

Table of Contents

PREFACE

Engineering Ceramics: New Perspectives Through Value-Added (Multi-) Functionality S. Reschke and C. Bogdanow	1
Realization of Ceramics Adiabatic Engine and Engine Components Having Many Functions S. Suzuki and H. Kawamura	11
Reactivity of AlN Powder in Aqueous Si₃N₄ and SiC Slurries T. Kosmač and K. Krnel	23
Destabilization of High Solids Loading Al₂O₃ Particle Suspensions with Alkali Swellable Polymers Via Enzyme Assisted Reactions D. Hesselbarth, E.V. Tervoort and L.J. Gauckler	31
Preparation of Coagulated Aqueous Alumina Suspension at Inherent pH A. Dakschobler and T. Kosmač	43
Composition and Morphology Control of Si-C-N Powders by CVD Method Š. Kavecký, B. Janeková and P. Šajgalík	49
Microstructure and Properties of Polymer-Derived SiCN Ceramics H.J. Kleebe, G. Motz and G. Ziegler	57
Oxidation Behavior of Precursor Derived Ceramics in the System Si-(B)-C-N E. Butchereit and K.G. Nickel	69
Low Cost Composites Made of Oxides and Nitrides: State-of the-Art and Perspectives J. Szépvölgyi	79
Thermo-Optical Investigations at Sintering of Boehmite Gels J. Majling, Š. Svetík and L. Pach	91
Role of Intergranular Films in Toughened Ceramics P.F. Becher, E.Y. Sun, C.H. Hsueh, G.S. Painter and K.L. More	97
Atomic Structure and Chemical Bondings of Intergranular Glassy Film in Si₃N₄-SiO₂ Ceramics M. Yoshiya, I. Tanaka and H. Adachi	107
Electronic Structure and Properties of Si/N/O/Al Ceramics L. Benco	119
Crystallisation, Thermal Expansion and Density of Si-Al-Y-O Glasses for Ceramics P. Lichvár, M. Liška, P. Šajgalík and P. Bezdička	125
Novel Developments in α-SiAlON Ceramics H. Mandal and M.J. Hoffmann	131
Microstructure and Properties of Titanium Nitride and Titanium Diboride-Based Composites A. Bellosi and F. Monteverde	139
SiC-Ceramics with Tailored Porosity Gradients for Combustion Chambers M. Dröschel, M.J. Hoffmann, R. Oberacker, H.v. Both, W. Schaller, Y.Y. Yang and D. Munz	149
Deformation Processing and Properties of Y₂O₃-Doped ZrO₂/Porous-Al₂O₃ Composites E.J. Winn and I.-. Chen	163
Design of Si₃N₄ Based Layered Composites for Multifunctional Application Z. Lenčič, P. Šajgalík, E. Roncari and K. Hirao	173
Piezo-Spectroscopic Determination of Residual Stresses in an Al₂O₃/NiAl FGM V. Lughì, L. Colombi Ciacchi, C.M. Kong, J.J. Lannutti and V. Sergo	183
Residual Stress and Wear Resistance of Liquid Phase Sintered Polycrystalline Alumina D. Galusek, F.L. Riley, A. Atkinson, Y. Zhang and R. Brydson	189
Mullite/Molybdenum Composites J.S. Moya, J.F. Bartolomé, M. Díaz and J. Requena	197
MoSi₂ - SiC Composites Prepared by Reactive Hot Pressing Z. Pánek and F. Lofaj	213
TZP/TiC Composites by Chemical Route K. Haberko, W. Pyda, Z. Pędzich and M.M. Bucko	221

28GHz Microwave Sintering of Piezoelectric Based Nanocomposites with Multiple Functions	
K. Tajima, H.J. Hwang, M. Sando and K. Niihara	229
Preparation of DLC Films by Ion Beam Mixing Method	
K. Irie and T. Miura	235
Behavior of Crack-Growth Resistance in Toughened Anisotropic Silicon Nitride Ceramics	
H. Kawamoto, Y. Takigawa, K. Hiramatsu and A. Okada	241
Fatigue Crack Growth in Self-Reinforced Silicon Nitride Based Materials	
P. Hvizdoš, D.Y. Jiang and M.J. Reece	253
Effect of SiC Addition on R-Curve Behaviour of Alumina and ZTA Ceramics	
H. Tomaszewski, M. Boniecki and H. Węglarz	261
Particulate Ceramic Composites: Their High-Temperature Creep Behavior	
S.M. Wiederhorn	267
Silicon Nitride/Carbide Nano/Micro Composites for Room as well as High Temperature Applications	
P. Šajgalík, M. Hnatko and Z. Lenčėš	289
High Temperature Behaviour of Al₂O₃-SiC Nano Composites	
J.-. Verhelle, M. Poorteman, P. Descamps, M. Deletter, J. Descamps and F. Cambier	301
Dynamic Fatigue and Fracture Toughness of Si₃N₄ + SiC Nanocomposite at 1350°C	
J. Dusza, P. Šajgalík and M. Steen	311
Microstructural Degradation Accompanying Tensile Creep Deformation in Quasi-Ductile Silicon Nitride	
F. Lofaj, A. Okada, Y. Ikeda, Y. Mizuta, H. Usami and H. Kawamoto	321
Young's Modulus Measurement of Silicon Nitride Ceramics by Indentation Methods	
E. Rudnayová, P. Hvizdoš, P. Arató and L. Pešek	335