

Cambridge University Press

978-1-107-41115-9 - Advanced Structural Ceramics: Materials Research Society

Symposia Proceedings: Volume 78

Editors: P. F. Becher, M. V. Swain and S. Sōmiya

Table of Contents

[More information](#)

Contents

Preface.....	xiii
PART I - TRANSFORMATION ANALYSIS	
Displacive Phase Transformation in Zirconia-Based Ceramics.....	3
B.C. Muddle	
A Study of Rhombohedral Phase in Y_2O_3 -Partially Stabilized Zirconia.....	17
Y. Kitano, Y. Mori, A. Ishitani and T. Masaki	
Texture on Ground, Fractured, and Aged Y-TZP Surfaces.....	25
F. Reidinger and P.J. Whalen	
Constitutive Laws for Ceramics Exhibiting Stress-Induced Martensitic Transformation.....	35
J.C. Lambropoulos	
The Stress Induced Transformation by Fracture in Y_2O_3 Containing Tetragonal Zirconia Polycrystals.....	43
G. Katagiri, H. Ishida, A. Ishitani and T. Masaki	
Reversible Transformation Plasticity in Uniaxial Tension-Compression Cycling of Mg-PSZ.....	51
K.J. Bowman, P.E. Reyes-Morel and I-W. Chen	
PART II - TRANSFORMATION PLASTICITY AND TOUGHNESS	
Deformation of Transformation Toughened Zirconia.....	61
J. Lankford	
Transformation Plasticity and Transformation Toughening in Mg-PSZ and Ce-TZP.....	75
I-W. Chen and P.E. Reyes-Morel	
The Temperature Dependence of Yield Stress and Fracture Toughness in Unstabilized Zirconia Crystals.....	89
T.W. Coyle, R.P. Ingel and P.A. Willging	
Strength and Toughness of Mg-PSZ and Y-TZP Materials at Cryogenic Temperatures.....	97
S. Veitch, M. Marmach and M.V. Swain	
Crack Propagation in Mg-PSZ.....	107
M.J. Readey, A.H. Heuer and R.W. Steinbrech	

Cambridge University Press

978-1-107-41115-9 - Advanced Structural Ceramics: Materials Research Society

Symposia Proceedings: Volume 78

Editors: P. F. Becher, M. V. Swain and S. Sōmiya

Table of Contents

[More information](#)

**PART III - MECHANICAL PROPERTIES AND MICROSTRUCTURES
OF ZIRCONIA TOUGHENED CERAMICS**

Mechanical Property and Microstructure of TZP and TZP/ Al_2O_3 Composites.....	123
K. Tsukuma and T. Takahata	
Evaluation of Commercially Available Transformation Toughened Zirconia.....	137
J.J. Swab	
Mechanical Properties and Thermal Stability of Yttria-Doped Tetragonal Zirconia Polycrystals with Diffused Ceria in the Surface.....	147
T. Sato, S. Ohtaki, T. Fukushima, T. Endo and M. Shimada	
Strength Improvement in Transformation Toughened Ceramics Using Compressive Residual Surface Stresses.....	155
R.A. Cutler, J.J. Hansen, A.V. Virkar, D.K. Shetty and R.C. Winterton	
Zirconia Dispersed Mullite Ceramics Through Hot-Pressing of Amorphous $\text{ZrO}_2\text{-SiO}_2\text{-Al}_2\text{O}_3$ Obtained by Rapid Quenching.....	165
M. Yoshimura, T. Noma, Y. Hanaue and S. Sōmiya	

PART IV - MECHANICAL BEHAVIOR OF REINFORCED CERAMIC COMPOSITES

Strength and Interfacial Properties of Ceramic Composites.....	175
D.B. Marshall	
The Strength of Fibres in All-Ceramic Composites.....	181
K. Kendall, N.McN. Alford and J.D. Birchall	
Weibull Modulus of Toughened Ceramics.....	189
K. Kendall, N.McN. Alford and J.D. Birchall	
Effect of Changes in Grain Boundary Toughness on the Strength of Alumina.....	199
R.F. Cook	
Erosion of a Silicon Carbide Whisker Reinforced Silicon Nitride.....	207
C.T. Morrison, J.L. Routbort and R.O. Scattergood	
Comparison of Matrix Variation in Nicalon (SiC) Fiber Reinforced Composites.....	215
W.L. Johnson, III and R.G. Brasfield	
Interfacial Characterizations of Fiber-Reinforced SiC Composites Exhibiting Brittle and Toughened Fracture Behavior.....	223
M.H. Rawlins, T.A. Nolan, D.P. Stinton and R.A. Lowden	
Analysis by SIMS and by EELS-EDX in a Stem of SiC Fibers Reinforced Composites.....	231
M. Lancin, F. Anxionnaz, M. Schumacher, O. Dugne and P. Trebbia	

Cambridge University Press

978-1-107-41115-9 - Advanced Structural Ceramics: Materials Research Society

Symposia Proceedings: Volume 78

Editors: P. F. Becher, M. V. Swain and S. Sōmiya

Table of Contents

[More information](#)

PART V – FRACTURE AND DEFORMATION BEHAVIOR IN CERAMIC COMPOSITES

Strain and Fracture in Whisker Reinforced Ceramics.....	241
P. Angelini, W. Mader and P.F. Becher	
On Prevalent Whisker Toughening Mechanisms in Ceramics.....	259
A.G. Evans, M. Rühle, B.J. Dagleish and M.D. Thouless	
Microstructure Development in Si_3N_4 -Based Composites.....	273
S.T. Buljan and G. Zilberstein	
Deflection-Toughened Corundum-Rutile Composites.....	283
S. Hori, H. Kaji, M. Yoshimura and S. Sōmiya	
Processing and Creep Performance of Silicon Carbide Whisker Reinforced Silicon Nitride.....	289
J.R. Porter, F.F. Lange and A.H. Chokshi	
Deformation Behavior of SiC Whisker Reinforced Si_3N_4	295
R.D. Nixon, S. Chevacharoenkul, M.L. Buckabee, S.T. Buljan and B.F. Davis	
Author Index.....	303
Subject Index.....	305