

Table of Contents

Multifunctional Thin Film Zinc Oxide Semiconductors: Application to Electronic Devices E. Fortunato, A. Gonçalves, A. Marques, A. Pimentel, P. Barquinha, H. Águas, L. Pereira, L. Raniero, G. Gonçalves, I. Ferreira and R. Martins	3
Novel Organic Hole Transport Layers for Molecular Electronic Systems H.D. Burrows, R. Castro, M.A. Esteves, B. Gigante, L. Leitão and A. Pauleta	8
Insights on Amorphous Silicon Nip and MIS 3D Position Sensitive Detectors R. Martins, D. Costa, H. Águas, F. Soares, A. Marques, I. Ferreira, P.M.R. Borges, S. Pereira, L. Raniero and E. Fortunato	13
The Study of High Temperature Annealing of a-SiC:H Films S. Zhang, Z. Hu, L. Raniero, X. Liao, I. Ferreira, E. Fortunato, P.M. Vilarinho, L. Pereira and R. Martins	18
Microstructure and Thermal Features of a-Si:H and nc-Si:H Thin Films Produced by Rf Sputtering V. Thaiyalnayaki, M.F. Cerqueira, F. Macedo and J.A. Ferreira	23
Poly-Si Thin Film Transistors: Effect of Metal Thickness on Silicon Crystallization L. Pereira, P. Barquinha, E. Fortunato and R. Martins	28
Organic Materials for Active Layers in Transistors: Study of the Electrical Stability Properties H.L. Gomes, P. Stallinga and D.M. de Leeuw	33
Structural and Optical Characterization of Light Emitting InGaN/GaN Epitaxial Layers S. Pereira, M.R. Correia and E. Alves	38
Effect of Oxidant/ Monomer Ratio on the Electrical Properties of Polypyrrole in Tantalum Capacitors G. Gonçalves, E. Fortunato, J.I. Martins and R. Martins	43
Electrical Imaging Map on Polycrystalline Diamond Films and Diodes and Structural Relationship Obtained by Micro-Raman J.C. Madaleno and L. Pereira	48
Electrical Properties of Fluorine Doped Diamond Like Carbon S.C. Trippé, J.C. Madaleno and L. Pereira	53
Electrical Performances of Low Temperature Annealed Hafnium Oxide Deposited at Room Temperature L. Pereira, P. Barquinha, E. Fortunato and R. Martins	58
Role of Hydrogen Plasma on the Electrical and Optical Properties of Indium Zinc Transparent Conductive Oxide L. Raniero, A. Gonçalves, A. Pimentel, S. Zhang, I. Ferreira, P.M. Vilarinho, E. Fortunato and R. Martins	63
A Study on the Electrical Properties of ZnO Based Transparent TFTs P. Barquinha, E. Fortunato, A. Gonçalves, A. Pimentel, A. Marques, L. Pereira and R. Martins	68
Thermoreactivity of Sol-Gel Precursor for ZnO-Based Thin Films V. Muşat, P.M. Vilarinho, R.d.C.C. Monteiro, E. Fortunato and E. Segal	73
Carrier Transport Investigation on Organic Semiconductor by Electrical DC and AC Measurements: the Case of Alq₃ V.M. Silva, M.P.F. Graça, J.C. Madaleno, L.C. Costa and L. Pereira	78
Study of Electrochromic Devices Incorporating a Polymer Gel Electrolyte Component A. Gonçalves, G. Gonçalves, E. Fortunato, A. Marques, A. Pimentel, R. Martins, M.A. Silva, M.J. Smith, J. Bela and J.P. Borges	83
Electroplating of Iron Films: Microstructural Effects of Alkaline Baths S.K. Poznyak, V.V. Kharton, J.R. Frade and M.G.S. Ferreira	88
Cu(In,Ga)Se₂ Prepared by a 2 and 3-Stage Hybrid RF-Magnetron Sputtering and Se Evaporation Method: Properties and Solar Cell Performance A.F. da Cunha, F. Kurdzesau and P.M.P. Salomé	93
Push-Pull Tricyanovinyl-Substituted Thienylpyrroles: Synthesis, Solvatochromic and Electrochemical Properties M.M.M. Raposo, A.M.R.C. Sousa, A.M.C. Fonseca and G. Kirsch	98

Donor-Acceptor Substituted Thienylpyrrole Azo Dyes: Synthesis, Solvatochromic and Electrochemical Properties	
M.M.M. Raposo, A.M.R.C. Sousa, A.M.C. Fonseca and G. Kirsch	103
Organically Modified Silica-Based Xerogels Derived from 3-Aminopropyltrimethoxysilane and 3-Isocyanatepropyltriethoxysilane through Carboxylic Acid Solvolysis	
L. Fu, R.A.S. Ferreira, S.S. Nobre, L.D. Carlos and J. Rocha	108
Photoluminescence of Di-Ureasil Hybrids Doped with Silica Coated Ag Nanoparticles	
V.I. Boev, R.A.S. Ferreira, S.S. Nobre, C.J.R. Silva, M.J.M. Gomes, L.M. Liz-Marzán and L.D. Carlos	113
Photoluminescence Changes Induced by Self-Organisation in Bridged Silsesquioxanes	
L.D. Carlos, R.A.S. Ferreira, S.S. Nobre, M. Wong Chi Man, J.J.E. Moreau, C. Bied and B. Pichon	118
Preparation of Photoluminescent Materials from a Lanthanide-Doped Microporous Titanosilicate Precursor	
Z. Lin, J.P. Rainho, J. Rocha and L.D. Carlos	123
Photoluminescence of Nanocrystalline Bismuth Titanate Thin Films Synthesized by the Sol-Gel Method	
A. Lisińska-Czekaj, M. Czaja, L. Kozielski, D. Czekaj, M. Piechowiak, M. Nowakowski and K. Zawisłok	128
EPR and TEM Characterization of Electroluminescent Alq₃	
M.N. Grecu, C. Ghica, A. Mirea, V.V. Grecu and M. Schwoerer	133
Photoinduced Effects in EPR Spectra of Copper Doped Potassium Tantalate	
A.G. Badalyan, C.B. Azzoni, P. Galinetto, M.C. Mozzati, L. Jastrabik, J. Rosa, M. Hrabovsky, P.P. Syrnikov and V.A. Trepakov	138
Iron Oxide and Oxide-Hydroxide Nanoparticles in Organic-Inorganic Matrices	
N.J.O. Silva, A. Millan, V.S. Amaral, F. Palacio, L. Fu, L.D. Carlos and V. de Zea Bermudez	142
New Fluorescent Heterocyclic Materials: Synthesis, Solvatochromic and Fluorescence Properties	
S.P.G. Costa, R.M.F. Batista, A.M.R.C. Sousa and M.M.M. Raposo	147
EPR and Optical Absorption Investigations of Photochromic Effect in Nearly Stoichiometric LiNbO₃:Fe	
M.C. Mozzati, A.G. Badalyan, G. Demaestri, P. Galinetto, F. Rossella, V. Bermúdez, C.B. Azzoni and G. Samoggia	152
Thermoelectric Properties of Bi₂Te₃/Sb₂Te₃ Thin Films	
L.M. Gonçalves, C. Couto, P. Alpuim, D.M. Rowe and J.H. Correia	156
High Field Polarization Response in Ferroelectrics: Current Solutions and Challenges	
E. Klotins	161
Low Pressure RF Plasma Jet Sputtering Technique Applied to Ferroelectric Films: Ba_{1-x}Sr_xTiO₃	
A. Deyneka, Z. Hubička, V.A. Trepakov, G. Suchaneck, L. Jastrabik, G. Gerlach, J. Pokorny, D. Chvostova and J. Olejníček	165
Texture – Property Relationships in Bi-Layered Ferroelectric Ceramics: A Case Study of SrBi₂Ta₂O₉	
H. Amorín, A.L. Kholkin and M.E.V. Costa	170
Relaxor-Like Behavior of Self-Polarized Pb(Zr,Ti)O₃ Thin Films	
G. Suchaneck, A. Deyneka, L. Jastrabik and G. Gerlach	175
Synthesis and Dispersion of PZT Ultra-Fine Powders	
A.Y. Wu, D. Van Genechten, P.M. Vilarinho and M.K. Van Bael	179
Growth of Lead Zirconate Titanate Single Crystals by the High Temperature Solution Method	
J.A. Pérez de la Torre, M.d.R. Soares, P.Q. Mantas, H. Amorín, M.E.V. Costa and A.M.R. Senos	184
Effect of Lead Content and B-Site Substitutions on Dielectric and Piezoelectric Properties of PZT Ceramics	
E. Dimitriu, F. Craciun, M. Cernea and R. Ramer	188
Optical Properties of PLZT 9/65/35 Thin Films on ITO-Coated Glass Substrate	
A. Khodorov and M.J.M. Gomes	193
Design and Analysis of the PZT-Based Piezoelectric Transformer	
L. Kozielski, A. Lisińska-Czekaj and D. Czekaj	198

Separation of the Pyro- and Piezoelectric Response of Electroactive Polymers for Sensor Applications	
H.F. Castro, S. Lanceros-Méndez and J.G. Rocha	202
Structural Characterization of Lead Metaniobate Thin Films Deposited by Pulsed Laser Ablation	
F. Cardoso, B.G. Almeida, P. Caldelas and J.A. Mendes	207
Ferroelectric and Dielectric Characteristics of $\text{Bi}_{3.25}\text{La}_{0.75}\text{Ti}_3\text{O}_{12}$ Thin Films Prepared by the Polymeric Precursor Method	
A.Z. Simões, M.A. Ramírez, B.D. Stojanović, Z. Marinković, E. Longo and J.A. Varela	212
Anomalous Broad Dielectric Dispersion of 0.4PZN-0.3PSN-0.3PZN Relaxor Ceramics at Lower Temperatures	
J. Banys, J. Macutkevicius, A. Brilingas, V. Samulionis, K. Bormanis, A. Sternberg and V. Zauls	216
Development of an Ultrasonic Motor Based on a Piezoelectric Ceramic Sandwiched between Two Laminate Composite Plates	
A. Basilio, R. Igreja, P. Inácio, C.J. Dias and J.N. Marat-Mendes	221
Piezoelectric Material for High Efficiency Ultrasonic Siren	
E. Dimitriu and A. Iuga	225
The Characterization of Two Dimensional Electrostrictive CuInP_2S_6 Materials for Transducers	
V. Samulionis, J. Banys and Y. Vysochanskii	230
Dielectric Investigations and Theoretical Calculations of Size Effect in Lead Titanate Nanocrystals	
R. Grigalaitis, J. Banys, S. Lapinskas, E. Erdem, R. Boettcher, H.J. Glaesel and E. Hartmann	235
The Influence of DC Bias on the Dielectric Response of $\text{Sr}_{1-x}\text{Ca}_x\text{TiO}_3$ Ceramics	
A. Tkach, B. Araújo and P.M. Vilarinho	240
Bi Effect on the Microstructure and Dielectric Properties of SrTiO_3 Thin Films	
O. Okhay, V.M.X. Bergano, A.Y. Wu and P.M. Vilarinho	245
Processing and Characterization of $(1-x)(\text{Na}_{1/2}\text{Bi}_{1/2})\text{TiO}_3 - x\text{La}(\text{Mg}_{1/2}\text{Ti}_{1/2})\text{O}_3$ Ceramics	
A.N. Salak, N.P. Vyshatko, A.L. Kholkin, V.M. Ferreira, N.M. Olekhnovich, Y.V. Radyush and A.V. Pushkarev	250
Microstructure Characterization and Dielectric Properties of $\text{La}_4\text{Mg}_3\text{W}_3\text{O}_{18}$ Layered Oxide	
D.D. Khalyavin, A.M.R. Senos and P.Q. Mantas	255
Study of the High Frequency Dielectric Properties of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ Ferroelectric Thin Films	
N. Delmonte, B.E. Watts, F. Leccabue, P. Cova and G. Chiorboli	259
V_2O_5-Doped $\text{M}^{2+}\text{Cu}_2\text{Nb}_2\text{O}_8$ Compounds ($\text{M}^{2+} = \text{Zn, Co, Ni, Mg \& Ca}$) for Microwave Dielectric LTCCs	
R.C. Pullar, C. Lai and N.M. Alford	264
TEM and XRD Investigation of MnO_2 Microstructure and its Influence on ESR of Ta Capacitors	
D. Dias, R. Monteiro, P.A. Carvalho, A.C. Ferro and W. Lohwasser	269
Effect of NaNbO_3 Crystalline Aggregates on the Electrical Properties of $\text{SiO}_2\text{-Na}_2\text{O-Nb}_2\text{O}_5$ Glass-Ceramics	
M.P.F. Graça, M.G. Ferreira da Silva and M.A. Valente	274
Ferromagnetism and Ferromagnetic Resonance in Mn Implanted Si and GaAs	
N.A. Sobolev, M.A. Oliveira, V.S. Amaral, A. Neves, M.C. Carmo, W. Wesch, O. Picht, E. Wendler, U. Kaiser and J. Heinrich	280
CVD of CrO_2 Thin Films: Influence of the Deposition Parameters on their Structural and Magnetic Properties	
A.F.S. Mota de Oliveira, A.J. Silvestre, P.M. Sousa, O. Conde, M.A. Rosa and M. Godinho	284
Cd-Doped LaMnO_3 Manganites Prepared by the Sol-Gel Technique	
A.M.L. Lopes, J.P. Araújo, A.M. Gomes, T.M. Mendonça, P.B. Tavares, J.G. Correia and V.S. Amaral	289
The Effects of Ca and Mn Excess Co-Doping in CMR Manganites Solid Solution Structures	
F. Figueiras, J.M. Vieira, M.E. Guzik, J. Legendziewicz, P.B. Tavares and V.S. Amaral	294
Tuning of Magnetocaloric Effect in Ferromagnetic La-Sr Manganites through Er and Eu Doping	
J.S. Amaral, M.S. Reis, V.S. Amaral, T.M. Mendonça, J.P. Araújo, P.B. Tavares and J.M. Vieira	299
Structural and Magnetic Properties of Chemically Deposited Hexaferrites	
B.E. Watts, D. Regonini, F. Leccabue, F. Casoli, F. Albertini, G. Bocelli and D.S. Schmool	304

Spin Reorientation Transition and Exotic Magnetism in Dilute $\text{Gd}_{1-x}\text{Y}_x$ Single Crystals (x	
J.A.M. Santos, J.B. Sousa, J.P. Araújo, F. Correia, J.F. Collingwood and S.B. Palmer	309
X-Ray Diffraction Study of Ordered Antiferromagnets for Tunnel Junctions	
N. Franco, E. Alves, M. Rickart, A. Guedes, P. Freitas and N.P. Barradas	314
Analysis of Phase Transitions in La and Nd Substituted YIG with Magnetic Disaccommodation Measurement	
P. Hernández-Gómez, C. Torres, C. de Francisco, J.I. Iñiguez and J.M. Perdigão	319
Heat Generation in Tunnel Junctions for Current-Written Pinned Layer Switching	
J. Ventura, A. Pereira, J.M. Teixeira, J.P. Araújo, F. Carpinteiro, J.B. Sousa, Y. Liu, Z. Zhang and P. Freitas	323
Synthesis of BiFeO_3 Ceramic Targets and Thin Film Deposition by Laser Ablation	
C.C. Mardare, P.B. Tavares, A.I. Mardare and R. Savu	328
Preparation and Properties of New Superconductor Material MgB_2	
D. Marinha, F.J. Oliveira, M.S. Reis, F.M. Costa, M.F. Carrasco, J.P. Araújo, J.B. Sousa, J.M. Vieira and V.S. Amaral	333
The Effect of Annealing Temperature on the Transport Properties of BSCCO Fibres Grown by LFZ and EALFZ	
M.F. Carrasco, J. Monteiro, V.S. Amaral, R.F. Silva, J.M. Vieira and F.M. Costa	338
The Growth of SiC Crystals from CoSi Molten Alloy Fluxes	
M.X. Gao, Y. Pan, F.J. Oliveira, G.Y. Yang and J.M. Vieira	343
Characterization of Nickel Implanted $\alpha\text{-Al}_2\text{O}_3$	
C. Marques, N. Franco, R.C.d. Silva, A. Wemans, M.J.P. Maneira and E. Alves	348
Three-Dimensional Dispersion of Nano-Fillers in Soft Composite as Revealed by Transmission Electron Microscopy/Electron Tomography (3D-TEM)	
S. Kohjiya	353
Effect of Wheel Speed and Boron Content on Microstructure and Crystallographic Texture of Boron Substituted Sm-Co Melt Spun Ribbons	
S.S. Makridis, E. Pavlidou, A. Neudert, J. McCord, R. Schäfer, G.C. Hadjipanays, D. Niarchos and A.K. Stubos	359
Local Vibrations of Substitutional Carbon in SiGe Alloys	
L.I. Khirunenko, Y.V. Pomozev, M.G. Sosnin, V.J.B. Torres, J.A.P. Coutinho, R. Jones, N.V. Abrosimov, H. Riemann and P.R. Briddon	364
Chromatic Dispersion in Ge-Doped SiO_2-Based Single Mode Fibres due to Temperature Dependence of the Ultraviolet Absorption: Numerical and Experimental Results	
P.S. André, A. Pinto, J.L. Pinto, R.A.S. Ferreira, S.S. Nobre, P. Monteiro and L.D. Carlos	369
Oxygen Evolution on Perovskite-Type Cobaltite Anodes: An Assessment of Materials Science-Related Aspects	
A.V. Kovalevsky, D.V. Sviridov, V.V. Kharton, E.N. Naumovich and J.R. Frade	377
Oxygen Nonstoichiometry and Ion-Electron Transport in $\text{SrFe}_{0.9}\text{M}_{0.1}\text{O}_{3-\delta}$ (M=Cr, Ti, Al)	
M.V. Patrakeev, I.A. Leonidov, V.L. Kozhevnikov and V.V. Kharton	382
Transport Properties and Thermal Expansion of $\text{SrCe}(\text{Y})\text{O}_{3-\delta}$ Ceramics	
I.P. Marozau, V.V. Kharton, J.R. Frade and F.M.B. Marques	387
Conductivity of La- and Pr- Doped $\text{Bi}_4\text{V}_2\text{O}_{11}$	
G. Paściak, J. Chmielowiec and P. Bujlo	392
Defect Formation in $\text{La}_2\text{Ni}(\text{M})\text{O}_{4+\delta}$ (M= Co, Cu): Modelling and Coulometric Titration Study	
E.N. Naumovich, M.V. Patrakeev, V.V. Kharton, A.A. Yaremchenko, E.V. Tsipis, D.I. Logvinovich, J.R. Frade and F.M.B. Marques	397
Mixed Conductivity of Ce- and Nb-Substituted (La, Sr)$\text{FeO}_{3-\delta}$	
V.V. Kharton, A.P. Viskup, A.V. Kovalevsky, A.L. Shaula, J.R. Frade and F.M.B. Marques	402
The Ion Conducting Properties of Perovskite-Type Solid Solutions $(\text{La}_{0.5}\text{Li}_{0.5})[\text{Ti}_{1-x}(\text{M}_{0.5}\text{Nb}_{0.5})_x]\text{O}_3$ (M = Al, Ga)	
E.A. Fortalnova, A.V. Mosunov, M.G. Safronenko, N.U. Venskivskii and E.D. Politova	407
Oxygen Permeability of Mixed Conducting Perovskite Lanthanum Gallate-Based Ceramics	
E.D. Politova, V.V. Aleksandrovskii, S.V. Zaitsev, G.M. Kaleva, A.V. Mosunov, S.Y. Stefanovich, A.K. Avetisov, S.V. Suvorkin, G.V. Kosarev, I.P. Sukhareva, J.S. Sung, K.Y. Choo and T.H. Kim	412

Microstructure and Electrical Conductivity of $\text{Yb}_{2+x}\text{Ti}_{2-x}\text{O}_{7-x/2}$ Materials A.V. Levchenko, J.C.d.C. Abrantes, A.V. Shlyakhina, L.G. Shcherbakova, A.L. Horovistiz and J.R. Frade	417
New Oxide-Ion Conductors $\text{Ln}_{2+x}\text{Ti}_{2-x}\text{O}_{7-x/2}$ (Ln = Dy – Lu; x=0.096) A.V. Shlyakhina, J.C.d.C. Abrantes, A.V. Levchenko, S.Y. Stefanovich, A.V. Knot'ko, L.L. Larina and L.G. Shcherbakova	422
Importance of Textural Characteristics in the Adsorption of Hydrogen onto Activated Carbon and Activated Carbon Fibers F. Salvador-Palacios, M.J. Sánchez-Montero, I. Sangüesa-Domínguez and C. Izquierdo-Misiego	427
Structural and Magnetic Properties of New $\text{Zr}(\text{Fe}_{0.8}\text{Cu}_{0.2})_2$ and $\text{Zr}(\text{Fe}_{0.8}\text{Cu}_{0.1}\text{Co}_{0.1})_2$ Hydrogen Storage Materials S.S. Makridis, M. Konstantakou, T.A. Steriotis, E. Pavlidou, K.G. Efthimiadis, M. Daniil, A. Ioannidou, E.S. Kikkinidis and A.K. Stubos	432
Investigations of Membrane Electrolytes for PEM Fuel Cell Applications P. Bujlo, A. Halama, G. Paściak and J. Chmielowiec	437
Quality Control of Fuel Cells Channels C. Silva, J.M.P. Coelho, M.A. Abreu, J. Cabrita Freitas and C. Rodrigues	442
Phase Separation on GaInAsSb Films for Thermophotovoltaic Devices V. Corregidor, N. Franco, E. Alves and N.P. Barradas	447
Electrocatalytic Properties of $\text{La}_2\text{Mg}_{17}$ Based Metal Hydride Electrodes Y. Chen and C.A.C. Sequeira	452
Preparation and Characterization of Pd-Black Films for Electrocatalysis M.C.F. Oliveira	456
Structure and Electrochemical Characterization of Electrolytic Ni-Co-P and Ni-W-P Layers M. Popczyk, A. Budniok, H. Scholl and T. Blaszczyk	460
Electrochemical Production and Characterization of Ni-Mo, Ni-Mo-P and Ni+Mo Coatings J. Niedbała	465
Hydrophobic Porous Benzene-Silica Hybrid Clay Heterostructure and Its Application in the Adsorption of Volatile Organic Compounds P. Ferreira, C.D. Nunes, J. Pires, A.P. Carvalho, P. Brandão and J. Rocha	470
Optimization of Deposition Parameters for Thin Silicon Films on Flexible Substrates in a Hot-Wire Chemical Vapor Deposition Reactor P. Alpuim, M. Ribeiro and S. Filonovich	475
Joining of Gamma-Based Titanium Aluminides – A Review A.S. Ramos, M.T. Vieira, M.F. Vieira and F. Viana	483
Laser Developed Al-Cr Surface Alloys: Microstructure, Mechanical and Wear Behaviour A. Almeida, P.A. Carvalho and R. Vilar	490
Characterization of Powder Metallurgy (PM) Nickel Base Superalloys for Aeronautical Applications J.M. Silva, R.A. Cláudio, A. Sousa e Brito, C.M. Branco and J. Byrne	495
Phase Transformation and Structural Studies of EUROFER RAFM Alloy A. Paúl, A. Beirante, N. Franco, E. Alves and J.A. Odriozola	500
Effect of Aluminising on the Hot Corrosion Resistance of Nickel-Chromium Alloys C.A.C. Sequeira and F.D.S. Marquis	505
Microstructural Characterization of 5083 Al Alloy Joints Friction Stir Welded M. Reis, R. Louro, P.J. Morais, L. Santos and H. Gouveia	510
Selective Laser Melting of Prealloyed High Alloy Steel Powder Beds C.S. Wright, M. Youseff, S.P. Akhtar, T.H.C. Childs, C. Hauser and P. Fox	516
Nitrogen Effect in Microstructural Parameters of a Cast Duplex Stainless Steel H. Santos, J. Leal and C. Sá	524
Effect of Vanadium and Carbon Content on the Sinterability of Water Atomised High Speed Steel Powders J.M.G. Mascarenhas, M. Oliveira and C.S. Wright	529
Comparative Study of the Additional Hardening Effects of Three Structural Steels L.G. Reis, B. Li and M. de Freitas	534
Effect of the HAZ Microstructural Gradient on the Unstable Fracture Behaviour of Welds in a High Strength Steel P. Teixeira, A. Loureiro, D.M. Rodrigues and J. Neves	539

Study of Abrasion Resistance of Steels by Micro-Scale Tests D. Braga, A. Ramalho, P.N. Silva and A. Cavaleiro	544
Phase Formation in Austenitic Stainless Steel A-TIG Welds A. Rodrigues, A. Loureiro and A.C. Batista	549
Texture and Evolution of Recrystallization in Low Carbon Steel Wire M. Zidani, Z. Boumerzoug, T. Baudin and R. Penelle	554
Residual Stress Evaluation on X 36 Cr Mo 17 HSM Finished Mould Steel J.P. Nobre, A.C. Batista, C. Capela and M.C. Gaspar	559
Surface Integrity of H13 ESR Mould Steel Milled by Carbide and CBN Tools M.J. Marques, J.C. Outeiro, A.M. Dias, R. M'Saoubi and H. Chandrasekaran	564
Low-Pressure Injection Molding Processing of AISI T15 High Speed Steel Powders J.F. Liberati, O.O. Araujo Filho, W.A. Monteiro, I.M. Esposito, R.A. Nogueira and F. Ambrozio Filho	569
Fatigue Properties of a Ck45 Steel Coated with a Post-Heat Treated Ni-Cu-P Electroless Deposit S. Yazdani, N. Parvini-Ahmadi and T. Saeid	574
Application of Advanced Multiphase Steels in Crashworthiness Structures: Experimental Study and Constitutive Equations N. Peixinho and A. Pinho	579
Transverse Rupture Strength of M3:2 High Speed Steel Produced through Conventional Casting and Powder Metallurgy Techniques O.O. Araujo Filho, J.F. Liberati, W.A. Monteiro, M.D.M. das Neves, L.C.E. da Silva and F. Ambrozio Filho	584
Dislocation Microstructure in Copper Multicrystals Deformed under the Sequences: Rolling - Tension and Tension - Rolling N.A. Sakharova and J.V. Fernandes	589
Magnesium Removal from TiC-TiB₂ SHS-Powders by Controlled Hot Acid Leaching F. Delmas, L. Gonçalves, I.M. Martins and M. Oliveira	594
Aluminothermic Reduction of Niobium Pentoxide in a Hydrogen Plasma Furnace M.W.D. Mendes, A.C.P. Santos, F.d.F.P. Medeiros, C. Alves Jr., A.G.P. Silva and U.U. Gomes	599
Statistical Modelling of the Particle Size Composition of an Alumina Matrix for No-Cement Self-Flowing Refractory Castables A.P. Silva, A.M. Segadães and T.C. Devezas	604
Formation of Ti-Matrix Composites for Lightweight Structural Components by Mechanical Alloying and Subsequent Annealing B. Trindade, M. Caetano and N. Duarte	609
Analyses of Composite Structures Behaviour with Embedded Bragg Grating Sensors C.A. Ramos, J.L. Esteves, R.A. Silva and A.T. Marques	614
Mechanical Properties of Particle Reinforced Resin Composites A. Ramalho, P.V. Antunes, M.D. Braga de Carvalho, M.H. Gil and J.M.S. Rocha	619
Residual Strength after Low Velocity Impact in Carbon-Epoxy Laminates A.M. Amaro, P.N.B. Reis and M.F.S.F. de Moura	624
The Signal Characteristics of the Spectral Response of Bragg Grating Sensor Embedded in Composite Laminated after the Cure Process C.A. Ramos, O. Frazão, I. Dias and A.T. Marques	629
Effect of the Ni Chemical Distribution on the Reactivity and Densification of WC-(Fe/Ni/Cr) Composite Powders C.M. Fernandes, A.M.R. Senos, J.M. Castanho and M.T. Vieira	633
Electroconductive Ceramic Composites for Cutting Tools F.A. Almeida, H. Bóia, C. Santos, J. Monteiro, F.J. Oliveira and R.F. Silva	638
Physical Cutting Model of Polyamide Composites (PA66 GF30) F. Mata, P. Reis and J.P. Davim	643
Shrinkage Behaviour of Borosilicate Glass-Al₂O₃ Composites during Isothermal Sintering M.M.R.A. Lima and R.d.C.C. Monteiro	648
Fatigue Notch Sensibility of Thermoplastic Glass Fibre Composites P.N.B. Reis, J.A.M. Ferreira, F. Antunes and J.D.M. Costa	653
The Oxidation Behaviour of TiC Matrix Ni₃Al and Fe₄₀Al Toughened Composites at High Temperatures M.X. Gao, F.J. Oliveira, Y. Pan, Y. He, E.B. Jiang, J.L. Baptista and J.M. Vieira	657

Mechanical Performance of Unsaturated Polyester Resins Modified with Powder from Scrap Tyre Rubber P.J.R.O. Nóvoa, A.J.M. Ferreira and A.T. Marques	662
Intermetallic Hydrides Based on (Zr-Ti)(Fe-Cr)₂ Type of Compounds S.S. Makridis, C. Christodoulou, M. Konstantakou, T.A. Steriotis, M. Daniil, A. Ioannidou, E.S. Kikkinidis and A.K. Stubos	666
Effect of Paraffin Oil Used as a Lubricant in Tensile Tests of Carbon Fibre Bundles L.G. Rosa, A. Colella and C.A. Anjinho	672
Consolidation of Glass Fibre-Polypropylene Towpregs by Compression Moulding J.F. Silva, J.P. Nunes and A.T. Marques	677
Influence of the Deposition Parameters on the Properties of Bis-Triethoxysilylpropyl] Tetrasulphide (BTESPT) Layers on AA2024-T3 – An Ellipsometric Study A. Cabral, J.P. Correia and M.G.S. Ferreira	682
The Influence of the Addition of Ti on the Mechanical Properties of W-S-Ti Coatings M. Evaristo, A. Nossa and A. Cavaleiro	687
Thermal Cycling Treatment and Structural Changes in Cu-Al-Ni Monocrystalline Alloys R.J.C. Silva, L.A. Matlakhova, E.C. Pereira, A.N. Matlakhov, S.N. Monteiro and R.J.S. Rodríguez	692
Microstructure and Mechanical Properties of Friction Stir Welds in Aluminium Alloys 2024-T3, 5083-O and 6063-T6 R.M. Leal and A. Loureiro	697
The Influence of Austempering Heat Treatment Variables on Dimensional Changes of a Ni-Cu Ductile Iron S. Yazdani	702
Preparation of Dispersion-Strengthened Coppers with Niobium Carbide and Niobium Boride by Mechanical Alloying V. Livramento, M.T. Marques, J.B. Correia, A. Almeida and R. Vilar	707
Foaming around Fastening Elements I.M.A. Duarte, J. Banhart, A.J.M. Ferreira and M.J.G. Santos	712
Lead Hardening by Oxide Dispersion F. Potecasu, O. Potecasu, F.M. Braz Fernandes and V. Muşat	718
Laser Cladding of Ni Based Cermets M.J. Tobar, J.M. Amado, C. Álvarez, G. Rodríguez and A. Yáñez	723
Laser Cutting of Glass Tubes J.M.P. Coelho, D.C. Alves and M.A. Abreu	729
Laser Drilling of Natural Stones R. Soto, M. Boutinguiza, F. Lusquiños, J. Pou, F. Quintero and M. Pérez Amor	734
Laser Powder Deposition of Tool Steels: Strategies Leading to Homogeneous Parts L. Costa, R. Vilar and T. Réti	739
Characterisation of Elastoplastic Behaviour Using Spherical Indentation A.C. Batista, J.P. Marinheiro, J.P. Nobre and A.M. Dias	744
In-Situ Friction Monitoring of Self-Mated CVD Diamond Coatings Using Acoustic Emission C.S. Abreu, F.J. Oliveira, J.R. Gomes, M. Belmonte, A.J.S. Fernandes and R.F. Silva	749
Calculations of the Thermal Conductivity of Porous Materials T. Fiedler, E. Pesetskaya, A. Öchsner and J. Grácio	754
Creep Behaviour of Si₃N₄ Ceramics Sintered with RE₂O₃ C. dos Santos, K. Strecker, F.P. Neto, C.R.M. Silva, F.A. Almeida and R.F. Silva	759
Thermal Shock Behaviour of Open-Cell Cordierite Foams F.A.C. Oliveira, S. Dias and J.C. Fernandes	764
Evaluation of Welding Residual Stresses Using the Incremental Hole-Drilling Technique J.P. Nobre, A. Loureiro, A.C. Batista and A.M. Dias	768
Green and Sintered Properties of Consolidated Mixtures of Mechanically Alloyed and Elemental Al Powders J.A. Rodríguez, J.M. Gallardo and E.J. Herrera	774
Assessment of Particle Clustering in MMCs by Quantitative Image Analysis N. Silva and A. Velhinho	779
Wear Resistance of Powder Hard Metal Inserted Ductile Iron N. Lourenço and H. Santos	784

Damage Mechanisms Identification in FRP Using Acoustic Emission and Artificial Neural Networks	
R. de Oliveira and A.T. Marques	789
Development of an Optic Fibre Sensor System for Acoustic Emission Sensing in FRP	
R. de Oliveira, O. Frazão, J.L. Santos and A.T. Marques	794
On the Evaluation of the Mechanical Behaviour of Structural Glass Elements	
S. Costa, M. Miranda, H. Varum and F. Teixeira Dias	799
A Multi-Level Low Cycle Fatigue Damage Model for Forging Die Material	
S. Gao and E. Werner	804
Influence of the Interaction Potential Parameters on the Mechanical Response of Simulated Semi-Crystalline Polymeric Materials	
R. Simões, J. Viana, G.R. Dias and A.M. Cunha	810
Determination of Elastic Modules in Dependence on Orientation by the Resonant Beam Technique	
S. Puchegger, D. Loidl, H. Peterlik and K. Kromp	815
On the Structural Evaluation of Unbiased W-O-N Sputtered Coatings	
N.M.G. Parreira, N.J.M. Carvalho and A. Cavaleiro	825
Processing-Microstructure-Properties Relationships in Extrusion of Thermoplastics	
O.S. Carneiro, J. Viana and J.M. Nóbrega	833
Dynamic Vulcanisation of EPDM-Based Thermoplastic Vulcanisates during Extrusion: Effect of Processing Conditions	
A.V. Machado, M. van Duin and J.A. Covas	838
Synthesis and Characterization of New Polyurethane Adhesives	
C.B. Correia and J.C. Bordado	843
Optimization of Deformable-Adhesive Application on the Chip-Apply Process	
I. Macedo, M.C. Oliveira and A. Cardoso	848
Transient Rheological Behaviour of PA6/EPM/EPM-g-MA Blends	
J.M. Silva, A.V. Machado and J.M. Maia	853
Non-Conventional Injection Moulding of a PP/PC-ABS Blend	
M. Bilewicz, J. Viana and A.M. Cunha	858
Polyurethane-Polyurea Membranes for Blood Oxygenation	
M.I. Pinto, D.P. Queiroz, M.H. Gil, A.J. Guiomar and M. Norberta de Pinho	863
Novel Multilayer Coatings on Polyethylene for Acetabular Devices	
V. Santos, J.P. Borges, C.M.S. Ranito, E. Pires, H.F. Araújo, A. Marques, L. Tomás, E. Fortunato, R. Martins and Y. Nunes	868
α- to β Transformation on PVDF Films Obtained by Uniaxial Stretch	
V. Sencadas, M.V. Moreira, S. Lanceros-Méndez, A.S. Pouzada and R. Gregório Filho	872
Influence of Diene Content on the Photodegradation of Ethylene-Propylene-Diene (EPDM) Elastomers	
G. Botelho, A. Queirós, M.A. Silva and M.J. Conceição	877
The Influence of Material Density on Bipolar Charge Transport in Polymer-Based Electronic Applications	
M.M.D. Ramos, H.M.G. Correia and H. Carmo	882
Influence of Catalyst Type on Biocompatibility of Polyurethanes	
J. Ryszkowska, M. Bil, P. Woźniak, M. Lewandowska and K.J. Kurzydłowski	887
Open Cell Polyurethane Foams for New Filters with Supported Adsorbents	
N. Correia, J.C. Bordado, J. Pires, M.B. Carvalho, A.P. Carvalho and M. Pinto	892
Plastic Behaviour of Copper Polycrystal Subjected to Fatigue-Tension Sequential Loading Tests	
W.P. Jia and J.V. Fernandes	897
Thermogravimetric Study of Polyethylene Catalytic Degradation by Zeolites	
A.V. Machado, I. Neves, G. Botelho and P. Rebelo	901
Sorption of Sodium Dodecyl Sulfate by Polyaniline-Cellulose Acetate Blends: Equilibrium and Kinetic Studies	
A.J.M. Valente, H.D. Burrows and V.M.M. Lobo	905
Electromechanical Characterization of a Biosensitive and Electroactive Polymer Membrane	
P. Inácio, J.N. Marat-Mendes and C.J. Dias	910

Electrical and Microstructural Changes of β-PVDF under Uniaxial Stress Studied by Scanning Force Microscopy	
J. Serrado-Nunes, V. Sencadas, A.Y. Wu, P.M. Vilarinho and S. Lanceros-Méndez	915
Electric Field Strength Dependent Electric Conductivity in Highly Insulating Materials	
E.R. Neagu and J.N. Marat-Mendes	920
Thermoelectrets from Poly(acrylonitrile) Thin Films: A Trapped Charge Stability Study	
J.N. Marat-Mendes and E.R. Neagu	925
The Influence of the Ambient Gas Environment on the Non-Isothermal DC Electric Measurements in Polymers	
J.N. Marat-Mendes and E.R. Neagu	930
Space Charge Studies in XLPE from Power Cables Using Combined Isothermal and Thermostimulated Current Measurements	
M. Carmo Lança, E.R. Neagu, L.A. Dissado and J.N. Marat-Mendes	935
Study of Electrical Properties of Natural Cork and Two Derivative Products	
M. Carmo Lança, E.R. Neagu, P.C. Silva, L. Gil and J.N. Marat-Mendes	940
Piezoelectric and Optical Response of Uniaxially Stretched (VDF/TrFE) (75/25) Copolymer Films	
J. Serrado-Nunes, A.Z. Kouvátov, V. Müller, H. Beige, P.M. Brandão, M. Belsley, M.V. Moreira and S. Lanceros-Méndez	945
Effect of Poling on the Mechanical Properties of β-Poly(Vinylidene Fluoride)	
C.M. Costa, V. Sencadas, J.F. Mano and S. Lanceros-Méndez	951
Optical Properties of 3,4,9,10-Perylenetetracarboxylic Dianhydride and 8-Hydroxyquinoline Aluminum Salt Films Prepared by Vacuum Deposition	
A. Stanculescu, F. Stanculescu, L. Tugulea and M. Socol	956
Immobilization of Thrombin Inhibitors on Polyesters Surface: An Original Approach towards Materials Blood Compatibilization	
C. Salvagnini and J. Marchand-Brynaert	961
Formation of Bone-Like Apatite on Polymeric Surfaces Modified with $-\text{SO}_3\text{H}$ Groups	
I.B. Leonor, H.M. Kim, F. Balas, K. Masakazu, R.L. Reis, T. Kokubo and T. Nakamura	966
Biomorphic Silicon Carbide Ceramics Coated with Bioactive Glass for Medical Applications	
J.P. Borrajo, P. González, J. Serra, S. Liste, S. Chiussi, B. León, A. de Carlos, F.M. Varela-Feria, J. Martínez-Fernández and A.R. de Arellano-López	970
Scale-up of Poly[(Vinyl Chloride)-b-(n-Butyl Acrylate)-b-(Vinyl Chloride)] prepared by Living Radical Polymerization	
J.F.J. Coelho, P. Alves, J. Monteiro, M.M.C.A. Castro, M. Abreu, P. Gonçalves and M.H. Gil	975
Bone Tissue Engineering Constructs Based on Starch Scaffolds and Bone Marrow Cells Cultured in a Flow Perfusion Bioreactor	
M.E. Gomes, R.L. Reis and A.G. Mikos	980
Bioactive Composite Materials for Bone Tissue Applications	
B.J.M. Leite Ferreira, M.G.G.M. Duarte, M.H. Gil, R.N. Correia, J. Román and M. Vallet-Regí	985
Study of the Fofosal Controlled Permeation through Glutaraldehyde Crosslinked Chitosan Membranes	
R.M.P.d. Silva, J.F. Mano and R.L. Reis	990
Enzymatic Degradation Behaviour of Starch Conjugated Phosphorylated Chitosan	
E.T. Baran, R. Jayakumar, J.F. Mano and R.L. Reis	995
Physicochemical Characterization of Novel Chitosan-Soy Protein/ TEOS Porous Hybrids for Tissue Engineering Applications	
S.S. Silva, J.M. Oliveira, J.F. Mano and R.L. Reis	1000
Preparation and Characterization of Chitosan-Based Scaffolds for Biomedical Applications	
J.V. Araújo, J.A. Lopes da Silva, M.M. Almeida and M.E.V. Costa	1005
Liquid Crystalline Behaviour of Chitosan in Formic, Acetic, Monochloroacetic Acid Solutions	
M. Prabakaran, J.P. Borges, M.H. Godinho and J.F. Mano	1010
Synthesis of N-Carboxymethyl Chitosan Beads for Controlled Drug Delivery Applications	
R. Jayakumar, R.L. Reis and J.F. Mano	1015
Influence of Molecular Weight and Crystallinity of Poly(L-Lactic Acid) on the Adhesion and Proliferation of Human Osteoblast Like Cells	
A.J. Salgado, Y.M. Wang, J.F. Mano and R.L. Reis	1020

Optimization of the Synthesis of Hydroxyapatite Powders for Biomedical Applications Using Taguchi's Method	
C.M.S. Ranito, C.A. Nogueira, J. Domingues, F. Pedrosa, F.A.C. Oliveira and J.P. Borges	1025
Influence of Substrate Temperature in Plasma Assisted Pulsed Laser Deposition of Hydroxyapatite Thin Films	
E.L. Solla, J.P. Borrajo, P. González, J. Serra, S. Chiussi, B. León and M. Pérez Amor	1029
New LDPE Copolymeric Films with Enhanced Hydrophilic Properties Prepared by Gamma Irradiation	
L.M. Ferreira, A.N. Falcão and M.H. Gil	1034
Effect of Glass Ceramic Crystallinity on the Formation of Simulated Apatite Layers	
N.A.F. Almeida and M.H.F.V. Fernandes	1039
Surface Treatment of Human Dentin by KrF Laser	
S. Eugénio, M. Sivakumar and R. Vilar	1044
Mineralization of Titanium Substrates with Different Structures and Surface Finish, Pre-Incubated in Albumin	
S.C.P. Cachinho, P.A.A.P. Marques and R.N. Correia	1049
Influence of Sterilization with γ-Irradiation in the Degradation of Plasma Sprayed Hydroxyapatite Coatings	
T. Costa, A.P. Serro, E. Pires and R. Colaço	1054
Molecular Dynamics Modelling of the Structure of Bioactive $(\text{CaO})_{0.3}(\text{SiO}_2)_{0.7}$ Sol-Gel	
R.N. Mead and G. Mountjoy	1059
Organic Vapour Discrimination Using Sorption Sensitive Chemocapacitor Arrays	
R. Igreja and C.J. Dias	1064
Surface Texture Development in KrF Excimer Laser Ablation of Dentin	
M. Sivakumar, R. Vilar and V. Oliveira	1068
Isothermal Crystallisation of a Glass from the $3\text{CaO} \cdot \text{P}_2\text{O}_5$–$\text{SiO}_2$–$\text{MgO}$–$\text{K}_2\text{O}$ System Studied by Impedance Spectroscopy	
C.M. Queiroz, M.H.F.V. Fernandes and J.R. Frade	1073
Non-Isothermal Crystallisation of SiO_2–MgO–K_2O–$3\text{CaO} \cdot \text{P}_2\text{O}_5$ Glass Studies by Impedance Spectroscopy	
C.M. Queiroz, M.H.F.V. Fernandes and J.R. Frade	1078
Mechanical Characterization of Dense Hydroxyapatite Blocks	
C.M.S. Ranito, F.A.C. Oliveira and J.P. Borges	1083
The Modulus Formalism Used in the Dielectric Analysis with Optical Characterization of Hydroxyapatite and $\text{CaTi}_4\text{P}_6\text{O}_{24}$ Ceramic Formers by Dry Ball Milling	
C.C. Silva, M.A. Valente, M.P.F. Graça and A.S.B. Sombra	1087
Study of the Cure of a Diglycidyl-Ether of Bisphenol-a (DGEBA) / Triethylenetetramine (TETA) Epoxy System by Non-Isothermal Differential Scanning Calorimetry (DSC)	
R. Losada, J.L. Mier, F. Barbadillo, R. Artiaga, A. Varela and S. Naya	1094
Tribological Study of the Damage Mechanics of Polymer-Metal Contacts Used in Implants	
R.C.L.d. Silva, J.S. de Santana, J.F. Silva Jr, A.O.d. Silva and J.T.N. Medeiros	1099
Adsorption Mechanism of 5-Flourouracil on Different Hydroxyapatite Particles	
C. Santos, M.A. Martins, M.M. Almeida and M.E.V. Costa	1103
Layer-by-Layer Deposition of Organically Capped Quantum Dots	
M.C. Neves, A.S. Pereira, M. Peres, A.L. Kholkin, T. Monteiro and T. Trindade	1111
Effect of the Matrix on the $1.5\mu\text{m}$ Photoluminescence of Er-Doped Silicon Quantum Dots	
M.F. Cerqueira, M. Stepikhova, M. Losurdo, T. Monteiro, M.J. Soares, M. Peres, A. Neves and E. Alves	1116
Ion Beam Analysis of Ge/Si Dots Grown on Ultrathin SiO_2 Interlayers	
A. Fonseca, E. Alves, J.P. Leitão, N.A. Sobolev, M.C. Carmo and A.I. Nikiforov	1121
Dispersion of Carbon Nanotubes in Polycarbonate and Its Effect on the Composite Properties	
C. Leer, O.S. Carneiro, J.A. Covas, J.M. Maia, F.W.J. van Hattum, C.A. Bernardo, L.P. Biró, Z.E. Horváth and I. Kiricsi	1125
Image Restoration of One-Dimensional HgTe Crystals Formed within Single Walled Carbon Nanotubes	
J. Sloan, R. Carter, A.I. Kirkland, R.R. Meyer, A. Vlandas, M.L.H. Green and J.L. Hutchison	1131

Terbiumpolyoxotungstate Anions as Building Units to Fabricate Nanostructured Films F.L. Sousa, P.C.R. Soares-Santos, H.I.S. Nogueira, R.A.S. Ferreira, A.M.V. Cavaleiro, L.D. Carlos and T. Trindade	1135
Influence of the Crystallographic Orientation on the Mechanical Behaviour of Sputtered Silver Thin Films A.P. Piedade, G. Gomez, M.T. Vieira and M. Staia	1140
Short-Range Effects and Magnetization Reversal in Co₈₀Fe₂₀ Thin Films: A MOKE Magnetometry/ Domain Imaging and AMR Study J.M. Teixeira, R.F.A. Silva, J. Ventura, A. Pereira, J.P. Araújo, M. Amado, F. Carpinteiro, J.B. Sousa, S. Cardoso, R. Ferreira and P. Freitas	1145
Structural Characterization of Sputtered Composite Stabilized ZrO₂ Thin Films A. Portinha, V. Teixeira, J. Carneiro, R. Newton and H. Fonseca	1150
ITO Thin Films on Silicon Buffer by Sol Gel Method T.M. Hammad	1155
Effect of Processing Conditions on the Microstructure and Electrical Resistance of Nanocrystalline ITO Thin Films Made by Laser Ablation R. Savu and E. Joanni	1161
Growth, Crystal Structure and Stability of Ag-Ni/Cu Films I.K. Bdikin, G.K. Strukova, G.V. Strukov, V.V. Kedrov, D.V. Matveev, S.A. Zverkov and A.L. Kholkin	1166
Laminated Composite Thin Films: A Solution to Improve Cutting Tools Performance J.M. Castanho and M.T. Vieira	1171
Electrolytical Obtaining of Ni-Mo Coatings with Polypyrrole J. Niedbala, A. Budniok and E. Łagiewka	1176
Electrodeposition and Thermal Treatment of Nickel Coatings Containing Molybdenum and Silicon M. Popczyk, J. Kubisztal and A. Budniok	1182
Extensibility of the Inter-Lamellar Amorphous Layer and the Mechanical Behaviour of Polyethylene J. Viana and E.M. Cunha	1186
Characterization of Porous Nanostructures K. Sinko, V. Torma and I. Pászli	1191
Immobilization of Hydride Tungsten Complex in Microporous Structures F. Costa, A.M.C. Fonseca, I. Neves, A.P. Carvalho and J. Pires	1196
Preparation and Characterization of Hybrid Organic/Inorganic Nanocomposites by In Situ Miniemulsion Polymerization M. Lehocý, A.C. Esteves, A.M. Barros-Timmons and J.A.P. Coutinho	1201
New Polyoxotungstates with Ln(III) and Co(II) and Their Immobilization in Silica Particles M.S.S. Balula, H.I.S. Nogueira and A.M.V. Cavaleiro	1206
Controlled Synthesis of Morphological Well-Defined BiVO₄ Pigment Particles Supported on Glass Substrates S.G. Cruz, P.I. Girginova, M.C. Neves, P. Smolka, R. Kusak, M. Caldeira, J. Teixeira-Dias, J. Pedrosa and T. Trindade	1211
Laser Sintering of BaTiO₃ Ceramics Obtained from Nanometric Powders R.S.d. Silva and A.C. Hernandez	1216
Luminescence and Absorption of Hybrid Xerogels Doped with PbS Nanoparticles Prepared by Gas Diffusion Method J.T. Gonçalves, V.I. Boev, A. Solovyev, C.J.R. Silva and M.J.M. Gomes	1221
Electrical Resistance Sintering of M.A. Al-5AlN Powders J.M.M. Martos, J. Cintas Físico, F.G. Cuevas and J.A. Rodríguez	1225
Luminescence and FTIR Spectroscopy of ZnO Nanocrystals L. Grigorjeva, D. Millers, W. Łojkowski and T. Strachowski	1230
Stable Dispersions of Aromatic Hydrocarbon Colloidal Particles by Laser Ablation S. Köstler, A. Rudorfer, R. Berghäuser, V. Ribitsch and G. Jakopic	1235
Co-Containing LDHs Synthesized by the Microwave-Hydrothermal Method P. Benito, M. Herrero, F.M. Labajos and V. Rives	1241
Encapsulation of Cu(II) Purine Derivative Complexes in NaY Zeolite N. Nunes, F. Costa, A.M.C. Fonseca, I. Neves, M.A. Carvalho and C. Ribeiro	1246

Low Cost Microstructures for Preconcentration of Polar and Non-Polar Organic Compounds	
L.M. Silva, R.R. Lima, A.T. Carvalho, M.L.P. Silva, J.C. Madaleno and L. Pereira	1250
Effect of Confinement on the Freezing-Melting Dynamics of Water	
J. Banys, M. Kinka, J. Macutkevici, G. Völkel, W. Böhlmann, V. Umamaheswari, M. Hartmann and A. Pöpl	1255
Application of Volatility Diagrams in the Microstructured Surfacing of Oxide Ceramics	
A. Souto, P. Rey, J. Franco and F. Guitián	1260
Synthesis, Magnetic and Mössbauer Studies of Mechanically Alloyed Fe_{0.63}Si_{0.37} Alloys	
B.F.O. Costa, V.S. Amaral, G. Le Caër and G. Le Caër	1265
Structural, Electrical and Dielectric Properties of Uranium Doped Barium Titanate	
C. Miclea, C. Tanasoiu, C.F. Miclea and A. Gheorghiu	1269
Optical Emission Spectroscopy Study of Magnetron Assisted Ni-Ti DC Sputtering	
M. Silva, P.R. Gordo, M.J.P. Maneira and F.M. Braz Fernandes	1274
Influence of PCA Content on Mechanical Properties of Sintered MA Aluminium	
J. Cintas Físico, J.M.M. Martos, F.G. Cuevas and J.M. Gallardo	1279
Influence of the Microwave Radiation on the Thermal Properties of Ni,Al Hydrotalcite-Like Compounds	
P. Benito, F.M. Labajos and V. Rives	1284
Structural, Microstructural and Magnetic Properties of Ball Milled Boron-Substituted Sm(Co,Fe,Cu,Zr)_{7.5} Compounds	
S.S. Makridis, E. Pavlidou, M. Konstantakou and A.K. Stubos	1289
Comparative Study between Natural and Artificial Zeolites as Supports for Biosorption Systems	
M.T. Tavares, C. Quintelas, H. Figueiredo and I. Neves	1294
Lead-Cadmium Fluorogermanate Glasses and Transparent Glass-Ceramics. Spectroscopy and Structure	
S.J.L. Ribeiro, Y. Messaddeq, L.A. Bueno, J. Dexpert-Ghys, A.S. Gouveia-Neto, C.C. Tambelli, J.P. Donoso and C. Magon	1299
Polynuclear Molybdenum and Tungsten Complexes containing 3-Hydroxypicolinic Acid and Europium (III)	
M.J.E. Rodrigues, F.A.A. Paz, R.A.S. Ferreira, L.D. Carlos and H.I.S. Nogueira	1305
Development and Interfacial Properties of Novel Polymer-Modified Carbon Film Electrodes	
C. Gouveia-Caridade, C.M.A. Brett and H.D. Liess	1313
Effect of Interlayer on the Residual Stresses within High-Temperature Coating	
X.C. Zhang, B.S. Xu, H.D. Wang and Y.X. Wu	1318
Joining of TiAl Using a Thin Multilayer	
L.I. Duarte, A.S. Ramos, M.F. Vieira, F. Viana and M.T. Vieira	1323
Use of Electroless Plating Copper Thin Films for Catalysis	
A.T. Carvalho, A.P. Nascimento Filho, L.M. Silva, M.L.P. Silva, J.C. Madaleno and L. Pereira	1328
Assessing the Influence of Heat Treatments on γ-TiAl Joints	
A. Guedes, A.M.P. Pinto, M.F. Vieira and F. Viana	1333
Electrochemical Reduction of AQ27DS in Aqueous Solution	
C.A.C. Sequeira, R.F.M. Lobo and G. Anastassakis	1338
Effect of Deposition and Processing Conditions for LaNiO₃ Bottom Electrodes on the Properties of Pb(Zr,Ti)O₃ Thin Film Capacitors Made by RF Magnetron Sputtering	
C.C. Mardare, A.I. Mardare and R. Savu	1343
Ferroelectric Properties of Pb(Zr,Ti)O₃ Thin Film Capacitors Made by RF Magnetron Sputtering and Heat-Treated by the Bottom Electrode Crystallization Method	
A.I. Mardare, C.C. Mardare and R. Savu	1348
Optimization of the Fabrication Parameters of PZT 52/48 Thin Films by Pulsed Laser Ablation	
J.R.A. Fernandes, E. Joanni and R. Savu	1353
Characterization of n-Type:ZnO:Al Films Grown by Magnetron Sputtering	
F. Chaabouni, L.C. Costa, M. Abaab and J. Monteiro	1358
The Sodium Loss and Transport through the Walls of the Ceramic Discharge Tube of High Pressure Sodium Lamps	
H. Lovas, V.K. Josépovits, Z. Tóth and J. Madarász	1363

Stabilisation of CuO Aqueous Suspensions M. Guedes, A.C. Ferro and J.M.F. Ferreira	1369
Adsorption of Surfactants on Polymer Surfaces Investigated with a Novel Zeta-Potential Measurement System M. Reischl, K. Stana-Kleinschek and V. Ribitsch	1374
Effect of Oxygen Content on Impedance Spectra of PtRh Electrodes for NO_x Sensing Applications P. Kurek, S. Thiemann-Handler, M. Marzantowicz and M. Wasiucioneck	1379
Modified Titania in the Photo-Assisted Oxidation of Chloroform R. Gouveia, R.A. Silva and C.M. Rangel	1385
Electrocatalytic Behavior of Perovskite-Related Cobaltites and Nickelates in Alkaline Media S.K. Poznyak, V.V. Kharton, J.R. Frade, A.A. Yaremchenko, E.V. Tsipis, I.P. Marozau and M.G.S. Ferreira	1391
Precise Characterization of Selected Silica-Based Materials from Grand Canonical Monte Carlo Simulations C. Herdes, M.A. Santos, F. Medina and L.F. Vega	1396
Modification of Organic Coatings with Thin Plasma Polymer Films. Influence on the Barrier Properties R. Serra, M.L. Zheludkevich, G. Grundmeier and M.G.S. Ferreira	1401
Modelling of Mixing in Single Screw Extruders N. Domingues, A. Gaspar-Cunha and J.A. Covas	1409
Simulations of Cyclic Plasticity and Fatigue Behavior of Structural Steels under Multiaxial Loading B. Li, L.G. Reis and M. de Freitas	1414
Modelling Local Brittle Zones in Welds Using the Finite Element Method P. Teixeira, D.M. Rodrigues and A. Loureiro	1419
Using Experiments Design to Model the Effect of Raw Materials on the Sintering and Technological Properties of Brick Compositions S.L. Correia, E. Grun, C.D. Denardi, D. Hotza and M.V. Folgueras	1424
Improving Profile Cooling through Modeling J.M. Nóbrega and O.S. Carneiro	1429
Modeling and Computation of Hydroxyapatite Nanostructures and Properties V. Bystrov, N. Bystrova, E. Paramonova, A. Sapronova and S. Filippov	1434
Problems of Heat Source Modeling in Iso-Exothermic Materials Used as Riser Sleeves in Foundry Z. Ignaszak and P. Popielarski	1438
Evolutional Friction Law in the Numerical Simulation of the Deep Drawing of a Rail M.C. Oliveira, J.L. Alves and L.F. Menezes	1443
Optimisation of Cordierite Processing through Taguchi Method F.A.C. Oliveira, S. Tavares, J. Domingues, J.C. Fernandes and D. Dias	1448
New Method for Material Classification from TGA Data by Nonparametric Regression S. Naya, R. Cao, R. Artiaga and A. García	1452
The Design and Characteristics of a Novel Ultrasonic Motor K.J. Lim, O.D. Kwon, C.H. Park, J.S. Lee and S.H. Kang	1457
On the Possibility to Observe a Compensation Effect around the Glass Transition Temperature R.M. Neagu, J.N. Marat-Mendes and E.R. Neagu	1462
Multilayer Plug Assisted Thermoforming-Concept and Practical Usefulness F.M. Duarte and J.A. Covas	1467
Strain and Stress Distribution in Vickers Indentation of Coated Materials J.M. Antunes, N.A. Sakharova, J.V. Fernandes and L.F. Menezes	1472
Quantitative Characterization of Pore Arrangement in Pore Bands in Pressure Die Cast AZ91 Magnesium Alloy by Image Processing D.G.L. Prakash and D. Regener	1477
Effect of Membrane Pore Size and Membrane-Solute Interactions on Lysozyme Ultrafiltration V. Magueijo, V. Semião and M. Norberta de Pinho	1483
Geometry and Topology of 3D Voronoi Partitions N. Reis, A.C. Ferro and J.C. Pereira	1488

Influence of the Weld on the Mechanical Behaviour of Tailor Welded Blanks A.J. Baptista, D.M. Rodrigues and L.F. Menezes	1493
Predicting Shrinkage in Semi-Crystalline Injection Mouldings – The Influence of Pressure A.J. Pontes and A.S. Pouzada	1501
Sintering M3/2 High Speed Steel Powder by DMLS Process I.M. Martins, L. Esperto and M.J.G. Santos	1506
Stress Corrosion Cracking of Austenitic Stainless Steel Alloys for Reinforced Concrete M.J. Correia and M.M. Salta	1511
Developments for Rapid Tooling Application in Sheet Metal Forming R. Baptista, M.B. Silva and C. Saraiva	1516
Metallurgical Study of a AISI 316L Stainless Steel Used in a Gas Turbine Exhaust System R.F. Martins, C.M. Branco, A.M. Gonçalves-Coelho and E.C. Gomes	1521
Diffusion Welding of WC-Co (Hardmetal)/ High Strength Steels J.M. Gómez de Salazar, M.I. Barrena, N. Merino and L. Matesanz	1526
Effect of the Consolidation Technique on the Sintering Ability and Thermal Properties of AlN Processed from Aqueous Suspensions S.M.H. Olhero and J.M.F. Ferreira	1531
Optimised Conditions for the Obtaining of Metakaolin A. Teixeira-Pinto and E. Vieira	1536
Characterization of Chromate-Intercalated Layered Double Hydroxides M. del Arco, D. Carriazo, C. Martín, A.M. Pérez Grueso and V. Rives	1541
Technical Features Evaluation of an Alumina Powder Prepared by Combustion Synthesis A.P. Tavares, S.M.H. Olhero and J.M.F. Ferreira	1546
Development of GF/PP Towpreg Woven Fabrics for Composite Reinforcements R.M.E. Sousa Fangueiro, J.P. Nunes, J.F. Silva, M. de Araújo and F. Novais	1551
Application of Braided Fibre Reinforced Composite Rods in Concrete Reinforcement R.M.E. Sousa Fangueiro, G. Sousa, F. Soutinho, S. Jalali and M. de Araújo	1556
A 5 GHz Resonant Cavity for Complex Permittivity Measurements: Design, Test Performances and Application L.C. Costa, S. Devesa and F. Henry	1561
The Influence of Tribophysical Activation on Non-Isothermal Sintering of BaTiO₃ Ceramics V.P. Pavlović, M.V. Nikolić, V. Spasojević, J. Blanuša, L. Živković, B.D. Stojanović, V.B. Pavlović and M.M. Ristić	1566
Adobe's Mechanical Characterization in Ancient Constructions: The Case of Aveiro's Region T. Martins and H. Varum	1571
Normal Contact Response of a Coating Containing an Interlayer X.C. Zhang, B.S. Xu, H.D. Wang and Y.X. Wu	1576
Nanostructure Evolution during Uni-Axial Deformation of PET – A WAXS and SAXS Study Using Synchrotron Radiation J. Viana, J.F. Mano, Z.Z. Denchev, M.J. Oliveira and M.C. Cramez	1583
In Situ Observation of Ni-Ti Thin Film Growth by Synchrotron Radiation Scattering R.M.S. Martins, F.M. Braz Fernandes, R.J.C. Silva, M. Beckers and N. Schell	1588
Local Probe Studies on Oxides Using Radioactive Isotopes J.P. Araújo, A.M.L. Lopes, E. Rita, J.G. Correia, V.S. Amaral and U. Wahl	1593
Using Atomic Force Microscopy to Retrieve Nanomechanical Surface Properties of Materials S. Graça, R. Colaço and R. Vilar	1598
Combination of IBA Techniques for Composition Analysis of GaInAsSb Films V. Corregidor, P.C. Chaves, M.A. Reis, C.P. Izarra, E. Alves and N.P. Barradas	1603
Sub-Surface Defects Induced by Low Energy Ar⁺ Sputtering of Silver M. Duarte Naia, P.M. Gordo, O.M.N.D. Teodoro, A.P. de Lima, A.M.C. Moutinho and R.S. Brusa	1608
Stress and Texture Analysis in Thin Films and Coatings by X-Ray Diffraction J.C.P. Pina, M.J. Marques, J.M.M. dos Santos and A.M. Dias	1613
Influence of Surface Roughness on the Quality of Data Obtained by Pseudo-Grazing Incidence X-Ray Diffraction M.J. Marques, J.C.P. Pina and A.M. Dias	1618

On a New Method Based on X-Ray Diffraction to Identify Stress-Strain Laws on Surface-Treated Materials	
A.C. Batista, J.P. Nobre and A.M. Dias	1623
A Comparison between X-Ray Diffraction and Petrography Techniques Used to Determine the Mineralogical Composition of Granite and Comparable Hard Rocks	
P.M. Amaral, J.C. Fernandes and L.G. Rosa	1628
Influence of Grain Size on the Setting of Portland Cement: A Stray-Field Magnetic Resonance Imaging Study	
T.G. Nunes	1633
Provenance Characterization of Archaeological Ceramics by Laser Induced Plasma Spectroscopy	
A.J. López, A. Ramil, G. Nicolas, M.P. Mateo, V. Piñon and A. Yáñez	1638
Characterisation of Roman Mortars from the Archaeological Site of Tróia (Portugal)	
A.S. Silva, M. Paiva, J. Ricardo, M.M. Salta, A.M. Monteiro and A.E. Candeias	1643
Characterisation of Ceramic Pastes of Portuguese Ancient Tiles	
A.P. Carvalho, M.F. Vaz, M.J. Samora and J. Pires	1648
Leaching Process of Cerium Extraction from Mixture of Cerite-Monazite Mineral	
J.C.C. Gomes, C.P. Souza, U.U. Gomes, J.R. Gavarri, J.P. Dallas and C. Leroux	1653
Applications of Quantitative Image Analysis to the Description of the Morphology of Boehmite and their Polyurethane Nanocomposites	
J. Ryszkowska	1658
Structural Grades of Timber by Bending and Compression Tests	
J.M. Branco, H. Varum and P. Cruz	1663
Micromemory Effects Involved during Martensitic Transformation in Ni-Rich NiTi Alloy	
K.K. Mahesh, C.M.L. dos Santos and F.M. Braz Fernandes	1668
Performance and Friction Properties of Injection Hybrid Moulds with Stereolithography Moulding Zones	
M.G. Westphal, A.S. Pouzada, G.V. Salmoria and C.H. Ahrens	1673
Hardware and Software Improvements in the Hotbird	
N. Franco, E. Alves and N.P. Barradas	1678
Experimental Phase Diagram of the Ternary Bi-Sn-Zn	
M.H. Braga, L.F. Malheiros, D. Soares, J.A. Ferreira and F. Castro	1682
Decay and Conservation of Building Stones on Cultural Heritage Monuments	
V. Rives and J.G. Talegon	1689
New Ceramic Products from Slate and Aluminium Sludge Wastes	
I.M. Martins, C. Xavier, M.H. Mendonça and M. Oliveira	1695
Reusing Porcelain Tile Polishing Wastes in the Manufacturing of Aluminosilicate Fireplace Bricks	
R.C. Santos, A.S. Correia and G. Andrade	1700
Use of Sewage Sludge in the Production of Light-Weight Ceramic Bricks	
R.P.S. Dutra, U.U. Gomes, R.M. Nascimento, A.E. Martinelli and C.A. Paskocimas	1706
Effect of Dolomite Addition on the Densification of Fly Ash Based Ceramics	
R.d.C.C. Monteiro, C.S. Mota and M.M.R.A. Lima	1711
Highly Reactive Alumina Production from Spent Baths	
C. Ribeiro, L. Gonçalves and F. Delmas	1716
Incorporation of Aluminium Residues in Dense Cordierite Formulations	
F.A.C. Oliveira, F. Delmas, A. Araújo, J.C. Fernandes and D. Dias	1722
Electrical Characterization of Mullite Bodies Containing Al-Rich Anodizing Sludge	
M.J. Ribeiro, J.C.d.C. Abrantes and J.A. Labrincha	1726
Prediction of Solid Waste Incineration Residues Quantity for Valorization in Lightweight Aggregates	
M.J. Quina, M.A. Almeida, R.C. Santos, J.C. Bordado and R.M. Quinta-Ferreira	1731
Leaching Behaviour of a Glass Produced from a MSWI Bottom Ash	
N. Lapa, R. Barbosa, S. Camacho, R.d.C.C. Monteiro, M.H.F.V. Fernandes and J.F.S. Oliveira	1736
Regeneration of Adsorbent Carbonaceous Materials with Supercritical Water	
M.J. Sánchez-Montero, F. Salvador-Palacios, A.S. Palacios and M.J.M. Rodriguez	1742
Evaluation of Physical Processing in the Recycling of Spent Domestic Batteries	
M. Cabral, N. Climaco, J.P. Ribeiro, P.A. Pessoa, C.A. Nogueira and F. Margarido	1748

