

Table of Contents

(in order of presentation)

1. *High Pressure Surface Science of Semiconductors and Ceramics*
Yury Gogotsi and Vladislav Domnich
2. *Characterizing Residual Stress in Scribes on Single Crystal Silicon Using Deflection Measurements: Supplemented with Raman Characterization*
Travis Randall and Ron Scattergood
3. *Electrical and Optical Detection and Heating of the High Pressure Metallic Phase of Silicon In-situ During Scratching with Diamond and its effect on the material's hardness*
John A. Patten, Lei Dong, and Jimmie A. Miller
4. *Phase Transformation in Silicon – Experiment and Modelling*
Liangchi Zhang
5. *Ductile Regime Machining of Silicon Nitride: A Numerical Study using Drucker-Prager Material Model*
Satya K. Ajjarapu, Ronnie R. Fesperman, John A. Patten and Harish P. Cherukuri
6. *Extending Electrical Resistivity Measurements in Micro-scratching of Silicon: Toward Optimal Thermal Modeling of Ductile Regime Machining for MEMS/NEMS*
Hisham A. Abdel-Aal
7. *Phase Transformation and Cracking in Brittle Materials during Nanoindentation*
Jae-il Jang, Songqing Wen, and George M. Pharr
8. *New Nanoindentation and Scanning Probe Tools and Techniques*
Warren C. Oliver
9. *Plasticity and Fracture of Semiconductors*
P. Pirouz, M. Zhang, S. Wang and J.L. Demeenet
10. *The Effect of Crystallographic Orientation on Ductile Material Removal in Silicon*
Brian P. O'Connor, Eric R. Marsh, and Jeremiah A. Couey
11. *Ceramic Machining Using Single-Point Carbon Nanotube Tools*
Jones B. Arnold and Roland D. Seals
12. *Effects of Alcohols on Diamond Machining of Materials*
S. Hsu (presented by Richard Gates)
13. *Nano/Micro-Tribology of Chemical-Mechanical Polishing*
Norm V. Gitis
14. *V Raman Scattering in 6H-SiC Indents*
Jennifer J. Huening, Meng Liang, Jae-il Jang, George M. Pharr, Xiang Chen, Leah Bergman and Robert J. Nemanich
15. *Nanoindentation and Raman Microspectroscopy Studies of Boron Carbide Single Crystals*
Vladislav Domnich, Thomas Juliano, Daibin Ge, and Yury Gogotsi
16. *Characterization of Subsurface Damage and Phase Transformations of Ceramics and Metallic Glass Alloys Using Scanning Acoustic Microscopy*
Jun Qu, Samuel B. McSpadden, Jr., and Peter J. Blau
17. *Chemical Hardness Density and Mechanically Induced Phase Transformations*
John J. Gilman
18. *Molecular Dynamics Simulations of Nanoindentation of β -SiC with Diamond Indenter*
A. Noreyan, J.G. Amar, and I. Marinescu
19. *Ductile Regime Nano-Machining of Single Crystal Silicon Carbide*

John Patten and Wei Gao