

Table of Contents

Preface

Chapter 1: Nanotechnology and Materials for Electronics

Effect of Dealloying Process on Microstructure and Electrochemical Properties of Ni Foam	
G.Y. Hou, J.Y. Li, L.K. Wu, Y.P. Tang, H.Z. Cao and G.Q. Zheng	3
Dispersion of TiO₂ Nanoparticles in Aqueous Solution	
W.X. Liu, P. Sun, J. Zhang and W.B. Cao	8
Effect of Solvents on Cadmium-Doped Zinc Oxide Nanoparticles Synthesised by Sol-Gel Technique	
H. Nalumaga, K.N. Kim, W.D. Kim and D.H. Hwang	14
Surface Functionalization of Zirconia Nanocrystals with Silane Coupling Agent and its Dispersion Behavior in O-Phenylphenoxyethyl Acrylate	
H.S. Lee, J.M. Park, K.H. Hwang and H.M. Lim	20
Preparation and Characterization of Nanosize ZrO₂ Particle for Highly Refractive Index Nanocomposite Depending on Zirconium Precursor and Concentration	
J.M. Park, H.S. Lee and H.M. Lim	26
Upconversion Luminescence of ZnO-TiO₂: Ho³⁺/Yb³⁺ Phosphor Powder	
K. Kobwittaya, Y. Oishi, T. Torikai, M. Yada and T. Watari	32
Relationship between Deep Donors and Current-Voltage Properties in Au/CdZnTe/Au Device	
Y.Q. Zhang and L. Fu	40

Chapter 2: Functional Ceramics

The Preparation and Properties of Alumina Ceramics through a Two-Step Pressureless Sintering Process	
C.S. Yuan, Z.J. Wang, Q. Zhi, Y.M. Zhang, X.D. Wang and J.F. Yang	47
Preparation of Siliconized Graphite by Liquid Silicon Infiltration of Porous Carbon Materials	
Y.Y. Zhao, W.M. Wang, H.Y. Xia and J.P. Wang	55
Effect of AlF₃ Content on Microstructure and Properties of Mullite/Al₂O₃ Composite Ceramics	
K.Z. Sang, F. Wang, D.J. Zeng and H.W. Li	62
Effect of the Addition of ZrO₂ Having Different Crystal Structures on the Mechanical Properties of Al₂O₃	
H.Y. Lim, B.L. Kim, J.H. Chae, J.B. Kang and B.R. Cho	68
High Emissivity of Ca²⁺/Fe³⁺-Doped LaAlO₃ Based Ceramic Materials	
J. Liu, G. He and J.T. Li	74
Optical Properties Evaluated According to the Different Thickness Sapphire under the Same Polishing Conditions	
J.H. Chae, H.Y. Lim and B.R. Cho	80
Solvothermal Synthesis of TiO₂-Modified Hydroxyapatite Using Water-Isopropanol Solution	
T. Goto, S.H. Cho, C. Ohtsuki and T. Sekino	86
Synthesis of Silicon Nitride Ceramic Fibers and the Effect of Nitrogen Atmosphere on their Morphology	
S. Baba, T. Goto, S.H. Cho and T. Sekino	92
Effects of Characteristic of Green Body on the Microstructure and Properties of Reaction Bonded Silicon Carbide	
S.C. Xu, Z.J. Wang, Y.M. Zhang, Q. Zhi, J. Matsushita and J.F. Yang	98
Oxidation Resistance and Bending Strength at High Temperatures of Ni/(ZrO₂+Al₂O₃) Hybrid Materials	
H.V. Pham, M. Nanko and W. Nakao	104

Torsion Strength Measurement of Engineering Ceramics	110
F.J. Feng and K. Yasuda	
Mechanical Properties of MgO-Doped Transparent Crystalline Alumina Fabricated by Two-Step Pressureless Sintering	116
X.D. Wang, Y.M. Zhang, Z.J. Wang, Q. Zhi, C.L. Gao, B. Wang and J.F. Yang	

Chapter 3: Materials and Technologies for Catalytic Processes

The Effect of Support Pretreatment with Ammonia on Pd/SiO₂ Catalyst	125
J.S. Kwon, J.H. Baek, H.S. Lee and M.S. Lee	
The Preparation of Highly Dispersed Pd/Gamma-Al₂O₃ Catalyst: The Relation of Attracting-Repelling Force and Pd Dispersion	130
M.Y. Byun, J.S. Kim, J.W. Park, D.W. Park and M.S. Lee	
Preparation and Catalytic Performance of Ni-Cu-B/TNTs Electrode by Cyclic Voltammetry Electrodeposition for Methanol Electro-Oxidation	136
G.Y. Hou, G.L. Fang, Y.P. Tang, L.K. Wu, H.Z. Cao and G.Q. Zheng	

Chapter 4: Materials in Metallurgical Production

The Preparation and Properties of Clay Bonded Silicon Carbide by Using Silicon Carbide Dusting Powder	143
S.C. Xu, Z.J. Wang, Y.M. Zhang, Q. Zhi, X.D. Wang and J.F. Yang	
Effect of Regenerated-Foundry Sand on the Mechanical Properties of Core	149
B.Y. Kang, K.H. Kim, D.W. Park and M.S. Lee	

Chapter 5: Materials and Electrical Insulating Technologies

Electric Field Simulation of Typical Defects in the Epoxy/Paper Composites Insulated Tubular Bus	157
C.L. Li, R. Liu, P.H. Li, W.P. Li and N.K. Gao	
Influence of the Morphology of Alumina Filler on Electrical and Thermal Properties of Epoxy Resin Composites	163
J.W. Ma, N.K. Gao, T.Y. Ren, Z.H. Pan and H.Y. Jin	
Optimization for Epoxy/Paper Composites Insulated Tubular Bus Structure	169
P.H. Li, L. Ruan, C.L. Li, F. Yang, H.Y. Jin and S.R. Zhu	
Analysis on the Performance of High Insulation Materials for Current Bending XLPE Cable	175
X. Yu, P.F. Gao, N.K. Gao, Z. Huang and H.Y. Jin	
Research on Correlation between Insulation Performances and Damage Degree of Burned Cable	180
X. Yu, T. Zhang, J.F. Wang, Z.W. Li, L. Yi and Y.F. Li	
Analysis of Physical and Chemical Properties of XLPE Insulation for Long Term Running Cable	186
T. Zhang, S.C. Nie, Z.H. Pan, Z.W. Li, N.K. Gao and X. Yu	
Research on Water Content and Physicochemical Properties of Insulating Materials for Water-Soaked XLPE Cable	192
Z.W. Li, Z.H. Pan, C.L. Li, P.F. Gao, S.J. Liang, N.K. Gao and H.Y. Jin	