

# Associate Professor Alex A. Volinsky, Ph.D.

University of South Florida, Department of Mechanical Engineering

4202 E. Fowler Ave. Stop ENG 030, Tampa, FL 33620-5350

Phone: (813) 974-5658, Fax: (813) 974-3539, volinsky@usf.edu, <http://volinsky.myweb.usf.edu/>

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<b>Education</b>	<b>University of Minnesota</b> , <i>Ph.D.</i> in Materials Science and Engineering Thesis title: “ <i>The Role of Geometry and Plasticity in Thin, Ductile Film Adhesion</i> ” Academic advisor: Professor W.W. Gerberich	Minneapolis, MN 1996 – 2000
	<b>Moscow State University of Aviation Technology</b> <i>Engineering Degree</i> in Metallurgical Engineering and Materials Science Thesis title: “ <i>Mathematical Model and Process Development for Producing Metal Matrix Composite Tubes by Means of Thermocompression</i> ”	Moscow, Russia 1990 – 1996
<b>Experience</b>	<b>University of South Florida, Department of Mechanical Engineering</b> <i>Associate Professor</i> 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 taught: Materials Selection in Mechanical Design, Advanced Materials, Mechanics of Materials, Introduction to Materials Science, Applied Elasticity, Fracture Mechanics. <i>Assistant Professor</i>	Tampa, FL 2009 – present
	<b>Laboratori Nazionali di Frascati, Istituto Nazionale di Fisica Nucleare</b> <i>Visiting Researcher</i> Managed US students work of measuring secondary electrons yield	Frascati, Italy 2011 – 2013
	<b>University of Science and Technology Beijing</b> <i>Visiting Professor</i> Managed joint projects, taught Advanced Materials in 2010 and supervised students	Beijing, China 2010 – 2018
	<b>European X-ray Free Electron Laser, XFEL (www.xfel.eu)</b> <i>Visiting Researcher</i> Lead groups of US students to design X-Ray laser optics elements	Hamburg, Germany 2010 – 2012
	<b>Technical University Dresden, Institute of Structural Physics</b> <i>Visiting Professor</i> Lead a group of US graduate and undergraduate students to study X-Ray optics elements thermomechanical behavior and oil microevaporation	Dresden, Germany 2008
	<b>Jagiellonian University, Faculty of Physics, Astronomy and Computer Science</b> <i>Visiting Professor, Marie Curie Host Fellow</i> Lead a group of US students to study surface effects using AFM	Krakow, Poland 2005 – 2007
	<b>Motorola: Digital DNA Labs, Process and Materials Characterization Lab</b> <i>Engineering Materials Senior Staff Member</i> , Platforms and Strategic Research Group Conducted principal research employing XRD, SEM, FIB, FA analytical techniques for advanced technologies development	Tempe, AZ 2002 – 2003
	<i>Team Leader, Senior Member of Technical Staff</i> Combinational & Power Technology, HiPerMOS & Bipolar Analysis Groups Managed and conducted analytical support for production and R&D with SEM, FIB, XRD, FA (Hip6, 7; CDR1, 3; SmartMOS; MRAM Motorola technologies)	Mesa, AZ 2000 – 2002
	<b>Motorola: Advance Product Research and Development Labs/MOS13 fab</b> <i>Senior Yield Enhancement Engineer</i> Excite dark filed defect metrology tool owner (Applied Materials). Solved problems with new HIP6/HIP7 copper technology in production, improved yield and product quality. Work conducted saved Motorola 3.6 million dollars.	Austin, TX 2001

**Motorola: Digital DNA Labs, Semiconductor Product Sector** Phoenix, AZ  
*Summer Intern Engineer* 2000

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 metallization and packaging levels problems.

**Sandia National Labs: Materials and Engineering Science Center** Livermore, CA  
*Graduate Research Associate* 1999

Developed and implemented test techniques, equipment and models for measuring thin film adhesion by nanoindentation at elevated temperatures. Investigated the effects 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* 1996 – 2000

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, 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* 1996 – 2000

Conducted principle research focused on novel techniques for thin film adhesion measurements and investigation of nano-mechanical properties of thin films and multilayers. This contributed 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* 1991 – 1996

Developed models 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, 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), Scanning probe microscopy (SPM, AFM, SKPFM); 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 samples preparation.

## Honors and Activities

- Micromachines Special Issue Guest Editor, 2019
- 2018 USF World Global Achievement Faculty Certificate
- Materials Special Issue Guest Editor, 2017
- 2016 USF Global Achievement Faculty Award, Global Student Success
- Included in 33<sup>rd</sup> Edition of American Men & Women of Science, 2015
- Cloud of Science Journal Editor since 2014 (cloudofscience.ru)
- 2013 13<sup>th</sup> International Conference on Fracture, International Scientific Committee, Thin Films, Coating, and Membranes International Scientific Committee, Session Organizer
- Reviewer for: NSF, DOE, NC State University, Nature, Nature Materials, Acta Materialia, Journal of Applied Polymer Science, Journal of Materials Research, Advanced Materials, Corrosion Science, Thin Solid Films, International Journal of Fracture, ASME and MRS Proceedings, Fatigue and Fracture of Engineering Materials and

Structures, Tribology International, Journal of Applied Physics, Environmental Science and Pollution Research, Journal of Alloys and Compounds, Microfluidics and Nanofluidics, Science of Advanced Materials, Metallurgical Transactions A, Journal of Materials Engineering and Performance, Journal of Physics and Chemistry of Solids, Nanoscale, Journal of Reinforced Plastics and Composites, Polymer Engineering & Science, Sensors and others.

- 2008 NACE Environmentally Assisted Cracking (TEG 186X) Symposium Chair
- 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
- 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 since 2005
- 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, 7/2005
- NanoPol 2005 "Frontiers of Nanomechanical Testing" Workshop Organizer, Krakow, Poland, 6/2005
- NGCM2004 Best Presentation Award, 9/2004
- Board of Review Member and Key Reader for Metallurgical and Materials Transactions A, since 1/2004
- 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, 2/2004
- 2004 Mechanical Integrity and Reliability of Electronic Materials Symposium Organizer for the 2004 ASME International Mechanical Engineering Congress, 11/2004
- 2004 Nano and Giga Challenges in Microelectronics Conference Co-organizer, 9/2004
- Microelectronic Engineering July 2004 Special Issue Guest Editor, 2004
- 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, 12/2002
- 2002 Nano and Giga Challenges in Microelectronics Conference Organizer, 9/2002
- 2001 Fall MRS Graduate Student Awards Committee, 11/2001
- 2001 Motorola Bravo Award for Hip7 technology certification, 10/2001
- Motorola SPS Engineering Technical Ladder Awards, since 4/2001
- Silver Quill Motorola Publication Awards, since 10/2000
- Motorola Direct Scholarship, 9/2000
- Materials Research Society Public Affairs Committee, 8/1998-12/2012
- Materials Research Society Gateway Taskforce, 11/1999 - 11/2001
- Materials Research Society Minnesota Chapter Travel Scholarship, 11/1999
- Materials Research Society Graduate Student Award, 4/1999
- 1998 Fall MRS Conference, Intergranular/Interfacial Fracture Symposium Session Chair, Boston, MA, 11/1998
- University of Minnesota Graduate School Fellowship, 9/1996.
- XXI and XXII Gagarin Conference First Prizes, 4/1995 and 4/1996
- The Russian Ministry of Science and Higher Education Research Scholarship, 1/1995
- Bauman University, Moscow Universities Engineering Drawing Competition Award, 3/1991
- Moscow State University of Aviation Technology, First Prize in the Technical Olympiad, 2/1990
- Moscow State University of Aviation Technology, Scientific Council Fellowship Award, 2/90-2/1996

## Patents

*Bidirectional Electrowetting Actuation with Voltage Polarity Dependence*, N.B. Crane, P. Mishra, A.A. Volinsky, Pub. No.: WO/2011/084597, Publication Date: 14.07.2011, International Application No.: PCT/US2010/060763, International Filing Date: 16.12.2010

*System and Method for Electrowetting Actuation Utilizing Diodes*, N.B. Crane, P. Mishra, A.A. Volinsky, US patent number 8,858,772, granted on 10/14/2014

## Publications

### Books and Book Chapters

1. *Polymer-Based Magnetolectric Composites: Polymer as a Binder*, Y. Song, D. Pan, Z. Zuo, A.A. Volinsky, Chapter in Magnetolectric Polymer-Based Composites: Fundamentals and Applications, Editors: S. Lanceros-Mendez, P. Martins, Wiley, ISBN 978-3-527-34127-6, 2017

2. *Peer-to-peer Foreign Language E-learning Stimulated by Gamification and Virality*, I.V. Osipov, A.A. Volinsky, A.Y. Prasikova, Chapter 2 in *New Developments in Foreign Language Learning*, Editor: Adrienne Murphy, Nova Science Publishers, 2016, ISBN: 978-1-63484-276-1
3. *Environmental Effects on BaTiO<sub>3</sub> Polarization Dynamics Characterized by Piezoresponse Force Microscopy*, D.Y. He, L.J. Qiao, A.A. Volinsky, Chapter in *Piezoresponse Force Microscopy and Electrochemical Strain Microscopy*, Volume II: Applications, Springer, 2016
4. *Delaminated Film Buckling Microchannels*, A.A. Volinsky, P. Waters, Chapter 8 in *Mechanical Self Assembly: Science and Applications* (Xi Chen, Ed.), Springer, New York, 2013, ISBN: 978-1-4614-4561-6
5. *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
6. *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, ISBN: 978-90-481-2791-7.
7. *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, ISBN: 978-0-387-27974-9.
8. *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, ISBN: 978-0-08-043749-1.

### **Edited Journals and Volumes**

1. A.A. Volinsky, T. Tsui, Special Issue Guest Editors, “Small Scale Deformation using Advanced Nanoindentation Techniques”, *Micromachines*, 2018
2. A.A. Volinsky, L. Qiao, Special Issue Guest Editors, “Stress Corrosion Cracking in Materials”, *Materials*, 2017
3. 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
4. *International Journal of Nanotechnology Special Issue, “Nanotechnology Toolkit”*, Proceedings of the 2004 Nano and Giga Challenges in Microelectronics Conference, Krakow Poland
5. *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 A.A. Volinsky

### **Journal Articles**

1. *Atomic Force Microscopy Study of Nanoporous Gold Surface and Electrochemical Properties*, P. Gao, P. Qian, L. Qiao, A.A. Volinsky, Y. Su, *Scripta Materialia*, accepted, 2019
2. *Thermal Deformation Behavior of the Al<sub>2</sub>O<sub>3</sub>-Cu/(W, Cr) Electrical Contacts*, X. Zhang, Y. Zhang, B. Tian, Y. Jia, Y. Liu, K. Song, A.A. Volinsky, *Vacuum*, Vol. 164, pp. 361-366, 2019
3. *Electrochemical Performance of 1-Ethyl-3-Methylimidazolium Bis(Trifluoromethylsulfonyl)Imide Ionic Liquid as Electrolyte for Primary Mg-Air Batteries*, J. Zhang, J. Ma, G. Wang, Y. Li, A.A. Volinsky, *Journal of the Electrochemical Society*, accepted, 2019
4. *High-density and Low-interstitial Ti-23Al-17Nb Prepared by Vacuum Pressureless Sintering from Blended Elemental Powders*, H. Wang, C. Zhang, F. Yang, P. Cao, Z. Guo, B. Lu, C. Chen, P. Liu, A.A. Volinsky, *Vacuum*, Vol. 164, pp. 62-65, 2019
5. *Cohesive Zone Modelling of Anodic Dissolution Stress Corrosion Cracking Induced by Corrosion Product Films*, C. Chen, W. Wang, Z. Zhang, Y. Su, A.A. Volinsky, *Philosophical Magazine A: Materials Science*, Vol. 99(9), pp. 1090-1102, 2019
6. *Cu-doped ZnO Electronic Structure and Optical Properties Studied by the First-principles Calculations and Experiments*, Z. Ma, F. Ren, X. Ming, Y. Long, A.A. Volinsky, *Materials*, Vol. 12(1), 196, pp. 1-12, 2019
7. *Proton Irradiation Effects on Hardness and the Volta Potential of Welding 308L Duplex Stainless Steel*, B. Jiang, Q. Peng, Z. Jiao, A.A. Volinsky, L. Qiao, *Micromachines*, Vol. 10(1), 11, pp. 1-13, 2019
8. *Recording Digital Color Information on Transparent Polyethylene Films by Thermal Treatment*, A. Kondratov, V. Yakubov, A.A. Volinsky, *Applied Optics*, Vol. 58(1), pp. 172-176, 2019
9. *Performance of Nd-Fe-B Magnets Fabricated by Hot Isostatic Pressing and Low-temperature Sintering*, F. Yang, H. Wang, L. You, A.A. Volinsky, C. Zhang, Z. Guo, Y. Sui, *Journal of Materials Engineering and Performance*, Vol. 28(1), pp. 273-277, 2019
10. *Effects of Ce and Y Addition on Microstructure Evolution and Precipitation of Cu-Mg Alloy Hot Deformation*, B. Wang, Y. Zhang, B. Tian, V. Yakubov, J. An, A.A. Volinsky, Y. Liu, K. Song, L. Li, M. Fu, *Journal of Alloys and Compounds*, Vol. 781, pp. 118-130, 2019

11. *Tribo-corrosion and Albumin Attachment of Nitrogen Ion-Implanted CoCrMo Alloy During Friction Onset*, X. Yan, J. Meng, K. Gao, X. Pang, A.A. Volinsky, *Journal of Materials Engineering and Performance*, Vol. 28(1), pp. 363-371, 2019
12. *3D Printing of NdFeB Bonded Magnets with SrFe<sub>12</sub>O<sub>19</sub> Addition*, F. Yang, X. Zhang, Z. Guo, S. Ye, Y. Sui, A.A. Volinsky, *Journal of Alloys and Compounds*, Vol. 779, pp. 900-907, 2019
13. *Arc Erosion Behavior of the Al<sub>2</sub>O<sub>3</sub>-Cu(W, Cr) Electrical Contacts*, X. Zhang, Y. Zhang, B. Tian, J. An, Z. Zhao, A.A. Volinsky, Y. Liu, K. Song, *Composites B: Engineering*, Vol. 160, pp. 110-118, 2019
14. *Coercivity Enhancement and Grain Refinement in Nd-Fe-B Sintered Magnets with Pyrite Doping by Jet Milling*, F. Yang, L. You, Z. Guo, V. Paley, A.A. Volinsky, *Journal of Magnetism and Magnetic Materials*, Vol. 469, pp. 146-150, 2019
15. *Temperature Effects on Magnetic Properties of Fe<sub>3</sub>O<sub>4</sub> Nanoparticles Synthesized by the Sol-gel Explosion-assisted Method*, P. Hu, T. Chang, W. Chen, J. Deng, S. Li, Y. Zuo, L. Kang, F. Yang, M. Hostetter, A.A. Volinsky, *Journal of Alloys and Compounds*, Vol. 773, pp. 605-611, 2019
16. *The Hydrogen-induced Pitting Corrosion Mechanism in Duplex Stainless Steel Studied by Current-sensing Atomic Force Microscopy*, V. Yakubov, M. Lin, A.A. Volinsky, L. Qiao, L. Guo, *NPJ Materials Degradation*, Vol. 2(39), pp. 1-4, 2018
17. *The Improved Thermal Conductivity of a Potting Material for High-power Fast Warm-up Cathodes*, X. Zhang, J. Hao, Z. Guo, Z. Ji, J. Luo, C. Chen, F. Yang, A.A. Volinsky, *Journal of Materials Engineering and Performance*, Vol. 27(12), pp. 6701-6708, 2018
18. *Study on Pure Mercurous Chloride Leaching with Sodium Thiosulfate*, C. Han, W. Wang, F. Xie, G. Wang, A.A. Volinsky, M. Gekhtman, *Russian Journal of Non-Ferrous Metals*, Vol. 59(6), pp. 589-595, 2018
19. *First Principles Calculations of Interfacial Properties and Electronic Structure of the AlN(0001)/Ti(0001) Interface*, W. Jin, L. Li, S. Zhang, H. Yang, K. Gao, X. Pang, A.A. Volinsky, *Chemical Physics Letters*, Vol. 713, pp. 153-159, 2018
20. *Effects of Thickness Ratios and Sputtering Mode on the Structural, Electrical and Optical Properties of Bilayer Molybdenum Thin Films*, H. Zhao, J. Xie, T. Liang, A. Mao, A. Wang, Y. Chen, D. Ma, V. Paley, A.A. Volinsky, *AIP Advances*, Vol. 8(9), p. 095028, 2018
21. *Study of Oxygen Evolution Reaction on Amorphous Au<sub>13</sub>@Ni<sub>120</sub>P<sub>50</sub> Nanocluster*, Y. Wang, P. Gao, X. Wang, J. Huo, L. Li, Y. Zhang, A.A. Volinsky, P. Qian, Y. Su, *Phys. Chem. Chem. Phys.*, Vol. 20(21), pp. 14545-14556, 2018
22. *Y Addition Effects on Hot Deformation Behavior of Cu-Zr Alloys with High Zr Content*, K. Tian, B. Tian, A.A. Volinsky, Y. Zhang, Y. Liu, Y. Du, *Archives of Metallurgy & Materials*, Vol. 63(2), pp. 875-882, 2018
23. *3D Gel Printing of Graded TiC-high Manganese Steel Cermet*, X. Zhang, L. Guo, F. Yang, A.A. Volinsky, M. Hostetter, Z. Guo, *Journal of Materials Science*, <https://doi.org/10.1007/s10853-018-2945-5>, 2018
24. *Electrochemical Performance of Mg-air Batteries Based on AZ Series Magnesium Alloys*, J. Ma, G. Wang, Y. Li, F. Ren, A.A. Volinsky, *Ionics*, <https://doi.org/10.1007/s11581-018-2705-1>, 2018
25. *Synthesis and Photoluminescence of Er<sup>3+</sup> and Yb<sup>3+</sup> Doped ZnS Nanocrystals*, L. Li, X. Zhang, X. Li, J. Huang, A.A. Volinsky, *Rare Metal Materials and Engineering*, Vol. 47(6), pp. 1744-1748, 2018
26. *Numerical Simulations of the Cu/Al Composite Plate Continuous Cast-rolling Process*, H. Tian, A. Wang, J. Xie, S. Liu, A.A. Volinsky, *Materials Research Express*, Vol. 5(12), p. 126505, 2018
27. *Hot Deformation Behavior of the 20 vol.% TiC/Cu-Al<sub>2</sub>O<sub>3</sub> Composites*, Y. Liu, Z. Yang, B. Tian, Y. Zhang, Z. Guo, A.A. Volinsky, *Journal of Materials Engineering and Performance*, Vol. 27(9), pp. 4791-4798, 2018
28. *Ultrahigh Thermal Conductivity Copper/Graphite Membrane Composites Prepared by Tape Casting with Hot-pressing Sintering*, Q. Cui, C. Yu, J. Hao, C. Chen, X. Zhang, Z. Guo, A.A. Volinsky, *Materials Letters*, Vol. 231, pp. 60-63, 2018
29. *Comparative Study of Ti and Cr Adhesion to the AlN Ceramic: Experiments and Calculations*, S. Zhang, W. Jin, H. Yang, K. Gao, X. Pang, L. Yan, A.A. Volinsky, *Applied Surface Science*, Vol. 457, pp. 856-862, 2018
30. *3D Gel-printing of Sr Ferrite Parts*, F. Yang, X. Zhang, Z. Guo, A.A. Volinsky, *Ceramics International*, Vol. 44, pp. 22370-22377, 2018
31. *Hydrostatic Pressure Effects on Hydrogen Entry into A514 Steel with Cathodic Deposits*, X.L. Xiong, Y. Xiang, J.X. Li, Y.J. Su, Q.J. Zhou, A.A. Volinsky, *Electrochimica Acta*, Vol. 283, pp. 1534-1542, 2018
32. *Enhanced Electrochemical Performance of Perovskite LaNiO<sub>3</sub> Coating on Li<sub>1.2</sub>Mn<sub>0.54</sub>Ni<sub>0.13</sub>Co<sub>0.13</sub>O<sub>2</sub> as Cathode Materials for Li-ion Batteries*, X. Zhang, J. Hao, L. Wu, Z. Guo, Z. Ji, J. Luo, C. Chen, J. Shu, H. Long, F. Yang, A.A. Volinsky, *Electrochimica Acta*, Vol. 283, pp. 1203-1212, 2018
33. *Secondary Phases Formation in Lanthanum-doped Titanium-zirconium-molybdenum Alloy*, B. Hu, K. Wang, P. Hu, Y. Zhou, J. Deng, W. Chen, P. Feng, J. Zhang, A.A. Volinsky, H. Yu, *Journal of Alloys and Compounds*, Vol. 757, pp. 340-347, 2018
34. *Thermodynamic Analysis of Ti<sub>3</sub>O<sub>5</sub> Nanoparticles Formed in Melt and Their Effects on Ferritic Steel Microstructure*, Y. Wang, M. Zhou, X. Pang, X. Chen, Z. Wang, A.A. Volinsky, H. Tang, *Materials*, Vol. 11(8), p. 1343, 2018
35. *Residual Stress and Microstructure Effects on Mechanical, Tribological and Electrical Properties of TiN Coatings on 304 Stainless Steel*, Y. Xi, Y. Bai, K. Gao, X. Pang, H. Yang, L. Yan, A.A. Volinsky, *Ceramics International*, Vol. 44(13), pp. 15851-15858, 2018

36. *Effects of Ce Addition on the Cu-Mg-Fe Alloy Hot Deformation Behavior*, B. Wang, Y. Zhang, B. Tian, J. An, A.A. Volinsky, H. Sun, Y. Liu, K. Song, Vacuum, Vol. 155, pp. 594-603, 2018
37. *Constitutive Model for Hot Deformation of the Cu-Zr-Ce Alloy*, Y. Zhang, H. Sun, A.A. Volinsky, B. Wang, B. Tian, Y. Liu, K. Song, Journal of Materials Engineering and Performance, Vol. 27(2), pp.728-738, 2018
38. *Tensile Deformation Temperature Impact on Microstructure and Mechanical Properties of AISI 316LN Austenitic Stainless Steel*, Y. Xiong, T. He, Y. Lu, F. Ren, A.A. Volinsky, W. Cao, Journal of Materials Engineering and Performance, Vol. 27(3), pp. 1232-1240, 2018
39. *Ultrafast Synthesis of Amorphous VO<sub>x</sub> embedded into 3D Struttred Amorphous Carbon Frameworks—Short-Range Order in Dual-Amorphous Composites Boosts Lithium Storage*, W. Wang, H. Wu, M. Qin, Z. Cao, Z. Liu, Q. Yu, C. Lao, D. Zhang, B. Jia, D. He, T. Liu, A.A. Volinsky, P. Cao and X. Qu, J. Mater. Chem. A, Vol. 6, pp. 7053-7061, 2018
40. *Antibacterial Activity and Inflammation Inhibition of ZnO Nanoparticles Embedded TiO<sub>2</sub> Nanotubes*, S. Yao, X. Feng, J. Lu, Y. Zheng, X. Wang, A.A. Volinsky, L.N. Wang, Nanotechnology, Vol. 29(24), p. 244003, 2018
41. *Annealing Effects on Microstructure and Mechanical Properties of Ultrafine-Grained Al Composites Reinforced with Nano-Al<sub>2</sub>O<sub>3</sub> by Rotary Swaging*, C. Chen, W. Wang, Z. Guo, C. Sun, A.A. Volinsky, V. Paley, Journal of Materials Engineering and Performance Vol. 27(4), pp 1738-1745, 2018
42. *Impacts of Multiple Laser Shock Processing on Microstructure and Mechanical Property of High-Carbon Steel*, Y. Xiong, T. He, Y. Lu, H. Bao, Y. Li, F. Ren, W. Cao, A.A. Volinsky, Journal of Iron and Steel Research International, Vol. 25(4), pp. 469-475, 2018
43. *Periodic Cracks and Temperature-Dependent Stress in Mo/Si Multilayers on Si Substrates*, G. Kravchenko, H.T. Tran, A.A. Volinsky, Philosophical Magazine, Vol 98(19), pp. 1765-1779, 2018
44. *First Principles Calculations Study of Crystallographic Orientation Effects on SiC/Ti and SiC/Cr Interfaces*, L. Li, W. Jin, H. Yang, K. Gao, P. Guo, X. Pang, A.A. Volinsky, Microelectronics Reliability, Vol. 83, pp. 119-126, 2018
45. *Initial Formation of Corrosion Products on Pure Zinc in Simulated Body Fluid*, L. Liu, Y. Meng, C. Dong, Y. Yan, A.A. Volinsky, L.N. Wang, Journal of Materials Science & Technology, Vol. 34(12), pp. 2271-2282, 2018
46. *Crack Initiation Mechanism in Lanthanum-Doped Titanium-Zirconium-Molybdenum Alloy During Sintering and Rolling*, P. Hu, Y. Zhou, J. Deng, S. Li, W. Chen, T. Chang, B. Hu, K. Wang, P. Feng, A.A. Volinsky, Journal of Alloys and Compounds, Vol. 745, pp. 532-537, 2018
47. *Preparation and Formation Mechanism of Monodisperse Micaceous Iron Oxide from Iron Chromium Grinding Waste*, B. Liu, S. Zhang, C. Chang, A.A. Volinsky, Powder Technology, Vol. 329, pp. 401-408, 2018
48. *In-situ Stress Gradient Evolution and Texture-dependent Fracture of Brittle Ceramic Thin Films Under External Load*, Y. Xi, Y. Bai, K. Gao, X. Pang, H. Yang, L. Yan, A.A. Volinsky, Ceramics International, 44 (7), pp. 8176-8183, 2018
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44. *Adhesion Quantification of Post-CMP Copper to Amorphous SiN Passivation by Nanoindentation*, J.B. Vella, A.A. Volinsky, I.S. Adhichetty, S.M. Smith Mat. Res. Soc. Symp. Proc. Vol. 649, pp. Q6.1.1-Q6.1.6, 2001
45. *Indentation-induced Debonding of Ductile Films*, A.A. Volinsky, W.M. Clift, N.R. Moody, W.W. Gerberich, Mat. Res. Soc. Symp. Proc. Vol. 586, p 255-260, 2000
46. *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
47. *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
48. *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

49. *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
50. *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
51. *Environmental Effects on Cu/SiO<sub>2</sub> and Cu/Ti/SiO<sub>2</sub> 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
52. *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
53. *CAD/CAM System for Metal Matrix Fiber Composite Tubes Production*, A.A. Volinsky and V.I. Galkin, XXII Gagarin Conference, Moscow, Russia, 1996
54. *Mathematical Model of the Thermocompression Equipment Heating*, A.A. Volinsky, S.N. Semenov and V.I. Galkin, XXI Gagarin Conference, Moscow, Russia, 1995
55. *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
56. *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. *Materials Science and Engineering FE Review*, A.A. Volinsky, FE Exam Review Lecture, University of South Florida, Tampa, FL, 2/12, 9/12, 2/16, 9/16, 9/17, 2/18, 9/18, 2/19 (invited lectures)
2. *Thin Films Mechanics*, A.A. Volinsky, Henan University of Science and Technology, Luoyang, China, 5/16 (invited lecture)
3. *Surface Effects in Thin Film Fracture*, A.A. Volinsky, University of Science and Technology Beijing, Beijing, China, 5/16 (invited lecture)
4. *Cell Adhesion Strength Modulated by Tuning Matrix Stiffness*, A. Sharfeddin, M. Gross. A.A. Volinsky, N.D. Gallant, 2015 University of South Florida Research Day, Tampa, FL 11/15 (poster)
5. *Synthesis and Characterization of the MC Nylon/Modified Yttrium Hydroxide Nanocomposites*, J. Chen, A.A. Volinsky, W. He, 2015 University of South Florida Research Day, Tampa, FL 11/15 (poster)
6. *Selected Topics in Advanced Materials*, A.A. Volinsky, Xian University of Architecture and Technology, Xian, China, 7/15 (invited lecture)
7. *Materials and Engineering Education in the US*, A.A. Volinsky, Henan University of Science and Technology, Luoyang, China, 7/15 (invited lecture)
8. *Irradiated 3C-SiC Single Crystals as the Maximum Temperature Sensors*, A.A. Volinsky, Tsinghua University, Beijing, China, 6/15 (invited seminar)
9. *Introductory Materials Education in the US*, A.A. Volinsky, University of Science and Technology Beijing, Beijing, China, 5/15 (invited lecture)
10. *Assessing Viscoelastic Properties of Polydimethylsiloxane (PDMS) Using Loading and Unloading of the Compression Test*, M. Fincan, A.A. Volinsky, Z. Wang, N. Gallant, Characterization of Minerals, Metals, and Materials Symposium, 144<sup>th</sup> TMS 2015 Annual Conference, Orlando, FL, 3/15
11. *Adhesion of Ge Electrode to Ni Substrate for Li Ion Battery Applications*, A. Jeyaranjan, A.A. Volinsky, N. Rudawski, K. Jones, Advances in Thin Films for Electronics and Photonics Symposium, 144<sup>th</sup> TMS 2015 Annual Conference, Orlando, FL, 3/15
12. *Structure, Composition, Electrical and Optical Properties of Sputtered PbSe Thin Films on Si*, X. Sun, K. Gao, X. Pang, H. Yang, H. Tran, A.A. Volinsky, Energy, Materials, Nanotechnology Meeting on Ceramics, Orlando, FL, 1/15 (invited talk)
13. *Molecular Studies and Characterization of Mucous Intestinal Features in Humans*, A.A. Volinsky, D. Rodriguez, E.V. Marchenko, Nano-Florida Conference 2014, Miami, FL 9/14 (poster)
14. *Looking Beyond the Human Rope Worms, Homo Funis Vermis*, A.A. Volinsky, Biological Medicine 2014: Healing Lyme Without Antibiotics, Bellevue, WA, 5/14 (invited lecture)
15. *Thin Film Mechanics and Adhesion Failure*, A.A. Volinsky, Transitions Optical Inc., Pinellas Park, FL, 4/14 (invited seminar)
16. *Nanomechanical Structures Testing*, A.A. Volinsky, Henan University of Science and Technology, Luoyang, China, 12/13 (invited seminar)
17. *Introduction to Materials Science and Engineering Review Lecture*, A.A. Volinsky, Xian University of Architecture and Technology, Xian, China, 12/13 (invited lecture)
18. *Human Rope Worms: Description and Current DNA Findings*, A.A. Volinsky, E.V. Marchenko, N.V. Gubarev, G.M. Orlovskaya, 2013 International Chronic Disease Conference, Seattle, WA, 9/13 (invited talk)
19. *Human Rope Worms: Patented Removal Methods*, N.V. Gubarev, A.A. Volinsky, 2013 International Chronic Disease Conference, Seattle, WA, 9/13 (invited talk)
20. *Advanced Nanomechanical Testing Techniques*, A.A. Volinsky, University of Leoben, Leoben, Austria, 7/13 (invited seminar)

21. *Residual Stress and Fracture Toughness of Sputtered TiN Films*, X. Pang, L. Zhang, H.T. Tran, [A.A. Volinsky](#), 13<sup>th</sup> International Congress on Fracture (ICF 13), Beijing, China, 6/13 ([invited keynote talk](#))
22. *Thin Film Delamination and X-ray Mirror Curvature Control*, [A.A. Volinsky](#), Arizona State University, Tempe, AZ, 4/12 ([invited seminar](#))
23. *Polydimethylsiloxane Mechanical Properties and Their Effects on Cell Growth*, Z. Wang, K. Elineni, N.D. Gallant, A.A. Volinsky, Biological Materials Science Symposium, 141<sup>st</sup> TMS 2012 Annual Conference, Orlando, FL, 3/12
24. *The Grand Challenge of Soft Tacky Polymers Nanoindentation*, [A.A. Volinsky](#), Z. Wang, N. Gallant, L.J. Qiao, International Symposium on Plasticity 2012 and Its Current Applications, San Juan, Puerto Rico, 1/12 ([invited talk](#))
25. *Irradiated 3C-SiC Maximum Temperature Sensor*, [A.A. Volinsky](#), General Electric, Greenville, SC, 10/11 ([invited seminar](#))
26. *Carbon Deposition by Film Delamination and X-ray Mirror Curvature Control*, [A.A. Volinsky](#), Laboratori Nazionali di Frascati, Istituto Nazionale di Fisica Nucleare, Frascati, Italy, 7/11 ([invited seminar](#))
27. *Advanced Nanomechanical Characterization Techniques*, [A.A. Volinsky](#), Hainan University, Haikou, China, 3/11 ([invited lecture](#))
28. *Non-standard Application of the Nanoindentation Apparatus*, [A.A. Volinsky](#), Moscow State University of Aviation Technology, MATI, Moscow, Russia, 2/11 ([invited lecture](#))
29. *Materials Education in the United States of America*, [A.A. Volinsky](#), University of Science and Technology Beijing, China, 10/10 ([invited lecture](#))
30. *Advanced Nanomechanical Testing with Nanoindentation*, [A.A. Volinsky](#), Henan University of Science and Technology, Luoyang, China, 10/10 ([invited seminar](#))
31. *Compliant MEMS Devices Actuation with the Nanoindenter and Electrowetting Experiments*, [A.A. Volinsky](#), N.B. Crane, C. Lusk, University of Science and Technology Beijing, China, 10/10 ([invited seminar](#))
32. *Total Variation Regularization for Thin Film Stress Analysis*, J.M. Carballo, A.A. Volinsky, Nano-Florida Conference, Orlando, FL, 9/09
33. *Fracture Patterns Formation due to Rapid Cooling of Mo/Si Nanolayers*, R. Shields, G. Kravchenko, J. Rachwal, A.A. Volinsky, Nano-Florida Conference, Orlando, FL, 9/09
34. *Evaporation of Pump Oil and Alkanes*, N. Waldstein, A.A. Volinsky, Nano-Florida Conference, Orlando, FL, 09/09
35. *X-Ray Stress Analysis of Silicon Wafers Under Four-point Bending*, J.D. Rachwal, A.A. Volinsky, H. Stöcker, D.C. Meyer, Nano-Florida Conference, Orlando, FL, 9/09
36. *Alternative Applications of a Nanoindenter*, [A.A. Volinsky](#), N.B. Crane, C. Lusk, N. Gallant, Florida Institute of Technology, Mechanical and Aerospace Engineering Seminar, Melbourne, FL, 8/09 ([invited seminar](#))
37. *Compliant MEMS Device Actuation and Fracture*, [A.A. Volinsky](#), D. Ke, C. Lusk, 12<sup>th</sup> International Congress on Fracture (ICF 12), Ottawa, Canada, 8/09
38. *Simplified Quantum Mechanics for Engineers*, [A.A. Volinsky](#), European X-ray Free Electron Laser, Hamburg Germany, 7/10 ([invited lecture](#))
39. *International US-Germany Joint Study of X-Ray Optics Thermomechanical Stability and Control*, [A.A. Volinsky](#), European Free Electron Laser, Hamburg Germany, 7/10 ([invited talk](#))
40. *Thin Films Mechanical Stability and Fracture Prevention*, [A.A. Volinsky](#), European X-ray Free Electron Laser, Hamburg Germany, 6/10 ([invited talk](#))
41. *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, 3/09
42. *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, 3/09
43. *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
44. *Mechanical Properties of Single and Polycrystalline SiC Thin Films*, J. Deva Reddy, [A.A. Volinsky](#), C. Frewin, C. Locke, S.E. Sadow, Materials Research Society 2008 Fall Meeting, Fundamentals of Nanoindentation and Nanotribology IV Symposium, Boston, MA, 12/08 ([invited talk](#))
45. *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](#))
46. *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](#))
47. *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
48. *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](#))

49. *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](#))
50. *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
51. *Nanomechanical Testing: From Corrosion Protection Coatings to MEMS Devices*, [A.A. Volinsky](#), Qualcomm Seminar Series, San Jose, CA, 8/08 ([invited talk](#))
52. *Lubricant Evaporation Rate Measurements: Methods Development and Limitations*, [A.A. Volinsky](#), N.A. Waldstein, Seagate Technology, Scotts Valley, CA, 8/08 ([invited talk](#))
53. *Temperature-induced Curvature Control in X-Ray Optics*, [A.A. Volinsky](#), G. Kravchehko, D.C. Meyer, Hamburg Synchrotron HASYLAB DESY, Hamburg Germany, 7/08 ([invited talk](#))
54. *Thin Film Fracture Prevention Practices*, [A.A. Volinsky](#), Leibniz-Institute for Catalysis at the University of Rostock, Berlin Germany, 7/08 ([invited talk](#))
55. *Mechanical Properties of Advanced Interconnect Structures in Microelectronic Devices*, [A.A. Volinsky](#), AMD Dresden, Germany, 7/08 ([invited talk](#))
56. *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](#))
57. *Nanoindentation Techniques for Assessing Mechanical Properties of Advanced Interconnect Structures*, [A.A. Volinsky](#), IMEC, Leuven, Belgium, 5/08 ([invited talk](#))
58. *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
59. *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, Materials Research Society 2008 Spring Meeting, Silicon Carbide-Materials, Processing, and Devices Symposium, San Francisco, CA, 3/08
60. *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](#))
61. *Chromium Oxide Coatings for Steel Corrosion Protection*, [A.A. Volinsky](#), X. Pang, K. Gao, Army Corrosion Summit 2008, Clearwater, FL, 2/08
62. *Water Effects on Gold Nanowear*, M. Pendergast, [A.A. Volinsky](#), NSF IREE Grantees Conference, Purdue University, West Lafayette, IN, 10/07 ([poster](#))
63. *Mechanical Properties of Advanced Interconnect Structures*, [A.A. Volinsky](#), Infineon, Munich, Germany, 06/07 ([invited talk](#))
64. *Nanomechanical Wear Testing*, [A.A. Volinsky](#), Frontiers of Nanomechanical Testing Workshop, Krakow, Poland, 6/07
65. *Interactive Growth of Delamination and Channel Cracks in Thin Films*, B. Yang, [A.A. Volinsky](#), ASME Applied Mechanics and Materials Conference, Austin, TX, 6/07
66. *Fracture of Chromium Oxide Coatings*, [A.A. Volinsky](#), X. Pang, K.W. Gao, University of Science and Technology Beijing, China, 12/06, ([invited talk](#))
67. *Mechanical Reliability of Thin Films and Multilayers*, [A.A. Volinsky](#), University of Science and Technology Beijing, China, 12/06, ([invited lecture](#))
68. *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](#))
69. *Patterns in Fracture and Wear*, [A.A. Volinsky](#), Tokyo Institute of Technology, Japan, 11/06
70. *Fracture Patterns*, [A.A. Volinsky](#), Osaka University, Japan, 11/06
71. *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](#))
72. *Mechanical Aspects of Anti-Corrosive Coatings Performance Tests*, [A.A. Volinsky](#), NACE International Corrosion 2006 Conference, San Diego, CA, 3/06
73. *Moisture-induced Thin Film Adhesion Degradation*, [A.A. Volinsky](#), P. Waters, NACE International Corrosion 2006 Conference, San Diego, CA, 3/06
74. *Wear-induced Nanoscale Surface Reconstruction Patterns*, [A.A. Volinsky](#), B. Such, M. Szymonski, 135<sup>th</sup> TMS 2006 Annual Conference, San Antonio, TX, 3/06
75. *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, 135<sup>th</sup> TMS 2006 Annual Conference, San Antonio, TX, 3/06
76. *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
77. *Moisture and Stress Effects on Thin Film and Coating Adhesion*, [A.A. Volinsky](#), P. Waters, Army Corrosion Summit 2006, Clearwater, FL, 2/06

78. *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)
79. *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
80. *Simulation of Periodic Crack Growth in Thin Films*, A.A. Volinsky, B. Yang, 2005 ASME Mechanical Engineering Congress, Orlando FL, 11/05
81. *Moisture Effects on Copper Thin Film Adhesion*, A.A. Volinsky, P.J. Waters, 2005 ASME Mechanical Engineering Congress, Orlando FL, 11/05
82. *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
83. *Probing Thin Film Mechanical Properties by Nanoindentation*, A.A. Volinsky, Technische Universität Dresden, Institut für Strukturphysik, Dresden, Germany, 8/05 (invited seminar)
84. *Multidisciplinary Field of Materials Science and Engineering*, A.A. Volinsky, Jagiellonian University, Department of Physics, Astronomy and Computer Science, Krakow, Poland, 6/05 (invited lecture)
85. *Nanoindentation for Thin Film Fracture Testing*, A.A. Volinsky, NanoPol 2005: Frontiers of Nanomechanical Testing Workshop, Krakow, Poland, 6/05
86. *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)
87. *Stress-induced Periodic Fracture Patterns in Thin Films*, A.A. Volinsky, N.R. Moody, D.C. Meyer, 11<sup>th</sup> International Congress on Fracture (ICF 11), Turin, Italy, 3/05
88. *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
89. *Micro-fluidics Applications of Telephone Cord Delamination Blisters*, A. A. Volinsky, P.J. Waters, G. Wright, Materials Research Society 2004 Fall Meeting, Mechanically Active Materials Symposium, Boston, MA, 12/04 (poster)
90. *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
91. *Thin Films Periodic Fracture Patterns*, A.A. Volinsky, 2004 ASME Mechanical Engineering Congress, Anaheim, CA 10/04
92. *Nanoindentation for advanced microelectronic interconnects mechanical characterization*, A.A. Volinsky, Symposium and Summer School: Nano and Giga Challenges in Microelectronics 2004, Cracow, Poland, 9/04 (invited poster)
93. *Low-K Dielectrics Metrology*, A.A. Volinsky, Porotech Ltd., Vaughan, ON, Canada, 8/04 (invited talk)
94. *Thin Film Mechanical Reliability: Environmental Effects*, A.A. Volinsky, NIST Workshop on Reliability Issues in Nanomaterials, Boulder, CO, 8/04
95. *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)
96. *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),
97. *Nanoindentation for Microelectronic Materials Characterization*, A.A. Volinsky, Intel, Chandler, AZ, 3/04 (invited talk)
98. *Mechanical Reliability of Advanced Interconnect Structures*, A.A. Volinsky, IEEE Nanoscale Device and System Integration Conference, Miami, FL 2/04 (invited talk)
99. *Nanoindentation Techniques for Assessing Mechanical Reliability of Microelectronic Interconnect Structures*, A.A. Volinsky, USF Physics Colloquium, 1/04
100. *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
101. *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
102. *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)
103. *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

104. *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](#))
105. *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](#))
106. *Mechanical Reliability and Characterization of Modern Microelectronic Interconnect Structures*, [A.A. Volinsky](#), Nano-Engineering World Forum, Marlborough, MA, 6/03 ([invited talk](#))
107. *SEM-related FAB Analytical Support*, [A.A. Volinsky](#), 2003 Phoenix Technical Forum, Chandler AZ, 3/03
108. *Characterization of Advanced Microelectronic Interconnect Structures*, [A.A. Volinsky](#), University of South Florida Department of Mechanical Engineering Invited Colloquium, 2/03 ([invited talk](#))
109. *Characterization and Reliability of Advanced Microelectronic Interconnect Structures*, [A.A. Volinsky](#), Purdue University School of Materials Engineering Invited Colloquium, 1/03 ([invited talk](#))
110. *"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
111. *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
112. *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](#))
113. *Nanoindentation Techniques for Assessing Mechanical Reliability at Nanoscale*, [A.A. Volinsky](#), Symposium and Summer School: Nano and Giga Challenges in Microelectronics, Moscow, Russia, 9/02 ([invited talk](#))
114. *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](#))
115. *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](#))
116. *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, 10<sup>th</sup> International Congress on Fracture (ICF 10), Honolulu, HI, 12/01 ([invited talk](#))
117. *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, 10<sup>th</sup> International Congress on Fracture (ICF 10), Honolulu, HI, 12/01 ([invited talk](#))
118. *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, 10<sup>th</sup> International Congress on Fracture (ICF 10), Honolulu, HI, 12/01
119. *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
120. *The Role of Geometry and Plasticity in Thin, Ductile Film Adhesion*, [A.A. Volinsky](#), University of Texas Seminar, Austin, 9/01 ([invited seminar](#))
121. *Fracture Toughness and Adhesion of Low-K Dielectric Thin Films*, [A.A. Volinsky](#), J.B. Vella, B.W. Fowler, I.S. Adhichetty, W.W. Gerberich, ASME/USCE/SES MMC 2001 Conference, San Diego, CA, 6/01 ([invited talk](#))
122. *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](#))
123. *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](#))
124. *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](#))
125. *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](#))
126. *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](#))
127. *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

128. *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)
129. *Thin Film Adhesion Measurement Techniques*, A.A. Volinsky, W.W. Gerberich, Motorola, AZ, 4/00 (invited talk)
130. *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)
131. *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
132. *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)
133. *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)
134. *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, 11/99
135. *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
136. *Indentation-induced Ductile Film Fracture*, A.A. Volinsky, W.W. Gerberich, Sandia National Laboratories, Livermore, CA, 8/99
137. *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
138. *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)