

Associate Professor Alex A. Volinsky, Ph.D.

University of South Florida, Department of Mechanical Engineering, 4202 E. Fowler Ave. ENB 118,
Tampa FL 33620; Phone: (813) 974-5658, Fax: (813) 974-3539; volinsky@usf.edu
www.eng.usf.edu/~volinsky

Education	University of Minnesota, Ph.D. Materials Science and Engineering	Minneapolis, MN
	Thesis title: “ <i>The Role of Geometry and Plasticity in Thin, Ductile Film Adhesion</i> ” Academic advisor: Professor W.W. Gerberich	6/96 – 10/00
Experience	Moscow State University of Aviation Technology (MATI.ru)	Moscow, Russia
	<i>Engineering Degree</i> in Metallurgical Engineering, Materials Science, GPA: 4.0/4.0 Thesis title: “ <i>Mathematical Model and Process Development for Producing Metal Matrix Composite Tubes by Means of Thermocompression</i> ”	9/90 – 2/96
	University of South Florida, Department of Mechanical Engineering	Tampa, FL
	<i>Associate Professor</i>	8/09 – present
	Research interests: Thin films processing, mechanical properties and characterization. Adhesion and fracture of thin films. Microelectronics and MEMS reliability. Irradiated materials properties and X-Ray diffraction. Courses developed and taught: Materials Selection in Mechanical Design, Advanced Materials, Mechanics of Materials. Lab Equipment: Hysitron Triboindenter, Rigaku Rotaflex 200BH X-Ray source, Bohlin CS-50 rheometer, Tencor P-20H profiler, Flexus, FSM film stress tool, Tukon Microhardness tester, optical microscopes, misc. equipment.	
	University of Science and Technology Beijing	Beijing, China
	<i>Visiting Professor</i>	10 – 12/10, 2 – 5/11
	Taught Advanced Materials graduate course and managed joint projects	
	European X-ray Free Electron Laser, XFEL (www.xfel.eu)	Hamburg, Germany
	<i>Visiting Researcher</i>	6 – 7/10
Lead a group of students to design X-Ray laser optics elements		
Technical University Dresden, Institute of Structural Physics	Dresden, Germany	
<i>Visiting Professor</i>	5 – 7/08	
Lead a group of graduate and undergraduate students to study X-Ray optics elements thermomechanical behavior and oil microevaporation		
Jagiellonian University, Faculty of Physics, Astronomy and Computer Science	Krakow, Poland	
<i>Visiting Professor, Marie Curie Host Fellow</i>	5 – 6/05, 5 – 8/07	
Motorola: Digital DNA Labs, Process and Materials Characterization Lab	Tempe, AZ	
<i>Engineering Materials Senior Staff Member</i> , Platforms and Strategic Research Group	12/02 – 08/03	
Conducted principal research employing XRD, SEM, FIB, FA analytical techniques for advanced technologies development		
<i>Team Leader, Senior Member of Technical Staff</i>	Mesa, AZ	
Combinational & Power Technology, HiPerMOS & Bipolar Analysis Groups	10/00 – 12/02	
Managing and conducting analytical support for production and R&D with SEM, FIB, XRD, FA (Hip6, 7; CDR1, 3; SmartMOS; MRAM Motorola technologies)		
Motorola: Advance Product Research and Development Labs/MOS13 fab	Austin, TX	
<i>Senior Yield Enhancement Engineer</i>	04/01 – 10/01	
Excite dark filed defect metrology tool owner (Applied Materials). Solving problems with new HIP6/HIP7 copper technology in production, improving yield and product quality. Work conducted saved Motorola 3.6 million dollars.		
Motorola: Digital DNA Labs, Semiconductor Product Sector	Phoenix, AZ	
<i>Summer Intern Engineer</i>	4/00 – 7/00	
Worked in the Interconnect Systems Lab, Process and Materials Characterization Lab, and Physical Science Research Lab on Cu and low-K materials adhesion and mechanical properties, solving problems on the metallization and packaging levels.		

Sandia National Labs: Materials and Engineering Science Center

Livermore, CA

Graduate Research Associate

5/99 – 8/99

Developed and implemented test techniques, equipment and models for measuring thin film adhesion by nanoindentation at elevated temperatures. Investigated the effect of film thickness, test temperature and environment on adhesion and mechanical properties of metallic thin films on dielectric substrates. Investigated mechanical properties of soft polymer films on metal substrates.

Microtechnology Laboratory /Center for Interfacial Engineering

Minneapolis, MN

Graduate Researcher

6/96 – 10/00

Microelectronics fabrication (thermal oxidation, thin film deposition and thermal processing, pattern transfer, thin film characterization, etc.)
Investigated the micro-mechanical and tribological properties of thin films using nanoindentation techniques, SEM and SPM microscopy, established scaling laws for adhesion of metallic films to semiconductor substrates for interconnect applications. Improved data acquisition system for IBM continuous micromechanical tester.

Department of Chemical Engineering and Materials Science

Minneapolis, MN

Teaching/Research Assistant

9/96 – 10/00

Conducted principle research focused on novel techniques for thin film adhesion measurement and investigation of nano-mechanical properties of thin films and multilayers. This contributes to an understanding of film thickness, temperature and contamination layer effects on the adhesion and plasticity-induced dislocation structures in thin films and coatings. Developed and conducted lab experiments, graded homework and exams for Introduction to Materials Science, Failure Analysis, and Materials Design and Performance courses.

Moscow State University of Aviation Technology

Moscow, Russia

Research Assistant

1/91 – 2/96

Developed a model and tested equipment for production of metal matrix fiber composite tubes by means of thermocompression.

Funding

National Science Foundation, NACE International, Motorola, Freescale Semiconductor, Seagate Technology, Texas Instruments

Professional Societies

Materials Research Society (Public Affairs Committee Member), ASME International, ASM International, TMS, NACE International, ASEE

Technical Skills

Scanning electron microscopy (SEM); Focused Ion Beam (FIB) microscopy/micro machining; X-Ray diffractometry (XRD), Failure analysis (Emission microscopy, FIB), atomic force microscopy (AFM); Mechanical testing using Hysitron Triboscope, Triboindenter, Nanoindenter II, XP and IBM micromechanical tester (MMT), and servohydraulic testing equipment; dynamic mechanical analysis (DMA); thin film deposition and general microelectronics processing; mechanical and electrochemical sample preparation.

Honors and Activities

- Reviewer for: NSF, DOE, NC State University, Nature Materials, Journal of Materials Research, Thin Solid Films, International Journal of Fracture, ASME and MRS Proceedings, Fatigue and Fracture of Engineering Materials and Structures, Tribology International, Metallurgical Transactions A and others.
- 2007 Fall MRS Conference, Fundamentals of Nanoindentation and Nanotribology IV Symposium AA Session Chair, Boston, MA, 11/07
- 2007 Tau Beta Pi Engineering Outstanding Faculty Researcher Award
- JOM Technical Advisor for the TMS Nanomechanical Behavior Committee
- 2008 NACE Environmentally Assisted Cracking (TEG 186X) Symposium Chair
- 2007 NACE TEG 186X - Environmentally Assisted Cracking Committee Vice Chair
- Participant of the US-Japan Young Scientists Symposium on Nanotechnology and Nanomanufacturing, 11/06
- Who's who in Engineering Academia listing at www.academickeys.com
- 2006 Spring MRS F Symposium Organizer: Materials, Technology, and Reliability of Low-k Dielectrics and Copper Interconnects, 05-06
- Marie Curie Host Fellowship Recipient, 5-7/05
- International Journal of Nanotechnology Guest Editor, 7/05
- NanoPol 2005 "Frontiers of Nanomechanical Testing" Workshop Organizer, Krakow, Poland, 6/05

- NGCM2004 Best Presentation Award, 9/04
- Board of Review Member and Key Reader for Metallurgical and Materials Transactions A, since 1/04
- One of the most cited recent papers in the field of Materials Science determined by ISI® for February 2004: A..A. Volinsky, N.R. Moody, W.W. Gerberich, Acta Mater. Vol. 50/3, pp. 441-466, 2002, 2/04
- 2004 Mechanical Integrity and Reliability of Electronic Materials Symposium Organizer for the 2004 ASME International Mechanical Engineering Congress, 11/04
- 2004 Nano and Giga Challenges in Microelectronics Conference Co-organizer, 9/04
- Microelectronic Engineering July 2004 Special Issue Guest Editor, 04
- 2003 Symposium Organizer for the Summer ASME Meeting of the Applied Mechanics and Material Division, Symposium on Characterization and Mechanical Reliability of Advanced Electronic Materials at Nanoscale, 6/03
- 2002 Fall MRS Best Poster Award Nominee, 12/02
- 2002 Nano and Giga Challenges in Microelectronics Conference Organizer, 9/02
- 2001 Fall MRS Graduate Student Awards Committee, 11/01
- 2001 Motorola Bravo Award for Hip7 technology certification, 10/01
- Motorola SPS Engineering Technical Ladder Awards, since 4/01
- Silver Quill Motorola Publication Awards, since 10/00
- Motorola Direct Scholarship, 9/00
- Materials Research Society Public Affairs Committee, since 8/98
- Materials Research Society Gateway Taskforce, 11/99 - 11/01
- Materials Research Society Minnesota Chapter Travel Scholarship, 11/99
- Materials Research Society Graduate Student Award, 4/99
- 1998 Fall MRS Conference, Intergranular/Interfacial Fracture Symposium Session Chair, Boston, MA, 11/98
- University of Minnesota Graduate School Fellowship, 9/96.
- XXI and XXII Gagarin Conference First Prizes, 4/95 and 4/96
- The Russian Ministry of Science and Higher Education Research Scholarship, 1/95
- Bauman University, Moscow Universities Engineering Drawing Competition Award, 3/91
- Moscow State University of Aviation Technology, First Prize in the Technical Olympiad, 2/90
- Moscow State University of Aviation Technology, Scientific Council Fellowship Award, 2/90-2/96

Patent

Bidirectional Electrowetting Actuation with Voltage Polarity Dependence, N.B. Crane, P. Mishra, A.A. Volinsky, US patent application filed on 12/16/2010

Publications

Books and Book Chapters:

1. *Fundamentals of Engineering Examination Sample Questions: General Engineering*, A. Kaw, P. Pendyala, K. Nora, A.A. Volinsky, M. Weng, S. Ioannou, S. Campbell, G. Besterfield, Lulu.com Publishing, 2009
2. *Measurements for Mechanical Reliability of Thin Films*, D.T. Read and A.A. Volinsky, NATO Science for Peace and Security Series C: Environmental Security, Security and Reliability of Damaged Structures and Defective Materials, (G. Pluvinage, A. Sedmak, editors), Springer, Dordrecht, Netherlands, , in cooperation with the NATO Public Diplomacy Division, pp. 337-358, 2009
3. *Thin Films for Microelectronics and Photonics: Physics, Mechanics, Characterization, and Reliability*, D.T. Read and A.A. Volinsky, Chapter 4 in Micro- and Opto-Electronic Materials and Structures: Physics, Mechanics, Design, Reliability, Packaging, Volume 1 Materials Physics / Materials Mechanics, (Ephraim Suhir, Y.C. Lee, and C.P. Wong, editors), Springer, New York, pp. 135-180, January, 2007
4. *Nanoindentation Methods in Interfacial Fracture Testing, Chapter 13 in Comprehensive Structural Integrity* A.A. Volinsky, D.F. Bahr, M.D. Kriese, N.R. Moody, W.W. Gerberich, (I. Milne, R.O. Ritchie, B. Karihaloo, editors-in-chief), Volume 8: Interfacial and Nanoscale Failure (W.W. Gerberich, W. Yang, editors), Elsevier, pp. 453-493, 2003

Edited Journals and Volumes:

1. T.Y. Tsui, Y-C. Joo, L. Michaelson, M. Lane, A.A. Volinsky, editors. Materials, Technology and Reliability of Low-k Dielectrics and Cooper Interconnects (Materials Research Society Symposium Proceedings Volume 914), Warrendale, PA, USA, 2006
2. International Journal of Nanotechnology Special Issue, "Nanotechnology Toolkit", Proceedings of the 2004 Nano and Giga Challenges in Microelectronics Conference, Krakow Poland
3. Microelectronic Engineering Special Issue, Volume 75, Issue 1, Pages 1-126 (July 2004), Proceedings of the Symposium on Characterization and Mechanical Reliability of Advanced Electronic Materials at Nanoscale, 2003 ASME Mechanics and Materials Conference, Phoenix, AZ, USA, 17 - 20 June 2003, edited by Alex A. Volinsky

Journal Articles:

1. *Fe₃O₄ Magnetic Nanoparticles Synthesis from Tailings by Ultrasonic Chemical Co-precipitation*, S. Wu, A. Sun, F. Zhai, J. Wang, W. Xu, Q. Zhang, A.A. Volinsky, Materials Letters, Vol. 65(12), pp. 1882-1884, 2011
2. *Annealing Effects on Microstructure and Mechanical Properties of Sputtered Multilayer Cr_{(1-x)Al_xN} Films*, X. Pang, H. Yang, X. Liu, K. Gao, Y. Wang, A.A. Volinsky, A.A. Levin, Thin Solid Films, accepted, 2011
3. *AlTiN Layer Effect on Mechanical Properties of Ti-doped Diamond-like Carbon Composite Coatings*, X. Pang, H. Yang, K. Gao, Y. Wang, A.A. Volinsky, Thin Solid Films, accepted, 2011
4. *Thermoporometry Study of Coagulation Bath Temperature Effect on Polyacrylonitrile Fibers Morphology*, P. Sobhanipour, R. Cheraghi, A.A. Volinsky, Thermochimica Acta, Vol. 518, pp. 101-106, 2011
5. *Local Piezoelectric Effect on Single Crystal ZnO Microbelt Transverse I-V Characteristics*, M. Li, Y. Su, W.Y. Chu, L.J. Qiao, A.A. Volinsky, G. Kravchenko, Appl. Phys. Lett., Vol. 98(8), p. 082105, 2011
6. *Humidity Effects on (001) BaTiO₃ Single Crystal Surface Water Adsorption*, D.Y. He, L.J. Qiao, A.A. Volinsky, Y. Bai, M. Wu, W.Y. Chu, Appl. Phys. Lett., Vol. 98(6), p. 062905, 2011
7. *Mn-Zn Soft Magnetic Ferrite Nanoparticles Synthesized from Spent Alkaline Zn-Mn Batteries*, P. Hu, D.A. Pan, S. Zhang, J. Tian, A.A. Volinsky, Journal of Alloys and Compounds, Vol. 509(9), pp. 3991-3994, 2011
8. *Heat Treatment Effects on Fe₃O₄ Nanoparticles Structure and Magnetic Properties Prepared by Carbothermal Reduction*, P. Hu, S. Zhang, H. Wang, D. Pan, J. Tian, Z. Tang, A.A. Volinsky, Journal of Alloys and Compounds, Vol. 509(5), pp. 2316-2319, 2011
9. *Epoxy Resin Effect on Anisotropic Nd-Fe-B Rubber-bonded Magnets Performance*, F. Zhai, A. Sun, D. Yuan, J. Wang, S. Wu, A.A. Volinsky, Z. Wang, Journal of Alloys and Compounds, 509, pp. 687-690, 2011
10. *Theoretical Explanation of Ag/Cu and Cu/Ni Nanoscale Multilayers Softening*, F. Ren, S. Zhao, W. Li, B. Tian, L. Yin, A.A. Volinsky, Materials Letters, Vol. 65(1), pp. 119-121, 2011
11. *Fuel Additives and Heat Treatment Effects on Nanocrystalline Zinc Ferrite Phase Composition*, P. Hu, D. Pan, X. Wang, J. Tian, J. Wang, S. Zhang, A.A. Volinsky, Journal of Magnetism and Magnetic Materials, Vol. 323, pp. 569-573, 2011
12. *Microstructure and Mechanical Properties of Ti/AlTiN/Ti-Diamondlike Carbon Composite Coatings on Steel*, X. Pang, H. Yang, S. Shi, K. Gao, Y. Wang, A.A. Volinsky, Journal of Materials Research, Vol. 25, No. 11, pp. 2159- 2165, 2010
13. *Fracture of Colloidal Single Crystal Films Fabricated by Controlled Vertical Drying Deposition*, C. He, L. Ding, W. Yuren, A.A. Volinsky, D. Li, J. Heng, Phys. Rev. E, Vol. 82, No. 3, p. 031602, 2010
14. *Nanomechanical Properties of TiO₂ Granular Thin Films*, H. Yaghoubi, N. Taghavinia, E.K. Alamdari, A.A. Volinsky, ACS Applied Materials and Interfaces, 2 (9), pp. 2629-2636, 2010
15. *Growth Rate Effect on 3C-SiC Film Residual Stress on (100) Si Substrates*, R. Anzalone, C. Locke, J. Carballo, N. Piluso, A. Severino, G. D'Arrigo, A.A. Volinsky, F. La Via, S.E. Sadow, Materials Science Forum, Vols. 645-648, pp. 143-146, 2010
16. *Carbothermal Reduction Method for Fe₃O₄ Powder Synthesis*, H. Wang, P. Hu, D. Pan, J. Tian, S. Zhang, A.A. Volinsky, Journal of Alloys and Compounds, 502 (2), pp. 338-340, 2010
17. *Inductance-capacitance Resonance Effect in the Magnetolectric Composites Characterization System*, D.A. Pan, X.F. Wang, J.J. Tian, S.G. Zhang, A.A. Volinsky, L.J. Qiao, Applied Physics A, Vol. 100, No. 4, pp. 1069-1072, 2010
18. *Current-Voltage Characteristics of Lead Zirconate Titanate/Nickel Bilayered Hollow Cylindrical Magnetolectric Composites*, D.A. Pan., S.G. Zhang, J.J. Tian, J.S. Sun, A.A. Volinsky, L.J. Qiao, Chinese Physics B 19 (2), p. 027201, 2010
19. *Bidirectional Electrowetting Actuation with Voltage Polarity Dependence*, N. Crane, A.A. Volinsky, P. Mishra, A. Rajgadkar, M. Khodayari, Appl. Phys. Lett., Vol. 96, pp. 104103-3, 2010
20. *Characterization of Electrowetting Processes Through Force Measurements*, N. Crane, P. Mishra, A.A. Volinsky, Review of Scientific Instruments, Vol. 81, pp. 043902-7, 2010
21. *Application of the Inverse Wavelet Transform on Electrochemical Current Signals to Demonstrate the Essence of High-frequency Variations*, M. Khodayari, S.R. Allahkaram, A.A. Volinsky, Anti-Corrosion Methods and Materials, Vol. 57, No. 2, pp. 65-69, 2010
22. *Resonant Modes and Magnetolectric Performance of PZT/Ni Cylindrical Layered Composites*, D.A. Pan, S.G. Zhang, J.J. Tian, J.S. Sun, A.A. Volinsky, L.J. Qiao, Applied Physics A, Vol. 98, No. 2, pp. 449-454, 2010
23. *Heat Treatment Effects on Microstructure and Magnetic Properties of Mn-Zn Ferrite Powders*, P. Hu, H. Yang, D.A. Pan, H. Wang, J. Tian, S. Zhang, X. Wang, A.A. Volinsky, Journal of Magnetism and Magnetic Materials, Vol. 322(1), pp. 173-177, 2010
24. *3C-SiC Films on Si for MEMS Applications: Mechanical Properties*, C. Locke, G. Kravchenko, P. Waters, J.D. Reddy, K. Du, A.A. Volinsky, C.L. Frewin, S.E. Sadow, Materials Science Forum, Vols. 615 - 617, pp. 633-636, 2009
25. *Geometry Effects on Magnetolectric Performance of Layered Ni/PZT Composites*, D.A. Pan, J.J. Tian, S.G. Zhang, J.S. Sun, A.A. Volinsky, L.J. Qiao, Materials Science Engineering B, Vol. 163(2), pp. 114-119, 2009
26. *Investigation of Microstructure and Mechanical Properties of Multi-layer Cr/Cr₂O₃ Coatings*, X. Pang, K. Gao, F. Luo, Y. Emirov, A.A. Levin, A.A. Volinsky, Thin Solid Films, Vol. 517, pp. 1922-1927, 2009

27. *Simple Model of the Magnetoelectric Effect in Layered Cylindrical Composites*, D.A. Pan, S.G. Zhang, [A.A. Volinsky](#), L.J. Qiao, Journal of Physics D: Applied Physics, Vol. 41, No. 20, p. 205008, 2008
28. *Electro-deposition Current Density Effect on Ni/PZT Layered Magnetoelectric Composites Performance*, D.A. Pan, S.G. Zhang, [A.A. Volinsky](#), L.J. Qiao, Journal of Physics D: Applied Physics, Vol. 41, No. 19, p. 195004, 2008
29. *Concentric Ring Pattern Formation in Heated Chromium-gold Thin Films on Silicon*, J.S. Randhawa, A. Bernfeld, M. Keung, [A.A. Volinsky](#), D.H. Gracias, Applied Physics Letters, Vol. 92(21), p. 211907, 2008
30. *Shape and Size Effects on Layered Ni/PZT/Ni Composites Magnetoelectric Performance*, D.A. Pan, S.G. Zhang, [A.A. Volinsky](#), L.J. Qiao, Journal of Physics D: Applied Physics, Vol. 41, No. 17, p. 172003, 2008
31. *Giant Magnetoelectric Effect in Ni-PZT Composite Cylindrical Structure*, D.A. Pan, Y. Bai, [A.A. Volinsky](#), W.Y. Chu, L.J. Qiao, Applied Physics Letters, Vol. 92(5), p. 052904, 2008
32. *Annealing Effects on Microstructure and Mechanical Properties of Chromium Oxide Coatings*, X. Pang, F. Luo, H. Yanga, Y. Wanga, K. Gao, [A.A. Volinsky](#), Thin Solid Films, Vol. 516, pp. 4685-4689, 2008
33. *Elastic Anisotropy Effect on Indentation-induced Thin Film Interfacial Delamination*, B. Yang, [A.A. Volinsky](#), Engineering Fracture Mechanics, Vol. 75, No. 10 pp. 3121-3130, 2008
34. *Microstructure and Mechanical Properties of Chromium Oxide Coatings*, X. Pang, [A.A. Volinsky](#), K. Gao, Journal of Materials Research, Vol. 22, No. 12, pp. 3531- 3537, 2007
35. *Interfacial Microstructure of Chromium Oxide Coatings*, X. Pang, K. Gao, H. Yang, L. Qiao, Y. Wang, [A.A. Volinsky](#), Advanced Engineering Materials, Vol. 9, No. 7, pp. 594-599, 2007
36. *Stress and Moisture Effects on Thin Film Buckling Delamination*, P. Waters, [A.A. Volinsky](#), Experimental Mechanics, Vol. 47, No. 1, pp. 163-170, 2007
37. *Application of the Standard Porosimetry Method for Nanomaterials*, Y.M. Volkovich, A.V. Sakars and [A.A. Volinsky](#), International Journal of Nanotechnology, Vol. 2, No. 3, pp. 292-302, 2005
38. *TEM Study of Spontaneous Surface Oxide Reduction in Metal Stacks*, W. Qin, [A.A. Volinsky](#), N.D. Theodore, Thin Solid Films 473, pp. 236-240, 2005
39. *Gate Oxide Metrology and Silicon Piezooptics*, S. Zollner, R. Liu, [A.A. Volinsky](#), B.-Y. Nguyen, C.S. Cook, Thin Solid Films 455-456, pp. 261-265, 2004
40. *FIB Failure Analysis of Memory Arrays*, [A.A. Volinsky](#), L. Rice, W. Qin, N.D. Theodore, Microelectronic Engineering, Vol. 75/1, pp. 3-11, 2004
41. *Tensile Crack Patterns in Mo/Si Multilayers on Si Substrates Under High-temperature Bending*, D.C. Meyer, T. Leisegang, A.A. Levin, P. Paufler, [A.A. Volinsky](#), Applied Physics A 78, pp. 303-305, 2004
42. *Nanoindentation of Au and Pt/Cu Thin Films at Elevated Temperatures*, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, Journal of Materials Research, Vol. 18, No. 9, pp. 2650-2657, 2004
43. *Effects of Near-tip Rotation on Pre-buckle Crack Growth of Compressed Beams Bonded to a Rigid Substrate*, Q.D. Yang, [A.A. Volinsky](#), International Journal of Solids and Structures 41, pp. 2711-2729, 2004
44. *Nanoindentation Techniques for Assessing Mechanical Reliability at Nanoscale*, [A.A. Volinsky](#) and W.W. Gerberich, Microelectronic Engineering, Vol. 69/2-4, pp. 519-527, 2003
45. *Effects of Diffusion on Interfacial Fracture of Gold-chromium Hybrid Microcircuit Film*, N.R. Moody, D.P. Adams, D. Medlin, T. Headley, N. Yang, [A.A. Volinsky](#), International Journal of Fracture, Vol. 119, No. 4, pp. 407-419, 2003
46. *Mechanical Properties and Fracture Toughness of Organo-silicate Glass (OSG) Low-k Dielectric Thin Films for Microelectronic Application*, J.B. Vella, I.S. Adhihetty, K. Junker, and [A.A. Volinsky](#), International Journal of Fracture, Vol. 119, No. 4, pp. 487-499, 2003
47. *Length Scales for the Fracture of Nanostructures*, W.W. Gerberich, J.M. Jungk, M. Li, [A.A. Volinsky](#), J.W. Hoehn, K.Yoder, International Journal of Fracture, Vol. 119, No. 4, pp. 387-405, 2003
48. *Fiducial Mark and CTOA Estimates of Thin Film Adhesion*, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, International Journal of Fracture, Vol. 119, No. 4, pp. 431-439, 2003
49. *Fracture Toughness, Adhesion and Mechanical Properties of Low-K Dielectric Thin Films Measured by Nanoindentation*, [A.A. Volinsky](#), J.B. Vella, W.W. Gerberich, Thin Solid Films 429/1-2 pp. 201-210, 2002
50. *Fiducial Mark and Nanocrack Zone Formation During Thin Film Delamination*, [A.A. Volinsky](#), N.R. Moody, M.L. Kottke, W.W. Gerberich, Philosophical Magazine A, Vol. 82, No. 17/18, pp. 3383-3391, 2002
51. ***Interfacial Toughness Measurements for Thin Films on Substrates*, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, Acta Mater. Vol. 50/3, pp. 441-466, 2002**
52. *Crack Arrest Toughness Assessment Through Thin Film Fiducial Marks*, [A.A. Volinsky](#), M.L. Kottke, N.R. Moody, W.W. Gerberich, Engineering Fracture Mechanics Vol. 69, No. 13, pp. 1511-1515, 2002
53. *Substrate Effects on Indentation Plastic Zone Development in Thin Soft Films*, D.E. Kramer, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, Journal of Materials Research, Vol. 16, No. 11, pp. 3150-3157, 2001
54. *The Role of Plasticity in Bi-material Fracture With Ductile Interlayers*, N.I. Tymiak, [A.A. Volinsky](#), M.D. Kriese, S.A. Downs and W.W. Gerberich, Metallurgical and Materials Transactions A; Vol. 31A; No. 3A; pp 863-872A, 2000
55. *Nanoindentation-Induced Defect-Interface Interactions: Phenomena, Methods and Limitations*, W.W. Gerberich, D. Kramer, N. Tymiak, [A.A. Volinsky](#), D.F. Bahr, and M. Kriese, Acta Mater. 47(15), pp. 4115-23, 1999

Conference Proceedings Papers:

1. *MEMS Slider Friction Characterization*, [A.A. Volinsky](#), C. Lusk, Hysitron Application Note, www.hysitron.com, 2010
2. *Compliant MEMS Device Actuation and Fracture*, [A.A. Volinsky](#), D. Ke, C. Lusk, 12th International Congress on Fracture Proceedings, Ottawa, Canada, 2009
3. *Temperature Effect on Pump Oil and Alkanes Evaporation*, N.A. Waldstein, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 1151E, SS3.4, 2008
4. *Mechanical Properties of Evaporated Gold Films. Hard Substrate Effect Correction*, K. Du, X. Pang, C. Chen, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 1086E, U8.41, 2008
5. *Residual Stress in CVD-grown 3C-SiC Films on Si Substrates*, [A.A. Volinsky](#), G. Kravchenko, P. Waters, J. Deva Reddy, C. Locke, C. Frewin, S.E. Sadow, Mat. Res. Soc. Symp. Proc. Vol. 1069, D3.5, 2008
6. *Moisture Effects on Gold Nanowear*, M. Pendergast, [A.A. Volinsky](#), X. Pang, R. Shields, Mat. Res. Soc. Symp. Proc. Vol. 1085E, T5.10, 2008
7. *Adhesion and Friction of Chromium Oxide Coatings in Air and in Water*, X. Pang, [A.A. Volinsky](#), K. Gao, NACE International Corrosion 2008 Conference Proceedings, Paper 01555, March 16-20, New Orleans, LA, 2008
8. *Tip-induced Calcite Single Crystal Nanowear*, R. Gunda, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 1049, AA5.15, 2008
9. *Pattern Formation During Nanowear of Gold Films*, M.E. Pendergast, X. Pang, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 1059E, KK10.3, 2008
10. *Mechanical Properties of Single and Polycrystalline SiC Thin Films*, J. Deva Reddy, [A.A. Volinsky](#), C. Frewin, C. Locke, S.E. Sadow, Mat. Res. Soc. Symp. Proc. Vol. 1049, AA3.6, 2008
11. *Electrowetting Forces in an Electrowetting-Driven Oscillator*, N.B. Crane, [A.A. Volinsky](#), V. Ramadoss, M. Nellis, P. Mishra, X. Pang, Mat. Res. Soc. Symp. Proc. Vol. 1052, DD8.1, 2008
12. *Compliant MEMS Motion Characterization by Nanoindentation*, J.G. Chouefati, C. Lusk, X. Pang, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 1052, DD6.24, 2008
13. *Nanoripples Formation in Single Crystals*, M.E. Pendergast, R. Gunda, A.A. Volinsky, Mat. Res. Soc. Symp. Proc. Vol. 1021E, HH5.9, 2007
14. *Novel Adhesion Test for Environmentally Assisted Fracture in Thin Films*, [A.A. Volinsky](#) and P. Waters, Tri-Service Conference on Corrosion, November 14-18, 2005, Orlando, FL, Proceedings Paper 104, 2005
15. *Mechanical Aspects of Anti-Corrosive Coatings Performance Tests*, [A.A. Volinsky](#), NACE International Corrosion 2006 Conference Proceedings, Paper 06041, March 12-16, San Diego, CA, 2005
16. *Moisture Effects on Copper Thin Film Adhesion*, P.J. Waters, [A.A. Volinsky](#), Proceedings of IMECE: ASME 2005 Orlando FL, Nov. 5-11, paper 81532, 2005
17. *Stress-Induced Periodic Fracture Patterns in Thin Films*, [A.A. Volinsky](#), N.R. Moody, D.C. Meyer, 11th International Congress on Fracture Proceedings, Turin, Italy, 2005
18. *Micro-fluidics Applications of Telephone Cord Delamination Blisters*, [A.A. Volinsky](#), P. Waters, G. Wright, Mat. Res. Soc. Symp. Proc. Vol. 855E, W3.16, 2004
19. *Sub-Critical Telephone Cord Delamination Propagation and Adhesion Measurements*, [A.A. Volinsky](#), P. Waters, J.D. Kiely, E. Johns, Mat. Res. Soc. Symp. Proc. Vol. 854E, U9.5, 2004
20. *Irradiated Single Crystals for High Temperature Measurements in Space Applications*, [A.A. Volinsky](#), V. Timoshenko, V. Nikolaenko, V. Morozov, Mat. Res. Soc. Symp. Proc. Vol. 851, NN1.4, 2004
21. *Irradiated Cubic Single Crystal SiC as a High Temperature Sensor*, [A.A. Volinsky](#), L. Ginzburgsky, Mat. Res. Soc. Symp. Proc. Vol. 792, R5.3, 2003
22. *Fracture Patterns in Thin Films and Multilayers*, [A.A. Volinsky](#), D.C. Meyer, T. Leisegang, P. Paufler, Mat. Res. Soc. Symp. Proc. Vol. 795, U3.8, 2003
23. *Application of FIB/SEM and TEM to Single Bit Failure Analysis in SRAM arrays*, W. Qin, [A.A. Volinsky](#), L. Rice, L. Johnston, N.D. Theodore, Mat. Res. Soc. Symp. Proc. Vol. 782, A5.77, 2003
24. *Oxide Reduction in Advanced Metal Stacks for Microelectronic Applications*, W. Qin, [A.A. Volinsky](#), D. Werho, N. D. Theodore, Mat. Res. Soc. Symp. Proc. Vol. 786, E6.33, 2003
25. *Optical and Dielectric Properties of Eu- and Y-Polytantalate Thin Films*, V. Vasilyev, A. Drehman, H. Dauplaise, L. Bouthillette, M. Roland, [A. Volinsky](#), S. Zollner, and W. Qin, Mat. Res. Soc. Symp. Proc. Vol. 786, E6.33 2003
26. *Characterization Techniques for Evaluating Strained Si CMOS Materials*, Q. Xie, R. Liu, X. Wang, M. Canonico, E. Duda, S. Lu, C. Cook, [A.A. Volinsky](#), S. Zollner, S. G. Thomas, T. White, A. Barr, M. Sadaka, and B. Nguyen, AIP Conference Proceedings Vol 683(1) pp. 223-227, 2003
27. *Mechanical Reliability and Characterization of Modern Microelectronic Interconnect Structures*, [A.A. Volinsky](#), Nano-Engineering World Forum Proceedings, Marlborough MA, 2003
28. *Plasticity Effects on Interfacial Fracture of Thin Gold Films*, N.R. Moody, D.P. Adams, M. Cordill, D.F. Bahr, [A.A. Volinsky](#), Symposium on Thin Films, ICM-9, 9th International Conference on the Mechanical Behavior of Materials Proceedings, Geneva Switzerland, 2003
29. *"Incompressible" Pore Effect on the Mechanical Behavior of Low-K Dielectric Films*, [A.A. Volinsky](#), M.B. Palacio, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 750, Y9.9, 2003
30. *Experiments with In-situ Thin Film Phone Cord Delamination Propagation*, [A.A. Volinsky](#), Mat. Res. Soc. Symp. Proc. Vol. 749, W10.7, 2003

31. *Nanoindentation of Silicate Low-K Dielectric Thin Films*. J.B. Vella, [A.A. Volinsky](#), I.S. Adhietty, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 716, B12.12, 2002
32. *Effects of Interface Structure on Gold Film Adhesion*, N.R. Moody, D.P. Adams, N.Y.C. Yang, [A.A. Volinsky](#), W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 727, B5.3, 2002
33. *Residual Stress and Microstructure of Electroplated Cu Film on Different Barrier Layers*, [A.A. Volinsky](#), M. Hauschildt, J.B. Vella, N.V. Edwards, R. Gregory, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 695, pp. 27-32, 2002
34. *Fiducial Marks as Measures of Thin Film Crack Arrest Toughness*, [A.A. Volinsky](#), M.L. Kottke, N.R. Moody, I.S. Adhietty, W.W. Gerberich, 10th International Congress on Fracture Proceedings, Honolulu, HI, 2001
35. *Mechanical Properties, Adhesion, and Fracture Toughness of Low-K Dielectric Thin Films for Microelectronic Applications*, I.S. Adhietty, J.B. Vella, [A.A. Volinsky](#), C. Goldberg, W.W. Gerberich, 10th International Congress on Fracture Proceedings (ICF10), Honolulu, HI, 2001
36. *Effects of Diffusion on Interfacial Fracture of Multilayer Hybrid Microcircuit Films*, N.R. Moody, D. P. Adams, D. Medlin, [A.A. Volinsky](#), N. Yang, W.W. Gerberich, 10th International Congress on Fracture, Honolulu, HI, 2001
37. *Finite Element Analysis of the Precracked Line Scratch Test*, [A.A. Volinsky](#), L. Mercado, V. Sarihan, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 657, pp. EE591-EE596, 2001
38. *Microstructure and Mechanical Properties of Electroplated Cu Thin Films*, [A.A. Volinsky](#), J. Vella, I.S. Adhietty, V. Sarihan, L. Mercado, B.H. Yeung, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 649, Q5.3, 2001
39. *Adhesion Quantification of Post-CMP Copper to Amorphous SiN Passivation by Nanoindentation*, J.B. Vella, [A.A. Volinsky](#), I.S. Adhietty, S.M. Smith Mat. Res. Soc. Symp. Proc. Vol. 649, pp. Q6.1.1-Q6.1.6, 2001
40. *Indentation-induced Ductile Film Interfacial Debonding*, [A.A. Volinsky](#), W.M. Clift, N.R. Moody, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 586, p 255-260, 2000
41. *A Brittle to Ductile Transition (BDT) in Adhered Thin Films*, W.W. Gerberich, [A.A. Volinsky](#), N.I. Tymiak, N.R. Moody, Mat. Res. Soc. Symp. Proc. Vol. 594, p 351-364, 2000
42. *Annealing Effects on Interfacial Fracture of Gold-Chromium Films in Hybrid Microcircuits*, N.R. Moody, D. Adams, [A.A. Volinsky](#), M. Kriese, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 586, p 195-206, 2000
43. *Superlayer Residual Stress Effect on the Indentation Adhesion Measurements*, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 594, p 383-388, 2000
44. *Acoustic Emission Analysis of Fracture Events in Cu Films with W Overlayer*, [A.A. Volinsky](#), W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 563, p 275-284, 1999
45. *Macroscopic Modeling of Fine Lines Adhesion Tests*, [A.A. Volinsky](#), J.C. Nelson, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 563, p 297-302, 1999
46. *Environmental Effects on Cu/SiO₂ and Cu/Ti/SiO₂ Thin Film Adhesion*, N.I. Tymiak, M. Li, [A.A. Volinsky](#), Y. Katz, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol.563, p 269-274, 1999
47. *Quantitative modeling and Measurement of Copper Thin Film Adhesion*, [A.A. Volinsky](#), N.I. Tymiak, M.D. Kriese, W.W. Gerberich and J.W. Hutchinson, Mat. Res. Soc. Symp. Proc. Vol. 539, pp. 277-290, 1999
48. *CAD/CAM System for Metal Matrix Fiber Composite Tubes Production*, [A.A. Volinsky](#) and V.I. Galkin, XXII Gagarin Conference, Moscow, Russia, 1996
49. *Mathematical Model of the Thermocompression Equipment Heating*, [A.A. Volinsky](#), S.N. Semenov and V.I. Galkin, XXI Gagarin Conference, Moscow, Russia, 1995
50. *Hot Drawing of Fiber Metal Composite Tubes*, V.I. Galkin, V.B. Gamzin, [A.A. Volinsky](#), Science and Transport: Russian Academy of Sciences Conference, Moscow, Russia, 1994
51. *Drawing Process of the Bimetal Rod*, V.I. Galkin, V.B. Gamzin, [A.A. Volinsky](#), Science and Transport: Russian Academy of Sciences Conference, Moscow, Russia, 1994

Presentations

1. *Advanced Nanomechanical Characterization Techniques*, [A.A. Volinsky](#), Hainan University, Haikou, China, 3/11 ([invited lecture](#))
2. *Non-standard Application of the Nanoindentation Apparatus*, [A.A. Volinsky](#), Moscow State University of Aviation Technology, MATI, Moscow, Russia, 2/11 ([invited lecture](#))
3. *Materials Education in the United States of America*, [A.A. Volinsky](#), University of Science and Technology Beijing, China, 10/10 ([invited lecture](#))
4. *Advanced Nanomechanical Testing with Nanoindentation*, Henan University of Science and Technology, Luoyang, China, 10/10 ([invited seminar](#))
5. *Compliant MEMS Devices Actuation with the Nanoindenter and Electrowetting Experiments*, [A.A. Volinsky](#), University of Science and Technology Beijing, China, 10/10 ([invited seminar](#))
6. *Simplified Quantum Mechanics for Engineers*, [A.A. Volinsky](#), European X-ray Free Electron Laser, Hamburg Germany, 07/10 ([invited lecture](#))
7. *International US-Germany Joint Study of X-Ray Optics Thermomechanical Stability and Control*, [A.A. Volinsky](#), European Free Electron Laser, Hamburg Germany, 07/10 ([invited talk](#))

8. *Thin Films Mechanical Stability and Fracture Prevention*, [A.A. Volinsky](#), European X-ray Free Electron Laser, Hamburg Germany, 06/10 ([invited talk](#))
9. *Alternative Applications of a Nanoindenter*, [A.A. Volinsky](#), N.B. Crane, C. Lusk, N. Gallant, Florida Institute of Technology, Mechanical and Aerospace Engineering invited seminar, 8/09 ([invited talk](#))
10. *Compliant MEMS Device Actuation and Fracture*, [A.A. Volinsky](#), D. Ke, C. Lusk, 12th International Congress on Fracture (ICF 12), Ottawa, Canada, 08/09
11. *Measuring the Response of Polymeric Dielectric Layers to Electrowetting*, P. Mishra, [A.A. Volinsky](#), N. Crane, Materials Research Society 2009 Spring Meeting, Symposium U: Electrofluidic Materials and Applications - Micro/Biofluidics, Electrowetting, and Electrospinning, San Francisco, CA, 03/09
12. *Force Measurements for Characterization of Electrowetting Response*, V. Ramadoss, P. Mishra, [A.A. Volinsky](#), N. Crane, Materials Research Society 2009 Spring Meeting, Symposium U: Electrofluidic Materials and Applications - Micro/Biofluidics, Electrowetting, and Electrospinning, San Francisco, CA, 03/09
13. *Layered Magnetolectric Composites Performance Optimization*, [A.A. Volinsky](#), G. Kravchenko, E. Pan, Materials Research Society 2008 Fall Meeting, Symposium C: Theory and Applications of Ferroelectric and Multiferroic Materials, Boston, MA, 12/08
14. *Degradation of Electrowetting Systems Utilizing Polymer Dielectric Layers*, N.B. Crane, [A.A. Volinsky](#), Du Ke, P. Mishra, Symposium GG: Microelectromechanical Systems--Materials and Devices II, Boston, MA, 12/08 ([poster](#))
15. *Temperature Effect on Alkanes Evaporation Rates: Proper Lubricant Selection*, [A.A. Volinsky](#), N.A. Waldstein, Materials Research Society 2008 Fall Meeting, Symposium SS: Selecting and Qualifying New Materials for Use in Regulated Industries, Boston, MA, 12/08
16. *Nanomechanical Testing: From Corrosion Protection Coatings to MEMS Devices*, [A.A. Volinsky](#), Qualcomm Seminar Series, San Jose, CA, 08/08 ([invited talk](#))
17. *Lubricant Evaporation Rate Measurements: Methods Development and Limitations*, [A.A. Volinsky](#), N.A. Waldstein, Seagate Technology, Scotts Valley, CA, 08/08 ([invited talk](#))
18. *Temperature-Induced Curvature Control in X-Ray Optics*, [A.A. Volinsky](#), G. Kravchenko, D.C. Meyer, Hamburg Synchrotron HASYLAB DESY, Hamburg Germany, 07/08 ([invited talk](#))
19. *Thin Film Fracture Prevention Practices*, [A.A. Volinsky](#), Leibniz-Institute for Catalysis at the University of Rostock, Berlin Germany, 07/08 ([invited talk](#))
20. *Mechanical Properties of Advanced Interconnect Structures in Microelectronic Devices*, [A.A. Volinsky](#), AMD Dresden, Germany, 7/08 ([invited talk](#))
21. *Non-traditional applications of a scanning nanoindentation apparatus*, [A.A. Volinsky](#), K. Du, N.B. Crane, C. Lusk, International Meeting of Maria Curie Fellows - Participants of 6th FP ToK Project on Nanoengineering for Expertise and Development (NEED), Krakow, Poland, 6/08 ([invited talk](#))
22. *Nanoindentation Techniques for Assessing Mechanical Properties of Advanced Interconnect Structures*, [A.A. Volinsky](#), IMEC, Leuven, Belgium, 5/08 ([invited talk](#))
23. *Mechanical Properties of Evaporated Gold Films. Hard Substrate Effect Correction*, [A.A. Volinsky](#), K. Du, X. Pang, C. Chen, Materials Research Society 2008 Spring Meeting, Mechanics of Nanoscale Materials Symposium, San Francisco, CA, 3/08
24. *Residual Stress in CVD-grown 3C-SiC Films on Si Substrates*, [A.A. Volinsky](#), G. Kravchenko, P. Waters, J. Deva Reddy, C. Locke, C. Frewin, S.E. Saddow, Materials Research Society 2008 Spring Meeting, Silicon Carbide-Materials, Processing, and Devices Symposium, San Francisco, CA, 3/08
25. *Moisture Effects on Gold Nanowear*, [A.A. Volinsky](#), M. Pendergast, X. Pang, R. Shields, Materials Research Society 2008 Spring Meeting, Nanoscale Tribology-Impact for Materials and Devices Symposium, San Francisco, CA, 3/08 ([poster](#))
26. *Chromium Oxide Coatings for Steel Corrosion Protection*, [A.A. Volinsky](#), X. Pang, K. Gao, Army Corrosion Summit 2008, Clearwater, FL, 2/08
27. *Mechanical Properties of Single and Polycrystalline SiC Thin Films*, J. Deva Reddy, [A.A. Volinsky](#), C. Frewin, C. Locke, S.E. Saddow, Materials Research Society 2008 Fall Meeting, Fundamentals of Nanoindentation and Nanotribology IV Symposium, Boston, MA, 12/08 ([invited talk](#))
28. *Pattern Formation in Si/Cr/Au Thin Film System*, A. Bernfeld, [A.A. Volinsky](#), D. Gracias, Materials Research Society 2008 Fall Meeting, Nanoscale Pattern Formation Symposium, Boston, MA, 12/08 ([poster](#))
29. *Tip-induced Calcite Single Crystal Nanowear*, R. Gunda, [A.A. Volinsky](#), Materials Research Society 2008 Fall Meeting, Nanoscale Pattern Formation Symposium, Boston, MA, 12/08 ([poster](#))
30. *Electrowetting Forces in an Electrowetting-Driven Oscillator*, N.B. Crane, [A.A. Volinsky](#), V. Ramadoss, M. Nellis, P. Mishra, X. Pang, Materials Research Society 2008 Fall Meeting, Microelectromechanical Systems-Materials and Devices Symposium, Boston, MA, 12/08
31. *Compliant MEMS Motion Characterization by Nanoindentation*, J.G. Choueifati, C. Lusk, X. Pang, [A.A. Volinsky](#), Materials Research Society 2008 Fall Meeting, Microelectromechanical Systems-Materials and Devices Symposium, Boston, MA, 12/08 ([poster](#))
32. *Water Effects on Gold Nanowear*, M. Pendergast, [A.A. Volinsky](#), NSF IREE Grantees Conference, Purdue University, West Lafayette, IN, 10/07 ([poster](#))

33. *Mechanical Properties of Advanced Interconnect Structures*, [A.A. Volinsky](#), Infineon, Munich, Germany, 06/07 (invited talk)
34. *Nanomechanical Wear Testing*, [A.A. Volinsky](#), Frontiers of Nanomechanical Testing Workshop, Krakow, Poland, 6/07
35. *Interactive Growth of Delamination and Channel Cracks in Thin Films*, B. Yang, [A.A. Volinsky](#), ASME Applied Mechanics and Materials Conference, Austin, TX, 06/07
36. *Fracture of Chromium Oxide Coatings*, [A.A. Volinsky](#), X. Pang, K.W. Gao, University of Science and Technology Beijing, China, 12/06, (invited talk)
37. *Mechanical Reliability of Thin Films and Multilayers*, [A.A. Volinsky](#), University of Science and Technology Beijing, China, 12/06, (invited lecture)
38. *Fracture and Wear Patterns in Thin Films and Single Crystals*, [A.A. Volinsky](#), US-Japan Young Scientists Symposium on Nanotechnology and Nanomanufacturing, 11/06 (poster)
39. *Patterns in Fracture and Wear*, [A.A. Volinsky](#), Tokyo Institute of Technology, Japan, 11/06
40. *Fracture Patterns*, [A.A. Volinsky](#), Osaka University, Japan, 11/06
41. *Thin Film Moisture Induced Delamination for Microchannel Fabrication*, P. Waters, [A.A. Volinsky](#), Gordon Research Conference, Gordon Research Conference, Thin Film and Small Scale Mechanical Behavior, Waterville, ME, 7/04 (poster)
42. *Single Crystal Surface Reconstruction Patterns*, [A.A. Volinsky](#), M. Pendergast, B. Such, M. Szymonski, Gordon Research Conference, Thin Film and Small Scale Mechanical Behavior, Waterville, ME, 7/04 (poster)
43. *Mechanical Aspects of Anti-Corrosive Coatings Performance Tests*, [A.A. Volinsky](#), NACE International Corrosion 2006 Conference, San Diego, CA, 3/06
44. *Moisture-induced Thin Film Adhesion Degradation*, [A.A. Volinsky](#), P. Waters, NACE International Corrosion 2006 Conference, San Diego, CA, 3/06
45. *Wear-induced Nanoscale Surface Reconstruction Patterns*, [A.A. Volinsky](#), B. Such, M. Szymonski, 135th TMS 2006 Annual Conference, San Antonio, TX, 3/06
46. *Thickness Effects on the Plasticity of Gold Films*, M. J. Cordill, N.R. Moody, D.P. Adams, D.F. Bahr, [A.A. Volinsky](#), W.W. Gerberich, 135th TMS 2006 Annual Conference, San Antonio, TX, 3/06
47. *Microchannel Manufacturing for Lab-on-a-chip Applications*, [A.A. Volinsky](#), 2006 US-Japan Young Researchers Exchange Program Workshop for Nanotechnology and Nanomanufacturing, Boston, MA, 3/06
48. *Moisture and Stress Effects on Thin Film and Coating Adhesion*, [A.A. Volinsky](#), P. Waters, Army Corrosion Summit 2006, Clearwater, FL, 2/06
49. *A New Method of Testing Thin Film Adhesion in a Wet Environment*, P. Waters, [A.A. Volinsky](#), Tri-service Corrosion Conference, Orlando, FL, 11/05 (poster award)
50. *Novel Adhesion Test for Environmentally Assisted Fracture in Thin Films*, [A.A. Volinsky](#) and P.J. Waters, Tri-service Corrosion Conference, Orlando, FL, 11/05
51. *Simulation of Periodic Crack Growth in Thin Films*, [A.A. Volinsky](#), B. Yang, 2005 ASME Mechanical Engineering Congress, Orlando FL, 11/05
52. *Moisture Effects on Copper Thin Film Adhesion*, [A.A. Volinsky](#), P.J. Waters, 2005 ASME Mechanical Engineering Congress, Orlando FL, 11/05
53. *Acoustic Emission of Thin Film Indentation-Induced Fracture*, [A.A. Volinsky](#), D. Hess, W.W. Gerberich, 2005 ASME Mechanical Engineering Congress, Orlando FL, 11/05
54. *Probing Thin Film Mechanical Properties by Nanoindentation*, [A.A. Volinsky](#), Technische Universität Dresden, Institut für Strukturphysik, Dresden, Germany, 8/05 (invited seminar)
55. *Multidisciplinary Field of Materials Science and Engineering*, Jagiellonian University, [A.A. Volinsky](#), Department of Physics, Astronomy and Computer Science, Krakow, Poland, 6/05 (invited lecture)
56. *Nanoindentation for Thin Film Fracture Testing*, [A.A. Volinsky](#), NanoPol 2005:Frontiers of Nanomechanical Testing Workshop, Krakow, Poland, 6/05
57. *Bridging Thin Film Fracture and Surface Science*, [A.A. Volinsky](#), Jagiellonian University, Department of Physics, Astronomy and Computer Science, Krakow, Poland, 5/05 (invited seminar)
58. *Stress-Induced Periodic Fracture Patterns in Thin Films*, [A.A. Volinsky](#), N.R. Moody, D.C. Meyer, 11th International Congress on Fracture (ICF 11), Turin, Italy, 3/05
59. *Sub-Critical Telephone Cord Delamination Propagation and Adhesion Measurements*, Materials Research Society 2004 Fall Meeting, [A.A. Volinsky](#), P.J. Waters, J.D. Kiely, E.C. Johns, Stability of Thin Films and Nanostructures Symposium, Boston, MA, 12/04
60. *Micro-fluidics Applications of Telephone Cord Delamination Blisters*, [A. A. Volinsky](#), P.J. Waters, G. Wright, (Poster), Materials Research Society 2004 Fall Meeting, Mechanically Active Materials Symposium, Boston, MA, 12/04
61. *Irradiated Single Crystals for High Temperature Measurements in Space Applications*, [A.A. Volinsky](#), V.A. Nikolaenko, V.A. Morozov, V.P. Timoshenko, Materials Research Society 2004 Fall Meeting, Materials for Space Applications Symposium, Boston, MA, 12/04
62. *Thin Films Periodic Fracture Patterns*, [A.A. Volinsky](#), 2004 ASME Mechanical Engineering Congress, Anaheim, CA 10/04

63. *Nanoindentation for advanced microelectronic interconnects mechanical characterization*, [A.A. Volinsky](#), Symposium and Summer School on: Nano and Giga Challenges in Microelectronics 2004, Cracow, Poland, 9/04 ([invited poster](#))
64. *Low-K Dielectrics Metrology*, [A.A. Volinsky](#), Porotech Ltd., Vaughan, ON, Canada, 8/04 ([invited talk](#))
65. *Thin Film Mechanical Reliability: Environmental Effects*, [A.A. Volinsky](#), NIST Workshop on Reliability Issues in Nanomaterials, Boulder, CO, 8/04
66. *Stress-induced Fracture Patterns in Thin Films*, [A.A. Volinsky](#), Gordon Research Conference, Thin Film and Small Scale Mechanical Behavior, Waterville, ME, 7/04 ([poster](#)),
67. *Nanoindentation for Microelectronic Materials Characterization*, [A.A. Volinsky](#), Intel, Chandler, AZ, 3/04 ([invited talk](#))
68. *Mechanical Reliability of Advanced Interconnect Structures*, [A.A. Volinsky](#), IEEE Nanoscale Device and System Integration Conference, Miami, FL 2/04 ([invited talk](#))
69. *Nanoindentation Techniques for Assessing Mechanical Reliability of Microelectronic Interconnect Structures*, [A.A. Volinsky](#), USF Physics Colloquium, 1/04
70. *Irradiated Cubic Single Crystal SiC as a High Temperature Sensor*, [A.A. Volinsky](#), L. Ginzburgsky, V.A. Morozov, Materials Research Society 2003 Fall Meeting, Radiation Effects and Ion Beam Processing of Materials Symposium, Boston, MA, 12/03
71. *Fracture patterns in Thin Films and Multilayers*, [A.A. Volinsky](#), D.C. Meyer, T. Leisegang, P. Paufler, Materials Research Society 2003 Fall Meeting, Thin Films-Stresses and Mechanical Properties X Symposium, Boston, MA, 12/03
72. *Application of FIB/SEM and TEM to Single Bit Failure Analysis in SRAM arrays*, [A.A. Volinsky](#), W. Qin, L. Rice, L. Johnston, N.D. Theodore, Materials Research Society 2003 Fall Meeting, Micro- and Nanosystems Symposium, Boston, MA, 12/03 ([poster](#))
73. *Surface Oxide Evolution on Al-Si Bond Wires*, [A.A. Volinsky](#), W. Qin, R. Doyle, T. Scharr, M. Shah, M. Kottke, D. Werho, N.D. Theodore, Materials Research Society 2003 Fall Meeting, Materials, Integration, and Packaging Issues for High-Frequency Devices Symposium, Boston, MA, 12/03
74. *Oxide Reduction in Advanced Metal Stacks for Microelectronic Application*, [A.A. Volinsky](#), W. Qin, D. Werho, N.D. Theodore, Materials Research Society 2003 Fall Meeting, Fundamentals of Novel Oxide/Semiconductor Interfaces Symposium, Boston, MA, 12/03 ([poster](#))
75. *Microstructure and Mechanical Behavior of Novel Low-K Dielectric Films*, [A.A. Volinsky](#), Society of Engineering Science 40th Annual Technical Meeting, Ann Arbor MI, 10/03 ([invited talk](#))
76. *Mechanical Reliability and Characterization of Modern Microelectronic Interconnect Structures*, [A.A. Volinsky](#), Nano-Engineering World Forum, Marlborough MA, 6/03 ([invited talk](#))
77. *SEM-related FAB Analytical Support*, [A.A. Volinsky](#), 2003 Phoenix Technical Forum, Chandler AZ, 3/03
78. *Characterization and Reliability of Advanced Microelectronic Interconnect Structures*, [A.A. Volinsky](#), Purdue University School of Materials Engineering invited colloquium, 1/03 ([invited talk](#))
79. *"Incompressible" Pore Effect on the Mechanical Behavior of Low-K Dielectric Films*, [A.A. Volinsky](#), M.B. Palacio, W.W. Gerberich, Materials Research Society 2002 Fall Meeting, Surface Engineering 2002-Synthesis, Characterization, and Applications, Boston, MA, 12/02
80. *Experiments with In-situ Thin Film Phone Cord Delamination Propagation*, [A.A. Volinsky](#), Materials Research Society 2002 Fall Meeting, Morphological and Compositional Evolution of Thin Films Symposium, Boston, MA, 12/02
81. *Nanomechanical Fracture Testing for Assessing the Durability of Hybrid Microcircuit Films*, N.R. Moody, D.P. Adams, N.Y.C. Yang, [A.A. Volinsky](#), W.W. Gerberich, 3rd European Symposium on Nano-Mechanical Testing, Applications of Nano-Mechanical Testing, Hukelhoven, Germany, 9/02 ([invited, video linked](#))
82. *Nanoindentation Techniques for Assessing Mechanical Reliability at Nanoscale*, [A.A. Volinsky](#), Symposium and Summer School on: Nano and Giga Challenges in Microelectronics, Moscow, Russia, 9/02 ([invited talk](#))
83. *Wireless Phones have Phone Cords Attached: Thin Film Phone Cord Delamination Propagation*, [A.A. Volinsky](#), Gordon Research Conference, Thin Film Mechanical Behavior, Waterville, ME, 7/02 ([poster](#))
84. *A Comparison Study of Ti/GaAs Ti/Si Fracture*, [A.A. Volinsky](#), M.L. Kottke, Mechanics of Thin Films and Other Small Structures Symposium, 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, Virginia, 6/02 ([invited talk](#))
85. *Mechanical Properties, Adhesion and Fracture Toughness of Low-K Dielectric Thin Films for Microelectronic Applications*, [A.A. Volinsky](#), I.S. Adhichetty, J.B. Vella, C. Goldberg, W.W. Gerberich, 10th International Congress on Fracture (ICF 10), Honolulu, HI, 12/01 ([invited talk](#))
86. *Effects of Diffusion on the Interfacial Fracture of Multilayer Hybrid Microcircuit Films*, N.R. Moody, D.P. Adams, D. Medlin, [A.A. Volinsky](#), N. Yang, and W.W. Gerberich, 10th International Congress on Fracture (ICF 10), Honolulu, HI, 12/01 ([invited talk](#))
87. *Fiducial Marks as a Measure of Thin Film Crack Arrest Toughness*, [A.A. Volinsky](#), M.L. Kottke, N.R. Moody, I.S. Adhichetty, W.W. Gerberich, 10th International Congress on Fracture (ICF 10), Honolulu, HI, 12/01

88. *Residual Stress and Microstructure of Electroplated Cu Film on Different Barrier Layers*, [A.A. Volinsky](#), M. Hauschildt, J.B. Vella, N.V. Edwards, R. Gregory, W.W. Gerberich, Materials Research Society 2001 Fall Meeting, Thin Films-Stresses and Mechanical Properties IX Symposium, Boston, MA, 11/01
89. *The Role of Geometry and Plasticity in Thin, Ductile Film Adhesion*, [A.A. Volinsky](#), University of Texas Seminar, Austin, 9/01 ([invited seminar](#))
90. *Adhesion and Fracture Testing of Multilayer Films in Hybrid Microcircuits*, N.R. Moody, D.P. Adams, [A.A. Volinsky](#), and W.W. Gerberich, Department of Materials Science and Engineering, University of Newcastle, Newcastle, United Kingdom, 3/01 ([invited seminar](#))
91. *The Effects of Composition and Structure on Interfacial Fracture: Chromium Diffusion and the Adhesion of Gold Films*, N.R. Moody, D. Medlin, D.P. Adams, [A.A. Volinsky](#), N. Yang, W.W. Gerberich, Materials Science Department Seminar, University of California, Berkeley, CA, 05/01 ([invited seminar](#))
92. *Fracture Toughness and Adhesion of Low K Dielectric Thin Films*, [A.A. Volinsky](#), J.B. Vella, B.W. Fowler, I.S. Adhichetty, and W.W. Gerberich, Merence, San Diego, CA, 6/01 ([invited talk](#))
93. *Finite Element Analysis of the Precracked Line Scratch Test*, [A.A. Volinsky](#), L. Mercado, V. Sarihan, W.W. Gerberich, Materials Research Society 2000 Fall Meeting, Materials Science of Microelectromechanical Systems (MEMS) Devices Symposium, Boston, MA, 11/00 ([poster](#))
94. *Adhesion and Fracture Testing of Gold Chromium Films in Hybrid Microcircuits*, N.R. Moody, [A.A. Volinsky](#), D.P. Adams, M. Kriese, W.W. Gerberich, AVS International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, 3/00 ([invited talk](#))
95. *Assessing Thin Film Reliability Using Nanoindentation*, N.R. Moody, D.P. Adams, K.A. Peterson, W.M. Clift, P. Hlava, [A.A. Volinsky](#), W.W. Gerberich, Critical Materials and Processes Program-Low Force Testing, ASMI Fall Meeting, St. Louis, MO, 11/00 ([invited talk](#))
96. *Aging of Gold-Chromium Multilayer Films in Hybrid Microcircuits: Techniques for Assessing Thin Film Reliability*, N.R. Moody, D.P. Adams, K.A. Peterson, W.M. Clift, P. Hlava, [A.A. Volinsky](#), W.W. Gerberich, Department Seminar, Department of Mechanics and Materials, Michigan State University, East Lansing, MI, 11/00 ([invited seminar](#))
97. *Microstructure and Mechanical Properties of Electroplated Cu Thin Films*, [A.A. Volinsky](#), J. Vella, I.S. Adhichetty, V. Sarihan, L. Mercado, B.H. Yeung, W.W. Gerberich, Materials Research Society 2000 Fall Meeting, Fundamentals of Nanoindentation and Nanotribology II Symposium, Boston, MA, 11/00
98. *Superlayer Indentation Test for Thin Film Adhesion Measurement*, [A.A. Volinsky](#), W.W. Gerberich, Gordon Research Conference, Thin Film Mechanical Behavior, Plymouth, NH, 7/00 ([poster](#))
99. *Thin Film Adhesion Measurement Techniques*, [A.A. Volinsky](#), W.W. Gerberich, Motorola, AZ, 4/00 ([invited talk](#))
100. *Superlayer Residual Stress Effect on the Indentation Adhesion Measurement*, [A.A. Volinsky](#), N.R. Moody, W.W. Gerberich, Materials Research Society 1999 Fall Meeting, Thin Films – Stresses and Mechanical Properties VIII Symposium, Boston, MA, 11/99
101. *Indentation-Induced Ductile Film Interfacial Debonding*, [A.A. Volinsky](#), W.M. Clift, N.R. Moody, W.W. Gerberich, Materials Research Society 1999 Fall Meeting, Interfacial Engineering for Optimized Properties II Symposium, Boston, MA, 11/99 ([poster](#))
102. *Annealing Effects on Interfacial Fracture of Gold Chromium Films in Hybrid Microcircuits*, N.R. Moody, [A.A. Volinsky](#), D.P. Adams, M. Kriese, W.W. Gerberich, MRS Symposium on Interfacial Engineering for Optimized Properties II, MRS Fall Meeting, Boston, MA, 11/99 ([invited talk](#))
103. *Assessing Reliability of Gold-Chromium Films in Hybrid Microcircuits Using Nanoindentation*, N.R. Moody, [A.A. Volinsky](#), D. Adams, S. Guthrie, W.W. Gerberich, Chemical Engineering and Materials Science Special Seminar, University of Minnesota, Minneapolis, MN, 99
104. *Ductile Thin Layers/Brittle Substrate Fracture. Superlayer Test for Practical Adhesion Measurements*, [A.A. Volinsky](#), W.W. Gerberich, Symposium on the Mechanics of Multilayered Materials 1999 IMECE Nashville, TN, 11/99
105. *Indentation-induced Ductile Film Fracture*, [A.A. Volinsky](#), W.W. Gerberich, Sandia National Laboratories, Livermore, CA, 8/99
106. *Macroscopic Modeling of Fine Line Adhesion Tests*, [A.A. Volinsky](#), J.C. Nelson, W.W. Gerberich, Materials Research Society 1999 Spring Meeting, Materials Reliability in Microelectronics Symposium IX, San Francisco, CA, 4/99
107. *Quantitative Modeling and Measurement of Copper Thin Film Adhesion*, [A.A. Volinsky](#), N.I. Tymiak, M.D. Kriese, W.W. Gerberich and J.W. Hutchinson, Materials Research Society 1998 Fall Meeting, Intergranular/Interfacial Fracture Symposium, Boston, MA, 11/98 ([invited talk](#))