

Contents

Preface	ix
Introduction	xi
DEVELOPMENTS IN ENGINEERING CERAMICS	
Elastic and Vibration Properties of Diamond-Like B-C Materials J. E. Lowther	3
Towards Simulation-Based Predictive Design of Glasses Liping Huang and John Kieffer	17
Dynamic Behavior of Thick Alumina Plates with Tunneled Interfaces F. Orgaz, T. Gómez del Río, A.Varela and J.F. Fernández	27
Deposition Phase Diagrams for Chemical Vapor Deposition of $\text{BCl}_3\text{-CH}_4\text{-H}_2$ System Shanhua Liu, Litong Zhang, Yongsheng Liu, Laifei Cheng, Xiaowei Yin, and Qingfeng Zeng	41
The Relation between Optical Properties and Lattice Defects of Translucent Aluminum Nitride Ceramics Fabricated by the Novel Annealing Process Yukihiro Kanechika, Yuriko Kaito, Masanobu Azuma, and Hiroshi Fukushima	49
Thermodynamic Calculations of ZrC-SiC System for Chemical Vapor Deposition Applications from $\text{SiCl}_4\text{-ZrCl}_4\text{-CH}_4\text{-H}_2$ Qiaomu Liu, Litong Zhang, Yiguang Wang, and Laifei Cheng	65
Debinding of Non Oxide Ceramics under Protective Atmosphere Dieter G. Brunner, Gaby Böhm, Friedrich Raether, and Andreas Klímera	77
Softening of Rare Earth Orthophosphates by Transformation Plasticity: Possible Applications to Fiber-Matrix Interphases in Ceramic Composites R. S. Hay, G. Fair, E. E. Boakye, P. Mogilevsky, T. A. Parthasarathy, and J. Davis	87

Influence of Fiber Architecture on Impact Resistance of Uncoated SiC/SiC Composites	97
Ramakrishna T. Bhatt, Laura M. Cosgriff, and Dennis S. Fox	
Oxidation Kinetics and Strength versus Scale Thickness for Hi-NICALON™-S SiC Fiber	105
R. S. Hay, G. Fair, E. Urban, J. Morrow, J. Somerson, and M. Wilson	
Ceramic Matrix Composites Densification by Active Filler Impregnation Followed by a P.I.P. Process	113
S. Le Ber, M.-A. Dourges, L. Maillé, R. Paillet, and A. Guette	
High Potential of Composites with Carbon Fibers and a Self-Sealing Ceramic Matrix in Moist Environments under High Pressures at 600°C	125
L. Quémar, F. Rebillat, F., A. Guette, H. Tawil, and C. Louchet-Pouillier	
Quantification of Higher SiC Fiber Oxidation Rates in Presence of B₂O₃ under Air	135
F. Rebillat, E. Garitte, and A. Guette	
Overview on the Self-Sealing Process in the SiC_r/[Si,C,B]_M Composites under Wet Atmosphere at High Temperature	151
F. Rebillat, X. Martin, E. Garitte, and A. Guette	
NDE for Characterizing Oxidation Damage in Reinforced Carbon-Carbon	167
Don J. Roth, Richard W. Rauser, Nathan S. Jacobson, Russell A. Wincheski, James L. Walker, and Laura A. Cosgriff	
Silicon Nitride and Silicon Carbide Components as Enabling Tools in Avionics, Space and Dispersing Technology	181
Karl E. Berroth	
α/β SiAlON Based Composites Incorporated with MoSi₂ for Electrical Applications	189
Erhan Ayas, Alpagut Kara, and Ferhat Kara	
Microstructure Characteristics and High-Temperature Performance of In-Situ Reinforced α-SiAlON Ceramics	197
Yu Zhou, Feng Ye, and Chunfeng Liu	
Synthesis Process and Microstructure for Al₂O₃/TiC/Ti Functionally Gradient Materials	207
Enrique Rocha-Rangel, David Hernández-Silva, Elizabeth Refugio-García, José G. Miranda-Hernández, and Eduardo Terrés-Rojas	
Brazing of MIEC Ceramics to High Temperature Metals	213
S. Dabbarh, E. Pfaff, A. Ziombra, and A. Bezold	

ADVANCED CERAMIC COATINGS

Thermodynamic Data for Y-O-H(g) from Volatilization Studies E. Courcot, F. Rebillat, and F. Teyssandier	227
From the Volatility of Simple Oxides to that of Mixed Oxides: Thermodynamic and Experimental Approaches E. Courcot, F. Rebillat, and F. Teyssandier	235
Nanolaminated Oxide Ceramic Coatings in the Y_2O_3 - Al_2O_3 System Nadine K. Eils, Peter Mechnich, Martin Schmücker, and Hartmut Keune	245
Thermochemical Stability of Rare Earth Sesquioxides under a Moist Environment at High Temperature E. Courcot, F. Rebillat, and F. Teyssandier	257
Manufacture of P-Type ZNO Thin Film by CO-Sputtering of ZN and Li_2CO_3 Targets Simultaneously Yang-Ming Lu, Shu-Yi Tsai, and Shin-Yi Wu	265
Synthesized Zircon and Zircon Composite from Liquid Chemical Process Yanxia Lu	273
ZrO ₂ -Environmental Barrier Coatings for Oxide/Oxide Ceramic Matrix Composites Fabricated by Electron-Beam Physical Vapor Deposition Peter Mechnich and Wolfgang Braue	285

GEOPOLYMERS

Development of Geopolymers from Plasma Vitrified Air Pollution Control Residues from Energy from Waste Plants Ioanna Kourti, D. Amutha Rani, D. Deegan, C. R. Cheeseman, and A. R. Boccaccini	297
Synthesis of Zeolite-X from Waste Porcelain Using Alkali Fusion Takaaki Wajima and Yasuyuki Ikegami	305
The Ageing Process of Alkali Activated Metakaolin C. H. Rüschler, E. Mielcarek, W. Lutz, A. Ritzmann, and W. M. Kriven	315
Testing of Geopolymer Mortar Properties for Use as a Repair Material Wanchai Yodsudjai, Prasert Suwanvitaya, Weerapong Pikulprayong, and Banjerd Taweessappaiboon	325
Author Index	335