

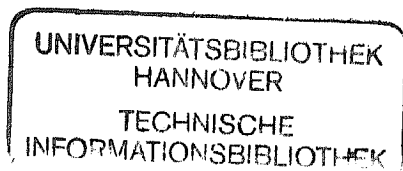
# COMPLEX MICROSTRUCTURES

*Edited by*  
R. STEVENS  
*Department of Ceramics, University of Leeds.*

*and*

D. TAYLOR  
*Fairey Tecramics Limited, Filleybrooks,  
Stone, Staffordshire, ST15 0PU.*

BRITISH CERAMIC PROCEEDINGS  
No. 42 MARCH 1989



Published by The Institute of Ceramics  
Shelton, Stoke-on-Trent, Staffs. U.K.

Rev 439  
(42)

# Contents

1. Mechanical Behaviour of a Whisker-Reinforced Alumina at Elevated Temperatures <i>H. Hübner and O. K. Lorenz</i>	1
2. Acoustic Emission Monitoring during Thermal Shock of Alumina Ceramics <i>I. Thompson and R. D. Rawlings</i>	15
3. Fabrication and Microstructure of Sialon-SiC Composites <i>R. M. Bower, A. J. Carr and A. Hendry</i>	25
4. Crystal Structure and Microstructure of Some New Silicon Aluminium Carbonitrides <i>R. J. Oscrift, P. Korgul and D. P. Thompson</i>	33
5. Pressureless Sintering of Pre-Prepared Sialon Powders <i>H. J. Edrees and A. Hendry</i>	49
6. Microstructure and Mechanical Properties of 'Silceram' Glass-Ceramic Produced by a Powder Route <i>H. S. Kim, R. D. Rawlings and P. S. Rogers</i>	59
7. Crystallization Behaviour of N- $\alpha$ -Wollastonite Glasses <i>P. Korgul and D. P. Thompson</i>	69
8. Microstructure of Submicron Powders and Green Compacts <i>K. Kendall</i>	81
9. On the Dispersion of Unary and Binary Ceramic Powders in Polymer Blends <i>J. G. Zhang, M. J. Edirisinghe and J. R. G. Evans</i>	91
10. Design and Fabrication Principles for Two-Phase Ceramic Composites <i>M. W. Real and D. J. Gault</i>	101
11. Strengthening of Aluminium Titanate by Addition of Zirconia and Zirconium Silicate <i>V. C. Pandolfelli, I. Nettleship, R. Stevens, J. A. Varela and E. Longo</i>	109
12. Microstructure Development during the Reaction Sintering of Alumina and Titania to Produce Aluminium Titanate <i>H. A. J. Thomas and R. Stevens</i>	117
13. The Microstructure of Zirconia Thermal Barrier Coatings <i>P. D. Harmsworth and R. Stevens</i>	123
14. Electrical Property Development in ZrO <sub>2</sub> -CeO <sub>2</sub> -Y <sub>2</sub> O <sub>3</sub> Based Ceramics <i>N. Khan and C. Leach</i>	133

15. The Influence of Titania on Stabilization and Sintering of Tetragonal Zirconia	139
<i>V. C. Pandolfelli, I. Nettleship and R. Stevens</i>	
16. Zirconia Toughening of Cordierite and Anorthite Glass Ceramics . . . . .	149
<i>Y. Cheng and D. P. Thompson</i>	
17. Computer Simulations of R-Curve Behaviour in ZrO <sub>2</sub> Ceramics . . . . .	159
<i>D. J. Browne and H. W. Chandler</i>	
18. Surface Transformation and Toughening of TZP Ceramics by Low Temperature Ageing . . . . .	167
<i>J. Wang and R. Stevens</i>	
19. Microstructure and Properties of Oxide-Graphite Composite Materials. I. Densification Behaviour During Compaction and the Development of Porosity on Firing . . . . .	179
<i>P. O. R. C. Brant, T. W. Button and B. Rand</i>	
20. Microstructure and Properties of Oxide-Graphite Composite Materials. II. Microstructure—Property Relationships in Model Systems . . . . .	193
<i>T. W. Button and B. Rand</i>	
21. Double Dilution X-Ray Diffraction Method for Quantitative Phase Analysis of Multiphase Systems . . . . .	201
<i>A. Monshi and P. F. Messer</i>	
22. Some Observations on the Structure of Zinc Oxide Varistors . . . . .	213
<i>M. G. Gee and M. Stewart</i>	
23. The Microstructures and Low Frequency Dielectric Properties of Some Zirconium Titanium Stannate (ZTS) Ceramics . . . . .	225
<i>F. Azough and R. Freer</i>	
24. Characterization of High T <sub>c</sub> Superconductors . . . . .	233
<i>I. Elphinstone, A. J. Carr and A. Hendry</i>	
Author Index . . . . .	245
Subject Index . . . . .	247