCH BULLETIN, 41: 1056-1062 2006

FLOW CYTOMETRY EVALUATION OF LEAD AND CADMIUM EFFECTS ON MOUSE SPERMATOGENESIS
OLIVEIRA, H; LOUREIRO, J; FILIPE, L; SANTOS, C; RAMALHO-SANTOS, J; SOUSA, M; PEREIRA, ML
REPRODUCTIVE TOXICOLOGY, 22 (3): 529-535 OCT 2006

FORMATION AND ELECTRICAL CHARACTERIZATION OF TI-MODIFIED SR0.3BA0.7NB2O6 CERAMIC SYSTEM
PEREZ, J; AMORIN, H; M'PEKO, JC; PORTELLES, J; PEREZ, JA; GUERRERO, F
MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY, 126 (1): 22-27 JAN 15 2006

FORMATION AND RELAXATION MECHANISMS OF THE SELF-POLARIZATION IN THIN FERROELECTRIC FILMS
AFANAS'EV, VP; PRONIN, IP.; KHOLKIN, AL
PHYSICS OF THE SOLID STATE, 48: 1214-1218 2006

FORMATION OF STRONTIUM-STABILIZED β-TRICALCIUM PHOSPHATE FROM CALCIUM-DEFICIENT APATITE
KANNAN S; PINA S; FERREIRA JMF
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 10, 89: 3277-3280 2006

FRICTION AND WEAR BEHAVIOUR OF BETA-SILICON NITRIDE-STEEL COUPLES UNDER UNLUBRICATED CONDITIONS
REIS, P; DAVIM, JP; XU, X; FERREIRA, JMF
MATERIALS SCIENCE AND TECHNOLOGY, 22 (2): 247-252 FEB 2006

FRICTION AND WEAR PERFORMANCE OF HFCVD NANOCRYSTALLINE DIAMOND COATED SILICON NITRIDE CERAMICS
ABREU, CS; AMARAL, M; FERNANDES, AJS; OLIVEIRA, FJ; SILVA, RF; GOMES, JR
DIAMOND AND RELATED MATERIALS, 15 (4-8): 739-744 SP. ISS. SI APR-AUG 2006

FT-IR AND RAMAN SPECTROSCOPIC STUDY OF DI-UREA CROSS-LINKED POLY (OXYETHYLENE)/SILOXANE ORMOLYTES DOPED WITH ZN2+ IONS
NUNES, SC; BERMUDEZ, VD; OSTROVSKII, D; CARLOS, LD
VIBRATIONAL SPECTROSCOPY, 40 (2): 278-288 MAR 17 2006

FT-IR, FT-RAMAN AND SERS SPECTRA OF PYRIDINE-3-SULFONIC ACID
PANICKER, CY; VARGHESE, HT; PHILIP, D; NOGUEIRA, HIS
SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY 64 (3): 744-747 JUN 2006

GAS SOLUBILITY OF CARBON DIOXIDE IN POLY(LACTIC ACID) AT HIGH PRESSURES
OLIVEIRA, NS; DORGAN, J; COUTINHO, JAP; FERREIRA, A; DARIDON, JL; MARRUCHO, IM
JOURNAL OF POLYMER SCIENCE PART B-POLYMER PHYSICS, 44 (6): 1010-1019 MAR 15 2006

GROWTH AND CHARACTERIZATION OF FERROELECTRIC SRBI2TA2O9 SINGLE CRYSTALS VIA HIGH-TEMPERATURE SELF-FLUX SOLUTION METHOD
AMORIN, H; BDIKIN, IK; KHOLKIN, AL; COSTA, MEV
PHYSICS OF THE SOLID STATE, 48 (3): 537-543 MAR 2006

GROWTH RATE IMPROVEMENTS IN THE HOT-FILAMENT CVD DEPOSITION OF NANOCRYSTALLINE DIAMOND
AMARAL M; FERNANDES A J S; VILA M; OLIVEIRA F J AND SILVA R F
DIAMOND AND RELATED MATERIALS, 15: 1822-1827 2006

HIGH STRENGTH TIC MATRIX FE28AL TOUGHENED COMPOSITES PREPARED BY SPONTANEOUS MELT INFILTRATION
GAO, MX; PAN, Y; OLIVEIRA, FJ; BAPTISTA, JL; VIEIRA, JM
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (16): 3853-3859 2006

HISTOPATHOLOGICAL EFFECTS OF HEXAVALENT CHROMIUM IN MOUSE KIDNEY
OLIVEIRA, H; SANTOS, TM; RAMALHO-SANTOS, J; PEREIRA, ML
B ENVIRON CONTAM TOX, 76 (6): 977-983 JUN 2006

HYBRID DENDRITIC-LINEAR COPOLYMERS: SYNTHESIS AND REACTIVITY
FROIMOWICZ, P; PAEZ, J; GANDINI, A; BELGACEM, NM; STRUMIA M
MACROMOLECULAR SYMPOSIA, 245-246: 51-60 2006

HYDROGENATED SILICON CARBON NITRIDE FILMS OBTAINED BY HWCVD, PA-HWCVD AND PECVD TECHNIQUES
FERREIRA, I; FORTUNATO, E; VILARINHO, P; VIANA, AS; RAMOS, AR; ALVES, E; MARTINS, R
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (9-20): 1361-1366 JUN 15 2006

HYDROTHERMAL SYNTHESIS OF PEROVSKITE BASED MATERIALS FOR MICROELECTRONIC APPLICATIONS
PITICESCU, RM; VILARINHO, P; POPESCU, LM; PITICESCU, RR
JOURNAL OF OPTOELECTRONICS AND ADVANCED MATERIALS, 8, 2: 543 – 547 2006

HYDROTHERMAL SYNTHESIS, STRUCTURAL CHARACTERISATION AND MAGNETIC BEHAVIOUR OF (4,4 '-BPYH)(2)[M(4,4 '-BPY)(H2O)(4)]-[V2O2(PMIDA)(2)]CENTER DOT 2H(2)O (M=MN2+ AND CO2+)
SHI, FN; PAZ, FAA; GIRGINOVA, PI; AMARAL, VS; ROCHA, J; KLINOWSKI, J; TRINDADE, T
INORGANICA CHIMICA ACTA, 359 (4): 1147-1158 MAR 1 2006

HYDROXYAPATITE NANO-POWDERS PRODUCED HYDROTHERMALLY FROM NACREOUS MATERIAL
LEMOS, AF; ROCHA, JHG; QUARESMA, SSF; KANNAN, S; OKTAR, FN; AGATHOPOULOS, S; FERREIRA, JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (16): 3639-3646 2006

IMPEDANCE SPECTROSCOPY EVOLUTION UPON SINTERING OF AL-RICH ANODISING SLUDGE-BASED EXTRUDED BODIES
RIBEIRO, MJ; ABRANTES, JC; LABRINCHA, JA
BOLETIN DE LA SOCIEDAD ESPANOLA DE CERAMICA Y VIDRIO, 45 (4): 300-303 JUL-AUG 2006

IMPROVING LIPASE PRODUCTION USING A PERFLUOROCARBON AS OXYGEN CARRIER
AMARAL, PFF; ROCHA-LEAO, MHM; MARRUCHO, IM; COUTINHO, JAP; COELHO, MAZ
JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY, 81 (8): 1368-1374 AUG 2006

INFLUENCE OF LI2O DOPING ON NON-ISOTHERMAL EVOLUTION OF PHASES IN K-NA-CONTAINING ALUMINOSILICATE MATRIX
TULYAGANOV, DU; AGATHOPOULOS, S; FERNANDES, HR; FERREIRA, JMF; FABRICHNAYA, O
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (1): 292-297 JAN 2006

INFLUENCE OF LITHIUM OXIDE AS AUXILIARY FLUX ON THE PROPERTIES OF TRIAXIAL PORCELAIN BODIES
TULYAGANOV, DU; AGRATHOPOULOS, S; FERNANDES, HR; FERREIRA, JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (7): 1131-1139 2006

INFLUENCE OF THE DE-WAXING ATMOSPHERE ON THE PROPERTIES OF ALN CERAMICS PROCESSED FROM AQUEOUS MEDIA
OLHERO, SM; MIRANZO, P; FERREIRA, JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (13): 2475-2483 SEP 2006

INTRODUCTION TO THE SPECIAL ISSUE ON NANOSCALE FERROELECTRICS
GRUVERMAN, A; KHOLKIN, AL
IEEE TRANSACTIONS ON ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL, 53, PP 2206-2007 2006

INVESTIGATIONS OF P-TYPE SIGNAL FOR ZNO THIN FILMS GROWN ON(100) GAAS SUBSTRATES BY PULSED LASER DEPOSITION
ROGERS, DJ; HOSSEINI TEHERANI, F; MONTEIRO, T; SOARES, M; NEVES, A; CARMO, M; PEREIRA, S
PHYSICS STATUS SOLIDI, 3, 1038 2006

ION AND ELECTRON CONDUCTION IN SRFE1-XSCXO3-DELTA
PATRAKEEV, MV; MARKOV, AA; LEONIDOV, IA; KOZHEVNIKOV, VL; KHARTON, VV
SOLID STATE IONICS , 177 (19-25): 1757-1760 OCT 15 2006

ION-EXCHANGE VOLTAMMETRY OF DOPAMINE AT NAFION-COATED GLASSY CARBON ELECTRODES: QUANTITATIVE FEATURES OF ION-EXCHANGE PARTITION AND REASSESSMENT ON THE OXIDATION MECHANISM OF DOPAMINE IN THE PRESENCE OF EXCESS ASCORBIC ACID
ROCHA, LS; CARAPUCA, HM
BIOELECTROCHEMISTRY, 69 (2): 258-266 OCT 2006

IONIC AND ELECTRONIC CONDUCTIVITIES, STABILITY AND THERMAL EXPANSION OF LA10-X(SI,AL)(6)O-26 +/-DELTA SOLID ELECTROLYTES
SHAULA, AL; KHARTON, VV; MARQUES, FMB
SOLID STATE IONICS , 177 (19-25): 1725-1728 OCT 15 2006

IONIC AND ELECTRONIC CONDUCTIVITY OF YB2+XTI2-XO7-X/2 MATERIALS
ABRANTES, JCC; LEVCHENKO, A; SHLYAKHTINA, AV; SHCHERBAKOVA, LG; HOROVISTIZ, AL; FAGG, DP; FRADE, JR
SOLID STATE IONICS , 177 (19-25): 1785-1788 OCT 15 2006

IONIC CONDUCTIVITY OF BROWNMILLERITE-TYPE CALCIUM FERRITE UNDER OXIDIZING CONDITIONS
SHAULA, AL; PIVAK, YV; WAERENBORGH, JC; GACZYNSKI, P; YAREMCHENKO, AA; KHARTON, VV
SOLID STATE IONICS , 177 (33-34): 2923-2930 NOV 15 2006

LIPOPHILIC EXTRACTIVES FROM DIFFERENT MORPHOLOGICAL PARTS OF BANANA PLANT "DWARF CAVENDISH"
OLIVEIRA, L; FREIRE, CSR; SILVESTRE, AJD; CORDEIRO, N; TORRES, IC; EVTUGUIN, D
INDUSTRIAL CROPS AND PRODUCTS, 23 (2): 201-211 MAR 2006

LIQUID-LIQUID EQUILIBRIUM OF (PERFLUOROALKANE PLUS ALKANE) BINARY MIXTURES
DE MELO, MJP; DIAS, AMA; BLESIC, M; REBELO, LPN; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
FLUID PHASE EQUILIBRIA, 242 (2): 210-219 APR 25 2006

LOW TEMPERATURE SYNTHESIS OF ANORTHITE BASED GLASS-CERAMICS VIA SINTERING AND CRYSTALLIZATION OF GLASS-POWDER COMPACTS
MARQUES, VMF; TULYAGANOV, DU; AGATHOPOULOS, S; GATAULLIN, VK; KOTHIYAL, GP; FERREIRA, JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (13): 2503-2510 SEP 2006

LUMINESCENCE PROPERTIES OF COMPOSITES MADE OF A EUROPIUM(III) COMPLEX AND ELECTROLUMINESCENT POLYMERS WITH DIFFERENT ENERGY GAPS
MORGADO, J; CHARAS, A; FERNANDES, JA; GONCALVES, IS; CARLOS, LD; ALCACER, L
JOURNAL OF PHYSICS D-APPLIED PHYSICS, 39 (16): 3582-3587 AUG 21 2006

LUNULARIA CRUCIATA, A POTENTIAL IN VITRO HOST FOR GLOMUS PROLIFERUM AND G. INTRARADICES
FONSECA, HM; BERBARA, RL; PEREIRA, ML
MYCORRHIZA, 16(7): 503-508 2006

MACHINING BEHAVIOR OF SILICON NITRIDE TOOLS COATED WITH MICRO-, SUBMICRO- AND NANO-METRIC CVD DIAMOND CRYSTALLITE SIZES
PAZ FAA; AMARAL M; OLIVEIRA FJ AND SILVA RF
DIAMOND AND RELATED MATERIALS, 15: 2029-2034 2006

MECHANICALLY INDUCED PHASE TRANSFORMATIONS OF THE SIGMA PHASE OF NANOGRAINED AND OF COARSE-GRAINED NEAR-EQUIATOMIC FECR ALLOYS
COSTA, BFO; LE CAER, G; LOUREIRO, JM; AMARAL, VS
JOURNAL OF ALLOYS AND COMPOUNDS, 424 (1-2): 131-140 NOV 9 2006

METHANE OXIDATION OVER SOFC ANODES WITH NANOCRYSTALLINE CERIA-BASED PHASES
KHARTON, VV; YAREMCHENKO, AA; VALENTE, AA; FROLOVA, EV; IVANOVSKAYA, MI; FRADE, JR; MARQUES, FMB; ROCHA, J
SOLID STATE IONICS , 177 (19-25): 2179-2183 OCT 15 2006

MICROWAVE ASSISTED SYNTHESIS OF MOLYBDENUM AND TUNGSTEN TETRACARBONYL COMPLEXES WITH A PYRAZOLYLPYRIDINE LIGAND. CRYSTAL STRUCTURE OF CIS-[MO(CO)4{ETHYL[3-(2-PYRIDYL)-1-PYRAZOLYL]ACETATE}]
COELHO, AC; PAZ, FAA; KLINOWSKI, J; PILLINGER, M; GONCALVES, IS
MOLECULES, 11: 940-952 2006

MIXED CONDUCTION INDUCED BY GRAIN BOUNDARY ENGINEERING
GOMES, E; FIGUEIREDO, FM; MARQUES, FMB
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (14): 2991-2997 2006

MIXED CONDUCTIVITY AND ELECTROCATALYTIC PERFORMANCE OF SRFEO3-DELTA-SRAL2O4 COMPOSITE MEMBRANES
YAREMCHENKO, AA; KHARTON, VV; VALENTE, AA; SHAULA, AL; MARQUES, FMB; ROCHA, J
SOLID STATE IONICS, 177 (26-32): 2285-2289 OCT 31 2006

MIXED CONDUCTIVITY AND MOSSBAUER SPECTRA OF (LA0.5SR0.5)(1-X)FE1-GAMMA AL GAMMA O3-DELTA (X=0-0.05, GAMMA=0-0.30)
KHARTON, VV; WAERENBORGH, JC; VISKUP, AP; YAKOVLEV, SO; PATRAKEEV, MV; GACZYNSKI, P; MAROZAU, IP; YARERMCHENKO, AA; SHAULA, AL; SAMAKHVAL, VV
JOURNAL OF SOLID STATE CHEMISTRY, 179 (4): 1273-1284 APR 2006

MIXED CONDUCTIVITY, STABILITY AND THERMOMECHANICAL PROPERTIES OF NI-DOPED LA(GA,MG)O3-DELTA
YAREMCHENKO, AA; KHARTON, VV; NAUMOVICH, EN; SHESTAKOV, DI; CHUKHAREV, VF; KOVALEVSKY, AV; SHAULA, AL; PATRAKEEV, MV; FRADE, JR; MARQUES, FMB
SOLID STATE IONICS , 177 (5-6): 549-558 FEB 2006

MODELING OF THE EMISSION RED-SHIFT IN ORGANIC-INORGANIC DI-UREASIL HYBRIDS
FERREIRA, RAS; FERREIRA, AL; CARLOS, LD
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (9-20): 1225-1229 JUN 15 2006

MODELING THE EMISSION RED-SHIFT IN AMORPHOUS SEMICONDUCTORS AND IN ORGANIC-INORGANIC HYBRIDS USING EXTENDED MULTIPLE TRAPPING
FERREIRA, RAS; FERREIRA, AL; CARLOS, LD
EUROPEAN PHYSICAL JOURNAL B, 50 (3): 371-378 APR 2006

MODIFICATION OF BIS-SILANE SOLUTIONS WITH RARE-EARTH CATIONS FOR IMPROVED CORROSION PROTECTION OF GALVANIZED STEEL SUBSTRATES
MONTEMOR MF, TRABELSI W, ZHELUDKEVICH M, FERREIRA MGS
PROGRESS IN ORGANIC COATINGS, 57: 67-77 2006

MODIFICATION OF THE LUMINESCENCE PROPERTIES OF AN EUROPIUM(III) TRIS(BETA-DIKETONATE) COMPLEX BY INCLUSION IN GAMMA-CYCLODEXTRIN AND 2,3,6-TRIMETHYL-GAMMA-CYCLODEXTRIN
FERNANDES, JA; BRAGA, SS; FERREIRA, RAS; PILLINGER, M; CARLOS, LD; RIBEIRO-CLARO, P; GONCALVES, IS
JOURNAL OF INCLUSION PHENOMENA AND MACROCYCLIC CHEMISTRY, 55 (3-4): 329-333 AUG 2006

NANOSTRUCTURE AND LUMINESCENT PROPERTIES OF SOL-GEL DERIVED EUROPIUM-DOPED AMINE FUNCTIONALISED HYBRIDS
DAHMOUCHE, K; SANTILLI, CV; PULCINELLI, SH; FERREIRA, RAS; CARLOS, LD; BERMUDEZ, VD; CRAIEVICH, AF
JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY, 37 (2): 99-104 FEB 2006

NANOSTRUCTURED HYBRID MATERIALS AS PRECURSORS FOR SYNTHESIS OF NANOCOPOSITES IN SI-O-C-N-ZR SYSTEM
IVANOVA, Y; GERGANOVA, TS; DIMITRIEV, Y; SALVADO, IMM; FERNANDES, MHV
THIN SOLID FILMS, 515 (1): 271-278 SEP 25 2006

NCD BY HFCVD ON A SI3N4-BIOGLASS COMPOSITE FOR BIOMECHANICAL APPLICATIONS
AMARAL, M; SALGUEIREDO, E; OLIVEIRA, FJ; FERNANDES, AJS; COSTA, FM; SILVA, RF
SURFACE & COATINGS TECHNOLOGY, 200 (22-23): 6409-6413 JUN 20 2006

NONAQUEOUS SYNTHESIS OF METAL OXIDE NANOPARTICLES: REVIEW AND INDIUM OXIDE AS CASE STUDY FOR THE DEPENDENCE OF PARTICLE MORPHOLOGY ON PRECURSORS AND SOLVENTS
MARKUS NIEDERBERGER, GEORG GARNWEITNER, JELENA BUHA, JULIEN POLLEUX, JIANHUA BA, NICOLA PINNA
JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY, 40: 259 2006

NOVEL FACETED ALPHA-SIALON MICRO-CRYSTALS PREPARED BY COMBUSTION SYNTHESIS
LIU, GH; CHEN, KX; ZHOU, HP; PEREIRA, C; FERREIRA, JMF
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (1): 364-366 JAN 2006

ON THE INTERPRETATION OF STRUCTURAL AND LIGHT EMITTING PROPERTIES OF INGAN/GAN EPITAXIAL LAYERS GROWN ABOVE AND BELOW THE CRITICAL LAYER THICKNESS
PEREIRA, S
THIN SOLID FILMS, 515 (1): 164-169 SEP 25 2006

ONE-DIMENSIONAL COORDINATION POLYMER OF N-(PHOSPHONOMETHYL) IMINODIACETIC ACID WITH IRON(II)
SHI, FN; PAZ, FAA; GIRGINOVA, P; ROCHA, J; AMARAL, VS; KLINOWSKI, J; TRINDADE, T
JOURNAL OF MOLECULAR STRUCTURE, 789 (1-3): 200-208 MAY 22 2006

OPTICAL ACTIVE CENTRES IN ZNO SAMPLES
MONTEIRO, T; SOARES, MJ; NEVES, A; PEREIRA, S; CORREIA, MR; PERES, M; ALVES, E; ROGERS, D; TEHERANI, F; MUNOZ-SANJOSE, V; TRINDADE, T; PEREIRA, A
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (9-20): 1453-1456 JUN 15 2006

OPTICAL STUDIES ON A COHERENT INGAN/GAN LAYER
CORREIA, MR; PEREIRA, S; ALVES, E; ARNAUDOV, B
SUPERLATTICES AND MICROSTRUCTURES, 40 (4-6): 452 2006

OPTIMIZATION AND MODELING OF LACCASE PRODUCTION BY TRAMETES VERSICOLOR IN A BIOREACTOR USING STATISTICAL EXPERIMENTAL DESIGN
TAVARES, APA; COELHO, MAZ; AGAPITO, MSM; COUTINHO, JAP; XAVIER, AMRB
APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY, 134 (3): 233-248 SEP 2006

OUT-OF-PLANE TILTED JOSEPHSON JUNCTIONS OF BI-EPITAXIAL YBA2CU3OX THIN FILMS ON TILTED-AXES NDGAO3 SUBSTRATES WITH CEO2 SEEDING LAYER
MOZHAEV, PB; MOZHAEVA, JE; BDIKIN, IK; KOTELYANSKII, IM; LUZANOV, VA; ZYBTSEV, SG; HANSEN, JB; JACOBSEN, CS
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, 435 (1-2): 23-26 MAR 15 2006

OUT-OF-SUBSTRATE PLANE ORIENTATION CONTROL OF THIN YBA2CU3OX FILMS ON NDGAO3 TILTED-AXES SUBSTRATES
MOZHAEV, PB; MOZHAEVA, JE; BDIKIN, IK; KOTELYANSKII, IM; LUSANOV, VA; HANSEN, JB; JACOBSEN, CS; KHOLKIN, AL
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, 434 (1): 105-114 FEB 1 2006

OXYGEN ION CONDUCTION IN OXIDE MATERIALS: SELECTED EXAMPLES AND BASIC MECHANISMS
TRAQUEIA, LSM; MARQUES, FMB; KHARTON, VV
BOLETIN DE LA SOCIEDAD ESPANOLA DE CERAMICA Y VIDRIO, 45 (3): 115-121 MAY-JUN 2006

OXYGEN ION CONDUCTORS FOR FUEL CELLS AND MEMBRANES: SELECTED DEVELOPMENTS
MARQUES, FMB; KHARTON, VV; NAUMOVICH, EN; SHAULA, AL; KOVALEVSKY, AV; YAREMCHENKO, AA
SOLID STATE IONICS , 177 (19-25): 1697-1703 OCT 15 2006

OXYGEN IONIC AND MIXED CONDUCTORS: RECENT DEVELOPMENTS
KHARTON, VV; SCHOLZ, F
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (8): 515-516 AUG 2006

OXYGEN NONSTOICHIORNETRY AND MIXED CONDUCTIVITY OF SRFE1-XMXO3-DELTA (M=A1, GA): EFFECTS OF B-SITE DOPING
PATRAKEE, MV; KHARTON, VV; BAKHTEEVA, YA; SHAULA, AL; LEONIDOV, IA; KOZHEVNIKOV, VL; NAUMOVICH, EN; YAREMCHENKO, AA; MARQUES, FMB
SOLID STATE SCIENCES, 8 (5): 476-487 MAY 2006

OXYGEN PERMEABILITY OF MIXED-CONDUCTING COMPOSITE MEMBRANES: EFFECTS OF PHASE INTERACTION
SHAULA, AL; KHARTON, VV; MARQUES, FMB; KOVALEVSKY, AV; VISKUP, AP; NAUMOVICH, EN
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (1): 28-40 JAN 2006

OXYGEN PERMEABILITY, ELECTRONIC CONDUCTIVITY AND STABILITY OF LA0.3SR0.7COO3-BASED PEROVSKITES
KHARTON, VV; TSIPIS, EV; YAREMCHENKO, AA; MAROZAU, IP; VISKUP, AP; FRADE, JR; NAUMOVICH, EN
MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY, 134 (1): 80-88 SEP 25 2006

OXYGEN PERMEABILITY, THERMAL EXPANSION AND MIXED CONDUCTIVITY OF GDXCE0.8-XPR0.2O2-DELTA, X=0, 0.15, 0.2
FAGG, DP; MAROZAU, IP; SHAULA, AL; KHARTON, VV; FRADE, JR
JOURNAL OF SOLID STATE CHEMISTRY, 179 (11): 3347-3356 NOV 2006

OXYGEN TRANSPORT AND THERMOMECHANICAL PROPERTIES OF SRFE(AL)O3-DELTA-SRAL2O4 COMPOSITES: MICROSTRUCTURAL EFFECTS
KHARTON, VV; KOVALEVSKY, AV; YAREMCHENKO, AA; SNIJKERS, FMM; COOYMANS, JFC; LUYTEN, JJ; MARKOV, AA; FRADE, JR; MARQUES, FMB
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (8): 663-673 AUG 2006

OXYGEN TRANSPORT IN FERRITE-BASED CERAMIC MEMBRANES: EFFECTS OF ALUMINA SINTERING AID
KHARTON, VV; SHAULA, AL; SNIJKERS, FMM; COOYMANS, JFC; LUYTEN, JJ; MAROZAU, IP; VISKUP, AP; MARQUES, FMB; FRADE, JR
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (16): 3695-3704 2006

PARA-HALOGENATED BENZALDEHYDE MOLECULES INCLUDED IN CYCLODEXTRINS: A COMBINED SPECTROSCOPIC AND THERMAL ANALYSIS
RIBEIRO-CLARO, PJA; DA COSTA, AMA; VUEBA, ML; PINA, ME; AMADO, AM
JOURNAL OF RAMAN SPECTROSCOPY, 37 (4): 472-479 APR 2006

PARTICLE SURFACE PROPERTIES OF STAINLESS STEEL-COATED TUNGSTEN CARBIDE POWDERS
FERNANDES, CM; SENOS, AMR; VIEIRA, MT
POWDER TECHNOLOGY, 164 (3): 124-129 JUN 15 2006

PEROVSKITE NANOSTRUCTURES OBTAINED BY A HYDROTHERMAL ELECTROCHEMICAL PROCESS
PITICESCU, RM; VILARINHO, P; POPESCU, LM; PITICESCU, RR
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY 26 (14): 2945-2949 2006

PHASE TRANSFORMATION AND GROWTH OF ROD-LIKE ALPHA-SIALON PARTICLES DURING COMBUSTION SYNTHESIS
LIU, GH; CHEN, KX; ZHOU, HP; PEREIRA, C; FERREIRA, JMF
MATERIALS LETTERS, 60 (9-10): 1276-1279 MAY 2006

PHASE TRANSFORMATION AND MICROSTRUCTURE DEVELOPMENT OF IN SITU TOUGHENED YB ALPHA-SIALON CERAMICS PREPARED BY TWO-STEP HOT-PRESSING
LIU, GH; CHEN, KX; ZHOU, HP; REN, KG; NING, XS; PEREIRA, C; FERREIRA, JMF
MATERIALS CHEMISTRY AND PHYSICS, 98 (1): 159-164 JUL 1 2006

PHYSICAL MEANING AND MEASUREMENT OF THE ENTROPIC PARAMETER Q IN AN INHOMOGENEOUS MAGNETIC SYSTEMS
REIS, MS; AMARAL, VS; SARTHOUR, RS; OLIVEIRA, IS
EUROPEAN PHYSICAL JOURNAL B, 50 (1-2): 99-103 MAR 2006

POLYMER CONFORMATION STRUCTURE OF WHEAT PROTEINS AND GLUTEN SUBFRACTIONS REVEALED BY ATR-FTIR
LI, W; DOBRASZCZKY, BJ; DIAS, A; GIL, AM
CEREAL CHEMISTRY, 83 (4): 407-410 JUL-AUG 2006

PREDICTION OF VISCOSITIES AND SURFACE TENSIONS OF FUELS USING A NEW CORRESPONDING STATES MODEL
QUEIMADA, AJ; ROLO, LI; CACO, AI; MARRUCHO, IM; STENBY, EH; COUTINHO, JAP
FUEL, 85 (5-6): 874-877 MAR-APR 2006

PREPARATION AND CHARACTERIZATION OF HIGH COMPRESSIVE STRENGTH FOAMS FROM SHEET GLASS
TULYAGANOV, DU; FERNANDES, HR; AGATHOPOULOS, S; FERREIRA, JMF
JOURNAL OF POROUS MATERIALS, 13 (2): 133-139 APR 2006

PREPARATION OF ACRYLATED AND URETHANATED TRIACYLGLYCEROLS
PELLETIER H, GANDINI A
EUROPEAN JOURNAL OF LIPID SCIENCE AND TECHNOLOGY 108 (5): 411-420 MAY 2006

PREPARATION OF CA ALPHA-SIALON POWDERS WITH ROD-LIKE CRYSTALS BY COMBUSTION SYNTHESIS
LIU, GH; CHEN, KX; ZHOU, HP; NING, XS; PEREIRA, C; FERREIRA, JMF
CERAMICS INTERNATIONAL, 32 (4): 411-416 2006

PREPARATION OF SILICA-BASED HYBRID MATERIALS BY GAMMA IRRADIATION
GOMES, SR; MARGACA, FMA; SALVADO, IMM; FERREIRA, LM; FALCAO, A
NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM INTERACTIONS WITH MATERIALS AND ATOMS, 248 (2): 291-296 AUG 2006

PRESSURELESS SINTERING OF IN-SITU TOUGHENED YB A-SIALON CERAMICS BY ADDING SEED CRYSTALS PREPARED BY COMBUSTION SYNTHESIS
LIU GH; CHEN KX; ZHOU HP; NING XS; PEREIRA C; FERREIRA JMF
JOURNAL OF MATERIALS SCIENCE, 6, 41: 1791-1796 2006

PROCESSING AND ELECTRICAL CONDUCTIVITY OF LANTHANUM GALLATE CORE-SHELL HETEROSTRUCTURES
GOMES, E; FIGUEIREDO, FM; MARQUES, FMB
BOLETIN DE LA SOCIEDAD ESPANOLA DE CERAMICA Y VIDRIO, 45 (3): 144-149 MAY-JUN 2006

PROCESSING OF GLASS-CERAMICS IN THESIO(2)-AL2O3-B2O3-MGO-CAO-NA2O-(P2O5)-F SYSTEM VIA SINTERING AND CRYSTALLIZATION OF GLASS POWDER COMPACTS
TULYAGANOV, DU; AGATHOPOULOS, S; FERNANDES, HR; FERREIRA, JMF
CERAMICS INTERNATIONAL, 32 (2): 195-200 2006

PROCESSING OF SUBMICROMETRIC CATI0.8FE0.2O3-DELTA CERAMICS BY MECHANICAL ACTIVATION
FUENTES, RO; CHINARRO, E; FIGUEIREDO, FM; SOARES, R; MARQUES, FMB; FRADE, JR
JOURNAL OF MATERIALS SCIENCE, 41 (22): 7393-7400 NOV 2006

PRODUCTION AND CHARACTERIZATION OF A BIOEMULSIFIER FROM YARROWIA LIPOLYTICA
AMARAL, PFF; DA SILVA, JM; LEHOCKY, M; BARROS-TIMMONS, AMV; COELHO, MAZ; MARRUCHO, IM; COUTINHO, JAP
PROCESS BIOCHEMISTRY, 41 (8): 1894-1898 AUG 2006

PROPERTIES OF TRIAXIAL PORCELAIN BODIES: INTERPRETATION OF STATISTICAL MODELING
CORREIA, SL; OLIVEIRA, APN; HOTZA, D; SEGADAES, AM
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (11): 3356-3365 NOV 2006

RAMAN AND INFRARED SPECTROSCOPIC AND THEORETICAL STUDIES OF DINUCLEAR RHENIUM AND OSMIUM COMPLEXES, M2(O2CCH3)4X2 (M = RE, OS; X = CL, BR)
HAJBA L; MINK J; KÜHN F E; GONCALVES, IS
INORGANICA CHIMICA ACTA, 359: 4741-4756 2006

REDOX BEHAVIOR OF ACCEPTOR-DOPED LA(AL,FE)O3-DELTA
TSIPIS, EV; KHARTON, VV; WAERENBORGH, JC; ROJAS, DP; NAUMOVICH, EN; FRADE, JR
JOURNAL OF ALLOYS AND COMPOUNDS, 413 (1-2): 244-250 MAR 9 2006

RELIABLE WAX PREDICTIONS FOR FLOW ASSURANCE
COUTINHO, JAP; EDMONDS, B; MOORWOOD, T; SZCZEPANSKI, R; ZHANG, XH
ENERGY & FUELS, 20 (3): 1081-1088 MAY 2006

RE-SHARPENABLE THICK CVD DIAMOND-COATED SI3N4 TOOLS FOR HARDMETAL TURNING
ALMEIDA FA; FERNANDES AJS; SILVA RF AND OLIVEIRA FJ
SURFACE & COATINGS TECHNOLOGY, 201: 1776–1782 2006

SIMULATED AND EXPERIMENTAL DISPERSED-PHASE BREAKAGE AND COALESCENCE BEHAVIOR IN A KUHNI LIQUID-LIQUID EXTRACTION COLUMN-STEADY STATE
GOMES, LN; GUIMARAES, ML; REGUEIRAS, PFR; STICHLMAIR, J; PINTO, JJC
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, 45 (11): 3955-3968 MAY 24 2006

SINTERING AND CRYSTALLIZATION OF AKERMANITE-BASED GLASS-CERAMICS
VENTURA, JMG; TULYAGANOV, DU; AGATHOPOULOS, S; FERREIRA, JMF
MATERIALS LETTERS, 60 (12): 1488-1491 JUN 2006

SOL-GEL DERIVED LI+-DOPED POLY(EPSILON-CAPROLACTONE)/SILOXANE BIOHYBRID ELECTROLYTES
NUNES, SC; BERMUDEZ, VD; SILVA, MM; SMITH, MJ; MORALES, E; CARLOS, LD; FERREIRA, RAS; ROCHA, J
JOURNAL OF SOLID STATE ELECTROCHEMISTRY, 10 (4): 203-210 APR 2006

SOLUBILITY OF ANTIBIOTICS IN DIFFERENT SOLVENTS. HYDROCHLORIDE FORMS OF TETRACYCLINE, MOXIFLOXACIN AND CIPROFLOXACIN
VARANDA, F; MELO, M J. P; CAÇO, A L.; DOHRN, R; MAKRYDAKI, FA; VOUTSAS, E; TASSIOS, D; MARRUCHO, IM
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, 45: 6368-6374 2006

STRUCTURAL ANALYSIS AND DEVITRIFICATION OF GLASSES BASED ON THE CAO-MGO-SIO2 SYSTEM WITH B2O3, NA2O, CAF2 AND P2O5 ADDITIVES
AGATHOPOULOS, S; TULYAGANOV, DU; VENTURA, JMG; KANNAN, S; SARANTI, A; KARAKASSIDES, MA; FERREIRA, JMF
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (4): 322-328 APR 1 2006

STRUCTURE AND PROPERTIES OF NOVEL TITANIUM-DOPED SILOXANE-POLYOXYETHYLENE PLANAR WAVEGUIDES
C MOLINA; K DAHMOUCHE; P HAMMER; V ZEA BERMUDEZ; L D CARLOS; M FERRARI; M MONTAGNA; R R GONÇALVES; L F C DE OLIVEIRA; H G M EDWARDS; Y MESSADDEQ; S J L RIBEIRO
J BRAZIL CHEM SOC, 17(3): 443-452 2006

STRUCTURE EVOLUTION IN THE LA2MGTIO6-BA2MGWO6 SYSTEM
KHALYAVIN, DD; SALAK, AN; SEABRA, MP; SENOS, AMR; MANTAS, PQ; FERREIRA, VM
MATERIALS RESEARCH BULLETIN, 41 (1): 167-176 JAN 5 2006

STRUCTURE SEQUENCE IN THE CATIO3-LAALO3 MICROWAVE CERAMICS – REVISED
KHALYAVIN, DD; SALAK, AN; SENOS, AMR; MANTAS, PQ; FERREIRA, VM
JOURNAL OF THE AMERICAN CERAMIC SOCIETY, 89 (5): 1721-1723 MAY 2006

STUDY OF GROWTH/INTERGROWTH BEHAVIOR AND STRUCTURAL ANALYSES OF BI2SR2CA2CU3O10+DELTA SINGLE CRYSTALS
KULAKOV, AB; MAIER, D; MALJUK, A; BDIKIN, IK; LIN, CT
JOURNAL OF CRYSTAL GROWTH, 296 (1): 69-74 OCT 15 2006

STUDY OF NATURAL MANGO JUICE SPOILAGE AND MICROBIAL CONTAMINATION WITH PENICILLIUM EXPANSUM BY HIGH RESOLUTION H-1 NMR SPECTROSCOPY
DUARTE, IF; DELGADILLO, I; GIL, AM
FOOD CHEMISTRY, 96 (2): 313-324 MAY 2006

STUDY OF REHABILITATION MORTARS: CONSTRUCTION OF A KNOWLEDGE CORRELATION MATRIX
MARQUES, SF; RIBEIRO, RA; SILVA, LM; FERREIRA, VM; LABRINCHA, JA
CEMENT AND CONCRETE RESEARCH, 36 (10): 1894-1902 OCT 2006

STUDY OF SOL-GEL DERIVED DI-UREASILS DOPED WITH ZINC TRIFLATE
NUNES S C; DE ZEA BERMUDEZ V; SILVA M M; SMITH M J; MORALES, E; FERREIRA, RAS; CARLOS, LD; ROCHA, J
SOLID STATE SCIENCES, 12, 8: 1484-1491 2006

STUDY OF THE ELECTRIC AND DIELECTRIC PROPERTIES OF SIO2-LI2O-NB2O5 SOL-GEL GLASS-CERAMICS
GRACA, MPF; DA SILVA, MGF; SOMBRA, ASB; VALENTE, MA
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (9-20): 1501-1505 JUN 15 2006

STUDY OF THE STRUCTURAL INSERTION OF AL3+ IN THE AL2O3-SIO2 AND ND2O3-AL2O3-SIO2 GLASS SYSTEMS
DA SILVA, MGF
JOURNAL OF NON-CRYSTALLINE SOLIDS, 352 (8): 807-820 JUN 1 2006

SUBSOLIDUS PHASE RELATIONS IN NA2O-CUO-SB2ON SYSTEM AND CRYSTAL STRUCTURE OF NEW SODIUM COPPER ANTIMONATE NA3CU2SBO6 (VOL 178, PG 1165, 2005)
SMIRNOVA, OA; NALBANDYAN, VB; PETRENKO, AA; AVDEEV, M
JOURNAL OF SOLID STATE CHEMISTRY, 179 (4): 1293-1293 APR 2006

SURFACE TENSION OF LIQUID FLUOROCOMPOUNDS
FREIRE, MG; CARVALHO, PJ; QUEIMADA, AJ; MARRUCHO, IM; COUTINHO, JAP
JOURNAL OF CHEMICAL AND ENGINEERING DATA, 51 (5): 1820-1824 SEP 14 2006

SYNTHESIS AND CHARACTERIZATION OF LAYERED DOUBLE HYDROXIDES INTERCALATED BY AN OXOMOLYBDENUM COMPLEX
GAGO, S; DIAS, AS; MONTEIRO, B; PILLINGER, M; VALENTE, AA; SANTOS, TM; GONCALVES, IS
JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS, 67 (5-6): 1011-1015 SP. ISS. SI MAY-JUN 2006

SYNTHESIS AND STRUCTURE OF A SODIUM COMPLEX OF AN AROMATIC BETA-DIKETONE AND PYRAZOLYLPYRIDINE
COELHO, AC; PAZ, FAA; KLINOWSKI, J; PILLINGER, M; GONCALVES, IS
MOLECULES, 11 (7): 528-538 JUL 2006

SYNTHESIS OF GLASS-CERAMICS IN THE CAO-MGO-SIO2 SYSTEM WITH B2O3, P2O5, NA2O AND CAF2 ADDITIVES
TULYAGANOV, DU; AGATHOPOULOS, S; VENTURA, JM; KARAKASSIDES, MA; FABRICHNAYA, O; FERREIRA, JMF
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (8): 1463-1471 2006

SYNTHESIS OF HYDROXY-CHLORAPATITES SOLID SOLUTIONS
KANNAN, S; ROCHA, JHG; FERREIRA, JMF
MATERIALS LETTERS, 60 (7): 864-868 APR 2006

SYNTHESIS OF SIO2-COATED BI2S3/POLY(STYRENE) NANOCOMPOSITES BY IN-SITU POLYMERIZATION
ESTEVES, AC; NEVES, MC; BARROS-TIMMONS, A; BOURGEAT-LAMI, E; LIZ-MARZAN, L; TRINDADE, T
JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, 6 (2): 414-420 FEB 2006

THE ALUMINIUM EFFECT ON GEL-DERIVED IRON SILICA GLASSES
DA SILVA, MGF; VALENTE, MA
JOURNAL OF MATERIALS SCIENCE, 41 (19): 6385-6395 OCT 2006

THE CORROSION RESISTANCE OF HOT DIP GALVANISED STEEL AND AA2024-T3 PRE-TREATED WITH BIS-[TRIETHOXYSILYLPROPYL] TETRASULFIDE SOLUTIONS DOPED WITH CE(NO3)3
CABRAL AM, TRABELSI W, SERRA R, MONTEMOR MF, ZHELUDKEVICH ML, FERREIRA MGS
CORROSION SCIENCE, 48: 3740-3758 2006

THE CORROSION RESISTANCE OF HOT DIP GALVANIZED STEEL PRETREATED WITH BIS-FUNCTIONAL SILANES MODIFIED WITH MICROSILICA
MONTEMOR MF, CABRAL AM, ZHELUDKEVICH ML, FERREIRA MGS
SURFACE & COATINGS TECHNOLOGY, 200: 2875-2885 2006

THE DEFECT CHEMISTRY OF CE(PR, ZR)O2-DELTA
FAGG, DP; FRADE, JR; KHARTON, VV; MAROZAU, IP
JOURNAL OF SOLID STATE CHEMISTRY, 179 (5): 1469-1477 MAY 2006

THE EFFECT OF CURRENT DIRECTION ON SUPERCONDUCTING PROPERTIES OF BSCCO FIBRE GROWN BY AN ELECTRICALLY ASSISTED LASER FLOATING ZONE PROCESS
CARRASCO, MF; AMARAL, VS; VIEIRA, JM; SILVA, RF; COSTA, FM
SUPERCONDUCTOR SCIENCE & TECHNOLOGY, 19 (1): 15-21 2006

THE EFFECT OF PLASTICIZERS ON THERMOPLASTIC STARCH COMPOSITIONS OBTAINED BY MELT PROCESSING
DA ROZ, AL; CARVALHO, AJF; GANDINI, A; CURVELO, AAS
CARBOHYDRATE POLYMERS 63 (3): 417-424 MAR 3 2006

THE ELECTRIC BEHAVIOR OF A LITHIUM-NIOBATE-PHOSPHATE GLASS AND GLASS-CERAMICS
GRACA, MPF; VALENTE, MA; DA SILVA, MGF
JOURNAL OF MATERIALS SCIENCE, 41 (4): 1137-1144 FEB 2006

THE USE OF PRE-TREATMENTS BASED ON DOPED SILANE SOLUTIONS FOR IMPROVED CORROSION RESISTANCE OF GALVANISED STEEL SUBSTRATES
TRABELSI W, TRIKI E, DHOUIBI L, FERREIRA MGS, ZHELUDKEVICH ML, MONTEMOR MF
SURFACE & COATINGS TECHNOLOGY, 200: 4240-4250 2006

TRANSPORT PROPERTIES AND ELECTROCHEMICAL ACTIVITY OF YBA(CO,FE)(4)O-7 CATHODES
TSIPIS, EV; KHARTON, VV; FRADE, JR
SOLID STATE IONICS , 177 (19-25): 1823-1826 OCT 15 2006

TRANSPORT PROPERTIES AND STRUCTURAL STABILITY OF TETRAGONAL CENBO4+DELTA
TSIPIS, EV; MUNNINGS, CN; KHARTON, VV; SKINNER, SJ; FRADE, JR
SOLID STATE IONICS , 177 (11-12): 1015-1020 APR 2006

TRANSPORT PROPERTIES OF SEALANTS FOR HIGH-TEMPERATURE ELECTROCHEMICAL APPLICATIONS: RO-BAO-SIO2 (R = MG, ZN) GLASS-CERAMICS
PASCUAL, MJ; KHARTON, VV; TSIPIS, E; YAREMCHENKO, AA; LARA, C; DURAN, A; FRADE, JR
JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, 26 (15): 3315-3324 2006

TRIBOLOGICAL TESTING OF SELF-MATED NANOCRYSTALLINE DIAMOND COATINGS ON SI3N4 CERAMICS
ABREU, CS; AMARAL, MS; OLIVEIRA, FJ; TALLAIRE, A; BENEDIC, F; SYLL, O; CICALA, G; GOMES, JR; SILVA, RF
SURFACE & COATINGS TECHNOLOGY, 200 (22-23): 6235-6239 JUN 20 2006

UNUSUAL FULL-COLOUR PHOSPHORS: NA(3)LNSI(3)O(9)
ANANIAS, D; CARLOS, LD; ROCHA, J
OPTICAL MATERIALS, 28 (6-7): 582-586 MAY 2006

USING ORNAMENTAL STONE CUTTING REJECTS AS RAW MATERIALS FOR RED CLAY CERAMIC PRODUCTS: PROPERTIES AND MICROSTRUCTURE DEVELOPMENT
ACCHAR, W; VIEIRA, FA; SEGADAES, AM
MATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING, 435: 606-610 NOV 5 2006

VAPOR-LIQUID EQUILIBRIUM OF CARBON DIOXIDE-PERFLUOROALKANE MIXTURES: EXPERIMENTAL DATA AND SAFT MODELING
DIAS, AMA; CARRIER, H; DARIDON, JL; PAMIES, JC; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, 45 (7): 2341-2350 MAR 29 2006

B-CYCLODEXTRIN AND PERMETHYLATED B-CYCLODEXTRIN INCLUSION COMPOUNDS OF A CYCLOPENTADIENYL MOLYBDENUM TRICARBONYL COMPLEX AND THEIR USE AS CYCLOOCTENE EPOXIDATION CATALYST PRECURSORS
BRAGA, SS; GAGO, S; SEIXAS, JD; VALENTE, AA; PILLINGER, M; SANTOS, TM; GONCALVES, IS; ROMÃO, CC
INORGANICA CHIMICA ACTA, 359: 4757-4764 2006

CORRIGENDUM

HYDROXYAPATITE SCAFFOLDS HYDROTHERMALLY GROWN FROM ARAGONITIC CUTTLEFISH BONES
ROCHA JHG; LEMOS AF; KANNAN S; AGATHOPOULOS S; FERREIRA, JMF
JOURNAL OF MATERIALS CHEMISTRY, 47, 15, PP 5007-5011 2005

[N-(2-AMMONIOETHYL)ETHYLENEDIAMINE-KAPPA N-2,N '][HYDROGEN N-(PHOSPHONATOMETHYL)-IMINODIACETATO]COPPER(II) SESQUIHYDRATE
SHI, FN; PAZ, FAA; TRINDADE, T; ROCHA, J
ACTA CRYSTALLOGRAPHICA SECTION E-STRUCTURE REPORTS ONLINE, 62: M335-M338 PART 2 FEB 2006

ADSORPTION MECHANISM OF 5-FLOUROURACIL ON DIFFERENT HYDROXYAPATITE PARTICLES
SANTOS, C; MARTINS, MA; ALMEIDA, MM; COSTA, MEV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1103-1107 PART 1-2 2006

ATTACHMENT/DETACHMENT OF SACCHAROMYCES CEREVISIAE ON PLASMA DEPOSITED ORGANOSILICON THIN FILMS
LEHOCKY, M; AMARAL, PFF; COELHO, MAZ; STAHEL, P; BARROS-TIMMONS, AM; COUTINHO, JAP
CZECHOSLOVAK JOURNAL OF PHYSICS 56: B1256-B1262 PART 7 SUPPL. B, 2006

BI EFFECT ON THE MICROSTRUCTURE AND DIELECTRIC PROPERTIES OF SRTIO(3)THIN FILMS
OKHAY, O; BERGANO, VMX; WU, AY; VILARINHO, PM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 245-249 PART 1-2 2006

BIOACTIVE COMPOSITE MATERIALS FOR BONE TISSUE APPLICATIONS
FERREIRA, BJML; DUARTE, MGGM; GIL, MH; CORREIA, RN; ROMAN, J; VALLET-REGI, M
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 985-989 PART 1-2 2006

CD-DOPED LAMNO3 MANGANITES PREPARED BY THE SOL-GEL TECHNIQUE
LOPES; AML; ARAÚJO, JP; GOMES, AM; MENDONÇA, TM; TAVARES, PB; CORREIA, JG; AMARAL VS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 289: 514-516 2006

CHROMATIC DISPERSION IN GE-DOPED SIO2-BASED SINGLE MODE FIBRES DUE TO TEMPERATURE DEPENDENCE OF THE ULTRAVIOLET ABSORPTION: NUMERICAL AND EXPERIMENTAL RESULTS
ANDRE, PS; PINTO, A; PINTO, JL; FERREIRA, RAS; NOBRE, SS; CARLOS, LD; MONTEIRO, P
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 369-373 PART 1-2 2006

CONTROLLED SYNTHESIS OF MORPHOLOGICAL WELL-DEFINED BIVO4 PIGMENT PARTICLES
CRUZ, SG; GIRGINOVA, PI; NEVES, MC; SMOLKA, P; KUSAK, R; CALDEIRA, M; TEIXEIRA-DIAS, J; PEDROSA, J; TRINDADE, T
MATERIALS SCIENCE FORUM, 514-516: 1211-1215 2006

CORROSION BEHAVIOUR OF VITRIFIED HEAVY METALS FROM INDUSTRIAL WASTES
SILVA, AC; ACCHAR, W; SEGADÃES, AM; MELLO-CASTANHO, S
ADVANCES IN SCIENCE AND TECHNOLOGY 45: 178-183 2006

CREEP BEHAVIOUR OF SI3N4 CERAMICS SINTERED WITH RE2O3
SANTOS, C; STRECKER, K; NETO, FP; SILVA, CRM; ALMEIDA, FA; SILVA, RF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 759-763 PART 1-2 2006

CRYSTAL GAZING
PAZ, FAA; KLINOWSKI, J
CHEMISTRY & INDUSTRY 6: 21-23 MARCH 2006

DEFECT FORMATION IN LA2NI(M)O-4+DELTA (M=CO, CU): MODELLING AND COULOMETRIC TITRATION STUDY
NAUMOVICH, EN; PATRAKEEV, MV; KHARTON, VV; YAREMCHENKO, AA; TSIPIS, EV; LOGVINOVICH, DI; FRADE, JR; MARQUES, FMB
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 397-401 PART 1-2 2006

DEPOSITION AND CHARACTERIZATION OF THICK PB(ZR,TI)O-3 FILMS ON OPTICAL FIBERS
VYSHATKO, NP; JOANNI, RE; FERNANDES, JR; SAVU, R; VILARINHO, PM; KHOLKIN, AL
FERROELECTRICS, 338: 1497-1504 2006

DESIGN OF THE PARTICLE SIZE COMPOSITION OF AN ALUMINA POWDER MATRIX FOR MAXIMUM FLOWABILITY AND MINIMUM WATER CONTENT
SILVA AP; SEGADÃES AM; DEVEZAS TC
MATERIALS SCIENCE FORUM, 530-531: 425-430 2006

DEVELOPMENT OF NOVEL WASTE-BASED CERAMIC PIGMENTS
COSTA, G; RIBEIRO, MJ; TRINDADE, T; LABRINCHA, JA
ADVANCES IN SCIENCE AND TECHNOLOGY 45: 2229-2234 2006

EFFECT OF CONSOLIDATION TECHNIQUE ON THE SINTERING ABILITY AND THERMAL PROPERTIES OF ALN PROCESSED FROM AQUEOUS SUSPENSIONS
OLHERO, SM; FERREIRA, JMF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1531-1535 PART 1-2 2006

EFFECT OF GLASS CERAMIC CRYSTALLINITY ON THE FORMATION OF SIMULATED APATITE LAYERS
ALMEIDA, NAF; FERNANDES, MHV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1039-1043 PART 1-2 2006

EFFECT OF NANBO3 CRYSTALLINE AGGREGATES ON THE ELECTRICAL PROPERTIES OF SIO2-NA2O-NB2O5 GLASS-CERAMICS
GRACA, MPF; DA SILVA, MGF; VALENTE, MA
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 274-279 PART 1-2 2006

EFFECT OF THE NI CHEMICAL DISTRIBUTION ON THE REACTIVITY AND DENSIFICATION OF WC-(FE/NI/CR) COMPOSITE POWDERS
FERNANDES, CM; SENOS, AMR; CASTANHO, JM; VIEIRA, MT
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 633-637 PART 1-2 2006

ELECTRICAL AND MICROSTRUCTURAL CHANGES OF BETA-PVDF UNDER UNIAXIAL STRESS STUDIED BY SCANNING FORCE MICROSCOPY
NUNES, JS; SENCADAS, V; WU, A; VILARINHO, PM; LANCEROS-MENDEZ, S
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 915-919 PART 1-2 2006

ELECTRICAL CHARACTERIZATION OF MULLITE BODIES CONTAINING AL-RICH ANODIZING SLUDGE
RIBEIRO, MJ; ABRANTES, JCC; LABRINCHA, JA
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1726-1730 PART 1-2 2006

ELECTROCATALYTIC BEHAVIOR OF PEROVSKITE-RELATED COBALTITES AND NICKELATES IN ALKALINE MEDIA
POZNYAK, SK; KHARTON, VV; FRADE, JR; YAREMCHENKO, AA; TSIPIS, EV; MAROZAU, IP; FERREIRA, MGS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1391-1395 PART 1-2 2006

ELECTROCONDUCTIVE CERAMIC COMPOSITES FOR CUTTING TOOLS
ALMEIDA, FA; BOIA, H; SANTOS, C; MONTEIRO, J; OLIVEIRA, FJ; SILVA, RF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 638-642 PART 1-2 2006

ELECTROPLATING OF IRON FILMS: MICROSTRUCTURAL EFFECTS OF ALKALINE BATHS
POZNYAK, SK; KHARTON, VV; FRADE, JR; FERREIRA, MGS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 88-92 PART 1-2 2006

FERROMAGNETISM AND FERROMAGNETIC RESONANCE IN MN IMPLANTED SI AND GAAS
SOBOLEV, NA; OLIVEIRA, MA; AMARAL, VS; NEVES, A; CARMO, MC; WESCH, W; PICHT, O; WENDLER, E; KAISER, U; HEINRICH, J
MATERIALS SCIENCE FORUM, 514-516: 280 2006

GD-DOPED LAM NO(3) MANGANITES PREPARED BY THE SOL-GEL TECHNIQUE
LOPES, AML; ARAUJO, JP; GOMES, AM; MENDONCA, TM; TAVARES, PB; CORREIA, JG; AMARAL, VS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 289-293 PART 1-2 2006

GROWTH OF LEAD ZIRCONATE TITANATE SINGLE CRYSTALS BY THE HIGH TEMPERATURE SOLUTION METHOD
PEREZ, JA; SOARES, MR; MANTAS, PQ; AMORIN, H; COSTA, MEV; SENOS, AMR
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 184-187 PART 1-2 2006

GROWTH, CRYSTAL STRUCTURE AND STABILITY OF AG-NI/CU FILMS
BDIKIN, IK; STRUKOVA, GK; STRUKOV, GV; KEDROV, VV; MATVEEV, DV; ZVER'KOV, SA; KHOLKIN, AL
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1166-1170 PART 1-2 2006

HYDROPHOBIC POROUS BENZENE-SILICA HYBRID CLAY HETEROSTRUCTURE AND ITS APPLICATION IN THE ADSORPTION OF VOLATILE ORGANIC COMPOUNDS
FERREIRA, P; NUNES, CD; PIRES, J; CARVALHO, AP; BRANDAO, P; ROCHA, J
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 470-474 PART 1-2 2006

IMPROVING THE PROPERTIES OF LOW TEMPERATURE SINTERED ALUMINA BODIES WITH GRANITE REJECT ADDITIONS
ACCHAR, W; SILVEIRA, GCL; CASTANHO, SRHM; SEGADÃES, AM
ADVANCES IN SCIENCE AND TECHNOLOGY 45: 2212-2217 2006

IN-SITU FRICTION MONITORING OF SELF-MATED CVD DIAMOND COATINGS USING ACOUSTIC EMISSION
ABREU, CS; OLIVEIRA, FJ; GOMES, JR; BELMONTE, M; FERNANDES, AJS; SILVA, RF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 749-753 PART 1-2 2006

IRON OXIDE AND OXIDE-HYDROXIDE NANOPARTICLES IN ORGANIC-INORGANIC MATRICES
SILVA, NJO; MILLAN, A; AMARAL, VS; PALACIO, F; FU, LS; CARLOS, LD; BERMUDEZ, VDZ
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 142-146 PART 1-2 2006

ISOTHERMAL CRYSTALLISATION OF A GLASS FROM THE 3CAO.P2O5-SIO2-MGO-K2O SYSTEM STUDIED BY IMPEDANCE SPECTROSCOPY
QUEIROZ, CM; FERNANDES, MHV; FRADE, JR
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1073-1077 PART 1-2 2006

LAYER-BY-LAYER DEPOSITION OF ORGANICALLY CAPPED QUANTUM DOTS
NEVES, MC; PEREIRA, AS; PERES, M; KHOLKIN, A; MONTEIRO, T; TRINDADE, T
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1111-1115 PART 1-2 2006

LEACHING BEHAVIOUR OF A GLASS PRODUCED FROM A MSW BOTTOM ASH
BARBOSA, R; CAMACHO, S; ALENDOURO, M; LAPA, N; FERNANDES, MHV; MONTEIRO, RCC; OLIVEIRA, JS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1736-1741 2006

LOCAL PROBE STUDIES ON OXIDES USING RADIOACTIVE ISOTOPES
ARAUJO, JP; LOPES, AML; RITA, E; CORREIA, JG; AMARAL, VS; WAHL, U - GROUP ISOLDE COLLABORATION
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1593-1597 PART 1-2 2006

MICROSTRUCTURE AND ELECTRICAL CONDUCTIVITY OF YB2+XTI2-XO7-X/2 MATERIALS
LEVCHENKO, A; ABRANTES, JCC; SLYAKHTINA, AV; SHCHERBAKOVA, LG;.HOROVISTIZ, AL; FRADE, JR
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 417-421 2006

MICROSTRUCTURE CHARACTERIZATION AND DIELECTRIC PROPERTIES OF LA4MG3W3O18 LAYERED OXIDE
KHALYAVIN, DD; SENOS, AMR; MANTAS, PQ
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 255-258 PART 1-2 2006

MINERALIZATION OF TITANIUM SUBSTRATES WITH DIFFERENT STRUCTURES AND SURFACE FINISH, PRE-INCUBATED IN ALBUMIN
CACHINHO, SCP; MARQUES, PAAP; CORREIA, RN
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1049-1053 PART 1-2 2006

MIXED CONDUCTIVITY OF CE- AND NB-SUBSTITUTED (LA,SR)FEO3-DELTA
KHARTON, VV; VISKUP, AP; KOVALEVSKY, AV; SHAULA, AL; FRADE, JR; MARQUES, FMB
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 402-406 PART 1-2 2006

MODELLING THE SOLUBILITY OF GASES IN SATURATED AND SUBSTITUTED PERFLUOROALKANES
DIAS, AMA; PAMIES, JC; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
POLISH JOURNAL OF CHEMISTRY, 80 (1): 143-152 JAN 2006

MODIFICATION OF ORGANIC COATINGS WITH THIN PLASMA POLYMER FILMS. INFLUENCE ON THE BARRIER PROPERTIES
SERRA, R; ZHELUDKEVICH, ML; GRUNDMEIER, G; FERREIRA, MGS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1401-1405 2006

MUTUAL SOLUBILITIES BETWEEN WATER AND IONIC LIQUIDS
FREIRE, MG; CARVALHO, PJ; DIAS, AMA; QUEIMADA, AJ; SANTOS, LMNBF; FERNANDES, AM+G4; MARRUCHO, IM; COUTINHO, JAP
AMERICAN CHEMICAL SOCIETY, 231: - 121-IEC MAR 26 2006

NANOSCALE CHARACTERIZATION OF FERROELECTRIC MATERIALS FOR PIEZOELECTRIC APPLICATIONS
KHOLKIN, AL; SHVARTSMAN, VV; KISELEV, DA
FERROELECTRICS, 341: 3-19 2006

NEW OXIDE-ION CONDUCTORS LN2+XTI2-XO7-X/2 (LN = DY-LU; X=0.096)
SHLYAKHTINA AV; ABRANTES JCC; LEVCHENKO AV; STEFANOVICH SY; KNOT'KO AV; LARINA LL; SHCHERBAKOVA LG
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516 PART 1-2, PP 422-426 2006

NEW POLYOXOTUNGSTATES WITH LN(III) AND CO(II) AND THEIR IMMOBILIZATION IN SILICA PARTICLES
BALULA, MSS; NOGUEIRA, HIS; CAVALEIRO, AMV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1206-1210 PART 1-2 2006

NON-ISOTHERMAL CRYSTALLISATION OF SIO2-MGO-K2O-3CAO CENTER DOT P2O5 GLASS STUDIES BY IMPEDANCE SPECTROSCOPY
QUEIROZ, CM; FERNANDES, MHV; FRADE, JR
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1078-1082 PART 1-2 2006

ORGANICALLY MODIFIED SILICA-BASED XEROGELS DERIVED FROM 3-AMINOPROPYLTRIMETHOXYSILANE AND 3-ISOCYANATEPROPYLTRIETHOXYSILANE THROUGH CARBOXYLIC ACID SOLVOLYSIS
FU, LS; FERREIRA, RAS; NOBRE, SS; CARLOS, LD; ROCHA, J
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 108-112 PART 1-2 2006

OXYGEN EVOLUTION ON PEROVSKITE-TYPE COBALTITE ANODES: AN ASSESSMENT OF MATERIALS SCIENCE-RELATED ASPECTS
KOVALEVSKY, AV; SVIRIDOV, DV; KHARTON, VV; NAUMOVICH, EN; FRADE, JR
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 377-381 PART 1-2 2006

OXYGEN NONSTOICHIOMETRY AND ION-ELECTRON TRANSPORT IN SRFE0.9M0.1O3-DELTA (M=CR, TI, AL)
PATRAKEEV, MV; LEONIDOV, IA; KOZHEVNIKOV, VL; KHARTON, VV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 382-386 PART 1-2 2006

PARTICLE DISTRIBUTION DESIGN IN A SELF-FLOW ALUMINA REFRACTORY CASTABLE WITHOUT CEMENT
SILVA, AP; SEGADÃES, AM; DEVEZAS, TC
ADVANCES IN SCIENCE AND TECHNOLOGY 45: 2260-2265 2006

PHOTOLUMINESCENCE OF DI-UREASIL HYBRIDS DOPED WITH SILICA COATED AG NANOPARTICLES
BOEV, VI; FERREIRA, RAS; NOBRE, SS; SILVA, CJR; GOMES, MJM; LIZ-MARZAN, LM; CARLOS, LD
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 113-117 PART 1-2 2006

PHOTOLURNINESCENCE CHANGES INDUCED BY SELF-ORGANISATION IN BRIDGED SILSESQUIOXANES
CARLOS, LD; FERREIRA, RAS; NOBRE, SS; WONG, M; MAN, C; MOREAU, JJE; BIED, C; PICHON, B
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 118-122 PART 1-2 2006

POLYNUCLEAR MOLYBDENUM AND TUNGSTEN COMPLEXES CONTAINING 3-HYDROXYPICOLINIC ACID AND EUROPIUM(III)
RODRIGUES, MJE; PAZ, FAA; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, HIS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1305-1309 PART 1-2 2006

PREPARATION AND CHARACTERIZATION OF CHITOSAN-BASED SCAFFOLDS FOR BIOMEDICAL APPLICATIONS
ARAUJO, JV; LOPES-DA-SILVA, JA; ALMEIDA, MM; COSTA, MEV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1005-1009 PART 1-2 2006

PREPARATION AND CHARACTERIZATION OF HYBRID ORGANIC/INORGANIC NANOCOMPOSITES BY IN SITU MINIEMULSION POLYMERIZATION
LEHOCKY, M; ESTEVES, AC; BARROS-TIMMONS, AM; COUTINHO, JAP
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1201-1205 PART 1-2 2006

PREPARATION AND PROPERTIES OF NEW SUPERCONDUCTOR MATERIAL MGB2
MARINHA, D; OLIVEIRA, FJ; REIS, MS; COSTA, FM; CARRASCO, MF; ARAUJO, JP; SOUSA, JB; VIEIRA, JM; AMARAL, VS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 333-337 PART 1-2 2006

PREPARATION OF PHOTOLUMINESCENT MATERIALS FROM A LANTHANIDE-DOPED MICROPOROUS TITANOSILICATE PRECURSOR
LIN, Z; RAINHO, JP; ROCHA, J; CARLOS, LD
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 123-127 PART 1-2 2006

PROCESSING AND CHARACTERIZATION OF (1-X)(NA1/2BI1/2)TIO3- XLA(MG1/2TI1/2)O-3 CERAMICS
SALAK, AN; VYSHATKO, NP; KHOLKIN, AL; FERREIRA, VM; OLEKHNOVICH, NM; RADYUSH, YV; PUSHKAREV, AV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 250-254 PART 1-2 2006

PROPERTIES OF WASTES-BASED EXTRUDED CERAMIC FORMULATIONS
RAUPP-PEREIRA, F; RIBEIRO, MJ; SEGADÃES, AM; LABRINCHA, JA
ADVANCES IN SCIENCE AND TECHNOLOGY, 45: 2218-2223 2006

ROLE OF HYDROGEN PLASMA ON THE ELECTRICAL AND OPTICAL PROPERTIES OF INDIUM ZINC TRANSPARENT CONDUCTIVE OXIDE
RANIERO, L; GONCALVES, A; PIMENTEL, A; ZHANG, S; FERREIRA, I; VILARINHO, PM; FORTUNATO, E; MARTINS, R
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 63-67 PART 1-2 2006

SILICA HYBRID NANOCOMPOSITES
CHERNEV, GE; SAMUNEVA, BI; DJAMBASKI, PR; SALVADO, IMM; FERNANDES, HV
CENTRAL EUROPEAN JOURNAL OF CHEMISTRY, 4 (1): 81-91 MAR 2006

SILICA-SCAVENGING EFFECT IN ZIRCONIA ELECTROLYTES: ASSESSMENT OF LANTHANUM SILICATE FORMATION
KOVALEVSKY, AV; MARQUES, FMB; KHARTON, VV; MAXIM, F; FRADE, JR
IONICS, 12 (3): 179-184 SEP 2006

STABILISATION OF CUO AQUEOUS SUSPENSIONS
GUEDES, M; FERRO, AC; FERREIRA, JMF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1369-1373 PART 1-2 2006

STATISTICAL MODELLING OF THE PARTICLE SIZE COMPOSITION OF AN ALUMINA MATRIX FOR NO-CEMENT SELF-FLOWING REFRACTORY CASTABLES
SILVA, A; SEGADÃES, A; DEVEZAS, T
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 604-608 PART 1-2 2006

STRUCTURAL AND OPTICAL CHARACTERIZATION OF LIGHT EMITTING INGAN/GAN EPITAXIAL LAYERS
PEREIRA, S; CORREIA, MR; ALVES, E
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 38-42 PART 1-2 2006

STRUCTURE AND DIELECTRIC BEHAVIOR OF THE (1-X)LA(MG1/2TI1/2)O-3-XBA(MG1/2W1/2)O-3 MICROWAVE CERAMICS
SALAK, AN; KHALYAVIN, DD; SENOS, AMR; MANTAS, PQ; FERREIRA, VM
FERROELECTRICS, 333: 213-219 2006

SURFACE TENSION MEASUREMENTS OF IMIDAZOLIUM BASED IONIC LIQUIDS
CARVALHO, PJ; FREIRE, MG; QUEIMADA, AJ; MARRUCHO, IM; COUTINHO, JAP
AMERICAN CHEMICAL SOCIETY, 231: - 122-IEC MAR 26 2006

SYNTHESIS AND DISPERSION OF PZT ULTRA-FINE POWDERS
WU, A; VAN GENECHTEN, D; VILARINHO, PM; VAN BAEL, MK
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 179-183 PART 1-2 2006

SYNTHESIS, MAGNETIC AND MOSSBAUER STUDIES OF MECHANICALLY ALLOYED FE0.63SI0.37 A ALLOYS
COSTA, BFO; AMARAL, VS; LE CAER, G
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1265-1268 PART 1-2 2006

TECHNICAL FEATURES EVALUATION OF AN ALUMINA POWDER PREPARED BY COMBUSTION SYNTHESIS
TAVARES, AP; OLHERO, SM; FERREIRA, JMF
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 1546-1550 PART 1-2 2006

TERBIUMPOLYOXOTUNGSTATE ANIONS AS BUILDING UNITS TO FABRICATE NANOSTRUCTURED FILMS
SOUSA, FL; SOARES-SANTOS, PCR; NOGUEIRA, HIS; FERREIRA, RAS; CAVALEIRO, AMV; CARLOS, LD; TRINDADE, T
MATERIALS SCIENCE FORUM 514-516: 1135-1139, PART 1-2 2006

TEXTURE - PROPERTY RELATIONSHIPS IN BI-LAYERED FERROELECTRIC CERAMICS: A CASE STUDY OF SRBI2TA2O9
AMORIN, H; KHOLKIN, AL; COSTA, MEV
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 170-174 PART 1-2 2006

THE EFFECT OF ANNEALING TEMPERATURE ON THE TRANSPORT PROPERTIES OF BSCCO FIBRES GROWN BY LFZ AND EALFZ
CARRASCO, MF; MONTEIRO, JH; AMARAL, VS; SILVA, RF; VIEIRA, JM; COSTA, FM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 338-342 PART 1-2 2006

THE EFFECTS OF CA AND MN EXCESS CO-DOPING IN CMR MANGANITES SOLID SOLUTION STRUCTURES
FIGUEIRAS, F; VIEIRA, JM; GUZIK, ME; LEGENDZIEWICZ, J; TAVARES, PB; AMARAL, VS
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 294-298 PART 1-2 2006

THE GROWTH OF SIC CRYSTALS FROM COSI MOLTEN ALLOY FLUXES
GAO, MX; PAN, Y; OLIVEIRA, FJ; YANG, GY; VIEIRA, JM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 343-347 PART 1-2 2006

THE INFLUENCE OF DC BIAS ON THE DIELECTRIC RESPONSE OF SR1-XCAXTIO3 CERAMICS
TKACH, A; ARAUJO, B; VILARINHO, PM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 240-244 PART 1-2 2006

THE OXIDATION BEHAVIOUR OF TIC MATRIX NI3AL AND FE40AL TOUGHENED COMPOSITES AT HIGH TEMPERATURES
GAO, MX; OLIVEIRA, FJ; PAN, Y; HE, Y; JIANG, EB; BAPTISTA, JL; VIEIRA, JM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 657-661 PART 1-2 2006

THE STUDY OF HIGH TEMPERATURE ANNEALING OF A-SIC:H FILMS
ZHANG, S; HU, Z; RANIERO, L; LIÃO, X; FERREIRA, I; FORTUNATO, E; VILARINHO, PM; PEREIRA, L; MARTINS, R
MATERIALS SCIENCE FORUM, 514 – 516: 18 – 22 2006

THERMOREACTIVITY OF SOL-GEL PRECURSOR FOR ZNO-BASED THIN FILMS
MUŞAT, V; VILARINHO, PM; MONTEIRO, R; FORTUNATO, E; SEGAL, E
MATERIALS SCIENCE FORUM, 514 – 516: 73 – 77 2006

TRANSPORT PROPERTIES AND THERMAL EXPANSION OF SRCE(Y)O3-DELTA CERAMICS
MAROZAU, IP; KHARTON, VV; FRADE, JR; MARQUES, FMB
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 387-391 PART 1-2 2006

TUNING OF MAGNETOCALORIC EFFECT IN FERROMAGNETIC LA-SR MANGANITES THROUGH ER AND EU DOPING
AMARAL, JS; REIS, MS; AMARAL, VS; MENDONCA, TM; ARAUJO, JP; TAVARES, PB; VIEIRA, JM
ADVANCED MATERIALS FORUM III, PTS 1 AND 2, 514-516: 299-303 PART 1-2 2006

TWO THERMODYNAMICS-BASED APPROACHES TO ATOMIC OXYGEN SENSING
ZHELUDKEVICH, ML; YASAKAU, KA
JOURNAL OF SPACECRAFT AND ROCKETS, 43: 426-430 2006

USE OF PHASE DIAGRAMS TO GUIDE CERAMIC PRODUCTION FROM WASTES
SEGADÃES, AM
ADVANCES IN APPLIED CERAMICS, 105 (1): 46-54 FEB 2006

NON SCI PAPERS

ART AND SCIENCE: LOOKING IN THE SAME DIRECTION
MAGALHÃES, MCF; OLIVEIRA, RM
CHEM INTERNATIONAL, 28, 2: 4-8 2006

ATOMIC FORCE MICROSCOPY OF POROUS SIO2-AL2O3 NANOMATERIALS OBTAINED BY SOL-GEL METHOD
IVANOVA, Y; GERGANOVA, TS; ILIEV, I; FERNANDES, MHV; SALVADO, IMM
NANOSCIENCE & NANOTECNOLOGY, 5: 169-173 2005

ATTACHMENT/DETACHMENT OF SACCHAROMYCES CEREVISIAE ON PLASMA DEPOSITED ORGANOSILICON THIN FILMS
LEHOCKY, M; AMARAL, PFF; COELHO, MAZ; STAHEL, P; BARROS-TIMMONS, AM; COUTINHO, JAP
22ND SYMPOSIUM ON PLASMA PHYSICS AND TECHNOLOGY, 56: B1256-B1262, PART 7 SUPPL. B 2006, CZECHOSLOVAK JOURNAL OF PHYSICS

COMPARATIVE STUDY OF LIPOPHILIC EXTRACTIVES OF HARDWOODS AND CORRESPONDING ECF BLEACHED KRAFT PULPS
FREIRE, CSR; PINTO, PCR; SANTIAGO, AS; SILVESTRE, AJD; EVTUGUIN, D; PASCOAL NETO, C
BIORESOURCES, 1(1): 3-17 2006

COMPREHENSIVE MODELLING OF THE EXPERIMENTAL TEMPERATURE AND STRESS RESPONSE OF TIME-DEPENDENT MATERIALS
ANDRÉ, JRS; CRUZ PINTO, JJC
III INTERNATIONAL CONFERENCE ON TIMES OF POLYMERS (TOP) AND COMPOSITES, 1-3 2006, ISCHIA, ITÁLIA

EFEITO DA SUBSTITUIÇÃO DO FELDSPATO POR UM FORMADOR DE FLUXO NA COMPOSIÇÃO DE UM GRÊS PORCELANATO
GIBERTONI, C; SEGADÃES, AM; QUINTEIRO, E; MORELLI, MR
CERÂMICA INFORMAÇÃO, 1-2, 44: 38-44 2006

IN VITRO STUDIES OF BIOACTIVE GLASS/POLYHYDROXYBUTYRATO COMPOSITES
PAIVA, AO; DUARTE, MG; FERNANDES, MHV; GIL, MH; COSTA, NG
MATERIALS RESEARCH, 9 (4): 417-423 2006

INFLUENCE OF THE ALKALI METAL CATION ON THE FRAGMENTATION OF MONENSIN IN ESI-MS/MS
LOPES, NP; PAZ, FAA; GATES, PJ
BRAZILIAN JOURNAL OF PHARMACEUTICAL SCIENCES, 42 (3 JUL/SEPT): 363-367 2006

NANOSTRUCTURED HYBRIDS AS PRECURSORS FOR SYNTHESIS OF SI-AL OXYCARBONITRIDE MATERIALS
IVANOVA, Y; GERGANOVA, TS; FERNANDES, MHV; SALVADO, IMM; KASHCHIEVA, E
JOURNAL OF THE UNIVERSITY OF CHEMICAL TECHNOLOGY AND METTALLURGY, 41, 3: 311-316 2006

NEW HYBRID NANOMATERIALS CONTAINING POLYETHYLENE OXIDE FOR CELL IMMOBILIZATION
CHERNEV, G; SAMUNEVA, B; DJAMBASKI, P; KASHCHIEVA, E; KABAIVANOVA, L; EMAINILOVA, E; SALVADO, IMM; FERNANDES, MHV
NANOSCIENCE & NANOTECNOLOGY, 6: 233-236 2006

OS MATERIAIS CERÂMICOS COMO AGENTES INOVADORES DA JOALHARIA, CERÂMICA INDUSTRIAL
APARO, E; ABRANTES, JCC
CERÂMICA INDUSTRIAL, 11 (1): 18-20 2006

QUANTIFICATION OF PHASES IN REFORMULATED COMPOSITIONS OF PORCELAINIZED STONEWARE TILE
GIBERTONI, C; SEGADÃES, AM; MORELLI, MR
QUALICER'2006, POS.121-POS.124 (CD-ROM) 2006, CASTELLÓN, ESPANHA

SELF-MATED SLIDING BEHAVIOUR OF CVD NANOCRYSTALLINE DIAMOND COATED SILICON NITRIDE CERAMICS FOR TRIBOLOGICAL APPLICATIONS
ABREU, CS; AMARAL, M; OLIVEIRA, FJ; SILVA, RF; GOMES, JR
5TH INTERNATIONAL CONFERENCE ON MECHANICS AND MATERIALS IN DESIGN M2D'2006, 2006, PORTO, PORTUGAL

SILICA HYBRID NANOCOMPOSITES
CHERNEV, G; SAMUNEVA, B; DJAMBASKI, P; SALVADO, IMM; FERNANDES, HV
CENTRAL EUROPEAN JOURNAL OF CHEMISTRY, CEJC, 4(1): 81-91 2006

SI-O-C-B AMORPHOUS MATERIALS FROM ORGANIC-INORGANIC HYBRID PRECURSORS
IVANOVA, Y; VUEVA, Y; FERNANDES, MHFV
JOURNAL OF THE UNIVERSITY OF CHEMICAL TECHNOLOGY AND METTALLURGY, 41 (4): 417-422 2006

STUDENTS' QUESTIONS: BUILDING A BRIDGE BETWEEN KOLB'S LEARNING STYLES AND APPROACHES TO LEARNING
PEDROSA, H; ALMEIDA, P; TEIXEIRA-DIAS, JJC; WATTS, M
EDUCATION + TRAINING, 48: 2/3, 97-111 2006

TEMPERATURE AND STRESS INFLUENCE IN THE DESCRIPTION OF TIME-DEPENDENT MATERIALS
ANDRÉ, JRS; CRUZ PINTO, JJC
13TH INTERNATIONAL CONFERENCE ON DEFORMATION, YIELD AND FRACTURE OF POLYMERS, DYFP 2006, 235-238 2006, KERKRADE, HOLANDA

WASTEWATER DISINFECTION BY PHOTODYNAMIC TECHNOLOGY
CARVALHO, CMB; GOMES, ATPC; FAUSTINO, MAF; TOME, JPC; NEVES, MGPMS; TOME, AC; LIN, Z; RAINHO, JP; ALMEIDA, MA; CUNHA, MA; ROCHA J; CAVALEIRO, JAS
2ND INTERNATIONAL WATER CONFERENCE (IWC2006), 23-26 2006, PORTO, PORTUGAL

PROCEEDINGS OF INTERNATIONAL CONFERENCES

CATALYTIC PERFORMANCE OF MICROPOROUS NB AND MESOPOROUS NB OR AL SILICATES IN THE DEHYDRATION OF D-XYLOSE TO FURFURAL
VALENTE, AA; DIAS, AS; LIMA, S; BRANDÃO, P; PILLINGER, M; PLÁCIDO, H; ROCHA, J
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1203-1206 2006, VIGO, SPAIN

CONTRIBUTION OF E. GLOBULUS KRAFT PULP COMPONENTS TO ITS KAPPA NUMBER AND BRIGHTNESS
NASCIMENTO, V; EVTUGUIN, DV; SILVESTRE, A; LOPES, JC; SOARES, J
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 402-405 2006, VIENNA, AUSTRIA

DEVELOPMENT OF INTEGRATED PHOTONIC WAVEGUIDES BASED ON ORGANIC–INORGANIC HYBRIDS
FERREIRA, RAS; NOGUEIRA, R; GUALDINO, A; CARLOS, LD; SILVA, NJO; FU, LS; TEIXEIRA, ALJ; PELLEGRINO, LP; MONTEIRO, P; ANDRÉ PS
13TH INTERNATIONAL CONFERENCE ON TELECOMMUNICATIONS - ICT, 2006

EXTRACTÁVEIS LIPOFÍLICOS EM PASTA KRAFT DE E. GLOBULUS. COMPORTAMENTO DURANTE O BRANQUEAMENTO ECF
FREIRE, CSR; SILVESTRE, AJD; PASCOAL NETO, C
NEWSLETTER DIGEST, 2006

GROWTH OF NANOPHASE SEMICONDUCTORS ON SURFACE MODIFIED CELLULOSIC FIBERS
NEVES, MC; MONTEIRO, OC; MARQUES, PA; GONÇALVES, G; PINTO, R; NETO, CP; TRINDADE, T
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1175-1178 2006, VIGO, SPAIN

HYDROTHERMAL SYNTHESIS OF A NOVEL MICROPOROUS YTTRIUM-TIN-SILICATE
LIN, Z; ROCHA, J
PERSPECTIVA DE LA INVESTIGACIÓN SOBRE MATERIALS EN ESPAÑA EN EL SIGLO XXI, IX CONGRESO NACIONAL DE MATERIALES, VOL II: 1207-1210 2006, VIGO, SPAIN

INDUSTRIAL CORK BY-PRODUCTS: A RENEWABLE SOURCE OF VALUABLE CHEMICALS
SOUSA, AF; PINTO, PCRO; SILVESTRE, AJD; NETO, CP
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 518-522 2006, VIENNA, AUSTRIA

INFLUENCE OF ADMIXTURES IN THE PROPERTIES OF HYDRAULIC LIME BASED MORTARS
SEABRA, MP; LABRINCHA, JA; FERREIRA, VM
THE HERITAGE, WEATHERING AND CONSERVATION INTERNATIONAL CONFERENCE (HWC'2006), VOL 1: 43-50 2006

INTER- AND INTRAMOLECULAR BONDING: TEACHING AND LEARNING APPROACHES IN THE BASIC SCHOOL CYC
OSÓRIO, MMP; SANTOS, TM; ROCHA, GM
THE INTERNATIONAL CONFERENCE IN MATHEMATICS, SCIENCES AND SCIENCE EDUCATION, 103-109: 2006, AVEIRO, PORTUGAL

ISOLATION AND CHARACTERIZATION OF DIOXANE LIGNIN FROM LEAF SHEATHS OF BANANA PLANT 'DWARF CAVENDISH'
OLIVEIRA, L; EVTUGUIN, DV; CORDEIRO, N; SILVESTRE, AJD; SILVA, AMS; TORRES, IC
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 413-416 2006, VIENNA, AUSTRIA

LOW COST LASER UV WRITTEN OPTICAL WAVEGUIDES IN ORGANIC–INORGANIC HYBRIDS
FERREIRA, RAS; NOGUEIRA, R; ANDRÉ, PS; GUALDINO, A; CARLOS LD; SILVA, NJO; FU, LS; DE ZEA BERMUDEZ, V; TEIXEIRA, ALJ; PELLEGRINO, LP; MONTEIRO, P
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1-4 2006, VIGO, SPAIN

LOW COST UV PATTERNABLE ORGANIC-INORGANIC SOL-GEL SILOXANEPOLY(OXYETHYLENE) MATERIALS FOR INTEGRATED OPTICS
ANDRÉ, PS; NOGUEIRA, R; FERREIRA, RAS; GUALDINO, A; CARLOS, LD; SILVA, NJO; FU, LS; TEIXEIRA, ALJ; PELLEGRINO, LP; MONTEIRO, P
ICTON, 1: 223, WE.C1.6 2006

MECHANICAL CHARACTERIZATION OF A WC-NI COMPOSITE PREPARED FROM SPUTTER-DEPOSITED POWDER
FERNANDES, CM; SENOS, AMR; CASTANHO, JM; VIEIRA, MT; ANTUNES, JM
PROCEEDING OF EURO PM2006, VOL 1: 37-41 2006, BELGIUM

NEW HYBRID MATERIALS BASED ON CELLULOSE FIBRES AND TITANIUM DIOXIDE NANOPARTICLES
MARQUES, PAAP; GONÇALVES, G; TRINDADE, T; NETO CP
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 122-125 2006, VIENNA, AUSTRIA

NEW POLYOXOMETALATE-LACCASE INTEGRATED SYSTEM FOR KRAFT PULP DELIGNIFICATION
GAMELAS, J; PONTES, AS; EVTUGUIN, DV; XAVIER, AMRB
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 60-63: 2006, VIENNA, AUSTRIA

PRELIMINARY STUDIES ON THE DEVELOPMENT OF LIME BASED MORTARS FOR ADOBE MASONRY
PAIVA, H; VELOSA, A; MARQUES, E; LABRINCHA, JA; COROADO, J; FERREIRA, VM
THE HERITAGE, WEATHERING AND CONSERVATION INTERNATIONAL CONFERENCE (HWC'2006), VOL 1: 103-107 2006

ROLE OF WATER REDUCING AGENTS IN MORTAR BEHAVIOUR
PAIVA, H; LABRINCHA, JA; FERREIRA, VM
THE HERITAGE, WEATHERING AND CONSERVATION INTERNATIONAL CONFERENCE (HWC'2006), VOL 1: 71-76 2006

STRUCTURAL CHARACTERIZATION OF GLUCANS FROM E. GLOBULUS WOOD AND THEIR FATE IN KRAFT PULPING
LISBOA, SA; EVTUGUIN, DV; NETO, CP
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 362-365 2006, VIENNA, AUSTRIA

STRUCTURAL CHARACTERIZATION OF LIGNIN FROM FLORAL STALK AND RACHIS OF 'DWARF CAVENDISH'
OLIVEIRA, L; EVTUGUIN, DV; CORDEIRO, N; SILVESTRE, AJD; SILVA, MCB
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 417-420 2006, VIENNA, AUSTRIA

STRUCTURAL STUDIES OF ß-CYCLODEXTRIN AND PERMETHYLATED ß-CYCLODEXTRIN INCLUSION COMPOUNDS OF A CYCLOPENTADIENYL IRON CARBONYL COMPLEX
GONÇALVES, IS; BRAGA, SS; PAZ, FAA; PILLINGER, M; SEIXAS, JD; ROMÃO, CC
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1019-1022 2006, VIGO, SPAIN

STUDY OF OLD AND REHABILITATION MORTARS BY COMMON ANALYTICAL TECHNIQUES
MARQUES, SF; LABRINCHA, JA; SILVA, LM; FERREIRA, VM
THE HERITAGE, WEATHERING AND CONSERVATION INTERNATIONAL CONFERENCE (HWC'2006), VOL 1: 63-69 2006

SURFACE CHARACTERIZATION OF CELLULOSE FIBERS PARTIALLY ESTERIFIED WITH FATTY ACIDS
FREIRE, CSR; SILVESTRE, AJD; NETO, CP; GANDINI, A; FARDIM, P; HOLMBOM, B
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 113-116: 2006, VIENNA, AUSTRIA

SURFACE MODIFICATION OF CELLULOSE FIBRES WITH FLUORINE-CONTAINING COMPOUNDS
CUNHA, AG; FREIRE, CSR; SILVESTRE, AJD; NETO, CP; GANDINI, A
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 216-219: 2006, VIENNA, AUSTRIA

SYNTHESIS AND CHARACTERIZATION OF LAYERED DOUBLE HYDROXIDES INTERCALATED BY OXOMOLYBDENUM AND OXOTUNGSTEN COMPLEXES
MONTEIRO, B; GAGO, S; DIAS, AS; PILLINGER, M; VALENTE, AA; GONÇALVES, IS
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1023-1026 2006, VIGO, SPAIN

SYNTHESIS AND PROPERTIES OF SIO2 COATED BI2S3/POLYMER NANOCOMPOSITES
ESTEVES, AC; BARROS-TIMMONS, A; BOURGEAT-LAMI, E; LIZ-MARZAN, L; TRINDADE, T
IX NATIONAL CONGRESS OF MATERIALS, VOL II: 1179-1182 2006, VIGO, SPAIN

SYNTHESIS OF SIO2/CELLULOSE FIBRES NANOCOMPOSITES
MARQUES, PAAP; PINTO, RJB; BARROS-TIMMONS, A; TRINDADE, T; NETO, CP
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 386-388 2006, VIENNA, AUSTRIA

THERMAL AND MECHANICAL PROPERTIES OF CELLULOSE/SIO2 HYBRIDS PREPARED BY A SOL-GEL METHOD
SEQUEIRA, S; PORTUGAL, I; EVTUGUIN, DV
THE 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 496-499 2006, VIENNA, AUSTRIA

BOOKS

ADVANCED MATERIALS FÓRUM III
VILARINHO, PM
TRANS TECH PUBLICATIONS, ISBN: 0-87849-402-2

BOOK CHAPTERS

CALCIUM AND MAGNESIUM PHOSPHATES: NORMAL AND PATHOLOGICAL MINERALIZATION
MAGALHÃES, MCF; MARQUES, PAAP; CORREIA, RN
EDS. KÖNIGSBERGER, E; KÖNIGSBERGER, LC, CHP 3: 71-123
2006, JOHN WILEY & SONS, LTD

HYBRID MATERIALS FOR OPTICAL APPLICATIONS
CARLOS, LD; FERREIRA, RAS; DE ZEA BERMUDEZ, V
HYBRID MATERIALS - SYNTHESIS, CHARACTERIZATION AND APPLICATIONS, EDS. KICKELBICK, G, CHP 9: 337-400 2006, WILEY-VCH

TRANSMISSION ELECTRON MICROSCOPY STUDIES OF NANOCRYSTALS
PINNA, N; WILLINGER, M-G
ENCYCLOPEDIA OF PARTICLE TECHNOLOGY

PLATING SLUDGE VALUE-ADDING BY APPLICATION OF HYDROMETALLURGICAL PROCESSES (CHAPTER 1)
SILVA, JE; PAIVA, AP; SOARES, D; LABRINCHA, JA; CASTRO, F
TRENDS IN HAZARDOUS MATERIALS RESEARCH, CHP 32: 1-62
2006, NOVA SCIENCE PUBLISHERS, NEW YORK

SCANNING PROBE MICROSCOPY: ELECTRICAL AND ELECTROMECHANICAL PHENOMENA AT THE NANOSCALE
KHOLKIN, AL; KALININ, SV; ROELOFS, A; GRUVERMAN, A
EDS. KALININ, S; GRUVERMAN, A., VOL 1: 1-6 2006, SPRINGER

PATENTS

CORROSION INHIBITING PIGMENT COMPRISING NANORESERVOIRS OF CORROSION INHIBITOR
MÖHWALD, H; SHCHUKIN, DG; ZHELUDKEVICH, ML; FERREIRA MGS
10/03/2006, PATENT APPLICATION NR. EP06 004 993.9

MÉTODO RÁPIDO DE PREPARAÇÃO DE ARTEFACTOS CERÂMICOS POROSOS
SEGADÃES, AM; MORELLI, MR; ZURBA, NK
UNIVERSITY OF AVEIRO, PORTUGAL AND FEDERAL UNIVERSITY OF SÃO CARLOS, BRASIL, 24/05/2006, PATENT APPLICATION NR 103 486

BLOCO NANOCELULAR PARA CONSTRUÇÃO DE ALVENARIAS
SEGADÃES, AM; MORELLI, MR; ZURBA, NK
UNIVERSITY OF AVEIRO, PORTUGAL AND FEDERAL UNIVERSITY OF SÃO CARLOS, BRASIL, 24/05/2006, PATENT APPLICATION NR 103 487

PAVIMENTO HIDROACTIVO FERTILIZANTE DO CICLO GEOBIOQUÍMICO DA FOTOSSÍNTESE
SEGADÃES, AM; MORELLI, MR; ZURBA, NK
UNIVERSITY OF AVEIRO, PORTUGAL AND FEDERAL UNIVERSITY OF SÃO CARLOS, BRASIL, 24/05/2006, PATENT APPLICATION NR 103 488

CIMENTO BELÍTICO FABRICADO EXCLUSIVAMENTE A PARTIR DE LAMAS DE ANODIZAÇÃO DE ALUMÍNIO, LAMAS DE ESTAÇÕES DE TRATAMENTO DE ÁGUA POTÁVEL, LAMAS DE CORTE DE MÁRMORE E AREIA DE FUNDIÇÃO
LABRINCHA, JA; RAUPP-PEREIRA, F; SEGADÃES, AM
UNIVERSITY OF AVEIRO, PORTUGAL, 29/12/2006, PATENT APPLICATION NR 103 631

PIGMENTO CERÂMICO PRETO, ISENTO DE COBALTO, COM ESTRUTURA BASEADA NA ESPINELA
LABRINCHA, JA; RIBEIRO, MJP; COSTA, MG; DELLA, VP
UNIVERSITY OF AVEIRO, PORTUGAL, 27/12/2006, PATENT APPLICATION NR 103 624

PIGMENTO CERÂMICO AZUL-TURQUESA ISENTO DE COBALTO, VANÁDIO E ZIRCÓNIO, CONTENDO LAMA DE CROMAGEM/NIQUELAGEM
LABRINCHA, JA; TRINDADE, T; RIBEIRO, MJP; COSTA, MG
UNIVERSITY OF AVEIRO, PORTUGAL, 26/07/2006, PATENT APPLICATION NR 103 540

OTHER RESEARCH ACTIVITIES

Until 31 st December 2006

ABSTRACTS IN CONFERENCE BOOKS

A NOVEL SOLUBLE THIOPHENE-BASED CONJUGATED POLYMER
STAGNARO; POLI, F; COSTA, G; GANDINI, A
ITALY, "TIMES OF POLYMERS" 2006 ISCHIA, 152, JUN 2006

A SOLVENT-FREE PROCESS OF COMBINING KEGGIN HETEROPOLYACIDS WITH PYRIDINE DERIVATIVES
SANTOS, FM; MIDÕES, PC; FÉLIX, V; CAVALEIRO, AMV; FERREIRA, PF; BESLEY, M; GOMES, EM
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, 14-16 DEC 2006

ABNORMAL DOMAIN SWITCHING CHARACTER IN PZT THIN FILMS
WU, A; LI, B; VILARINHO, PM; WU D; GRUVERMAN, A
USA, MATERIALS RESEARCH SOCIETY-MRS FALL MEETING, 594, 2006

ABSTRACTS OF WORKSHOP ON LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS
FERREIRA, RAS; FERREIRA, AL; CARLOS LD
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 52, 27-28 JAN 2006

AMPHIPHILIC MOLECULES AND CYCLODEXTRINS IN AQUEOUS SOLUTION: 1H NMR AND SANS STUDIES
DIAS, C; LIMA, S; TEIXEIRA, J; TEIXEIRA-DIAS, JJC
TORINO, ITALY, XIII INTERNATIONAL CYCLODEXTRIN SYMPOSIUM, 0,13263888889, 2006

ANALYSIS OF MICROSATELLITE INSTABILITY IN MICE EXPOSED TO CADMIUM CHLORIDE
ALMEIDA, T; OLIVEIRA, H; PEREIRA, ML; SANTOS, C; LOPES, T
AVEIRO, PORTUGAL, XV NATIONAL CONGRESS OF BIOCHEMISTRY, 49, 2006

APPLICATION OF MICROWAVE ACID DIGESTION COUPLED WITH UV/VIS SPECTROPHOTOMETRY FOR DETERMINATION OF CHROMIUM COPPER ARSENATE ACUTE TOXICITY IN VIVO
MATOS, RC; TEIXEIRA, I; MORAIS, S; PEREIRA, ML; DE JESUS, JP
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, 256, 14-16 DEC 2006

BINUCLEAR RUTHENIUM(II) COMPLEXES WITH BRIDGING POLYPYRIDILYC LIGANDS: A STUDY BY ELECTROSPRAY MASS SPECTROMETRY
SANTOS, TM; MADUREIRA, JP; BARROS, CM; SANTANA-MARQUES, G; FELIX, V
CAPE TOWN, SOUTH AFRICA, XXXVIITH INTERNATIONAL CONFERENCE OF COORDINATION CHEMISTRY, 406, 13-18 AUG 2006

BIODEGRADABLE ORGANIC-INORGANIC HYBRID SYSTEM DOPED WITH LANTHANIDE COMPLEXES
FERNANDES, M; NOBRE, S; DE ZEA BERMUDEZ, V; CHARAS, A; MORGADO, J; FERREIRA, RAS; CARLOS, LD
DIJON, FRANCE, MATERIAUX 2006, 13-17 NOV 2006

BLEACHING OF KRAFT PULP EMPLOYING POLYOXOMETALATES AND LACCASE
GAMELAS, JAF; PONTES, ASN; EVTUGUIN, DV; XAVIER, AMRB
PORTUGAL, 3RD EUROPEAN MEETING IN OXIZYMES, 55, 2006

CAPACIDADE DE ABSORÇÃO DO CHUMBO POR PLANTAS DO GÉNERO CISTUS DESENVOLVIDAS EM AMBIENTES MINEIROS
ABREU, MM; SANTOS, ES; ANJOS, C; MAGALHÃES, MCF; NABAIS, C
HUELVA, ESPANHA, II CONGRESO IBÉRICO DE LA CIENCIA DEL SUELO, IICICS2006, 52, 2006

CARACTERIZACIÓN ESTRUCTURAL DE VIDRIOS BIOACTIVOS DEL SISTEMA SIO2-CAO-NA2O-MGO-P2O5
AGUIAR, H; SOLLA, E; SERRA, J; GONZÁLEZ , P; LEÓN, B; ALMEIDA, N; CACHINHO, S; CORREIA, R; OLIVEIRA, JM; FERNANDES, MH
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 20-23 JUN 2006

CATALYTIC PERFORMANCE OF MICROPOROUS NB AND MESOPOROUS NB OR AL SILICATES IN THE DEHYDRATION OF D-XYLOSE TO FURFURAL
VALENTE, AA; DIAS, AS; LIMA, S; BRANDÃO, P; PILLINGER, M; PLÁCIDO, H; ROCHA, J
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 11, 20-23 JUN 2006

CATALYTIC PROPERTIES OF THE DIOXOMOLYBDENUM SILOXIDE MOO2(OSIPH3)2 AND ITS 2,2'-BIPYRIDINE ADDUCT MOO2(OSIPH3)2(BPY)
BALULA, MS; BRUNO, SM; MONTEIRO, B; PILLINGER, M; RIBEIRO-CLARO, P; GONÇALVES, IS; VALENTE, AA
DRESDEN, GERMANY, 1ST INTERNATIONAL IUPAC CONFERENCE ON GREEN-SUSTAINABLE CHEMISTRY, I.1-038 PG. 217, 10-15 SEPT 2006

CATALYTIC STUDIES OF NEW CHLORO AND TRIPHENYLSILOXY DERIVATIVES OF DIOXOMOLYBDENUM(VI) FOR OLEFIN EPOXIDATION
BALULA, MS; BRUNO, SM; PEREIRA, CCL; NOLASCO, M; PILLINGER, M; RIBEIRO-CLARO, P; GONÇALVES, IS; VALENTE, AA
ST PETERSBURG, RUSSIA, 4TH EFCATS SCHOOL ON CATALYSIS: CATALYST DESIGN - FROM MOLECULAR TO INDUSTRIAL LEVEL, P-5: 79, 2006

CHARACTERIZATION AND MECHANICAL PERFORMANCE OF THE MG-STABILIZED B-CA3(PO4)2 PREPARED FROM MG-SUBSTITUTED CA-DEFICIENT APATITE
KANNAN, S; LEMOS, AF; ROCHA, JH; FERREIRA, JMF
NANTES, FRANCE, 20TH EUROPEAN CONFERENCE ON BIOMATERIALS 27 SEP, 01 OCT 2006

CHARACTERIZATION OF FERROELECTRICS DOMAIN STRUCTURE OF PZT THIN FILMS BY PFM
BDIKIN, IK; KHOLKIN, AL; KIM, SH
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 184, 18-22 JUN 2006

CHEMICAL MODIFICATION OF ELECTRODES FOR ELECTROANALYSIS
CARAPUÇA, HM; ROCHA, LS; SILVA, CP; FERNANDES, D; CAVALEIRO, AM
PORTO, PORTUGAL, JORNADAS DE ELECTROQUÍMICA E INOVAÇÃO 2006, E-INOV 2006, 41, 10 OCT 2006

CHIRALLY TEMPLATED POROUS CLAY HETEROSTRUCTURES ASSEMBLED FROM A NATURAL CLAY
RODRIGUES, R; CARVALHO, AP; PIRES, J; FERREIRA, P
AVEIRO, PORTUGAL, III JORNADAS CICECO, 61, 13-14 JAN 2006

CHIRALLY TEMPLATED POROUS CLAY HETEROSTRUCTURES ASSEMBLED FROM A NATURAL CLAY
FERREIRA, P; RODRIGUES, R; CARVALHO, AP; PIRES, J
SLOVENIA, 5TH INTERNATIONAL CONFERENCE ON INORGANIC MATERIALS, 91, 2006

COMPUTATIONAL EXPLORATION AND PHYSICAL PROPERTIES OF THE NANOSTRUCTURED ULTRA-THIN PVDF FERROELECTRIC POLYMERS FILMS
BYSTROV, V; PARAMONOVA, E; BYSTROVA, N; SAPRONOVA, A; FRIDKIN, V; VERKHOVSKAYA, K; KHOLKIN, A; DEKHTYAR, Y; MESSNER, C; POLYAKA, N; KATASHEV, A; KLIEM, H; FLORANGE, R; TADROS-MORGANE, R; BDIKIN, I
RUSSIA, 1ST INTERNATIONAL CONFERENCE ON MATHEMATICAL BIOLOGY AND BIOINFORMATICS, 25-26, 2006

CORROSION PERFORMANCE OF CERIUM DOPED SILANE PRE-TREATMENTS ON ALUMINIUM ALLOYS
CABRAL, AM; SERRA, R; ZHULEDKEVICH, M; MONTEMOR, MF; FERREIRA, MGS
PORTO, PORTUGAL, FORUM ON ELECTROCHEMISTRY AND INNOVATION 2006, 42, 20 OCT 2006

CORROSION PROTECTION OF METALLIC SUBSTRATES USING PRETREATMENTS BASED ON SILANE COATINGS MODIFIED WITH CORROSION INHIBITORS.
MONTEMOR, MF; ZHELUDEVICH, M; FERREIRA, MGS
DOURDAN, FRANCE, INTERNATIONAL SYMPOSIUM ON ELECTROCHEMICAL METHODS IN CORROSION RESEARCH, 111, 18-23 JUN 2006

CRYSTAL STRUCTURE AND DIELECTRIC PROPERTIES OF NEW A-SITE DEFICIENT LA5/3MGTAO6 DOUBLE PEROVSKITE
KHALYAVIN, DD; AULIKA, I; SENOS, AMR; MANTAS, PQ
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, , 18-22 JUN 2006

CRYSTAL STRUCTURE, PHASE SEPARATION, AND MAGNETIC PROPERTIES OF LSMO-BASED MULTIFERROIC COMPOSITE CERAMICS
SONG, GB; KHOLKIN, AL; AMARAL, JS; AMARAL, VS
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 215, 18-22 JUN 2006

CRYSTALLIZATION AND ELECTRICAL CHARACTERIZATION OF NA0.5BI0.5TIO3 (NBT) THIN FILMS OBTAINED BY A MODIFIED SOL-GEL ROUTE
RÉMONDIÈRE, F; MALIC, B; KOSEC, M; MARCHET, P; WU, A; VILARINHO, PM; MERCURIO, JP
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 125, 18-22 JUN 2006

DECOLOURIZATION AND DETOXIFICATION OF KRAFT EFFLUENT BY TRAMETES VERSICOLOR
AGAPITO, MSM; TAVARES, APM; EVTUGUIN, DV; XAVIER, AMRB
GERMANY, 3RD INTERNATIONAL CONGRESS ON BIOCATALYSIS, 146, 2006

DECOLOURIZATION AND DETOXIFICATION OF KRAFT EFFLUENT STREAMS BY LIGNOLITIC ENZYMES OF TRAMETES VERSICOLOR.
AGAPITO, MSM; EVTUGUIN, DV; XAVIER, AMRB
PORTUGAL, 3RD EUROPEAN MEETING IN OXIZYMES, 59, 2006

DEFECT TRANSPORT MODELLING IN MONOCLINIC LA2-XPRXTI2-YNBYSIO9+δ
PIVAK, YV; KHARTON, VV; NAUMOVICH, EN; FRADE, JR
POLAND, INTERNATIONAL CONFERENCE “MODELLING AND DESIGN OF MOLECULAR MATERIALS 2006”, 44, 2006

DEHYDRATION OF D-XYLOSE OVER MICROPOROUS AND MESOPOROUS NIOBIUM SILICATES
VALENTE, AA; DIAS, AS; LIMA, S; BRANDÃO, P; PILLINGER, M; ROCHA, J
AVEIRO, PORTUGAL, III JORNADAS CICECO, 29, 13-14 JAN 2006

DESIGNING NOVEL ORGANIC-INORGANIC FRAMEWORKS
PAZ, FAA; KLINOWSKI, J
WARSAW UNIVERSITY, POLAND, 18TH IUPAC CONFERENCE ON PHYSICAL ORGANIC CHEMISTRY - ICPOC 18, 20-25 AUG 2006

DEVELOPMENT OF INTEGRATED PHOTONIC WAVEGUIDES BASED ON ORGANIC–INORGANIC HYBRIDS
FERREIRA, RAS; NOGUEIRA, R; GUALDINO, A; CARLOS, LD; SILVA, NJO; FU, LS; TEIXEIRA, ALJ; PELLEGRINO, LP; MONTEIRO, P; ANDRÉ, PS
INTERNATIONAL CONFERENCE ON TELECOMUNICATIONS ICT-2006, 09-12 MAY 2006

DIABETES INDUCES SPERMATOGENESIS AND EPIDIDYMAL ALTERATIONS IN GK AND STZ-TREATED RAT MODELS DOR DIABETES
AMARAL, S; OLIVEIRA, H; PEREIRA, ML; RAMALHO-SANTOS, J
AVEIRO, PORTUGAL, XV NATIONAL CONGRESS OF BIOCHEMISTRY, 127, 2006

DIELECTRIC CHARACTERIZATION OF LA(MG1/2TI1/2)O3 - (NA1/2BI1/2)TIO3 MICROWAVE CERAMICS
SALAK, AN; MALYSH, TV; FERREIRA, VM; VIEIRA, LG; RIBEIRO, JL
FINLAND, 4TH INTERNATIONAL CONFERENCE ON MICROWAVE MATERIALS AND THEIR APPLICATION, P-09, 2006

DIELECTRIC PROPERTIES OF BT-LMT MIXED CERAMICS
KEBURIS, P; BANYS, J; BRILINGAS, A; SALAK, A; FERREIRA, VM
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 247, 18-22 JUN 2006

DIOXOMOLYBDENUM(VI) IMMOBILIZATION IN MODIFIED MESOPOROUS MATERIALS: APPLICATION IN OLEFIN EPOXIDATION
BRUNO, SM; VALENTE, AA; FERNANDES, JA; PILLINGER, M; RIBEIRO-CLARO, P; GONÇALVES, IS
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, P28: 152, 14-16 DEC 2006

DIOXOMOLYBDENUM(VI) MODIFIED MESOPOROUS MATERIALS AS CATALYSTS FOR THE EPOXIDATION OF OLEFINS
BRUNO, SM; VALENTE, AA; FERNANDES, JA; MARTINS, LS; GONÇALVES, IS; PILLINGER, M; RIBEIRO-CLARO, P; ROCHA, J
AVEIRO, PORTUGAL, III JORNADAS CICECO, 55, 13-14 JAN 2006

DYNAMICS OF SHORT AND LONG POLY(ACRYLIC ACID) CHAINS HYDROPHOBICALLY MODIFIED WITH PYRENE FOLLOWED BY FLUORESCENCE TECHNIQUES
SEIXAS DE MELO, J; COSTA, T; FRANCISCO, A; MAÇANITA, AL; GAGO, S; GONÇALVES, IS
VILAMOURA, PORTUGAL, SUMMER SCHOOL OF ULTRAFAST REACTION DYNAMICS AND APPLICATIONS, 41, 2006

EFFECT OF ANION, CATION, TEMPERATURE AND WATER CONTENT ON THE SURFACE TENSION OF IMIDAZOLIUM BASED IONIC LIQUIDS
CARVALHO, PJ; FREIRE, MG; QUEIMADA, AJ; MARRUCHO, IM; COUTINHO, JAP
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 26, 2006

EFFECT OF HYDROTHERMAL SYNTHESIS CONDITIONS ON THE TITANIUM OXIDE NANOTUBES FORMATION
MAXIM, F; FERREIRA, P; VILARINHO, PM
AVEIRO, PORTUGAL, III JORNADAS CICECO, 60, 13-14 JAN 2006

EFFECT OF OXYGEN TRANSFER ON LIPASE PRODUCTION BY YARROWIA LIPOLYTICA IN THE PRESENCE OF PERFLUOROCHEMICALS
AMARAL, PFF; FREIRE, MG; ROCHA-LEÃO, MHM; MARRUCHO, IM; COELHO, MAZ; COUTINHO, JAP
BRASIL, XVI CONGRESSO BRASILEIRO DE ENGENHARIA QUÍMICA, 5142-5149, 2006

ELECTRICAL AND MICROSTRUCTRUAL CHANGES OF PVDF UNDER DIFFERENT PROCESSING CONDITIONS BY SCANNING FORCE MICROSCOPY
LANCEROS-MENDEZ, S; SERRADO NUNES, J; SENCADAS, V; BELSLEY, M; BEIGE, H; KOUVATOV, A; VILARINHO, P; WU, A
USA, MATERIALS RESEARCH SOCIETY-MRS FALL MEETING, 53, 2006

ELECTRICAL CHARACTERIZATION OF GLASSES AND GLASS-CERAMICS OF THE SIO2-MGO-NA2O SYSTEM
BARROCA, N; FERNANDES, MH; VILARINHO, PM
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 18-22 JUN 2006

ELECTRICAL CHARACTERIZATION OF PZN-PT CERAMICS PREPARED BY THE SEEDING METHOD
WU, A; LI, Z; VILARINHO, PM
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 313, 18-22 JUN 2006

ELECTRICAL CHARACTERIZATION OF SIO2:LINBO3 GLASS AND GLASS CERAMICS USING DC CONDUCTIVITY, TSDC MEASUREMENTS AND DIELECTRIC SPECTROSCOPY
GRAÇA, MPF; FERREIRA DA SILVA, MG; VALENTE , MA
POZNAN, PIDS&BDS 2006, 2006

ELECTROCHEMISTRY OF TETRABUTYLAMMONIUM SALTS OF KEGGIN-TYPE POLYOXOTUNGSTATES ADSORBED ON GLASSY CARBON ELECTRODES
FERNANDES, D; CARAPUÇA, HM; CAMPOS, I; CAVALEIRO, AM
CORUNHA, SPAIN, IX IBERIC MEETING OF ELECTROCHEMISTRY, 114, 10-13 JUL 2006

ELECTROSTRICTION INDUCED PIEZOELECTRICITY AND MEMORY EFFECTS IN BT-LMT MIXED CERAMICS
BANYS, J; SAMULIONIS, V; SALAK, A; FERREIRA, VM; KEBURIS, P
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 263, 18-22 JUN 2006

EMPLOYING HIGH-RESOLUTION SOLID-STATE NMR IN SOLID-STATE SCIENCE
MAFRA, L; ROCHA, J; PAZ, FAA; FERNANDEZ, C
AVEIRO, PORTUGAL, III JORNADAS CICECO, 18, 13-14 JAN 2006

ENERGY TRANSFER IN ORGANIC-INORGANIC HYBRIDS INCORPORATING EU3+-BASED IONIC SALTS AND β-DIKETONATES COMPLEXES
CARLOS, LD; FERREIRA, RAS; NOBRE, SS; PISHEL, U; LIMA, PP; FREIRE, RO; MALTA, OL
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, FI2, 04-09 SEPT 2006

ENERGY TRANSFER WOTHIN AMINE-FUNCTIONALISED ORGANIC/INORGANIC HYBRIDS MODIFIED BY LANTHANIDE IONS
CARLOS, LD; NOBRE, SS; FU, L; FERREIRA, RAS; NUNES, SC; GONÇALVES, MC; DE ZEA BERMUDEZ, V
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 20-23 JUN 2006

ENTHALPIES OF VAPORIZATION OF IONIC LIQUIDS BY CALVET MICROCALORIMETRY
SANTOS, LMNBF; GOMES, LR; COUTINHO, JAP; ESPERANÇA, JMSS; REBELO, LPN
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 240, 2006

EQUILIBRIUM AND INTERFACIAL PROPERTIES OF WATER + ALKANES: MEASUREMENTS AND MODELING
OLIVEIRA, MB; CARVALHO, PJ; QUEIMADA, AJ; MARRUCHO, IM; COUTINHO, JAP
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 771, 2006

ESTUDO DO DIAGRAMA DE FASES PRESSÃO-TEMPERATURA DO C60
MARQUES, L; MEZOUAR, M; HODEAU, JL
PORTUGAL, 15ª CONFERÊNCIA NACIONAL DE FÍSICA, 94, 2006

EVALUATION OF FATIGUE IN SEEDED AND UNSEEDED PZT THIN FILMS BY LOCAL PIEZOELECTRIC HYSTERESIS LOOPS
LI, B; WU, A; VILARINHO, PM; KHOLKIN, A; GRUVERMAN, A
USA, MATERIALS RESEARCH SOCIETY-MRS FALL MEETING, 592, 2006

EVALUATION OF NANOMETER THICK MERCURY FILM ELECTRODES FOR SCANNED STRIPPING CHRONOPOTENTIOMETRY
ROCHA, LS; PINHEIRO, JP; CARAPUÇA, HM
CZECH REPUBLIC, 7TH EUROPEANMEETING ON ENVIRONMENTAL CHEMISTRY (EMEC7), 214, 2006

EVALUATION OF NANOMETER THICK MERCURY FILM ELECTRODES FOR STRIPPING CHRONOPOTENTIOMETRY
ROCHA, LS; PINHEIRO, JP; CARAPUÇA, HM
SPAIN, IX IBERIC MEETING OF ELECTROCHEMISTRY, 82, 2006

EXPERIMENTAL STUDY OF INTERFACIAL PHENOMENA IN SOME POLLUTANTS ENRICHED MODEL SOLUTIONS VS. SURFACE ENGINEERED CLINOPTILOLITE
CHMIELEWSKÁ, E; SABOVÁ, L; GÁPLOVSKÁ, K; PEPE, F; CAPUTO D; WU, A
USA, 7TH INTERNATIONAL CONFERENCE ON THE OCCURRENCE, PROPERTIES, AND UTILIZATION OF NATURAL ZEOLITES, 86-87, 2006

FITOESTABILIAÇÃO DA AREA MINEIRA DO BRAÇAL, SEVER DO VOUGA, PORTUGAL : REALIDADE OU MITO?
ABREU, MM; MAGALHÃES, MCF; ANJOS, C
CÁCERES, SPAIN, IV CONGRESO IBEROAMERICANO DE FÍSICA Y QUÍMICA AMBIENTAL (IV CIFYQA), 349-350, 2006

FLUORESCENCE STUDIES OF HYDROPHOBICALLY MODIFIED POLYMERS WITH DIFFERENT POLYMER CHAIN SIZES
COSTA, T; FRANCISCO, A; GAGO, S; GONÇALVES, IS; SEIXAS DE MELO, J
RIO DE JANEIRO, BRASIL, 41ST IUPAC INTERNATIONAL SYMPOSIUM ON MACROMOLECULAS, 150, 2006

FLUORESCENCE STUDIES ON HYDROPHOBICALLY MODIFIED POLYMERS AND OLIGOMERS BASED ON CARBOXILIC ACID CHAINS
COSTA, T; SEIXAS DE MELO, J; PIÑEIRO, M; GAGO, S; GONÇALVES, IS
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, P50: 174, 14-16 DEC 2006

FROM METAL COMPLEXES OF N-(PHOSPHONOMETHYL)IMINODIACETATE TO MAGNETIC HYBRID MATERIALS
GIRGINOVA, P; AMARAL, V; PAZ, FAA; SHI F-N; ROCHA J; TRINDADE T
TOMAR, PORTUGAL, EUROPEAN CONFERENCE ON MOLECULAR MAGNETISM, ECMM, 10-15 OCT 2006

FUNCTIONAL QDS/POLYMER NANOCOMPOSITES VIA CONTROLLED/LIVING MINIEMULSION POLYMERIZATION
ESTEVES, ACC; BOMBALSKI, L; MATYJASZEWSKI, K; HODGE, P; TRINDADE, T; BARROS-TIMMONS, AM
UK, INTERNATIONAL CONFERENCE ON POLYMER SYNTHESIS-MACRO GROUP UK, 204, 2006

FURAN CHEMISTRY AT THE SERVICE OF MACROMOLECULAR MATERIALS
GANDINI, A
VIENNA, AUSTRIA, 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 43-46, AUG 2006

GAS SORPTION IN POLY(LACTIC ACID)
OLIVEIRA, NS; DORGAN, J; FERREIRA, A; MARRUCHO, IM
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 353, 2006

GLASS FUSING: AN ART AND SCIENCE CONNECTION
MONTEIRO, PAC; OLIVEIRA, RM; MAGALHÃES, MCF
BRAGA, PORTUGAL, PROCEEDINGS OF THE 3RD INTERNATIONAL CONFERENCE ON HANDS-ON SCIENCE – SCIENCE EDUCATION AND SUSTAINABLE DEVELOPMENT, 191, 2006

GLASSES AND GLASS-CERAMICS FOR MEDICAL APPLICATIONS (OBTAINED BY THE SOL-GEL METHOD)
FERREIRA DA SILVA, MG; AIGUEPERSE, E
KLICZKOW CASTLE, POLAND, 4TH INTERNATIONAL CONFERENCE ON SOL-GEL MATERIALS, 18-22 JUN 2006

GRAPE SEED POLYPHENOLIC CARACTERIZATION
PASSOS, CP; CARDOSO, SM; DOMINGUES, P; DOMINGUES, MRM; SILVA, CM; COIMBRA, MA
BULGÁRIA, SOFIA, THIRD CENTRAL EUROPEAN CONGRESS ON FOOD, 95, 2006

GROWTH OF NANOCRYSTALLINE SEMICONDUCTORS ON SUBMICRON PARTICLES
TRINDADE, T
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 27-28 JAN 2006

GROWTH OF SEMICONDUCTOR NANOCRYSTALS ON SUB-MICROMETRIC INORGANIC PARTICLES
NEVES, MC; MONTEIRO, OC; HEMPELMANN, R; TRINDADE, T
SITGES-BARCELONA, SPAIN, INTERNATIONAL WORKSHOP ON NANOCHEMISTRY- COST D19 ACTION, 11-14 MAY 2006

HIGH PRESSURE DENSITIES AND DERIVED THERMODYNAMIC PROPERTIES OF IMIDAZOLIUM BASED IONIC LIQUIDS
GARDAS, RL; FREIRE, MG; CARVALHO, PJ; MARRUCHO, IM; FERREIRA, AGM; FONSECA, IMA; COUTINHO, JAP
INDIA, 2ND CONFERENCE ON THERMODYNAMICS OF CHEMICAL AND BIOLOGICAL SYSTEMS, 17, 2006

HIGH PRESSURE DENSITIES AND DERIVED THERMODYNAMIC PROPERTIES OF IMIDAZOLIUM BASED IONIC LIQUIDS
GARDAS, RL; FREIRE, MG; CARVALHO, PJ; MARRUCHO, IM; FERREIRA, AGM; FONSECA, IMA; COUTINHO, JAP
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 133, 2006

HIGH RESOLUTION NMR TOOLS FOR THE ANALYSIS OF BEER AND WINE
GIL, A M
NOTTINGHAM, UNITED KINGDOM, 8TH INTERNATIONAL CONFERENCE ON APPLICATIONS OF MAGNETIC RESONANCE IN FOOD SCIENCE, JUL 2006

HOMOMETALLIC FERRIMAGNETISM IN A NEW COPPER CHAIN COMPOUND NA2CU5SI4O14.
MOREIRA DOS SANTOS, A; BRANDÃO, P; REIS, MS; AMARAL VS; ROCHA, J
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS'06, 2006

HUMAN AMNIOTIC FLUID NUCLEAR MAGNETIC RESONANCE (NMR) ANALYSIS FOR PRENATAL DIAGNOSTICS – A METABONOMIC APPROACH
GRAÇA, G; DUARTE, I; GOODFELLOW, BJ; BARROS-TIMMONS, A; CARREIRA, I; BELA, A; SPRAUL, M; GIL, AM
PORTO, PORTUGAL, ENCONTRO NACIONAL DE BIOQUÍMICA, DEC 2006

HYBRID CHITOSAN-POLYLACTIC ACID / HA COMPOSITE BIOMATERIALS
VENTURA, JM; ARAÚJO, ABA; LEMOS, AF; FERREIRA, JMF
NANTES, FRANCE, 20TH EUROPEAN CONFERENCE ON BIOMATERIALS 27 SEP, 01 OCT 2006

HYBRID MATERIALS BASED ON LANTHANOPOLYOXOMETALATES AND 3-HYDROXYPICOLINIC ACID
GRANADEIRO, C; SOARES-SANTOS, P; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, H
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, DP24, 04-09 SEPT 2006

HYBRID MATERIALS BASED ON LANTHANOPOLYOXOMETALATES AND 3-HYDROXYPICOLINIC ACID
GRANADEIRO, CM; SOARES-SANTOS, PCR; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, HIS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 61, 13-14 JAN 2006

HYDROTHERMAL SYNTHESIS, RIETVELD REFINEMENT AND PHOTOLUMINESCENT PROPERTIES OF EU SILICATE WITH APATITE-TYPE STRUCTURE
FERDOV, S; FERREIRA, RAS; LIN, Z
AVEIRO, PORTUGAL, III JORNADAS CICECO, 23, 13-14 JAN 2006

HYDROXYAPATITE SCAFFOLDS FOR BONE RESTORATION FROM CUTTLEFISH
ROCHA, JHG; LEMOS, AF; OLHERO, SMH; AGATHOPOULOS, S; FERREIRA, JMF
20TH EUROPEAN CONFERENCE ON BIOMATERIALS 27 SEP, 01 OCT 2006

IMMOBILIZATION OF LANTHANIDE IONS IN A PILLARED LAYERED DOUBLE HYDROXIDE
PILLINGER, M; GAGO, S; FERREIRA, RAS; MONTEIRO, B; CARLOS, LD; SANTOS, TM; GONÇALVES, IS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 37, 13-14 JAN 2006

IMPROVED CONDUCTIVITY OF LANTHANIDE DOPED CERIA
NUNEZ, P; COLL, DP; FRADE, JR
STWITZERLAND, 7TH EUROPEAN SOFC FORUM, LUCERNE, 2006

IN SITU POLYMERIZATION IN MINIEMULSION: A VERSATILE SYNTHETIC TOOL TOWARDS POLYMER NANOCOMPOSITES CONTAINING QUANTUM DOTS
ESTEVES, ACC; BARROS-TIMMONS, A; TRINDADE, T
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 27-28 JAN 2006

IN VITRO BIOACTIVITY OF PMMA-BASED COMPOSITE IN SIMULATED PLASMA WITH ALBUMIN
LOPES, PP; FERREIRA, BJML; ALMEIDA, NAF; FREDEL, MC; FERNANDES, MHV; CORREIA, RN; SILVA, TE
CAXAMBU, BRASIL, IV COLAOB, CONGRESSO IBERO-AMERICANO DE BIOMATERIAIS, 2006

INCLUSION AND SOLUBILITY OF OXYGEN IN AQUEOUS SOLUTION OF SODIUM PERFLUOROHEPTANOATE AND BETA-CYCLODEXTRIN
LIMA, S; DIAS, AMA; COUTINHO, JAP; MARRUCHO, IM; TEIXEIRA-DIAS, JJC
TORINO, ITALY, XIII INTERNATIONAL CYCLODEXTRIN SYMPOSIUM, 0,18402777778, 2006

INCLUSION COMPOUNDS OF AMPHIPHILIC MOLECULES IN BETA-CYCLODEXTRIN: H/D DYNAMIC EXCHANGE PROCESS
CUNHA-SILVA, L; DIAS, C; TEIXEIRA-DIAS, JJC
TORINO, ITALY, XIII INTERNATIONAL CYCLODEXTRIN SYMPOSIUM, 0,16041666667, 2006

INCLUSION OF A EUROPIUM(III) TRIS(β-DIKETONATE) IN NATIVE AND PERMETHYLATED γ-CYCLODEXTRIN FOR THE MODIFICATION OF ITS LUMINESCENCE PROPERTIES
BRAGA, SS; FERNANDES, JA; FERREIRA, RAS; PILLINGER, M; CARLOS, LD; RIBEIRO-CLARO, P; GONÇALVES, IS
FORTALEZA, BRAZIL, 13TH BRAZILIAN MEETING ON INORGANIC CHEMISTRY, BMIC282: 173, 03-06 SEPT 2006

INCLUSION OF MOLYBDENOCENE DICHLORIDE IN CYCLODEXTRINS: STRUCTURAL AND BIOLOGICAL PROPERTIES
BRAGA, SS; MARQUES, MPM; SOUSA, JB; PILLINGER, M; TEIXEIRA-DIAS, JJC; GONÇALVES, IS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 24, 13-14 JAN 2006

INCORPORATION OF MIXED VALENCE VANADIUM IN THE MICROPOROUS TITANOSILICATE AM-2
FERDOV, S; LIN, Z; FERREIRA RAS
AMBLESIDE, UNITED KINGDOM, XXIX ZEOLITE ASSOCIATION CONFERENCE, 16, 30 JUL-04 AUG 2006

INFLUENCE OF CALCIUM MAGNESIUM PHOSPHATE NANO-CRYSTALS IN THE SURFACE REACTIVITY OF A SI-MG-CA-P GLASS CERAMIC
ALMEIDA, NAF; FERNANDES, MHV
BERLIM, GERMANY, 5TH INTERNATIONAL WORKSHOP ON BIOMEDICAL APPLICATIONS OF NANOTECHNOLOGY, 2006

INFLUENCE OF HEAT-TREATMENT TEMPERATURE IN THE STRUCTURAL PROPERTIES OF LINBO3 NANOCRYSTALLITES EMBEDDED IN A SILICATE GLASS MATRIX
GRAÇA, MPF; FERREIRA DA SILVA, MG; VALENTE, MA
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 27-28 JAN 2006

INTER AND INTRA-MOLECULAR BONDING: TEACHING AND LEARNING APPROACHES IN THE SECONDARY SCHOOL CYCLE
ROCHA, GM; SANTOS, TM; OSÓRIO, MMP
BRAGA, PORTUGAL, 3RD INTERNATIONAL CONFERENCE ON HANDS-ON SCIENCE, 35-36, 04-09 SEPT 2006

INTERFACIAL PROPERTIES OF WATER + ALKANE SYSTEMS
OLIVEIRA, MB; CARVALHO, PJ; MARRUCHO, IM; COUTINHO, JAP; KONTOGEORGIS, GM; MIQUEU, C; QUEIMADA, AJ
DENMARK, EUROPEAN SYMPOSIUM ON APPLIED THERMODYNAMICS, 42-45, 2006

INVESTIGATION OF NOVEL K+ - AND MG2+ -DOPED DI-AMIDOSIL HYBRID MATERIALS
NUNES, SC; DE ZEA BERMUDEZ, V; OSTROVSKII, D; SILVA, MM; SMITH, MJ; FERREIRA, RAS; CARLOS, LD
DIJON, FRANCE, MATERIAUX 2006, 13-17 NOV 2006

IRON SUBSTITUTED POLYOXOTUNGSTATES AS CATALYSTS IN THE OXIDATION OF INDANE WITH H2O2
ESTRADA, AC; SANTOS, ICMS.; SIMÕES, MMQ; NEVES, MGPMS; CAVALEIRO, JAS; CAVALEIRO, AMV
AVEIRO, PORTUGAL, III JORNADAS CICECO, 36, 13-14 JAN 2006

LACCASE BIOCATALYSIS FOR DELIGNIFICATION OF KRAFT PULP WITH POLYOXOMETALATES
GAMELAS, J; PONTES, AS; EVTUGUIN, DV; XAVIER, AMRB
GERMANY, 3RD INTERNATIONAL CONGRESS ON BIOCATALYSIS, L35, 2006

LANTHANIDE COMPLEXES OF KEGGIN POLYOXOMETALATES IN ORGANIC-INORGANIC HYBRID MATERIALS
RODRIGUES, MJE; PAZ, FAA; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, HIS
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, DP25, 04-09 SEPT 2006

LANTHANIDE COMPLEXES OF KEGGIN TYPE POLYOXOMETALATES IN INORGANIC HYBRID MATERIALS
RODRIGUES, MJE; PAZ, FAA; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, HIS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 74, 13-14 JAN 2006

LANTHANIDE DOPED SÍLICA NANOPARTICLES FOR BIOANALYTICAL APPLICATIONS
SOARES-SANTOS, PCR; IWU, K; TRINDADE, T; FERREIRA, RAS; CARLOS, LD; NOGUEIRA, HIS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 25, 13-14 JAN 2006

LANTHANIDE DOPED SILICA NANOPARTICLES FOR BIOTAGGING
IWU, K; SOARES-SANTOS, PCR; NOGUEIRA, HIS; SILVA, MM; FERREIRA, RAS; GUIOMAR, AJ; CARLOS, LD; TRINDADE, T
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, FP11, 04-09 SEPT 2006

LANTHANIDE DOPED ZNO NANOCRYSTALS: SYNTHESIS, SURFACE MODIFICATION AND OPTICAL BEHAVIOUR
PEREIRA, AS; PERES, M; PEREIRA S, MONTEIRO T, TRINDADE T
GRENOBLE, FRANCE, TNT2006 – TRENDS IN NANOTECHNOLOGY, APR 2006

LANTHANIDE-BASED LAMELLAR NANOHYBRIDS: A NEW CLASS OF LUMINOPHORES?
KARMAOUI, M; FERREIRA, RAS; MANE, AT; CARLOS, LD; PINNA, N
NICE, FRANCE, SCIENTIFIC PROGRAMME OF THE E-MRS IUMRS ICEM 2006 SPRING MEETING, A3-02, 29 MAY-02 JUN 2006

LIVING/ CONTROLLED POLYMERIZATION MECHANISMS TOWARDS TAILOR-MADE QDS/ POLYMER NANOCOMPOSITES
ESTEVES, ACC; BOMBALSKI, L; SASSO, B; MATYJASZEWSKI, K; HODGE, P; TRINDADE, T; BARROS-TIMMONS, AM
RIO DE JANEIRO, BRASIL, 41ST INTERNATIONAL SYMPOSIUM ON MACROMOLECULES, MACRO 2006, 120, 16-21 JUL 2006

LOCAL FERROELECTRIC PROPERTIES AND DOMAIN STRUCTURE IN LEAD BASED RELAXOR CERAMICS
SHVARTSMAN, VV; KISELEV, DA; BDIKIN, IK; STERNBERG, A; KHOLKIN, AL
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 147, 18-22 JUN 2006

LOW COST LASER UV WRITTEN OPTICAL WAVEGUIDES IN ORGANIC–INORGANIC HYBRIDS
FERREIRA, RAS; NOGUEIRA, R; ANDRÉ, PS; GUALDINO, A; CARLOS, LD; SILVA, NJO; FU, LS; DE ZEA BERMUDEZ, V; TEIXEIRA, ALJ; PELLEGRINO, L; MONTEIRO, P
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 20-23 JUN 2006

LOW COST LASER UV WRITTEN OPTICAL WAVEGUIDES IN ORGANIC–INORGANIC HYBRIDS
GUALDINO, A; NOGUEIRA, R; ANDRÉ, PS; FERREIRA, RAS; CARLOS, LD; SILVA, NJO; FU, LS; DE ZEA BERMUDEZ, V; TEIXEIRA, ALJ; PELLEGRINO, LP; MONTEIRO, P
AVEIRO, PORTUGAL, III JORNADAS CICECO, 62, 13-14 JAN 2006

LOW COST UV PATTERNABLE ORGANIC-INORGANIC SOL-GEL SILOXANEPOLY(OXYETHYLENE) MATERIALS FOR INTEGRATED OPTICS
ANDRÉ, PS; NOGUEIRA, R; FERREIRA, RAS; GUALDINO, A; CARLOS, LD; SILVA, NJO; FU, LS; TEIXEIRA, ALJ; PELLEGRINI, LP; MONTEIRO, P
NOTTINGHAM, UNITED KINGDOM, 8TH INTERNATIONAL CONFERENCE ON TRANSPARENT OPTICAL NETWORKS, 18-22 JUN 2006

LUMINESCENT COMPOSITE POLYMER NANOSTRUCTURES
CARLOS, LD; FERREIRA, RAS; SILVA, NJO; NUNES, SC; DE ZEA BERMUDEZ, V
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 23, 27-28 JAN 2006

LUMINESCENT LANTHANIDE-ORGANIC FRAMEWORKS: 3D ASSEMBLY OF LA3+, EU3+ AND TB3+ WITH ETIDRONIC ACID RESIDUES (HEDP5-)"
HI, F-N; PAZ, FAA; FERREIRA, RAS; MAFRA, L; CARLOS, LD; TRINDADE, T; ROCHA, J
XIANGTAN E ZHANGJIAJIE, CHINA, 5TH INTERNATIONAL FORUM ON ADVANCED MATERIAL SCIENCE AND TECHNOLOGY, 11-17 JUL 2006

MAGNETIC AND MAGNETOCALORIC PROPERTIES OF LA0.70-X(EU,ER)X(SR,CA)0.30MNO3.
AMARAL, JS; REIS, MS; AMARAL, VS; MENDONÇAA, TM; ARAÚJO, JP; TAVARES PB; VIEIRA, JM
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS'06, 2006

MAGNETIC ENTROPY CHANGE OF PR1-XCAXMNO3 MANGANITES
REIS, MS; AMARAL, VS; ARAÚJO, JP; TAVARES, PB; GOMES, AM; OLIVEIRA, IS
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS'06, 2006

MAGNETIC PROPERTIES OF HYBRID D-METAL COMPLEXES OF N-(PHOSPHONOMETHYL)IMINODIACETATE
GIRGINOVA, P; AMARAL, V; PAZ, FAA; SHI, F-N; ROCHA, J; KLINOWSKI, J; TRINDADE, T
AVEIRO, PORTUGAL, III JORNADAS CICECO, 26, 13-14 JAN 2006

MAGNETIC REFRIGERATION: A COOL IDEA
REIS, MS; AMARAL, JS; AMARAL, VS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 13-14 JAN 2006

MASS SPECTROMETRY STUDIES ON IONIC LIQUIDS AGGREGATES
LOPES DA SILVA, R; MARRUCHO, IM; COUTINHO, JAP; FERNANDES, AM
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 142, 2006

MECHANISM OF AA5083 CORROSION AND THE INHIBITION OF LOCALIZED CORROSION BY LANTHANIDE-BASED INHIBITORS
YASAKAU, KA; ZHELUDKEVICH, ML; FERREIRA, MGS
DOURDAN, FRANCE, INTERNATIONAL SYMPOSIUM ON ELECTROCHEMICAL METHODS IN CORROSION RESEARCH, 41, 18-23 JUN 2006

MECHANISMS OF VISIBLE LIGHT EMISSION IN ZNO:SM NANOSTRUCTURES
MONTEIRO, T; TRINDADE, T; PERES, M; PEREIRA, AS; NEVES, A; SOARES, MJ; CRUZ, A
GIESSEN, 4TH INTERNATIONAL WORKSHOP ON ZNO AND RELATED MATERIALS, 03-06 OCT 2006

MICROWAVE DIELECTRIC PROPERTIES OF BI-SUBSTITUTED LA(MG1/2TI1/2)O3
SALAK, AN; MALYSH, TV; FERREIRA, VM
FINLAND, 4TH INTERNATIONAL CONFERENCE ON MICROWAVE MATERIALS AND THEIR APPLICATION, 0-20, 2006

MICROWAVE-ASSISTED SYNTHESIS OF NOVEL MOLYBDENUM AND TUNGSTEN TETRACARBONYL COMPLEXES WITH A CHELATING PYRAZOLYLPYRIDINE LIGAND
COELHO, AC; PAZ, FAA; KLINOWSKI, J; PILLINGER, M; GONÇALVES, IS
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, 14-16 DEC 2006

MIXED CONDUCTIVITY, THERMAL EXPANSION AND DEFECT CHEMISTRY OF A-SITE DEFICIENT LANI0.5TI0.5O3-δ
YAKOVLEV, S; KHARTON, V; KOVALEVSKY, A; ZEKONYTE, J; NAUMOVICH, E; FRADE, J
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, CD-ROM, 18-22 JUN 2006

MIXED NAFION/POLY(SODIUM 4-STYRENESULFONATE) CATION-EXCHANGE COATINGS ON GLASSY CARBON /MERCURY FILM ELECTRODES: MORPHOLOGIC FEATURES AND ION-EXCHANGE / PERMSELECTIVITY PROPERTIE
ROCHA, LS; CARAPUÇA, HM; PINHEIRO, JP
BORDEUX, FRANCE, X EUROPEAN CONFERENCE ON ELECTROANALYSIS, ESEAC 2006, P2-097, 2006

MODELING OF POLYMER PHASE EQUILIBRIA: A SOFT-SAFT APPROACH
PEDROSA, N; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
DENMARK, EUROPEAN SYMPOSIUM ON APPLIED THERMODYNAMICS, 236-238, 2006

MODELING OF POLYMER PHASE EQUILIBRIA: A SOFT-SAFT APPROACH
PEDROSA, N; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 691, 2006

MODELING OF THE EMISSION RED-SHIFT IN AMORPHOUS SEMICONDUCTORS AND IN ORGANIC-INORGANIC DI-UREASIL HYBRIDS
FERREIRA, RAS; FERREIRA, AL; CARLOS, LD
AVEIRO, PORTUGAL, III JORNADAS CICECO, 14, 13-14 JAN 2006

MODELING THE LIQUID-LIQUID EQUILIBRIA OF WATER + PERFLUOROCARBONS WITH THE CUBIC-PLUS-ASSOCIATION EQUATION OF STATE
OLIVEIRA, MB; FREIRE, MG; MARRUCHO, IM; COUTINHO, JAP; KONTOGEORGIS GM; QUEIMADA, AJ
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 638-639, 2006

MOLYBDENUM(II) COMPLEXES SUPPORTED IN MICRO AND MESOPOROUS MATERIALS FOR HETEROGENEOUS CATALYSIS
DIAS, MV; NUNES, CD; VAZ, PD; FERREIRA, P; CALHORDA, MJ
SPAIN, XXII INTERNATIONAL CONFERENCE ON ORGANOMETALLIC CHEMISTRY, 815, 2006

MUTUAL SOLUBILITIES BETWEEN WATER AND IONIC LIQUIDS
FREIRE, MG; CARVALHO, PJ; DIAS, AMA; SANTOS, LMNBF; FERNANDES, AM; MARRUCHO, IM; COUTINHO, JAP
DENMARK, EUROPEAN SYMPOSIUM ON APPLIED THERMODYNAMICS, 227-230, 2006

MUTUAL SOLUBILITIES OF IMIDAZOLIUM BASED IONIC LIQUIDS AND WATER AND THE HOFMEISTER SERIES
FREIRE, MG; CARVALHO, PJ; GARDAS, R; SANTOS, LMNBF; MARRUCHO, IM; COUTINHO, JAP
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 75, 2006

NANOSCALE CHARACTERIZATION OF FERROELECTRIC MATERIALS FOR ELECTRONIC APPLICATIONS (INVITED)
KHOLKIN, AL
THAILÂNDIA, 5TH ASIAN MEETING ON ELECTROCERAMICS, 47, 2006

NANOSCALE PROPERTIES OF PLZT CERAMICS VIA SCANNING FORCE MICROSCOPY
KHOLKIN, AL; KISELEV, DK; SHVARTSMAN, VV; BDIKIN, DK; BORMANIS, K; STERNBERV, A
EUA, 15TH IEEE INTERNATIONAL SYMPOSIUM ON APPLICATIONS OF FERROELECTRICS, 35, 2006

NEW CHIRAL OXAZOLINE DIOXOMOLYBDENUM(VI) COMPLEXES: SYNTHESIS AND CATALYTIC PROPERTIES IN OLEFIN EPOXIDATION
MONTEIRO, B; BRUNO, SM; PEDRO, F; ABRANTES, M; BALULA, MS; VALENTE, AA; PILLINGER, M; RIBEIRO-CLARO, P; KÜHN, FE; GONÇALVES, IS
ZARAGOZA, SPAIN, XXII INTERNATIONAL CONFERENCE ON ORGANOMETALLIC CHEMISTRY, P647: 835, 2006

NEW HYBRID MATERIALS BASED ON CELLULOSE FIBRES AND TITANIUM DIOXIDE NANOPARTICLES
MARQUES, PAAP; GONÇALVES, G; TRINDADE, T; NETO, CP
VIENNA, AUSTRIA, 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 122-125, AUG 2006

NEW PMMA-CO-EHA GLASS FILLED COMPOSITES FOR BIOMEDICAL APPLICATIONS: PRODUCTION ROUTE AND EVALUATION OF THE MECHANICAL PROPERTIES
CORBELLINI , M; FERREIRA, BJML; ALMEIDA, NAF; FREDEL, MC; CORREIA, RN; FERNANDES, MHV
FLORIANÓPOLIS, BRASIL, V ENCONTRO DA SOCIEDADE BRASILEIRA DE PESQUISAS DE MATERIAIS, 2006

NEW TRENDS ON THE CORROSION INHIBITION OF METALLIC SUBSTRATES
MONTEMOR, MF; FERREIRA, MGS; LAMAKA, SV; ZHELUDKEVICH, M
MAASTRICHT, NETHERLANDS, EUROCORR 2006, 14, 25-28 SEPT 2006

NMR AND MOLECULAR MODELLING STUDIES OF INCLUSION COMPLEXES OF SMALL AMPHIPHILIC MOLECULES IN CYCLODEXTRINS
DIAS, C; CUNHA-SILVA, L; GOODFELLOW, BJ; TEIXEIRA-DIAS, JJC
TORINO, ITALY, XIII INTERNATIONAL CYCLODEXTRIN SYMPOSIUM, 7-P01, 2006

NON-COMPLETE PHONON SOFTENING IN AURIVILLIUS COMPOUNDS
NOUJNI, D; KAMBA, S; KUZEL, P; VELJKO, S; BOVTUN, V; SAVINOV, M; PETZELT, J; AMORIN, H; COSTA, MEV; KHOLKIN, AL; BOULLAY, PH; ADAMCZYK, M
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 162, 18-22 JUN 2006

NOVEL EUROPIUM(III) AND GADOLINIUM(III) TRIS-B-DIKETONATE COMPLEXES WITH PYRAZOLYLPYRIDINE LIGANDS
COELHO, AC; MOREIRA DOS SANTOS, A; PAZ, FAA; GONÇALVES, IS; ROCHA, J; CARLOS, LD
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, D_248_O DO2, 04-09 SEPT 2006

NOVEL INORGANIC COMPOUNDS AS LOW-DIMENSION MAGNETIC MATERIALS
MOREIRA DOS SANTOS, A; REIS, MS; BRANDÃO, P; ROCHA, J; VOLKOVA, O; VASILIEV AN;AND AMARAL, VS
TOMAR, PORTUGAL, EUROPEAN CONFERENCE ON MOLECULAR MAGNETISM, ECMM, 10-15 OCT 2006

NOVEL MICROPOROUS YTTRIUM-TIN-SILICATE WITH THE STRUCTURE OF MINERAL PETARASITE
LIN, Z; ROCHA, J
INTERNATIONAL SYMPOSIUM ON ZEOLITES AND MICROPOROUS CRYSTALS, ZMPC 2006, 89, 30 JUL-02 AUG 2006

NOVEL MODULAR COORDINATION FRAMEWORKS
PAZ, FAA; SHI, F-N; ROCHA, J; TRINDADE, T; KLINOWSKI, J
AVEIRO, PORTUGAL, III JORNADAS CICECO, 13-14 JAN 2006

OCTANOL-WATER PARTITION COEFFICIENTS OF (IMIDAZOLIUM-BASED) IONIC LIQUIDS
GARDAS, RL; FREIRE, MG; MARRUCHO, IM; COUTINHO, JAP
INDIA, 2ND CONFERENCE ON THERMODYNAMICS OF CHEMICAL AND BIOLOGICAL SYSTEMS, 18, 2006

OCTANOL-WATER PARTITION COEFFICIENTS OF (IMIDAZOLIUM-BASED) IONIC LIQUIDS
GARDAS, RL; FREIRE, MG; MARRUCHO, IM; COUTINHO, JAP
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 136, 2006

ON HYDROXYAPATITE SOLUBILITY CONSTANTS, AT 298.15 K
MAGALHÃES, MCF
FREIBERG, GERMANY, 12TH INTERNATIONAL SYMPOSIUM ON SOLUBILITY PHENOMENA AND RELATED EQUILIBRIUM PROCESSES, 16, 2006

OPTICAL MATERIALS DOPED WITH EU3+ COMPLEXES
FERNANDES, M; GONÇALVES, MC; DE ZEA BERMUDEZ, V; CHARAS, A; MORGADO, J; FERREIRA, RAS; CARLOS, LD
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, BP60, 04-09 SEPT 2006

ORGANIC-INORGANIC HYBRID MAGNETIC MATERIALS WITH N-(PHOSPHONOMETHYL)IMINODIACETATE
PAZ, FAA; SHI, F-N; GIRGINOVA, P; AMARAL, V; ROCHA, J; TRINDADE, T
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 9-O-12, 1003-1006, 20-23 JUN 2006

ORGANIC-INORGANIC HYBRIDS INCORPORATING A TB(III) BETA-DIKETONATE COMPLEX SYNTHESIZED VIA ACID-CATALYZED SOL-GEL REACTION
LIMA, PP; FERREIRA, RAS; JÚNIOR, SA; CARLOS, LD; MALTA, OL
RIO DE JANEIRO, BRASIL, 41ST INTERNATIONAL SYMPOSIUM ON MACROMOLECULES, MACRO 2006, 16-21 JUL 2006

OXIDATION OF 1,2-DIHYDRONAPHTHALENE BY HYDROGEN PEROXIDE CATALYZED BY MN(III) SUBSTITUTED POLYOXOTUNGSTATES
ESTRADA, AC; SIMÕES, MMQ; NEVES, MGPMS; SILVA, AMS; CAVALEIRO, JAS; CAVALEIRO, AM
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, 193, 14-16 DEC 2006

OXIDATION OF 1-INDENE WITH HYDROGEN PEROXIDE CATALYSED BY POLYOXOTUNGSTATES
ESTRADA, AC; SANTOS, ICMS; SIMÕES, MMQ; NEVES, MGPMS; CAVALEIRO, JAS; CAVALEIRO, AMV
DRESDEN, GERMANY, 1ST INTERNATIONAL IUPAC CONFERENCE ON GREEN-SUSTAINABLE CHEMISTRY, I.2-006, 10-15 SEPT 2006

OXIDATION OF OLEFINS AND ALCOHOLS WITH POLYMERIC ORGANOTIN VANADATE CATALYSTS
VALENTE, AA; ABRANTES, M; BALULA, MS; PAZ, FAA; PILLINGER, M; ROMÃO, CC; ROCHA, J; GONÇALVES, IS
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, P229, 14-16 DEC 2006

OXYGEN NONSTOICHIOMETRY AND TRANSPORT MECHANISMS IN NI-DOPED LA(SR)GA(MG)O3-δ
YAREMCHENKO, A; KHARTON, V; NAUMOVICH, E; PATRAKEEV, M; SHAULA, A; MARQUES, FMB
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, CD-ROM, 18-22 JUN 2006

OXYGEN PERMEABILITY, STABILITY AND P-TYPE ELECTRONIC CONDUCTIVITY OF PR2NIO4 -BASED MATERIALS
KOVALEVSKY, A; KHARTON, V; YAKOVLEV, S; YAREMCHENKO, A; PIVAK, Y; FRADE, JR
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, CD-ROM, 18-22 JUN 2006

PARAMAGNETIC CHROMIUM DETECTION IN SEVERAL ORGANS OF MICE EXPOSED TO POTASSIUM CHROMATE
OLIVEIRA, H; SOARES, M; LOPES, JC; ALONSO, P; MARTINEZ, J; SANTOS, TM; SANTOS, C; PEREIRA, ML
AVEIRO, PORTUGAL, XV NATIONAL CONGRESS OF BIOCHEMISTRY, 197, 08-10 DEC 2006

PHASE RELATIONSHIPS AND IONIC TRANSPORT IN TI-, ZR- AND CE-SUBSTITUTED APATITE SYSTEMS BASED ON LA10-XSI6O27-δ
PIVAK, Y; KHARTON, V; YAREMCHENKO, A; FRADE, J; MARQUES, FMB
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, CD-ROM, 18-22 JUN 2006

PHOSPHONIUMS BASED IONIC LIQUIDS AND WATER: MUTUAL SOLUBILITIES
FREIRE, MG; CARVALHO, PJ; MARRUCHO, IM; COUTINHO, JAP; FERNANDES, A
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 597, 2006

PHOTOLUMIENSCENCE OF EU3+-DOPED NANOSIZED MICROPOROUS TITANOSLICATE- A STRUCTURAL ANALOGUE OF THE MINERAL PHARMACOSIDERITE
FERDOV, S; LIN, Z; FERREIRA, RAS
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, BP16, 04-09 SEPT 2006

PHOTOLUMINESCENCE OF XEROGELS AND THIN FILMS OF EU3+ DOPED BASED ON ORGANIC-INORGANIC HYBRIDS
PECORARO, E; LIMA, PP; FERREIRA, RAS; MOLINA, C; RIBEIRO, SJL; MESSSADDEQ, Y; JÚNIOR, SA; MALTA, OL; CARLOS, LD
6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, BP37, 04-09 SEPT 2006

PHOTOLUMINESCENT PROPERTIES OF ADSORBED EU3+-DOPED ETS-10
DOMINGUES, J; LIN, Z; VALENTE, A; CARLOS, L; ROCHA, J
AVEIRO, PORTUGAL, III JORNADAS CICECO, 97, 13-14 JAN 2006

PHYSICAL PROPERTIES OF THE NANOSTRUCTURED ULTRA-THIN FERROELECTRIC POLYMERS TEMPLATES FOR MEDICAL AND BIOLOGY APPLICATIONS.
BYSTROV, V; PARAMONOVA, E; BYSTROVA, N; SAPRONOVA, A; FRIDKIN, V; VERKHOVSKAYA, K; KHOLKIN, A; DEKHTYAR, Y; MESSNER, C; POLYAKA, N; KATASHEV, A; KLIEM, H; FLORANGE, R; TADROS-MORGANE, R; BDIKIN, I
KOREA, WORLD CONGRESS ON MEDICAL PHYSICS AND BIOMEDICAL ENGINEERING 2006, 4174, 2006

PIGMENTOS INORGÂNICOS DA PINTURA RUPESTRE AOS NANOMATERIAIS
TRINDADE, T
AVEIRO, PORTUGAL, WORKSHOP: REVESTIMENTOS RUMO AO FUTURO, 31 MAR 2006

POLY (LACTIC ACID) - A NEW ACTIVE PACKAGING MATERIAL
GONÇALVES, CMB; COUTINHO, JAP; MARRUCHO, IM
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, P97, 221, 14-16 DEC 2006

POLYALLYLAMINE HYDROCHLORIDE COATED THIN MERCURY FILM ELECTRODES: CHARACTERIZATION STUDIES AND APPLICATION TO IONIC EXCHANGE VOLTAMMETRY
SILVA, CP; CARAPUÇA, HM
BORDEUX, FRANCE, X EUROPEAN CONFERENCE ON ELECTROANALYSIS, ESEAC 2006, P1-087, 2006

POLYELECTROLYTE-MODIFIED ELECTRODES: ION-EXCHANGE VOLTAMMETRIC DETERMINATION OF TRACE LEAD IN ESTUARINE WATERS
SILVA, CP; PINHEIRO, JP; CARAPUÇA, HM
CZECH REPUBLIC, 7TH EUROPEANMEETING ON ENVIRONMENTAL CHEMISTRY (EMEC7), 216, 2006

POLYMERS AND POLYMER NANOCOMPOSITES FROM RENEWABLE RESOURCES
MARRUCHO, IM
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, TA1, 41, 14-16 DEC 2006

POLYSTYRENE MIXTURES PHASE EQUILIBRIA: A STATISTICAL ASSOCIATION THEORY APPROACH
PEDROSA, N; VEGA, LF; COUTINHO, JAP; MARRUCHO, IM
SPAIN, XIV CONGRESSO DE FISICA ESTADISTICA, BB22, 2006

PREDICTION OF PFCS THERMOPHYSICAL PROPERTIES USING QSPR METHODS
PRATAS DE MELO, MJ; COUTINHO, JAP; MARRUCHO, IM; OLIVEIRA, JABP
DENMARK, EUROPEAN SYMPOSIUM ON APPLIED THERMODYNAMICS, 107-110, 2006

PREPARATION AND CHARACTERISATION OF CHITOSAN-ALGINATE-HA COMPOSITE SCAFFOLDS
ARAÚJO, ABA; LEMOS, AF; VENTURA, JM; FERREIRA, JMF
20TH EUROPEAN CONFERENCE ON BIOMATERIALS 27 SEP, 01 OCT 2006

PREPARATION AND STUDY OF IN VITRO BIOACTIVITY OF PMMA-BASED COMPOSITES FILLED WITH CA3(PO4)2-SI-MG GLASS
LOPES, PP; FERREIRA, BJML; ALMEIDA, NAF; FREDEL, MC; FERNANDES, MHV; CORREIA, RN
FLORIANÓPOLIS, BRASIL, V ENCONTRO DA SOCIEDADE BRASILEIRA DE PESQUISAS DE MATERIAIS, 2006

PREPRATION AND CHARACTERIAZATION OF SINGLE COMPOSITION AND COMPOSITION GRADIENT PB(TI,ZR)O3 FILMS
KHAENAMKAEW, P; MUENSIT, S; BDIKIN, I; KHOLKIN, AL
THAILÂNDIA, 5TH ASIAN MEETING ON ELECTROCERAMICS, 52, 2006

PROMOTING RENEWABLEENERGY RESOURCES – A LOOK BEYOND THE PORTUGUESE SCHOOL PROGRAM OF CHEMISTRY
LOPES, BS; MAGALHÃES, MCF
ALMADA, PORTUGAL, QUÍMICA SUSTENTÁVEL UM TEMA … UMA REFLEXÃO XXENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, 233, 2006

PROMOTING TEACHERS FORMATION ON RENEWABLE ENERGY RESOURCES – THE UNPOSTPONABLE OPTION FOR EDUCATION!
LOPES, BS; MAGALHÃES, MCF
AVEIRO, PORTUGAL, INTERNATIONAL CONFERENCE IN MATHEMATICS, SCIENCES AND SCIENCE EDUCATION, 271, 2006

PROSPECTS IN CHEMICAL MODIFICATION OF ELECTRODES FOR ELECTROANALYSIS
CARAPUÇA, HM; ROCHA, LS; SILVA, CP; CAMPOS, IM; CAVALEIRO, AM
BORDEUX, FRANCE, X EUROPEAN CONFERENCE ON ELECTROANALYSIS, ESEAC 2006, APP L03, 2006

PROTECTIVE SOL-GEL FILMS WITH SELF-HEALING ABILITY BASED ON NANOCONTAINERS IMPREGNATED WITH ORGANIC CORROSION INHIBITOR
ZHELUDKEVICHA, ML; YASAKAU, KA; MONTEMOR, MF; CECILIO, P; FERREIRA, MGS
DOURDAN, FRANCE, INTERNATIONAL SYMPOSIUM ON ELECTROCHEMICAL METHODS IN CORROSION RESEARCH, 62, 18-23 JUN 2006

RECENT ADVANCEMENT IN THE NANOSCALE PIEZOELECTRIC CHARACTERIZATION OF FERROELECTRICS MATERIALS
KHOLKIN, AL
FRANCE, JOURNÉES COUCHES MINCES FERROÉLECTRIQUES 2006˝ AND ˝4ÈME RENCONTRE FRANCO-UKRAINIENNE˝, 35, 2006

REFRIGERAÇÃO MAGNÉTICA: UMA IDEIA REFRESCANTE
REIS, MS; AMARAL, JS; AMARAL, VS
AVEIRO, PORTUGAL, FÍSICA 2006 - 15ª CONFERÊNCIA NACIONAL DE FÍSICA, 04-07 SEPT 2006

RHEOLOGICAL PROPERTIES OF SIO2/POLYSACCHARIDES NANOCOMPOSITES
OLIVEIRA, FC; BARROS-TIMMONS, AM; LOPES DA SILVA, JA
RIO DE JANEIRO, BRASIL, 41ST INTERNATIONAL SYMPOSIUM ON MACROMOLECULES, MACRO 2006, 116, 16-21 JUL 2006

RUTHENIUM(II)-THIOETHER COMPLEXES CONTAINING 9-ETHYL-GUANINE: SYNTHESIS AND STRUCTURAL CHARACTERIZATION
SANTOS, TM; QUINTAL, SO; SANTANA-MARQUES, G; GOODFELLOW, BJ; FELIX, V
AVEIRO, PORTUGAL, EUROPEAN BIOLOGICAL INORGANIC CHEMISTRY CONFERENCE - EUROBIC 8, 01-06 JUL 2006

SALTING-OUT EFFECTS IN AQUEOUS SOLUTIONS OF [BMIM][BF4]
VISAK, ZP; TRINDADE, J; BLESIC, M; MARRUCHO, IM; COUTINHO, JAP; REBELO, LPN
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 510-511, 2006

SALTING-OUT EFFECTS IN AQUEOUS SOLUTIONS OF [BMIM][BF4] AND [EMIM][ETSO4]
TRINDADE, J; ESPERANÇA, JMSS; VISAK, ZP; BLESIC, M; MARRUCHO, IM; COUTINHO, JAP; LOPES, JNC; REBELO, LPN
TUNISIA, EUCHEM CONFERENCE ON MOLTEN SALTS AND IONIC LIQUIDS, 244, 2006

SCIENTIFIC LITERACY VERSUS CARBON MONOXIDE (CO) POISONING: A CASE STUDY
SANTOS, TM; PEREIRA, ML; SARAIVA, AP
BRAGA, PORTUGAL, 3RD INTERNATIONAL CONFERENCE ON HANDS-ON SCIENCE, 536-537, 04-09 SEPT 2006

SELF-ASSEMBLED LAMELLAR MONO-AMIDE CROSS-LINKED ALKYLENE/SILOXANE HYBRIDS
NUNES, SC; SILVA, NJO; DE ZEA BERMUDEZ, V; FERREIRA, RAS; CARLOS, LD; DAHMOUCHE, K; SANTILLI, CV; OSTROVSKII, D; ROCHA, J; CRAIEVICH, AF
KYOTO, JAPAN, XIII INTERNATIONAL CONFERENCE ON SMALL-ANGLE SCATTERING, 09-13 JUL 2006

SELF-ASSEMBLY PROPERTIES OF ALKYLENE/SILOXANE HYBRIDS
NUNES, SC; SILVA, NJO; DE ZEA BERMUDEZ, V; CARLOS, LD; AMARAL, VS;FERREIRA, RAS; ROCHA, J; SANTILLI, CV; OSTROVSKII, D
DIJON, FRANCE, MATERIAUX 2006, 13-17 NOV 2006

SINTERING STUDIES ON PZT THICK FILMS ON CU FOIL DEPOSITED BY EPD
WU, A; VILARINHO, PM; KINGON, A
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 102, 18-22 JUN 2006

SIO2/LOCUST BEAN GUM AND SIO2/CHITOSAN NANOCOMPOSITES: RHEOLOGICAL BEHAVIOR
OLIVEIRA, FC; BARROS-TIMMONS, AM; LOPES DA SILVA, JA
BRASIL, III BRAZILIAN CONFERENCE ON RHEOLOGY, 2006

SMALL-PORE LANTHANIDE SILICATE CHIRAL FRAMEWORK PHOSPHORS
ANANIAS, D; PAZ, FAA; CARLOS, LD; GERALDES, CFGC; ROCHA, J
6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, 04-09 SEPT 2006

SMALL-PORE LUMINESCENT LANTHANIDE SILICATES
KOSTOVA; M; ANANIAS, D; PAZ, FAA; CARLOS, LD; ROCHA, J
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, 04-09 SEPT 2006

SOIL REMEDIATION: SOIL UPTAKE BY PLANTS IN BRAÇAL MINING AREA (PORTUGAL)
MAGALHÃES, MCF; ABREU, MM; ANJOS, C
ALMADA, PORTUGAL, QUÍMICA SUSTENTÁVEL UM TEMA … UMA REFLEXÃO XXENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, 236, 2006

SOL-GEL DERIVED UV PHOTOPARTENABLE DI-UREASIL ORGANIC-INORGANIC HYBRIDS
VICENTE, C; MACEDO, AG; ANDRÉ, PS; NOGUEIRA, R; FERREIRA, RAS; FU, LS; CARLOS, LD
AVEIRO, PORTUGAL, FÍSICA 2006 - 15ª CONFERÊNCIA NACIONAL DE FÍSICA, 29, 04-07 SEPT 2006

SOL-GEL HYBRID MATRICES FOR BACTERICAL CELL IMMOBILIZATION
SAMUNEVA, B; CHERNEV, G; DJAMBASKI, P; KASHCHIEVA, E; KABAIVANOVA, L; EMANUILOVA, E; SALVADO, IMM; FERNANDES MHV; WU, A
JENA, GERMANY, 8TH INTERNATIONAL OTTO SCHOTT COLLOQUIUM, 2006

SOLID ACID CATALYSTS FOR CYCLODEHYDRATION OF XYLOSE
DIAS, AS; LIMA, S; BRANDÃO, P; VALENTE, AA; PILLINGER, M; ROCHA, J
ST PETERSBURG, RUSSIA, 4TH EFCATS SCHOOL ON CATALYSIS: CATALYST DESIGN - FROM MOLECULAR TO INDUSTRIAL LEVEL, P-19: 94, 2006

SOLID ACIDS CATALYSTS FOR CYCLODEHYDRATION OF D-XYLOSE INTO FURFURAL
VALENTE, AA; DIAS, AS; LIMA, S; BRANDÃO, P; PILLINGER, M; ROCHA, J
REIMS, FRANCE, BIOMASS DERIVED PENTOSES 2006, C7: 61, 2006

SOLID ACIDS FOR CYCLODEHYDRATION OF XYLOSE
DIAS, AS; LIMA, S; BRANDÃO, P; VALENTE, AA; PILLINGER, M; ROCHA, J
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, P57: 181, 14-16 DEC 2006

SOLID INCLUSION COMPOUNDS OF CARBONYL METAL COMPLEXES WITH β-CYCLODEXTRIN AND 2,3,6-TRIMETHYL-β-CYCLODEXTRIN
BRAGA, SS; PAZ, FAA; PILLINGER, M; SEIXAS, JD; ROMÃO, CC; GONÇALVES, IS
TORINO, ITALY, 13TH INTERNATIONAL CYCLODEXTRIN SYMPOSIUM, 3-O3, 14-17 MAY 2006

SOLID-STATE REACTIONS BETWEEN KEGGIN HETEROPOLYACIDS AND PYRIDINE DERIVATIVES
SANTOS, FM; MIDÕES, PC; FÉLIX, V; CAVALEIRO, AMV; FERREIRA, F; GOMES, EM; BESLEY, M
AVEIRO, PORTUGAL, III JORNADAS CICECO, 71, 13-14 JAN 2006

SPECTROSCOPIC STUDY ORGANIC-INORGANIC HYBRID INCORPORATING EUROPIUM HETEROCYCLIC β-DIKETONE COMPLEXES
LIMA, PP; PAVITHRAN, R; REDDY, MLP; FERREIRA, RAS; ALVES, JRS; MALTA, OL; CARLOS, LD
AVEIRO, PORTUGAL, III JORNADAS CICECO, 66, 13-14 JAN 2006

ß-CYCLODEXTRIN INCLUSION COMPOUNDS OF A MOLYBDENUM TRICARBONYL COMPLEX AND THEIR USE IN CATALYTIC OLEFIN EPOXIDATION
GAGO, S; BRAGA, SS; SEIXAS, JD; VALENTE, AA; PILLINGER, M; SANTOS, TM; ROMÃO, CC; GONÇALVES, IMS
ST PETERSBURG, RUSSIA, 4TH EFCATS SCHOOL ON CATALYSIS: CATALYST DESIGN - FROM MOLECULAR TO INDUSTRIAL LEVEL, 26, 20-24 SEPT 2006

STRATEGIES TO ENHANCE THE TRANSPORT PROPERTIES OF SOLID OXIDE ELECTROLYTES IN PROSPECTIVE WORKING CONDITIONS
FRADE, JR; KHARTON, VV
PORTO, PORTUGAL, JORNADAS DE ELECTROQUÍMICA E INOVAÇÃO 2006, E-INOV 2006, 10 OCT 2006

STRESS EFFECT ON SOL GEL SRTIO3 FILMS: STRUCTURE, MICROSTRUCTURE AND ELECTRICAL PROPERTIES AT ROOM TEMPERATURE
OKHAY, O; WU, A; VILARINHO, PM; SOARES, MR; PETZELT, J; POKORNY, J
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 115, 18-22 JUN 2006

STRUCTURAL AND MORPHOLOGICAL EVOLUTION DURING PYROLYSIS OF SOL-GEL DERIVAD GLASSES IN THE SI-O-C-N-TI SYSTEM
IVANOVA, Y; GERGANOVA, TS; DIMITRIEV, IY; SALVADO, IMM; FERNANDES, MHV; WU, A
JENA, GERMANY, 8TH INTERNATIONAL OTTO SCHOTT COLLOQUIUM, 2006

STRUCTURAL STUDIES OF ß–CYCLODEXTRIN AND PERMETHYLATED B–CYCLODEXTRIN INCLUSION COMPOUNDS OF A CYCLOPENTADIENYL IRON CARBONYL COMPLEX
GONÇALVES, IS; BRAGA, SS; PAZ, FAA; PILLINGER, M; SEIXAS, JD; ROMÃO, CC
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 9-P-04: 1019-1022, 20-23 JUN 2006

STRUCTURE AND DIELECTRIC CHARACTERISATION OF A NEW A-SITE DEFICIENT LA5/6MGTAO6 PEROVSKITE
KHALYAVIN, DD; SENOS, AMR; MANTAS, PQ; ARGYRIOU, DN; VIEIRA, LG; RIBEIRO, JL
VILNIUS, LITUÂNIA, SPECIALIZED COLLOQUE AMPERE AND AVH – WORKSHOP: ADVANCED MATERIALS AS STUDIED BY SPECTROSCOPIC AND DIFFRACTION TECHNIQUES, 2006

STRUCTURE AND DIELECTRIC PROPERTIES OF LEAD ZIRCONATE TITANATE SINGLE CRYSTALS
PÉREZ, J; SOARES, MR; MANTAS, PQ; PAZ, FAA; KLINOWSKI, J; SENOS, AMR
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 177, 18-22 JUN 2006

STRUCTURE AND MAGNETISM OF NA2CU5SI4O12 AN UNUSUAL CHAIN FERRIMAGNET
MOREIRA DOS SANTOS, A; REIS, MS; AMARAL, VS; FITCH, A; BRANDÃO, P; ROCHA, J
AVEIRO, PORTUGAL, III JORNADAS CICECO, O9: 22, 13-14 JAN 2006

STRUCTURE DETERMINATION FROM POWDER DIFFRACTION DATA OF OCTADECYLBENZENE
FERREIRA, A; PAZ, FAA; PAULY, J; MILHET, M; KLINOWSKI, J; BURLEY, J; COUTINHO, JAP
GENEVA, SWITZERLAND, 10TH EUROPEAN POWDER DIFFRACTION CONFERENCE, EPDIC 10, 100, 01-04 SEPT 2006

STUDY OF MASS TRANSFER PERFORMANCE IN A MULTIPHASE BIOREACTOR FOR LIPASE PRODUCTION BY YARROWIA LIPOLYTIC
AMARAL, PFF; FREIRE, MG; ROCHA-LEÃO, MHM; MARRUCHO, I; COELHO, MAZ; COUTINHO, JAP
CZECH REPUBLIC, 16TH INTERNATIONAL CONGRESS OF CHEMICAL AND PROCESS ENGINEERING, 1770, 2006

STUDY OF EMULSIONS STABILITY USING A BIOSURFACTANT FROM Y. LIPOLYTICA (IMUFRJ 50682)
TRINDADE, JR; FREIRE, MG; COUTINHO, JAP; MARRUCHO, IM
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 221-222, 2006

SUPPRESSION OF COPPER REDEPOSITION BY RE SALTS AND ORGANIC COMPLEXANTS AS EFFECTIVE TACTICS OF LOCALIZED CORROSION INHIBITION ON AA2024
YASAKAU, KA; ZHELUDKEVICH, ML; FERREIRA, MGS
DOURDAN, FRANCE, INTERNATIONAL SYMPOSIUM ON ELECTROCHEMICAL METHODS IN CORROSION RESEARCH, 29, 18-23 JUN 2006

SURFACE CHARACTERIZATION OF CELLULOSE FIBERS PARTIALLY ESTERIFIED WITH FATTYA CIDS
FREIRE, CSR; SILVESTRE, AJA; NETO, CP; GANDINI, A; HOLMBOM, B
VIENNA, AUSTRIA, 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 113-116, AUG 2006

SURFACE MODIFICATION OF CELLULOSE FIBERS WITH FLUORINE-CONTAINING COMPOUNDS
CUNHA, AG; FREIRE, CSR; SILVESTRE, AJA; NETO, CP; GANDINI, A
VIENNA, AUSTRIA, 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 216-219, AUG 2006

SURFACE MODIFICATION OF MAGNETIC NANOPARTICLES FOR BIOMEDICAL APPLICATIONS
MARTINS, MA; NEVES, MC; ESTEVES, ACC; GUIOMAR, AJ; TRINDADE, T
AVEIRO, PORTUGAL, WORKSHOP: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, 27-28 JAN 2006

SURFACE TENSION MEASUREMENTS OF IMIDAZOLIUM BASED IONIC LIQUIDS
CARVALHO, PJ; FREIRE, MG; QUEIMADA, AJ; MARRUCHO, IM; COUTINHO, JAP
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 399-400, 2006

SURFACE TENSION OF CHAIN MOLECULES – A COMBINATION OF THE GRADIENT THEORY WITH THE CPA EOS
OLIVEIRA, MB; MARRUCHO, IM; COUTINHO, JAP; KONTOGEORGIS, GM; MIQUEU, C; QUEIMADA, AJ
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 223, 2006

SURFACE TENSION OF CHAIN MOLECULES – A COMBINATION OF THE GRADIENT THEORY WITH THE CPA EOS
OLIVEIRA, MB; MARRUCHO, IM; COUTINHO, JAP; KONTOGEORGIS, GM; MIQUEU, C; QUEIMADA, AJ
DENMARK, EUROPEAN SYMPOSIUM ON APPLIED THERMODYNAMICS, 380-383, 2006

SVET AS A DIAGNOSTIC TOOL FOR CORROSION INHIBITORS
BASTOS, A; ZHELUDKEVICH, M; FERREIRA, MGS
PORTO, PORTUGAL, FORUM ON ELECTROCHEMISTRY AND INNOVATION 2006, 45, 20 OCT 2006

SYNCHROTRON X-RAY POWDER DIFFRACTION STUDIES ON LANTHANIDE SILICATES
PAZ, FAA; FERREIRA, A; FERDOV, S; LIN, Z; ROCHA, J
GENEVA, SWITZERLAND, 10TH EUROPEAN POWDER DIFFRACTION CONFERENCE, EPDIC 10, 90, 01-04 SEPT 2006

SYNTHESIS AND CATALYTIC PROPERTIES OF DIOXOMOLYBDENUM(VI) MODIFIED MESOPOROUS MATERIALS
BRUNO, SM; VALENTE, AA; FERNANDES, JA; GONÇALVES, IS; PILLINGER, M; RIBEIRO-CLARO, P
BUDAPEST, HUNGARY, 1ST EUROPEAN CHEMISTRY CONGRESS, C-PO-19: 37, 2006

SYNTHESIS AND CHARACTERISATION OF STRONTIUM TITANATE NANOCUBES
FERREIRA P, MAXIM F, VILARINHO P M
NICE, FRANCE, SCIENTIFIC PROGRAMME OF THE E-MRS IUMRS ICEM 2006 SPRING MEETING, A-34, 29 MAY-02 JUN 2006

SYNTHESIS AND CHARACTERIZATION OF FINE BARIUM STRONTIUM TITANATE POWDERS
WU, A; GONZÁLEZ, M; VILARINHO, PM
SENDAI, JAPAN, 8TH INTERNATIONAL SYMPOSIUM ON HYDROTHERMAL REACTIONS & SEVENTH INTERNATIONAL CONFERENCE ON SOLVOTHERMAL REACTIONS, 68, 05-09 AUG 2006

SYNTHESIS AND CHARACTERIZATION OF LAYERED DOUBLE HYDROXIDES INTERCALATED BY OXOMOLYBDENUM AND OXOTUNGSTEN COMPLEXES
MONTEIRO, B; GAGO, S; DIAS, AS; PILLINGER, M; VALENTE, AA; GONÇALVES, IS
VIGO, SPAIN, IX CONGRESSO NACIONAL DE MATERIALES, 9-P-05, 20-23 JUN 2006

SYNTHESIS AND CHARACTERIZATION OF POLYMER-EMBEDDED COPT3 NANOPARTICLES FOR BIOANALYTICAL APPLICATIONS
MARTINS, MA; NEVES, MC; ESTEVES, ACC; GIRGINOVA, PI; GUIOMAR, AJ; AMARAL, V; TRINDADE, T
GRENOBLE, FRANCE, TNT2006 – TRENDS IN NANOTECHNOLOGY, APR 2006

SYNTHESIS AND MECHANICAL PERFORMANCE OF BIOLOGICAL-LIKE HYDROXYAPATITES
LEMOS, AF; KANNAN, S; ROCHA, JHG; FERREIRA, JMF
20TH EUROPEAN CONFERENCE ON BIOMATERIALS 27 SEP, 01 OCT 2006

SYNTHESIS AND PROPERTIES OF SIO2-COATED BI2S3/POLYMER NANOCOMPOSITES
ESTEVES, ACC; NEVES, MC; BARROS-TIMMONS, AM; BOURGEAT-LAMI, E; LIZ-MARZÁN, L; TRINDADE, T
SPAIN, XI CONGRESSO NATIONALE DE MATERIALES, 2006

SYNTHESIS AND REACTIVITY OF MIXED-RING INDENYL COMPLEXES OF MOLYBDENOCENE
PEREIRA, CCL; ROMÃO, CC; GONÇALVES, IS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 38, 13-14 JAN 2006

SYNTHESIS AND STRUCTURAL CHARACTERIZATION OF NEW MIXED-RING INDENYL DERIVATIVES OF MOLYBDENUM CONTAINING PHOSPHORUS LIGANDS
PEREIRA, CCL; GAMELAS, CA; HAZELL, A; ROMÃO, CC; GONÇALVES, IS
ZARAGOZA, SPAIN, XXII INTERNATIONAL CONFERENCE ON ORGANOMETALLIC CHEMISTRY, P184: 372, 2006

SYNTHESIS AND STRUCTURE OF NANOMATERIALS IN THE SYSTEM SILICA – CHITOSAN
CHERNEV, G; SAMUNEVA, B; DJAMBASKI, P; KABAIVANOVA, L; EMANUILOVA, E; VASILEV, S; SALVADO, IMM; FERNANDES MHV; WU, A
JENA, GERMANY, 8TH INTERNATIONAL OTTO SCHOTT COLLOQUIUM, 2006

SYNTHESIS OF ALUMINUM METHYLPHOSPHONATE-ALPHA (ALMEPO-ALPHA) IN ETHYLENE GLYCOL
LIN, Z
SENDAI, JAPAN, 8TH INTERNATIONAL SYMPOSIUM ON HYDROTHERMAL REACTIONS & SEVENTH INTERNATIONAL CONFERENCE ON SOLVOTHERMAL REACTIONS, 66, 05-09 AUG 2006

SYNTHESIS OF SIO2/CELLULOSE FIBRES NANOCOMPOSITES
MARQUES, PAAP; PINTO, RJB; BARROS-TIMMONS, A; TRINDADE, T; NETO, CP
VIENNA, AUSTRIA, 9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP (EWLP), 386-388, AUG 2006

TERBIUM(III) COMPLEXES OF 2-AMINONITONIC ACID, THIOSALICYLIC AND ANTHRANILIC ACIDS: SYNTHESIS AND PHOTOLUMINESCENCE PROPERTIES
SOARES-SANTOS, P; FERREIRA, RAS; TRINDADE, T; CARLOS, LD; NOGUEIRA, HIS
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, 04-09 SEPT 2006

THE "SMART" RELEASE SYSTEMS FOR SELF-HEALING CORROSION PROTECTION
ZHELUDKEVICH, M; LAMAKA, SV; YASAKAU, KA; MONTEMOR, MF; SHCHUKIN, D; FERREIRA, MGS
MAASTRICHT, NETHERLANDS, EUROCORR 2006, 20, 25-28 SEPT 2006

THE CRYSTALLINE STRUCTURE AND SOLID SOLUTION LIMIT OF SELF-DOPED (LA1-XCAX)1-YVAYMNO3-δ
FIGUEIRAS, F; VIEIRA, JM; GUZIK, ME; LEGENDZIEWICZ, J; LOPES, ABL; TAVARES, PB; AMARAL, VS
WROCŁAW, POLAND, 6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS, ICFE-6, EO 3, 04-09 SEPT 2006

THE FINAL "FATE" OF HEAVY METAL RESIDUES: THE CHROMIUM COMPOUNDS. AN ENVIRONMENTAL CASE STUDY
SARABANDO, CMF; SANTOS, TM; MAGALHÃES, MCF
BRAGA, PORTUGAL, 3RD INTERNATIONAL CONFERENCE ON HANDS-ON SCIENCE, 36, 04-09 SEPT 2006

THE HOFMEISTER SERIES AND THE MUTUAL SOLUBILITIES OF WATER AND IONIC LIQUIDS
FREIRE, MG; CARVALHO, PJ; SANTOS, LMNBF; MARRUCHO, IM; REBELO, LPN; COUTINHO, JAP
USA, THERMO INTERNATIONAL 2006 CONFERENCE, 14-15, 2006

THE IMPACT ON THE SURFACE AND GROUNDWATERS COMPOSITION IN THE SURROUNDING AREA OF THE SANTO ANTONO ABANDONED GOLD MINE (PENEDONO, PORTUGAL)
MATIAS, MJ; MAGALHÃES, MCF; ABREU, MM; BASTO, MJ
JUGOWICE, POLONIA, 4TH WORKSHOP ON HARD ROCK HYDROGEOLOGY OF THE BOHEMIAN MASSIF, 41-42, 2006

THE PHASE SEPARATION, CRYSTAL STRUCTURE AND MAGNETIC PROPERTIES OF (X) LA0.625SR0.375MNO3 – (1-X)LUMNO3 SYSTEM
SONG, GB; KHOLKIN, AL; AMARAL, JS; AMARAL, VS
AVEIRO, PORTUGAL, III JORNADAS CICECO, O-2: 15, 13-14 JAN 2006

THE POTENTIAL OF HIGH RESOLUTION 1H NMR SPECTROSCOPY OF HUMAN HEPATIC BILE TO ASSESS LIVER GRAFT FUNCTION
DUARTE, IF; GIL, AM; STANLEY, EG; LEGIDO-QUIGLEY, C; HOLMES, E; LINDON, JC; NICHOLSON, JK; MURPHY, GM; HEATON, N; VILCA-MELENDEZ, H
BOSTON, USA, METABOLOMICS 2006, 44, 24-29 JUN 2006

THE USE OF AFM TO STUDY THE LOCALIZED CORROSION BEHAVIOR OF ALUMINUM ALLOYS AND INHIBITING ACTION OF THE LN COMPOUNDS
YASAKAU, K; ZHELUDKEVICH, ML; FERREIRA, MGS
PORTO, PORTUGAL, FORUM ON ELECTROCHEMISTRY AND INNOVATION 2006, 46, 20 OCT 2006

THICK FILMS OF BAND2TI5O14 FABRICATED BY ELECTROPHORETIC DEPOSITION FOR MICROWAVE APPLICATIONS
FU, Z; WU, A; VILARINHO, PM; KINGON, A
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 115, 18-22 JUN 2006

THIN FILMS OF PHOTOCROSSLINKABLE POLYMER ELECTROLYTES BASED ON CHITOSAN GRAFTED WITH PEZO AND A FURAN CHROMOPHORE
GANDINI, A; LE NEST, JF; HARIRI, S
MONTPELLIER, FRANCE, 10TH INTERNATIONAL CONFERENCE ON CHITIN AND CHITOSAN, 19, SEPT 2006

TIO2 NANOPARTICLES FOR SELF-CLEANING AND BUILDING MATERIALS
TRINDADE, T
AVEIRO, PORTUGAL, WORKSHOP: NANOTECHNOLOGIES IN CONSTRUCTION, 03 JUL 2006

TIOX NANOSTRUCTURED INTERLAYER AS RESERVOIR OF CORROSION INHIBITORS FOR COATINGS WITH SELF-HEALING ABILITY
LAMAKA, SV; ZHELUDKEVICH, ML; YASAKAU, KA; SERRA, R; MONTEMOR, MF; CECILIO, P; FERREIRA, MGS
NOORDWIJK, NETHERLANDS, COSI, COATINGS SCIENCE INTERNATIONAL, 69, 26-30 JUN 2006

TIOX SELF-ASSEMBLED NETS AS NANOSTRUCTURED RESERVOIRS FOR SELF-HEALING ANTICORROSION PRE-TREATMENTS
LAMAKA, SV; ZHELUDKEVICH, M; YASAKAU, KA; MONTEMOR, MF; CECILIO, P; FERREIRA, MGS
MAASTRICHT, NETHERLANDS, EUROCORR 2006, 220, 25-28 SEPT 2006

TITANIA NANOTUBES SYNTHESIS: THE IMPORTANCE OF THE NEUTRALIZING STEP
MAXIM, F; FERREIRA, P; VILARINHO, PM
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 312, 18-22 JUN 2006

TRANSPORT PROPERTIES AND DEFECT INTERACTIONS IN FERRITE-BASED PEROVSKITES
FRADE, J; KHARTON, V; NAUMOVICH, E; YAREMCHENKO, A; PATRAKEEV, M; ISLAM, S
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 18-22 JUN 2006

TSALLIS STATISTICS AND ITS APPLICATIONS
REIS, MS; SARTHOUR, RS; AMARAL VS; OLIVEIRA, IS
AVEIRO, PORTUGAL, III JORNADAS CICECO, 13-14 JAN 2006

TSALLIS STATISTICS AND MANGANITES
REIS, MS; AMARAL, VS; SARTHOUR RS; OLIVEIRA, IS
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS'06, 2006

TWO SYNTHESIS ROUTES FOR THE PREPARATION OF A SIO2-LINBO3 GLASS AND GLASS-CERAMICS - A COMPARATIVE STUDY
GRAÇA, MPF; FERREIRA DA SILVA, MG; VALENTE, MA
AVEIRO, PORTUGAL, III JORNADAS CICECO, 48, 13-14 JAN 2006

ULTRASONIC AND PIEZOELECTRIC PROPERTIES OF THE BT-LMT CERAMIC SYSTEM
SAMULIONIS, V; SALAK, A; BANYS, J; FERREIRA, VM; KEBURIS, P
TOLEDO, SPAIN, ELECTROCERAMICS X, INTERNATIONAL CONFERENCE ON ELECTROCERAMICS, 270, 18-22 JUN 2006

VALORIZATION OF INCINERATED MUNICIPAL SOLID WASTES BY GLASS-CERAMIC TECHNOLOGY
DAVIM, E; FERNANDES, MHV; MONTEIRO, RCC
SUNDERLAND, UNITED KINGDOM, 8TH ESG CONFERENCE OF GLASS SCIENCE AND TECHNOLOGY, 2006

VOLTAMMETRIC AND STRUCTURAL STUDIES OF TETRA-BUTYLAMMONIUM SALTS OF KEGGIN-TYPE SILICOTUNGSTATES ADSORBED ON GLASSY CARBON ELECTRODES
FERNANDES, DM; CARAPUÇA, HM; CAMPOS, I; CAVALEIRO, AMV
CAPARICA, PORTUGAL, XX ENCONTRO NACIONAL DA SOCIEDADE PORTUGUESA DE QUÍMICA, SPQ, 196, 14-16 DEC 2006

OTHER PUBLICATIONS

A REVIEW ON THE BOOK "STATIONARY AND NON-STATIONARY KINETICS OF PHOTOINITIATED POLYMERIZATION
GANDINI, A
IN POLYMER INTERNATIONAL, 55: 124-125 2006

COMPARATIVE STUDY OF LIPOPHILIC EXTRACTIVES OF HARDWOODS AND CORRESPONDING ECF BLEACHED KRAFT PULPS
FREIRE, CSR; PINTO, PC; SANTIAGO, AS; SILVESTRE, AJD; EVTUGUIN, DV; NETO, CP
BIORESOURCES, 1: 3-17 2006

EXTRACTÁVEIS LIPOFÍLICOS EM PASTAS KRAFT DE E. GLOBULUS COMPORTAMENTO DURANTE O BRANQUEAMENTO ECF
FREIRE, CSR; SILVESTRE, AJD; NETO, CP
NEWSLETTER DIGEST, 2006

FERRIHYDRITE AND MAGHEMITE NANOPARTICLES IN ORGANIC-INORGANIC MATRICES
SILVA, NJO; FU, LS; MILLAN, A; URTIZBEREA, A; PALÁCIO, F; NUNES,SC; DE ZEA BERMUDEZ, V; RODRÍGUEZ-GONZALES, B; LIZ-MARZÁN, LM; BERQUÓ, T; CARLOS, LD; AMARAL, VS
AVEIRO, PORTUGAL, III JORNADAS DO CICECO, 81 13-14 JAN 2006

LOCAL DISTORTIONS IN FERROMAGNETIC INSULATOR LAMNO3.12
LOPES, AML; ARAÚJO, JP; RAMASCO, JJ; CORREIA, JG; AMARAL, VS; SURYANARAYANAN, R
SAN SEBASTIAN, SPAIN, , JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS06, COMM. OP-095 2006

LOCAL PROBE STUDIES NEAR THE CHARGE ORDER AND MAGNETIC TRANSITIONS IN PR1-XCAXMNO3
AMARAL, VS; LOPES, AML; ARAÚJO, JP; RITA, E; MENDONÇA, TM; REIS, MS; TAVARES, PB; CORREIA, JG; TOMIOKA, Y; TOKURA, Y; THE ISOLDE COLABORATION
GENEVA, SWITZERLAND, ISOLDE WORKSHOP AND USER'S MEETING, 2006

MAGNETIC PROPERTIES OF LA0.625SR0.375MNO3-LUMNO3 SYSTEM
FIGUEIRAS, F; AMARAL, JS; ARAÚJO, JP; AMARAL, VS; SONG, GB; KHOLKIN, AL
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS06, 2OO-092 2006

MANUFACTURA E CARACTERIZAÇÃO DE COMPÓSITOS CIMENTO-MATERIAL LENHOCELULÓSICO DE ORIGEM PORTUGUESA (PINHO, EUCALIPTO OU CORTIÇA)
PEREIRA, C; JORGE, FC; NEVES, AS; COUTINHO, JS; FERREIRA, JMF
PORTUGAL, VIDA RURAL, 4: 46-47 2006

MATERIAIS EM DESPORTOS RADICAIS
VILARINHO, PM; FERNANDES, MH; MARTINS, J; SILVA, P
CD-ROM, 2006

MATERIAIS PARA A SOCIEDADE DO HIDROGÉNIO: PRODUZIR E ARMAZENAR
FIGUEIREDO, FM
MUNDUS, 8: 42-43 2006

MATERIAIS PARA A SOCIEDADE DO HIDROGÉNIO: UTILIZAR
FIGUEIREDO, FM
MUNDUS, 10: 64-65 2006

MECHANICAL CHARACTERIZATION OF A WC-NI COMPOSITE PREPARED FROM SPUTTER-DEPOSITED POWDER
FERNANDES, CM; SENOS, AMR; CASTANHO, JM; VIEIRA, MT; ANTUNES, JM
BELGIUM, EURO PM2006, ORAL PRESENTATION 2006

NANOQUÍMICA NA INVESTIGAÇÃO DE MATERIAIS COM NOVAS FUNCIONALIDADES
TRINDADE, T
ANTIGUINHO- BOLETIM DA AAAUA, 23: 17 2006

NANOSTRUCTURED MAGNETISM OF IRON OXIDE NANOPARTICLES IN HYBRID AND POLYMERIC MATRICES
AMARAL, VS; SILVA, NJO; CARLOS, LD
AVEIRO, WORKSHOP ON LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS, ORAL PRESENTATION 2006

NATURE OF PHASE TRANSITION IN MANGANITES: ADIABATIC AND VIBRONIC PHASE SEGREGATION MECHANISMS
AMARAL, JS; AMARAL, VS
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS06, COMM. OP-093 2006

POLYOXOMETALATES IN OXIDATIVE CATALYSIS OF ORGANIC COMPOUNDS
CAVALEIRO, AMV
COIMBRA, PORTUGAL, CICLO DE PALESTRAS E CURSO INTEGRADO DE CATÁLISE (O CURSO DECORREU ÀS SEXTAS-FEIRAS DE 21 DE ABRIL A 30 JUNHO), 24 26 DE MAIO DE 2006

RELATION BETWEEN STRUCTURAL AND MAGNETIC PROPERTIES OF FERRIHYDRITE AND MAGHEMITE NANOPARTICLES WITHIN HYBRID AND POLIMERIC MATRICES
SILVA, NJO; FU, LS; MILLÁN, A; URTIZBEREA, A; DE ZEA BERMUDEZ, V; RODRIGUÉZ-GONZALÉZ, B; LIZ-MARZÁN, LM; CARLOS, LD; PALACIO, F; AMARAL, VS
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS06, COMM. 040 2006

SHELL THICKNESS DETERMINATION IN MAGHEMITE NANOPARTICLE SERIES
MILLAN; URTIZBEREA, A; SILVA, NJO; AMARAL, VS; PALACIO, F
SAN SEBASTIAN, SPAIN, JOINT EUROPEAN MAGNETIC SYMPOSIA JEMS06, COMM. 016 2006

SINTERING STUDIES OF NONSTOICHIOMETRIC STRONTIUM TITANATE CERAMICS
AMARAL, L; TKACH, A; SENOS, AMR; VILARINHO, PM
TOLEDO, SPAIN, ELECTROCERAMICS X, ORAL PRESENTATION 18-22 JUN 2006

STRUCTURE - ELECTRICAL PROPERTY RELATIONSHIPS IN LEAD ZIRCONATE TITANATE SINGLE CRYSTALS NEAR THE MORPHOTROPIC PHASE BOUNDARY
PEREZ, JA; SENOS, AMR; SOARES, MR; MANTAS, PQ; AMORIN, H; COSTA; MEV
TOLEDO, SPAIN, ELECTROCERAMICS X, POSTER PRESENTATION 18-22 JUN 2006

STRUCTURE AND DIELECTRIC CHARACTERISATION OF A NEW A-SITE DEFICIENT LA5/6MGTAO6 PEROVSKITE
KHALYAVIN, DD; SENOS, AMR; MANTAS, PQ; ARGYRIOU, DN; VIEIRA, LG, RIBEIRO, JL
VILNIUS, LITHUANIA, SPECIALIZED COLLOQUE AMPERE AND AVH-WORKSHOP: ADVANCED MATERIALS AS STUDIED BY SPECTROSCOPIC AND DIFFRACTION TECHNIQUES, 2006

TSALLIS STATISTICS AND ITS APPLICATIONS
REIS, MS; ARAÚJO, JP; OLIVEIRA, IS; AMARAL, VS
AVEIRO, PORTUGAL, III JORNADAS DO CICECO, P32: 57 13-14 JAN 2006

CONGRESS ORGANISATION

11 OLIMPÍADA IBEROAMERICANA DE QUÍMICA
MAGALHÃES, MCF
08-15 SEPT 2006, UNIVERSITY OF AVEIRO, PORTUGAL

12TH INTERNATIONAL SYMPOSIUM ON SOLUBILITY PHENOMENA AND RELATED EQUILIBRIUM PROCESSES_IN
MAGALHÃES, MCF
23-28 JUL 2006, TU BERGAKADEMIE FREIBERG, GERMANY

25 ANOS DE MATERIAIS EM PORTUGAL
FERNANDES, MH; VILARINHO, PM
02-04 NOV 2006, UNIVERSITY OF AVEIRO, PORTUGAL

2ND REPSOL MEETING ON FLOW ASSURANCE
COUTINHO, JAP
10 NOV 2006, UNIVERSITY OF AVEIRO, PORTUGAL

6TH IBERIAN VACUUM MEETING ETCHC-4
SILVA, RF: INTERNATIONAL ADVISORY COMMITTEE
26-28 JUN 2006, UNIVERSITY OF SALAMANCA, SPAIN

6TH INTERNATIONAL CONFERENCE ON F-ELEMENTS
CARLOS, LD: INTERNATIONAL SCIENTIFIC ADVISORY COMMITTEE
04-09 SEPT 2006, WROCŁAW, POLAND

8TH EUROPEAN CONFERENCE ON APPLICATIONS OF POLAR DIELECTRICS
KHOLKINE, A
06-08 SEPT 2006, METZ

9TH EUROPEAN WORKSHOP ON LIGNOCELLULOSICS AND PULP – EWLP
NETO, CP: INTERNATIONAL ADVISORY COMMITTEE
27-30 AUG 2006, VIENNA, AUSTRIA

JORNADAS DE ELECTROQUÍMICA E INOVAÇÃO 2006 (E-INOV 2006)
CARAPUÇA, H
20 OCT 2006, FUNDAÇÃO CUPERTINO DE MIRANDA, PORTO, PORTUGAL

ELECTROCERAMICS X
MARQUES, FMB: INTERNATIONAL ADVISORY COMMITTEE
18-22 JUN 2006, TOLEDO, SPAIN

EMPREENDER: DA TEORIA À PRÁTICA
DANIEL, A
16 DEC 2006, UNIVERSITY OF AVEIRO, PORTUGAL

E-MRS 2006 - SPRING MEETING
MARQUES, FMB: SCIENTIFIC COMMITTEE
29 MAY-02JUN 2006, NICE, FRANCE

FÍSICA 2006: 15ª CONFERÊNCIA NACIONAL DE FÍSICA
CARLOS, LD: SCIENTIFIC COMMITTEE
04-07 SEPT 2006, UNIVERSITY OF AVEIRO, PORTUGAL

III JORNADAS CICECO
FERREIRA P: ORGANISING COMMITTEE
13-14 JAN 2006, UNIVERSITY OF AVEIRO, PORTUGAL

IV CONGRESSO IBEROAMERICANO DE INVESTIGACION EN CELULOSA Y PAPEL
NETO CP: SCIENTIFIC ADVISORY COMMITTEE
23-27 OCT 2006, SANTIAGO E VALDIVIA, CHILE

LIME MORTARS: PAST AND FUTURE
FERREIRA, VM; LABRINCHA, JA
11 OCT 2006, UNIVERSITY OF AVEIRO, PORTUGAL

NANOTECHNOLOGIES IN CONSTRUCTION
FERREIRA, V; LABRINCHA, J; DANIEL, A
03 JUL 2006, UNIVERSITY OF AVEIRO, PORTUGAL

OLIMPÍADAS IBEROAMERICANAS DE QUÍMICA
DA SILVA, F; FRANCISCO, A: SCIENTIFIC ADVISORY COMMITTEE
07-15 SEPT 2006, UNIVERSITY OF AVEIRO, PORTUGAL

SEMINÁRIO ACERCA DA UTILIZAÇÃO DA DIFRACÇÃO DE RAIOS-X APLICADA A CARACTERIZAÇÃO DE HETEROESTRUTURS ELECTRO-CERÂMICAS
PEREIRA, S
UNIVERSITY OF AVEIRO, PORTUGAL

WORKSHOP – NANOTECHNOLOGIES IN CONSTRUCTION
BARROS-TIMMONS, A
03 JUL 2006, UNIVERSITY OF AVEIRO, PORTUGAL

WORKSHOP – REVESTIMENTOS RUMO AO FUTURO
BARROS-TIMMONS, A
31MAR 2006, UNIVERSITY OF AVEIRO, PORTUGAL

WORKSHOP INTERNACIONAL: LOW-DIMENSIONAL SEMICONDUCTOR STRUCTURES: GROWTH, PROPERTIES AND APPLICATIONS
PEREIRA, S
27-28 JAN 2006, UNIVERSITY OF AVEIRO, PORTUGAL

XII OLIMPIADAS IBERO-AMERICANAS
SANTOS T M: SCIENTIFIC ADVISORY COMMITTEE
07-11 SEPT 2006, UNIVERSITY OF AVEIRO, PORTUGAL

XVTH NATIONAL CONGRESS OF BIOCHEMISTRY
PEREIRA, ML: ORGANISING COMMITTEE
08-10 DEC 2006, UNIVERSITY OF AVEIRO, PORTUGAL

COURSES, SEMINARS AND TRAINING PROGRAMMES

JOINT MASTER PROGRAMME: MATERIALS SCIENCE AND ENGINEERING
BARROS-TIMMONS, A
OCTOBER 2004, THE TECHNICAL UNIVERSITY OF HAMBURG /HARBURG AND THE UNIVERSITY OF AALBORG

FAME - ERASMUS MUNDUS MASTER PROGRAMME IN FUNCTIONALIZED ADVANCED MATERIALS AND ENGINEERING
BARROS-TIMMONS, A
UNIVERSITIES OF AUSBURG, GRENOBLE, AVEIRO, BORDEAUX, DARMSTADT, LIÉGE, LOUVAIN, 2006

1º CURSO DE TRABALHOS PRÁTICOS DO 12º ANO
RIBEIRO-CLARO, P
UNIVERSITY OF AVEIRO, PORTUGAL, 14 JAN - 11 APR 2006

2º CURSO DE TRABALHOS PRÁTICOS DO 12º ANO
RIBEIRO-CLARO, P
UNIVERSITY OF AVEIRO, PORTUGAL, 28 JAN - 11 APR 2006

ACÇÃO DE FORMAÇÃO: "QUÍMICA NAS ESCOLAS" – ACTIVIDADES PARA PROFESSORES DO ENSINO SECUNDÁRIO (12º ANO)
SANTOS, T, 2006

ACTIVIDADE LABORATORIAL – COMO DETERMINAR A CONCENTRAÇÃO DE UMA SOLUÇÃO CORADA PELA INTENSIDADE DA SUA COR?- ACÇÃO DE FORMAÇÃO E MATERIAL DE APOIO
SANTOS, T, 2006

TRAINING: COLLOIDS, SURFACES AND INTERFACES (CONTINUES IN 2007)
GANDINI, A
UNIVERSITY OF AVEIRO, PORTUGAL, 07 NOV 2006 - 13 MAR 2007

TRAINING: SYNTHESIS, PROPERTIES AND APPLICATIONS OF POLYMERS
GANDINI, A
UNIVERSITY OF AVEIRO, PORTUGAL, 07 FEV- 18 JUL 2006

REACHING OUT ACTIVITIES

"DOS 0 AOS -195 EM 10 SEGUNDOS"
RIBEIRO-CLARO, P; GOODFELLOW, B
04 MAR - 06 MAY 2006

"QUÍMICA EM ESPECTÁCULO!!!"
RIBEIRO-CLARO, P; GOODFELLOW, B
22-24 NOV 2006

"PROFISSÃO: QUÍMICO!" APRESENTADA REGULARMENTE AQUANDO DAS VISITAS DE ALUNOS DO ENSINO SECUNDÁRIO AO DQ)
RIBEIRO-CLARO, P
2006

A QUÍMICA DOS NANO-GLUTÕES ECOLÓGICOS
TRINDADE, T
OCUPAÇÃO CIENTÍFICA DE JOVENS NAS FÉRIAS- PROGRAMA CIÊNCIA VIVA, UNIVERSITY OF AVEIRO, 12-21 JUL2006

ACTIVIDADE DO CIÊNCIA VIVA - PROJECTO: UMA JANELA INORGÂNICA PARA A QUÍMICA DA VIDA – O CRÓMIO COMO CASO DE ESTUDO – ESCOLHIDO POR UM ALUNO
SANTOS, T

COLLABORATION WITH TWO LOCAL INDUSTRIES: INDASA AND WEBER CIMENFIX, VIA INDUSTRIAL INTERNSHIPS WITH THE PURPOSE OF ESTABLISHING FUTURE RESEARCH COLLABORATIONS.
BARROS-TIMMONS, A

COMUNICAÇÕES EM EVENTOS PÚBLICOS KINETICS OF SOLID STATE PROCESSES UNDER VARIABLE TEMPERATURE
FRADE, JR
UNIVERSIDAD DE LA LAGUNA/SPAIN/TENERIFE, 05 APR 2006

COMUNICAÇÕES EM EVENTOS PÚBLICOS PILHAS DE COMBUSTÍVEL ANTES DA SOCIEDADE DO HIDROGÉNIO
FRADE, JR; FIGUEIREDO, FM
FÓRUM FÍSICA E ENERGIA: DESAFIOS DE HOJE PARA PORTUGAL, UNIVERSITY OF AVEIRO, MAY 2006

DINAMIZADOR E PARTICIPANTE NA ACADEMIA DE VERÃO
UNIVERSITY OF AVEIRO, JUL 2006

DO DINOSSAURO AO PORCO/SEMANA DO JOVEM CIENTISTA
COUTINHO, JAP
SEMANA DO JOVEM CIENTISTA, VISIONARIUM, S M FEIRA, PORTUGAL, 01 MAY 2006

EDITED SPECIAL ISSUE OF THE JOURNAL OF SOLID STATE ELECTROCHEMISTRY "OXYGEN IONIC AND MIXED CONDUCTORS: RECENT DEVELOPMENTS" NUMBER 8, VOLUME 10
KHARTON, V
2006

EDITOR ASSOCIADO DA REVISTA INTERNACIONAL "TRANSACTIONS ON ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL DE IEEE" (EUA)
KHOLKIN, A

EDITOR DE "SPECIAL ISSUE ON NANOSCALE FERROELECTRICS" PUBLICADO EM DEZEMBRO DE 2006 EM "TRANSACTIONS ON ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL DE IEEE"
KHOLKIN, A
DEC 2006

EUREKA ESPECIAL DE NATAL
RIBEIRO-CLARO, P
EMISSÕES ESPECIAIS DO PROGRAMA EUREKA (UA/TSF), EMITIDOS PELA RÁDIO NACIONAL TSF, 17 DEC 2005

EUREKA ESPECIAL DIA DOS NAMORADOS / QUÍMICA DO AMOR
RIBEIRO-CLARO, P; ROCHA, J
EMISSÕES ESPECIAIS DO PROGRAMA EUREKA (UA/TSF), EMITIDOS PELA RÁDIO NACIONAL TSF, 11 FEV 2006

EUREKA / A VERDADE SOBRE A MENTIRA
RIBEIRO-CLARO, P
EMISSÕES ESPECIAIS DO PROGRAMA EUREKA (UA/TSF), EMITIDOS PELA RÁDIO NACIONAL TSF, 01 APR 2006

ESCOLA DE VERÃO DO DEPARTAMENTO DE FÍSICA 2006
REIS, M
CONSTRUÇÃO DE UM GERADOR VAN-DER-GRAFF

BIO IN MACHINA
ROCHA, J
FÁBRICA DA CIÊNCIA VIVA, UNIVERSITY OF AVEIRO, PORTUGAL, 23 NOV 2006

LA QUÍMICA EN LA ENSEÑANZA SECUNDARIA: SITUACIÓN EN PORTUGAL
MAGALHÃES, MCF
XIX OLIMPIADA NACIONAL DE QUÍMICA DE ESPANHA, VIGO, ESPANHA, 21-24 APR 2006

LEGO-QUÍMICA: A NANOTECNOLOGIA NAS NOSSAS MÃOS
TRINDADE, T
SEMANA ABERTA DA CIENCIA E TECNOLOGIA, UNIVERSITY OF AVEIRO, PORTUGAL, 22 NOV 2006

MATERIAIS DE MUDANÇA DE FASE PARA ISOLAMENTO TÉRMICO E ARMAZENAMENTO DE ENERGIA
COUTINHO, JAP
WORKSHOP 'ENERGIA NA CASA DO FUTURO', UNIVERSITY OF AVEIRO, PORTUGAL, JAN 2006

MATERIAIS EM DESPORTOS RADICAIS – SEMANA DA CIÊNCIA E TECNOLOGIA DA UNIVERSIDADE DE AVEIRO
VILARINHO, PM: ORGINIZING COMMITTEE
UNIVERSITY OF AVEIRO, PORTUGAL, 26TH NOV TO 01ST DEC 2006

MEMBER OF EDITORIAL BOARDS OF THE JOURNAL OF SOLID STATE ELECTROCHEMISTRY (SPRINGER) AND MATERIALS LETTERS (ELSEVIER)
KHARTON, V

MEMBRO DA COMISSÃO FERROELÉCTRICA DA SOCIEDADE IEEE (E.U.A.)
KHOLKIN, A

MEMBRO DO CONCELHO CONSULTIVO DE CONFERÊNCIA EUROPEIA ECAPD
KHOLKIN, A

MEMBRO DO CONCELHO CONSULTIVO DE CONFERÊNCIA INTERNACIONAL "MICRO- AND NANOSCALE STRUCTURING IN FERROELECTRICS"
KHOLKIN, A

NANOMATERIAIS: PEQUENAS PEÇAS PARA UM GRANDE PALCO
TRINDADE, T
ESCOLA SECUNDÁRIA FERREIRA DE CASTRO/OLIVEIRA DE AZEMEIS

NANOMATERIAIS: QUE FUTURO EM PORTUGAL?
TRINDADE, T
1º ENEM - ENCONTRO NACIONAL DE ESTUDANTES DE MATERIAIS
COMEMORAÇÃO DO DIA MUNDIAL DOS MATERIAIS, UNIVERSITY OF AVEIRO, PORTUGAL, 02ND NOV 2006

NANOQUÍMICA NA UA
TRINDADE, T
PROGRAMA DE TELEVISÃO 3810-UA, 02ND MAY 2006

NANOTECNOLOGIA: ESTADO ACTUAL E PERSPECTIVAS
TRINDADE, T
FORUM NOVAS FRONTEIRAS DA CIÊNCIA E DO CONHECIMENTO, ALFANDEGA DO PORTO/PORTO, 01ST APR 2006

OLIMPÍADAS DE QUÍMICA
RIBEIRO-CLARO, P; CARAPUÇA, H
UNIVERSITY OF AVEIRO, PORTUGAL, APR 2006

OLIMPÍADAS DE QUÍMICA - FINAL
RIBEIRO-CLARO, P
UNIVERSITY OF AVEIRO, PORTUGAL, 06TH MAY 2006

OLIMPÍADAS DE QUÍMICA – SEMIFINAL
RIBEIRO-CLARO, P
UNIVERSITY OF AVEIRO, PORTUGAL, MAR 2006

OLIMPÍADAS DE QUÍMICA JÚNIOR
RIBEIRO-CLARO, P; CARAPUÇA, H
UNIVERSITY OF AVEIRO, PORTUGAL, 22ND APR 2006

ONDE ESTÁ A QUÍMICA NO AMBIENTE?
MAGALHÃES, MCF
SEMANA DA CIÊNCIA E TECNOLOGIA, UNIVERSITY OF AVEIRO, PORTUGAL, 24TH NOV 2006

CANALIZADOR MOLECULAR: UMA PROFISSÃO DE FUTURO?
ROCHA, J
"OS INCRÍVEIS MOMENTOS EM QUÍMICA", UNIVERSITY OF TRÁS-OS-MONTES-E-ALTO DOURO, 11ST JAN 2006

PALESTRA SOBRE BIOMATERIAIS EM ESCOLAS
FERREIRA, V
PLATAFORMA QUIMIMATER - QUIMICA DOS MATERIAIS, 2006

SEMANA DA PRÁTICA PEDAGÓGICA
SANTOS, T
UNIVERSITY OF AVEIRO, PORTUGAL, MAI 2006

SEMINAR: A SOCIEDADE DO HIDROGÉNIO
FIGUEIREDO, F
PLATAFORMA QUIMIMATER - QUIMICA DOS MATERIAIS, 2006

DIA DA MULHER, CIÊNCIA E PRECONCEITO
ROCHA, J
EMISSÕES ESPECIAIS DO PROGRAMA EUREKA (UA/TSF), EMITIDOS PELA RÁDIO NACIONAL TSF, 08 MAR 2006

QUANTUM DOTS
TRINDADE, T
NANODIÁLOGO- UM MEGADIÁLOGO SOBRE A NANOTECNOLOGIA, PAVILHÃO DO CONHECIMENTO- CIÊNCIA VIVA/LISBOA, 22ND APR 2006

ACÇÕES DE DIVULGAÇÃO E ACTIVIDADES EXPERIMENTAIS NO ÂMBITO DA DISCIPLINA DE QUÍMICA DO 12º E ELABORAÇÃO DOS RESPECTIVOS PROTOCOLOS
SILVA, RF; FRADE, J

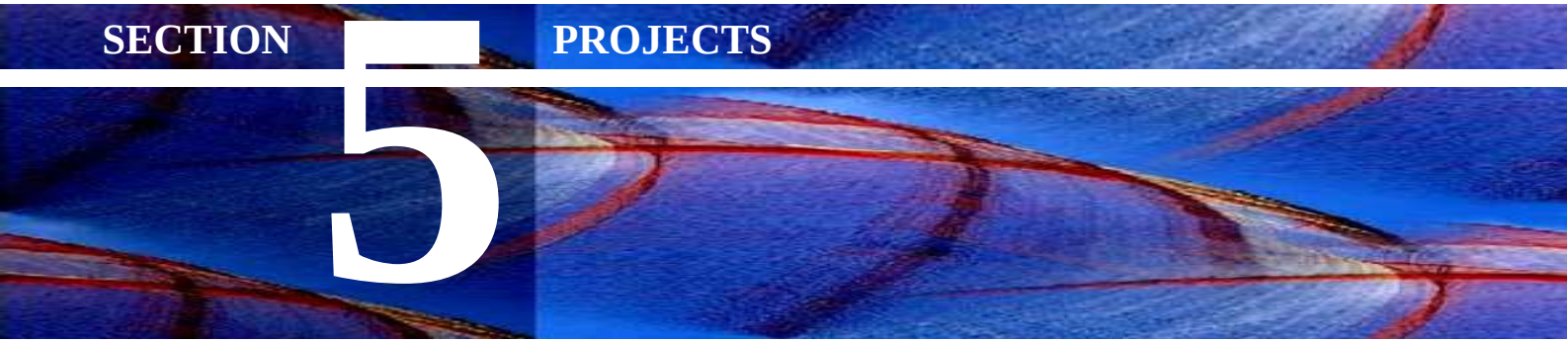
QUIMIMATER – PLATAFORMA DE COLABORAÇÃO PARA O ENSINO DA QUIMICA DE MATERIAIS NO 12º ANO DO ENSINO SECUNDÁRIO, 2006

RESEARCH ACTIVITIES IN MATERIALS SCIENCE AT UA
TRINDADE, T
EMMS STUDENTS-WOORKSHOP: A LOOK INTO THE FUTURE OF MATERIALS SCIENCE, UNIVERSIDADE DE AVEIRO, JUN 2006

SALCIÊNCIA - PROJECTO CIÊNCIA VIVA
MAGALHÃES, MCF; CAVALEIRO, AMV

VARIAS PALESTRAS SOBRE POLÍMEROS SINTÉTICOS E NATURAIS EM CIÊNCIA VIVA E ESCOLAS SECUNDÁRIAS
GIL, A
SEMANA DA CIÊNCIA E TECNOLOGIA, 2006

XI OLIMPÍADA IBEROAMERICANA DE QUÍMICA
CAVALEIRO, AMV
AVEIRO, 07-15 SEPT 2006


SECTION
5
PROJECTS

PROJECTS TERMINATED

AERATION OF MULTIPHASE BIOLOGICAL REACTORS
POCTI/EQU/44427/2002

E-ECORISK – A REGIONAL ENTERPRISE NETWORK DECISION SUPPORT SYSTEM FOR ENVIRONMENTAL RISK AND DISASTER MANAGEMENT OF LARGE SCALE INDUSTRIAL SPILLS
EVG1-CT-2002-00068

HYBRID MATERIALS PREPARED BY IRRADIATION
POCTI/CTM/44150/2002

NETWORKED CENTRE OF EXCELLENCE IN MATERIALS FOR THE ECONOMIC DEVELOPMENT OF THE ATLANTIC AREA – MNAA

OPTICAL WAVEGUIDE LASERS BASED ON HYBRID SOL-GEL DERIVED MATERIALS DOPED WITH LANTHANIDE IONS
POCTI/CTM/42478/2001

BIOMATERIAIS DE SI3N4 REVESTIDOS A DLC E DIAMANTE CVD – BIODIAM
POCTI/CTM/45423/2002

CONTROLO DE QUALIDADE NA ÁREA DA TECNOLOGIA DE FUNDIÇÃO

DEPOSIÇÃO DE CERAS PARAFÍNICAS EM OLEODUTOS

ESTUDO COMPARATIVO DO COMPORTAMENTO "IN VITRO" DE VIDROS DO SISTEMA SI-CA-P-MG, EM ESPÉCIMES MONOLÍTICOS E NA FORMA DE FILMES

LABORATÓRIO DE MICROSCOPIA ELECTRÓNICA ANALÍTICA DE RESOLUÇÃO ATÓMICA - GRANDES EQUIPAMENTOS DE USO COMUM
REEQ

NANOCOMPÓSITOS DE MATRIZ CARRAGENANO PARA APLICAÇÕES BIOMÉDICAS

QUALIDADE E TECNOLOGIA DE MATERIAIS PARA APLICAÇÕES DE DESGASTE

USO DE PERFLUOROCARBONETOS NA AERAÇÃO DE CULTURAS DE YARROWIA LYPOLITICA PARA DESENVOLVIMENTO DE BIOPROCESSOS E PRODUÇÃO DE LIPASE

PROJECTS IN PROGRESS

ADOPTIC - ADDITIVE OPTIMISATION FOR IMPROVED CERAMICS
SIXTH FRAMEWORK PROGRAMME (FP6).

ADVANCED ENVIRONMENTALLY FRIENDLY MULTIFUNCTIONAL CORROSION PROTECTION BY NANOTECHNOLOGY
11783-2 MULTIPROTECT

APPLICATION OF NMR METHODS FOR THE CHARACTERIZATION AND QUALITY CONTROL OF BEER
UNICER-BEBIDAS DE PORTUGAL, SGPS, S.A.

BIOACTIVE TEXTILES USING FUNCTIONAL BIOPOLYMERS
POCI/CTM/58312/2004

BIOCHEMICAL CHARACTERISATION OF STOMACH, ENDOMETRIAL AND LUNG TUMOUR (HRMAS) NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY
CIMAGO

BIOREFINARIA: APROVEITAMENTO DE CONDENSADOS
CAIMA – INDÚSTRIA DE CELULOSE SA

BIOREFINARIA: ELEMENTOS NÃO PROCESSUAIS NO CIRCUITO DE RECUPERAÇÃO E POTENCIALIDADES DO LICOR
CAIMA – INDÚSTRIA DE CELULOSE SA

BIO-TRIBODIAM - DLC AND CVD DIAMOND COATED SI3N4 CERAMICS FOR TRIBOLOGICAL AND BIOMEDICAL PURPOSES
SIXTH FRAMEWORK PROGRAMME (FP6) 2004 (Nº 022860)

CARACTERIZAÇÃO E DESENVOLVIMENTO DE AGLOMERANTES PARA A INDÚSTRIA DE MÓS ABRASIVOS
ACORDO DE COOPERAÇÃO

CARBIFINO – CONCEPÇÃO DE NOVOS GRAUS DE METAL DURO DE GRANULOMETRIA SUB- A NANO-MÉTRICA COM ELEVADA RESISTÊNCIA AO DESGASTE EROSIVO
AI, PRIME IDEIA 70/00090

CATALYTIC CONVERSION OF CARBOHYDRATES INTO FURAN DERIVATIVES
POCI/QUI/56112/2004

CHARACTERIZATION OF HETEROPOLYSACCHARIDES USING MASS SPECTROMETRY
POCI/QUI/59337/2004

COMPLEXOS DE METAIS DE TRANSIÇÃO(III) E LANTANÍDEOS(III) COMO CATALISADORES NA POLIMERIZAÇÃO DE OLEFINAS
PTDC/CTM/67409/2006

CONTROLO DE QUALIDADE NA ÁREA DA TECNOLOGIA DE FUNDIÇÃO
PROTOCOLO DE COLABORAÇÃO ENTRE FUNFRAP – FUNDIÇÃO PORTUGUESA E A U.AVEIRO

CONVERSÃO ELECTROQUÍMICA DE COMBUSTÍVEIS (ECOFUELS)
REEQ

CORE-SHELL CERAMIC MEMBRANES WITH NANO-SIZED GRAINS FOR OXIGEN SEPARATION AND SYN-GAS PRODUCTION
POCI/CTM/59727/2004

DESENVOLVIMENTO DE UMA SONDA DE MICROSCOPIA DE FORÇA ATÓMICA PARA MAPEAMENTO DE PH À NANOESCALA EM SUPERFÍCIES
PTDC/CTM/74290/2006

DESENVOLVIMENTO TECNOLÓGICO APLICADO A MATÉRIAS-PRIMAS, PROCESSOS E PRODUTOS CERÂMICOS
ACORDO DE COOPERAÇÃO

DETECTANDO A MIRCO-DISTRIBUIÇÃO DE ESPÉCIES QUÍMICAS EM SOLUÇÃO NA VIZINHANÇA DE METAIS ACTIVOS
PTDC/CTM/66041/2006

DEVELOPMENT AND CHARACTERIZATION OF CERAMIC COMPOSITE MATERIALS FOR THERMOMECHANICAL APPLICATIONS
REEQ

DEVELOPMENT OF A FIXED SITE CARRIER CERAMIC ULTRAMICROPOROUS MEMBRANE AND CATALYTIC MEMBRANE REACTOR FOR OLEFINS SEPARATION/PURIFICATION
POCI/EQU/59344/2004

DEVELOPMENT OF A FIXED SITE CARRIER CERAMIC ULTRAMICROPOROUS MEMBRANE REACTOR FOR THE SELECTIVE SEPARATION AND OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE
POCI/EQU/59345/2004

DEVELOPMENT OF A NEW PHASE CHANGE MATERIAL COMPOSITE FOR ENERGY STORAGE AND THERMAL INSULATION
POCI/CTM/60288/2004

DEVELOPMENT OF NEW INTERSTITIAL OXIDE-ION CONDUCTORS FOR EFFECTIVE OXYGEN SEPARATION AND CONVERSION OF THE HYDROCARBONS
POCI/CTM/59197/2004

DEVELOPMENT OF NEW NANOSTRUCTURED HYBRID SOL-GEL COATINGS MODIFIED WITH ORGANIC INHIBITORS FOR CORROSION PROTECTION OF METALLIC SUBSTRATES
POCI/CTM/59234/2004

DIELECTRIC PROPERTIES AND LATTICES DYNAMICS OF GRANULAR MATERIALS
POCTI/CTM/45284/2002

E-ECORISK – A REGIONAL ENTERPRISE NETWORK DECISION SUPPORT SYSTEM FOR ENVIRONMENTAL RISK AND DISASTER MANAGEMENT OF LARGE SCALE INDUSTRIAL SPILLS
EVG1-CT-2002-00068

ELECTROCERAMICS FROM NANOPOWDERS PRODUCED BY INNOVATIVE METHODS- ELENA
COST 539 ACTION

ELECTROPOLYMERIZED COATING USED AS PRE-TREATMENTS FOR ALUMINIUM ALLOYS
POCI/CTM/60064/2004

EQUILÍBRIO DE FASES E PROCESSOS DE SEPARAÇÃO DE GORDURAS
GRICES

EQUILIBRIUM AND INTERFACIAL PROPERTIES OF WATER + OIL SYSTEMS
POCI/EQU/58239/2004

ESTUDO COMPARATIVO DO COMPORTAMENTO "IN VITRO" DE VIDROS DO SISTEMA SI-CA-P-MG, EM ESPÉCIMES MONOLÍTICOS E NA FORMA DE FILMES
ACÇÃO INTEGRADA LUSO-ESPANHOLA NºE 75/05

ESTUDO DE ÓXIDOS MAGNÉTICOS APLICANDO ISÓTOPOS RADIOACTIVOS (ISOLDE-CERN)
POCI/FP/63953/2005

FORMABILITY AND SELF-REPAIR PROPERTIES OF ADVANCED WELDABLE PRIMERS (PRIMEFORM)
RFS-CR-04031-PRIMEFORM

HYBRID MATERIALS PREPARED BY IRRADIATION
POCTI/CTM/44150/2002

IMMOBILIZED PHOTOSENSITIZER AS NEW MATERIALS IN WATER TREATMENT
POCI/CTM/58183/2004

IMPROVED MATERIALS PROCESSING THROUGH TAILORING THE SURFACE CHARACTERISTICS OF NANO AND MICRON-SIZED POWDERS
ACORDO DE COOPERAÇÃO

LABORATÓRIO DE MICROSCOPIA ELECTRÓNICA ANALÍTICA DE RESOLUÇÃO ATÓMICA - GRANDES EQUIPAMENTOS DE USO COMUM
REEQ

LUMINESCENT LANTHANIDE SILICATE SYNTHESIS USING LANTHANIDE COMPLEXES AS STRUCTURE DIRECTING AGENTS
POCI/CTM/58863/2004

MATERIAIS HÍBRIDOS ORGÂNICOS-INORGÂNICOS PARA APLICAÇÕES EM ÓPTICA INTEGRADA
GRICES

MATERIALS SCIENCE AND FUNDAMENTAL RESEARCH ON NANO-STRATIFIED RARE EARTH BASED COMPOUNDS FOR MAGNETIC REFRIGERATION AND SENSOR APPLICATIONS - UNUSUAL MARTENSITIC TRANSITIONS DRIVEN BY THE ELECTRONIC FLUID
POCI/CTM/61284/2004

MATSILC-NOVEL MATERIALS FOR SILICATE BASED FUEL CELLS
SIXTH FRAMEWORK PROGRAMME (FP6)

MELHORAR O LABORATÓRIO CENTRAL DE DIFRACÇÃO DE RAIOS-X DA UNIVERSIDADE DE AVEIRO
REEQ

MODIFIED ELECTRODES: FROM VERSATILE MODELS TO FUNCTIONAL DEVICES FOR STUDYING DYNAMIC SPECIATION IN THE ENVIRONMENT
POCI/AMB/55939/2004

MOLECULAR HYBRIDS OF POLYOXOMETALATES AND DIPOLAR ORGANIC MOLECULES: SYNTHESIS, CHARACTERIZATION AND DETERMINATION OF NON-LINEAR OPTICAL PROPERTIES
POCTI/CTM/37713/2001

MOULD PROTEOME REGULATION BY SUBSTRATE BIOAVAILABILITY: DEPOLYMERISING ENZYMES LIKELY TO ALTER BIOPOLYMER NAN
POCTI/QUI/56229/2004

MULTICERAL-MULTIFUNCTIONAL CERAMICS LAYERS WITH HIGH ELECTRO-MAGNETOELASTIC COUPLIN IN COMPLEX GEOMETRIES
SIXTH FRAMEWORK PROGRAMME (FP6).

MULTICERAL-MULTIFUNCTIONAL CERAMICS LAYERS WITH HIGH ELECTRO-MAGNETOELASTIC COUPLIN IN COMPLEX GEOMETRIES
SIXTH FRAMEWORK PROGRAMME (FP6)

MULTIFUNCTIONAL ANIONIC CLAYS
POCI/CTM/58507/2004

NANOCOFC
SIXTH FRAMEWORK PROGRAMME (FP6)

NANOCRYSTALLINE DIAMOND (NCD) FILMS ON SILICON NITRIDE CERAMICS FOR TRIBOLOGICAL APPLICATIONS – NANODIAM
POCI/CTM/59449/2004

NANO-SCALE INVESTIGATION OF FATIGUE OF FERROELECTRIC THIN FILMS
POCI/CTM/61071/2004

NANOSTRUCTURED HYBRID ORGANIC-INORGANIC ASSEMBLIES: DEVELOPMENT OF LAYER-BY-LAYER AND SINGLE LAYER HETEROPOLYTUNGSTATE MODIFIED ELECTRODES
POCI/QUI/56534/2004

NETWORK OF EXCELLENCE: FUNCTIONALISED ADVANCED MATERIALS AND ENGINEERING OF HYBRIDS AND CERAMICS (FAME)
FP6 2004 NMP3/CT (NOE 500159)

NEW METHODOLOGY FOR THE PRODUCTION OF LIGHT WEIGHT INTERMETALLIC MATRIX COMPOSITES WITH IMPROVED MECHANICAL PROPERTIES
POCI/CTM/57536/2004

NEW ORGANIC/INORGANIC HYBRIDS FOR INTEGRATED OPTICS
POCI/CTM/59075/2004

NEW OXOMETAL COMPOUNDS WITH TAILORED CATALYTIC PROPERTIES
POCTI/QUI/56109/2004

NOVEL BST DIELECTRIC FILMS FOR ULTRA HIGH DENSITY DRAMS
POCTI/CTM/47285/2002

NOVEL CERAMIC MEMBRANES FOR SYNTHESIS GAS PRODUCTION
POCI/CTM/58570/2004

NOVEL MULTIDIMENSIONAL LANTHANIDE-ORGANIC FRAMEWORKS: HYDROTHERMAL SYNTHESIS, STRUCTURAL CHARACTERISATION AND APPLICATIONS
POCI/QUI/58377/2004

OLIMPÍADAS DE QUÍMICA JÚNIOR 2006
POCI-MEDIDA 3.1

OLIMPÍADAS DE QUÍMICA JÚNIOR 2007
POCI-MEDIDA V.6

ÓXIDOS DE ORGANORÉNIO (VII) COM LIGANDOS-ANSA E AS SUAS APLICAÇÕES COMO CATALISADORES HOMOGÉNEOS E HETEROGÉNEOS
PTDC/QUI/71198/2006

PERIODIC MESOPOROUS ORGANIC-INORGANIC HYBRIDS
POCI/CTM/55648/2004

POLARIZATION-DRIVEN SELF-ASSEMPLY OF ORGANIC AND BIOMATERIALS USING ULTRATHIN FERROELECTRIC POLYMERS
INTAS

POLYOXOMETALATES: FORM DISCRETE CLUSTERS TO NETWORKS AND MATERIALS
POCI/QUI/58887/2004

PROCESSING AND CHARACTERIZATION OF ELECTROACTIVE POLYMERS AND COMPOSITES BASED ON PVDF FOR MICROELECTRONIC
POCI/CTM/59425/2004

PRODUCTION OF CALCIUM PHOSPHATE (CAP) NANOPARTICLES AND CAP MODIFIED SURFACES FOR CELL GUIDING AND DIFFERENTIATION STUDIES
ACORDO DE COOPERAÇÃO

PROJECTO PE067 - INTERACÇÃO TINTA-PAPEL
ACORDO DE COOPERAÇÃO

QUANTITATIVE ANALYSIS OF THE SHEAR EFFECTS ON THE SOLIDIFICATION OF POLYMERS WITH A SHEAR-DSC
POCTI/CTM/46270/2002

REUSE AND IMMOBOLISATION OF INDUSTRIAL WASTES BY GEOPOLYMERISATION: NEW CONSTRUCTION ARTEFACTS
POCI/AMB/59408/2004

REVESTIMENTOS POR POLIMERIZAÇÃO PARA PRÉ-TRATAMENTO DE LIGAS DE ALUMÍNIO
POCI/CTM/60064/2004

SCREENING OF IONIC LIQUIDS FOR GAS SEPARATION
POCI/EQU/58152/2004

SELF-HEALING PROTECTIVE COATING WITH 'INTELLIGENT' NANORESERVOIRS OF CORROSION INHIBITORS
PTDC/CTM/65632/2006

SIMULATION OF CYCLIC SEPARATION PROCESSES USING PARALLEL COMPUTING
POCTI/EQU/46055/2002

SIMULTANEOUS PRECIPITATION AND IN SITU STABILISATION OF CALCIUM PHOSPHATE POWDERS FOR BIOME
POCI/CTM/60207/2004

SÍNTESE E CARACTERIZAÇÃO DE NANOMATERIAIS CERÂMICOS COM APLICAÇÕES BIOLÓGICAS E ELETROQUÍMICAS
GRICES

STRUCTURE AND REACTIVITY OF ORGANOMETALLIC MOLECULES ENCAPSULATED IN PILLARED INTERLAYERED CLAYS
POCTI/QUI/44654/2002

STUDIES OF COLOSSAL MAGNETORESISTIVE OXIDES WITH RADIOACTIVE ISOTOPES
CERN/FNU/49509/2002

STUDY OF COMPATIBLE MORTARS FOR THE PRESERVATION OF THE BUILT HERITAGE
POCI/HEC/57890/2004

SUB0 – AUMENTO DO TEMPO DE VIDA DE FERRAMENTAS E ORGÃOS DE MAQUINAS POR TRATAMENTO TERMICO ESPECIFICO
AGÊNCIA DE DESENVOLVIMENTO

SUB-PROJECTO ISOLAMENTO ACÚSTICO – CASA DO FUTURO AVEIRODOMUS

SUB-PROJECTO ISOLAMENTO TÉRMICO – CASA DO FUTURO AVEIRODOMUS

SUB-PROJECTO RECICLAGEM – CASA DO FUTURO AVEIRODOMUS

SUB-PROJECTO REVESTIMENTOS – CASA DO FUTURO AVEIRODOMUS

SUPERCONDUCTING BORIDES: PROPERTIES AND MATERIALS PROCESSING
POCTI/CTM/39340/2001

SUPERCRITICAL FLUID EXTRACTION OF GRAPE SEED OIL: ENHANCEMENT OF RECOVERY USING ENZYMATIC PRE-TREATMENT OF SEED
POCTI/EQU/47533/2002

SURFACE REACTIVITY OF TIO2-CONTAINING GLASSES IN SIMULATED PHYSIOLOGICAL SOLUTIONS
POCI/CTM/60761/2004

SUSTAINPACK - INNOVATION AND SUSTAINABLE DEVELOPMENT IN THE FIBRE BASED PACKAGING VALUE CHAIN
FP6 2002 NMP/1 (IP 500311-2)

THEMATIC NETWORK - POLAR ELECTROCERAMICS DEPOSITION OF THIN FILMS – POLECER
G5RT/CT/2001/05024 – POLECER

ULCOS - ULTRA LOW CO2 STEELMAKING
NMP2-CT-2004-515960 ULCOS

VALORIZAÇÃO DE RESÍDUOS E SUB-PRODUTOS INDUSTRIAIS NO DESENVOLVIMENTO DE MATERIAIS CERÂMICOS
GRICES – CNPQ

WACHEUP - NEW CONCEPTS FOR UPGRADING PULP AND CORK MILL WASTE STREAMS TO VALUES-ADDED CHEMICALS
SIXTH FRAMEWORK PROGRAMME (FP6)

WEAR OF ALUMINIUM MATRIX COMPOSITES: INFLUENCE OF THE PROCESSING AND HEAT TREATMENT PARAMETER
POCTI/CTM/46086/2002

SPONSORS:

Portuguese Republic Government

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

European Union / ERDF – European Regional Development Fund

POCTI Programa Operacional Ciência Tecnologia Inovação
MINISTÉRIO DA CIÊNCIA E DO ENSINO SUPERIOR

FAME noe

MARIE CURIE ACTIONS

Ciência.Inovação 2010 Programa Operacional Ciência e Inovação 2010
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

INTERREG IIIB Materials Network Atlantic Arc
ESPAÑA ESPACIO ATLÁNTICO
FRANCE ESPACE ATLANTIQUE
IRELAND ATLANTIC AREA
PORTUGAL ESPAÇO ATLÂNTICO
U.K. ATLANTIC AREA