

Table of Contents

Preface

Chapter 1: Powder Synthesis and Characterization

Preparation of Protonic Conductor BaZr_{0.5}Ce_{0.3}Ln_{0.2}O_{3-δ} (Ln=Y, Sm, Gd, Dy) by Using a Solid State Reactive Sintering Method

J.F. Bu, P.G. Jönsson and Z. Zhao 1

High Energy Milling of Zirconia: A Systematic Critical Review on the Phase Transformation

N. Gorodylova, Ž. Dohnalová and P. Šulcová 6

Structural and Electrical Properties of (1-x)Pb (Zr_yTi_{1-y})O_{3-x}Sm(Fe³⁺_{0.5}, Nb⁵⁺_{0.5})O₃ Ceramics Prepared by Conventional Solid State Synthesis and Sintered at Low Temperature

F. Kahoul, L. Hamzioui and A. Boutarfaia 12

Structural and Electrical Properties of Ca²⁺ Substituted Pb[(Zr_{0.52}Ti_{0.48})_{0.98}(Cr³⁺_{0.5}, Ta⁵⁺_{0.5})_{0.02}]_{0.96}P_{0.04}O₃ Ceramics

L. Hamzioui, F. Kahoul and A. Boutarfaia 18

Soft Synthesis of FAU Nanozeolites and Microporous Membranes

T.F. Mastropietro, E. Drioli and T. Poerio 24

Characteristic and Sinterability of Alumina-Zirconia-Yttria Nanoparticles Prepared by Different Chemical Methods

J. Grabis, D. Jankovica, I. Steins, K. Smits and I. Sipola 30

Ultradispersed Powdery Y₂O₃-Bi₂O₃-ZnO Composition with High Chemical Homogeneity for Fine-Grained Ceramics

E.A. Trusova, K.V. Vokhmintcev and A.N. Kirichenko 36

Preparation of Highly-Dispersed Powders of Cobalt, Nickel, Molybdenum and Tungsten Oxides by Modified Sol-Gel Technique

E.A. Trusova and K.V. Kotsareva 42

Development of Highly Dispersed Hybrid Nanoalumina with the Sol-Gel Method

F. Petrakli, D. Sioulas and A. Tsetsekou 48

Study of Gamma Alumina Synthesis – Analysis of the Specific Surface Area

A.H. Munhoz Jr., H. de Paiva, L. Figueiredo de Miranda, E.C. de Oliveira, R.C. Andrade and R.R. Ribeiro 54

Synthesis and Characterization of Nanocomposite HA/α-Al₂O₃ Sol-Gel Powders for Biomedical Applications

N.H.A. Camargo, P. Corrêa, P.F. Franczak and E. Gemelli 61

Effect of Ammonium Sulfate on Morphology of Y₂O₃ Nanopowders Obtained by Precipitation and its Impact on the Transparency of YAG Ceramics

H. Tomaszewski, A. Wajler, H. Weglarz, A. Sidorowicz, U. Brykała and K. Jach 67

Segregation and Color Change on (Cr,Ca) Codoped Nanocrystalline Tin Dioxide

D. Gouvêa, D. Ucha Rocha and L. Batista Caliman 73

Microstructural Characterization of Activated Carbon Obtained from Waste Tires

F. Mazzanti, G. Magnani, S. Grilli, A. Brillante, T. Salzillo, A. Brentari, E. Burresi, C. Mingazzini and P. Fabbri 79

Chapter 2: Colloidal Processing, Shape Forming and Compaction Mechanisms

Transparent Tetragonal Zirconia Ceramics by Colloidal Processing of Nanoparticle Suspension

M. Trunec and O. Bera 85

Composition – Property Relations in Shear Thickening Fluids

Ł. Wierzbicki and M. Leonowicz 91

Thick Film Processing Challenges in the Realisation of a Co-Fired Solid Oxide Fuel Cell Roll

M. Cassidy, P. Connor, M. Etches, Y. Kalecheff, M. MacHado, J. Nairn and J. Irvine 98

A Mixed SVD-Neural Network Approach to Optimal Control of Ceramic Mould Manufacturing in Lost Wax Cast Processes	105
C. Caramiello, S. Iannuzzi, A. Acernese and D.M. D'Addona	
Manufacturing of Porous Ceramic Spheres Using Calcium Phosphates, by a Mechanical Method without Additives or Binders	113
K.B. Violin, T.S. Goia, K. Ishikawa, J.C. Bressiani and A.H.d.A. Bressiani	
Chapter 3: Sintering and Related Phenomena	
<i>In Situ</i> Platelet Reinforcement of Alumina and Zirconia Matrix Nanocomposites – One Concept, Different Reinforcement Mechanisms	118
F. Kern and R. Gadow	
Sol-Gel Derived Mullite-Gahnite Composite	126
S. Kurajica, E. Tkalčec, V. Mandić, I. Ložić and J. Schmauch	
3D Phase-Field Simulation and Characterization of Microstructure Evolution during Liquid Phase Sintering	132
H. Ravash, E. Specht, J. Vleugels and N. Moelans	
Influence of Alumina Addition on Low Temperature Degradation of Y_2O_3-Coated Powder Based Y-TZP Ceramics	139
F. Zhang, K. Vanmeensel, M. Inokoshi, B. van Meerbeek, I. Naert and J. Vleugels	
Effect of Different Sintering Processes on Microstructure of Alumina Ceramics	145
A.S.A. Chinelatto, C. Lago Ojaime, M.V. Gelfuso, D. Thomazini and A.L. Chinelatto	
Mechanical Characterization of Conventional and Non-Conventional Sintering Methods of Commercial and Lab-Synthesized Y-TZP Zirconia for Dental Applications	151
A. Presenda, M.D. Salvador, F. Peñaranda-Foix, J.M. Catalá and A. Borrell	
Sintering of Al_2O_3-TiO_2 Mixtures Obtained by High-Energy Ball Milling	157
A.S. Ramos, M.A. de Souza, R.d.O. Magnago, C. dos Santos, C.A.A. da Silva and B. de Almeida Fortes	
Effect of Particle Size of ZrO_2(Y_2O_3) Powders on the Shrinkage of the Sintered Substrate with Coloring Gradient	162
P.C. da Silva, R.d.O. Magnago, C.A.A. da Silva, B. de Almeida Fortes and C. dos Santos	