Adam J. Schwartz

The Ames Laboratory
311 TASF
Ames, IA 50011-3020
ajschwartz@ameslab.gov
www.ameslab.gov

Research Interests

Accelerating advanced material development and deployment
Structure - property - processing - performance relationships
High pressure and dynamic properties of materials
Critical materials
Rare earth elements, alloys, and compounds
Actinide science

Education

Ph.D., Materials Science and Engineering, University of Pittsburgh, 1991. Dissertation: "Magnetization, Coercivity, and Magnetic Viscosity in Co-Ni and Co-Ni-Al Fine Particle Ferromagnets"
M.S., Metallurgical Engineering, University of Pittsburgh, 1989
B.S., Metallurgical Engineering, University of Pittsburgh, 1985

Professional Appointments and Leadership Positions

2014 – present	**Director, The Ames Laboratory**
2014 – present	**Professor, Materials Science and Engineering, Iowa State University**
2014 – present	**Critical Materials Institute Advisory Board, Ames Laboratory**
2013 – 2014	**Leadership Team, Developing Substitutes Focus Area Leader** **Critical Materials Institute, Ames Laboratory led DOE Energy Innovation Hub**
2010 – 2014	**Division Leader, Condensed Matter and Materials Division** **Lawrence Livermore National Laboratory**
2005 – 2012	**Adjunct Research Professor** **Washington State University**
2009 – 2010	**Acting Program Leader for Dynamic Materials Properties** **Lawrence Livermore National Laboratory**
2009 – 2010	**Acting Program Leader for Physics and Engineering Models** **Lawrence Livermore National Laboratory**
2009 – 2010	**Group Leader, Actinide Science and Characterization** **Lawrence Livermore National Laboratory**
2005 – 2010	**Project Leader, Phase Transformations and Aging in Pu Alloys** **Lawrence Livermore National Laboratory**

2005 – 2008	**Deputy Division Leader, Condensed-Matter and High-Pressure Physics Division** **Lawrence Livermore National Laboratory**
2002 – 2005	**Deputy Program Leader for Enhanced Surveillance – Plutonium Aging** **Lawrence Livermore National Laboratory**
2002 – 2004	**Board of Directors** **Valley Children's Museum, San Ramon, CA**
1999 – 2002	**Project Leader, Fundamentals of Dynamic Deformation and Failure** **Lawrence Livermore National Laboratory**
1997 – 2005	**Task Leader, Plutonium Science and Plutonium Aging** **Lawrence Livermore National Laboratory**
1997 – 2002	**Project Leader, Shaped-Charge Liner Processing and Characterization** **Lawrence Livermore National Laboratory**
1997 – 2000	**Project Leader, Grain Boundary Engineering for Improved and Predictable Materials Properties** **Lawrence Livermore National Laboratory**
1994 - 1997	**Staff Scientist** **Lawrence Livermore National Laboratory**
1991 – 1994	**Post Doctoral Research Associate** **Lawrence Livermore National Laboratory**

Professional Activities, Select Honors, and Awards

APS, TMS, MRS
National and International Review Panels (12)
Symposium Organizer (7)
LLNL Science, Technology, Engineering, and Operations Award, 2008
DOE/NNSA/Defense Programs Award of Excellence, 2007
Lawrence Livermore National Laboratory Science and Technology Award, 2003
Neill Griffiths Memorial Award, 1998

Select Leadership Advancement

Institute for Management Studies
Global Institute for Leadership Development
The Leadership Challenge
Best Practice Project Management
LLNL Management Institute
LLNL Executive Presence
UCLA Extension
- Managing Systems Development
- Cost Estimation of Projects
- Project Risk and Opportunity Management

Patent

United States Patent Number: US 6,397682 B2, June 4, 2002, Mukul Kumar, Adam Schwartz, Wayne King, "Intergranular Degradation Assessment Via Random Grain Boundary Network Analysis."

Select Plenary, Keynote, and Invited Talks

2015: Invited, Graduate and Professional Student Senate Seminar, "Scientific Research at the Ames Laboratory"

2015: Invited, Ames Rotary Club, "Ames Laboratory: A Cornerstone of Ames Since 1947"

2014: Invited, Beyond Rare Earth Magnets Workshop, Ames Laboratory, "Materials Development Framework"

2014: Invited, Department of Physics and Astronomy Seminar, Iowa State University, "Plutonium Aging"

2014: Keynote, Liberal Arts and Sciences Signature Theme Workshop on Complex Materials, Iowa State University, "Complex Materials Research at the Ames Laboratory"

2014: Invited, Materials Science and Engineering Seminar, Iowa State University, "Time-Dependent Processes in Pu Alloys: From Femtoseconds to Teraseconds"

2014: Invited, George Washington University, Elliott School of International Affairs, "Contribution of the National Laboratory System to U.S. National Security" with Charles McMillan and Paul Hommert

2014: Invited, Trilateral Workshop on Critical Materials, Ames, IA, "Creating a Quantitative Framework for Cost-Efficient Material Development"

2014: Invited, Rare Earth Research Conference 2014, Squaw Valley, CA, "Developing Substitutes for Critical Materials"

2013: Plenary, Critical Materials Institute Workshop, The Ames Laboratory, "Developing Substitutes"

2013: Invited, Presentation to Tsuneo Nishida – Permanent Mission of Japan to the United Nations, LLNL, "Critical Materials"

2013: Plenary, LLNL Science Day, LLNL, "Resolving a National Challenge: The Science of Aging Weapons"

2010: Plenary, Pu Futures 2010 – The Science, A Topical Conference on Plutonium and Actinides, Keystone, Colorado, "Time-Dependent Processes in Pu Alloys: From Femtoseconds to Teraseconds"

2008: Invited, Pu Futures 2008 – The Science, A Topical Conference on Plutonium and Actinides, Dijon, France, "Isothermal Martensitic and Pressure-Induced δ to α' Phase Transformations in a Pu-Ga Alloy"

2008: Invited, Spring 2008 Materials Research Society Meeting, San Francisco, CA, "Low-Temperature Martensitic and Pressure-Induced δ to α' Phase Transformation in a Pu-Ga Alloy"

2008: Invited (with T.B. Massalski), Spring 2008 Materials Research Society Meeting, San

Francisco, CA, “Structure and Phase Transformations in Pu Alloys”

2008: Keynote, Plasticity 2008, Kona, HI, “Isothermal Martensitic and Pressure-Induced δ to α′ Phase Transformation in a Pu-Ga Alloy”

2006: Invited Tutorial, Fall 2006 Materials Research Society Meeting, Boston, MA, “Opportunities in Plutonium Metallurgical Research”

2006: Plenary, Pu Futures 2006 – The Science, A Topical Conference on Plutonium and Actinides, Pacific Grove, CA, “Plutonium Metallurgy: The Materials Science Challenges Bridging Condensed-Matter Physics and Chemistry”

2006: Invited Tutorial, Pu Futures 2006 – The Science, A Topical Conference on Plutonium and Actinides, Pacific Grove, CA, “Frontiers of Metallic Plutonium – A Tutorial”

2005: Invited, 5th International Workshop: Fundamental Plutonium Properties, Snezhinsk, Russia, “Advanced Transmission Electron Microscopy Characterization of Pu-Alloys”

2005: Invited, 5th International Workshop: Fundamental Plutonium Properties, Snezhinsk, Russia, “Transformation Crystallography and Morphology of Isothermal Martensite in Pu-Ga Alloys”

2005: Invited Lecturer, CDAC Summer School, Advanced Photon Source, Argonne National Laboratory, “Physics, Materials Science, and Chemistry of Actinides”

2004: Invited, Russian – U.S. Workshop on Plutonium Science, Sarov, Russia, “Characterization of Aging Phenomena in Pu-Alloys”

2003: Invited, Aging, Compatibility and Stockpile Stewardship Conference, Lawrence Livermore National Laboratory, “Plutonium Aging and Pit Lifetimes”

2003: Plenary, Actinides Separation Conference, Berkeley, CA, “Characterization of Aging in Old Plutonium”

2002: Invited, ASM International California Meeting, “Electron Backscatter Diffraction”

2001: Invited, Denver X-Ray Conference, Steamboat Springs, CO, “An Overview of Electron Backscatter Diffraction”

2001: Invited, 19th International Symposium on Ballistics, Interlaken, Switzerland, “Role of Texture in Spin Formed Cu Shaped-Charge Liners”

2000: Invited, Microscopy and Microanalysis 2000, Philadelphia, PA, “Coupling Automated Electron Backscatter Diffraction with Transmission Electron and Atomic Force Microscopies”

2000: Invited, Northern California Microscopy Society, "Combining Orientation Imaging with TEM and AFM for Materials Characterization”

2000: Invited, Orientation Imaging Microscopy Workshop, Salt Lake City, UT, "Coupling Automated Electron Backscatter Diffraction with Transmission Electron and Atomic Force Microscopies"

1999: Invited, Fall 1999 Materials Research Society Meeting, Boston, MA, “Influence of Processing Method on the Grain Boundary Character Distribution”

1999: Invited, The Minerals, Metals and Materials Society Meeting, Advances in Twinning, San Diego, CA, “Role of Twinning in the Optimization of the Grain Boundary Character

Distribution"

1998: Invited, 17th International Symposium on Ballistics, Midrand, South Africa, "Analysis of Intergranular Impurity Concentration and the Effects on the Ductility of Copper Shaped Charge Jets"

1998: Invited, Pontifical Catholic University of Rio de Janiero, Brazil, "Electron Backscatter Diffraction Characterization of Texture Gradients in Ta and Ta Alloys"

1998: Invited, Johns Hopkins University, Baltimore, MD, "Applications of Orientation Imaging Microscopy and the Potential to Engineer Grain Boundaries"

1996: Invited, U.S. Army Symposium on Solid Mechanics, Myrtle Beach, SC, "Mechanical Behavior and Microtexture of Ta and Ta-W Plate"

Books

Schwartz, A.J., Kumar, M., Adams, B.L., and Field, D.P., Editors, Electron Backscatter Diffraction in Materials Science, 2nd Edition, Springer Publishers, New York (2009). ISBN 978-0-387-88135-5, e- ISBN 978-0-387-88136-2, DOI 10.1007/978-0-387-88136-2.

Sarrao, J., Schwartz, A.J., Antonio, M.R., Burns, P.C., Haire, R.G., and Nitsche, H., Editors, Actinides 2005 – Basic Science, Applications, and Technology, Materials Research Society, **893**, 2006.

Schwartz, A.J., Kumar, M., and Adams, B.L., Editors, Electron Backscatter Diffraction in Materials Science, Kluwer Academic/ Plenum Publishers, New York, 2000.

Book Chapter, Published

Schwarzer, R.A., Field, D.P., Adams, B.L., Kumar, M., and Schwartz, A.J., Present State of Electron Backscatter Diffraction and Prospective Developments, in: Electron Backscatter Diffraction in Materials Science, 2nd Edition, A.J. Schwartz, M. Kumar, B.L. Adams, and D.P. Field, eds., Springer Publishers, New York, 1 (2009).

King, W.E., Stölken, J.S., Kumar, M., and Schwartz, A.J., Strategies for analyzing EBSD datasets, in: Electron Backscatter Diffraction in Materials Science, A.J. Schwartz, M. Kumar, B.L. Adams, eds., Kluwer Academic/Plenum Publishers, New York, 153 (2000).

Guest Editor

Schwartz, A.J., and Wolfer, W.G., *Journal of Computer-Aided Materials Design*, 14(3), 2007.

Select Journal Publications

Jeffries, J.R., Manley, M.E., Wall, M.A., Blobaum, K.J.M., and Schwartz, A.J., "Hidden disorder in the alpha' → delta transformation of Pu-1.9at. 5 Ga," *Physical Review B*, **85**, 224104 (2012).

Blobaum, K.J.M., Jeffries, J.R., Schwartz, A.J., Cynn, H., Yang, W., Wall, M.A., and Evans, W.J., "In situ X-ray diffraction study of the delta to alpha' isothermal martensitic transformation kinetics in a Pu- Ga alloy," *Journal of Nuclear Materials*, **412** (3), 84-88 (2011).

Jeffries, J.R., Wall, M.A., Moore, K.T., and Schwartz, A.J., "He bubble coarsening by migration and coalescence in annealed Pu- Ga alloys," *Journal of Nuclear Materials*, **410** (1-3), 327-333 (2011).

Jeffries, J.R., Blobaum, K.J.M., Wall, M.A., and Schwartz, A.J., "Evidence for nascent equilibrium nuclei as progenitors of anomalous transformation kinetics in a Pu-Ga alloy," *Physical Review B*, **80**, 094107 (2009).

Schwartz, A.J., Cynn, H., Blobaum K.J.M., Wall, M.A., Moore, K.T., Evans, W.J., Farber D.L., Jeffries, J.R., and Massalski, T.B., "Atomic structure and phase transformations in Pu alloys," *Progress in Materials Science*, **54**, 909-943 (2009).

Jeffries, J.R., Blobaum, K.J.M., Wall, M.A., and Schwartz, A.J., "Microstructural evidence for conditioning-dependent δ→α′ transformations in retained δ–phase Pu-Ga," *Acta Materialia*, **57**, 1831-1842 (2009).

Jeffries, J.R., Blobaum, K.J.M., Wall, M.A., and Schwartz, A.J., "Reproducible phase transformation in a single Pu–1.9 at.% Ga specimen," *Journal of Nuclear Materials*, **384**, 222-225 (2009).

Tobin, J.G., Söderlind, P., Landa, A., Moore, K.T., Schwartz, A.J., Chung, B.W., Wall, M.A., Wills, J.M., Haire, R.G., and Kutepov, A.L., "Electronic structure: wide-band, narrow-band, and strongly correlated systems," *Journal of Physics: Condensed Matter*, **20**, 125204 (2008).

Schwartz, A.J., and Wolfer, W.G., "Toward a Deeper Understanding of Plutonium," *Journal of Computer-Aided Materials Design*, **14**(3), 329-330 (2007).

Schwartz, A.J., and Wolfer, W.G., "Introduction to Modeling and Simulations of Plutonium Aging," *Journal of Computer-Aided Materials Design*, **14**(3), 331-335 (2007).

Schwartz, A.J., "Plutonium Metallurgy: The materials science challenges bridging condensed-matter physics and chemistry," *Journal of Alloys and Compounds*, **444-445C**, 4-10 (2007).

Massalski, T.B., and Schwartz, A.J., "Connections between the Pu- Ga phase diagram in the Pu-rich region and the low temperature phase transformations," *Journal of Alloys and Compounds*, **444-445C**, 98-103 (2007).

Oudot, B., Blobaum, K.J.M., Wall, M.A., and Schwartz, A.J., "Confirmation of the double-C curve kinetics in the isothermal δ → α ′ phase transformation in a Pu-Ga alloy using differential scanning calorimetry," *Journal of Alloys and Compounds*, **444-445C**, 230-235 (2007).

Moore, K.T., van der Laan, G., Wall, M.A., Schwartz, A.J., and Haire, R.G., "Rampant changes in 5f5/2 and 5f7/2 filling across the light and middle actinide metals," *Physical Review B*, **76**, 073105 (2007).

Moore, K.T., Söderlind, P.A. Schwartz, A.J., and Laughlin, D.E., Comment on "Symmetry and Stability of δ Plutonium: The Influence of Electronic Structure," – Reply, *Physical Review Letters*, **99**(1), 019704 (2007).

Moore, K.T., van der Laan, G., Haire, R.G., Wall, M.A., Schwartz, A.J., and Söderlind, P., "Emergence of Strong Exchange Interaction in the Actinide Series: The Driving Force for Magnetic Stabilization of Curium," *Physical Review Letters*, **98**, 236402 (2007).

Moore, K.T., Laughlin, D.E., Söderlind, P., and Schwartz, A.J., "Incorporating anisotropic electronic structure in crystallographic determination of complex metals: iron and plutonium," *Philosophical Magazine*, **87** (17), 2571-2588 (2007).

Moore, K.T., Krenn, C.R., Wall, M.A., and Schwartz, A.J., "Orientation relationship, habit plane, twin relationship, interfacial structure, and plastic deformation resulting from the $\delta \rightarrow \alpha'$ isothermal martensitic transformation in Pu-Ga alloys," *Metallurgical and Materials Transactions*, **38A**, 212-222 (2007).

Chu, S., Schwartz, A.J., Massalski, T.B., and Laughlin, D.E., "Extrinsic paramagnetic Meissner Effect in multiphase indium-tin alloys," *Applied Physics Letters*, **89**, 111903 (2006). Also published in the September 15, 2006 issue of *Virtual Journal of Applications of Superconductivity*.

Blobaum, K.J.M., Krenn, C.R., Wall, M.A., Massalski, T.B. and Schwartz, A.J., "Nucleation of the α' phase in Pu-Ga alloys," *Acta Materialia*, **54**, 4001-4011 (2006).

Moore, K.T., Söderlind, P.A. Schwartz, A.J., and Laughlin, D.E., "Symmetry and Stability of δ Plutonium: The Influence of Electronic Structure," *Physical Review Letters*, **96**, 206402-1-4 (2006).

Chung, B.W., Schwartz, A.J., Ebbinghaus, B.B., Fluss, M.J., Haslam, J.J., Blobaum, K.J.M, and Tobin, J.G., "Spectroscopic Signature of Aging in δ-Pu(Ga), *Journal of the Physical Society of Japan*, **75** (5), 054710 (2006).

Blobaum, K.J.M., Krenn, C.R., Mitchell, J.N., Haslam, J.J., Wall, M.A., Massalski, T.B. and Schwartz, A.J., "Evidence of transformation bursts during thermal cycling of a Pu-Ga alloy," *Metallurgical and Materials Transactions*. **37**A, 567-577 (2006).

Moore, K.T., van der Laan, G., Tobin, J.G., Chung, B.W., Wall, M.A., and Schwartz, A.J., "Probing the population of the spin-orbit split levels in the actinide 5f states," *Ultramicroscopy*, **106**, 261-268 (2006).

Moore, K.T., van der Laan, G., Haire, R.G., Wall, M.A., and Schwartz, A.J., "Oxidation and aging in U and Pu probed by spin- orbit sum rule analysis: Indications for covalent metal-oxide bonds," *Physical Review B*, **73**, 033109 (2006).

Schwartz, A.J., King, W.E., and Kumar, M., "Influence of processing method on the network of grain boundaries," *Scripta Materialia*, **54/6**, 963-968 (2006).

Wong, J., Krisch, M., Farber, D.L., Occelli, F., Xu, R., Chiang, T.-C., Clatterbuck, D., Schwartz,

A.J., Wall, M.A., and Boro, C., "Crystal dynamics of δ fcc Pu-Ga by high resolution inelastic x-ray scattering," *Physical Review B*, **72**, 064115 (2005).

Kim, T.K., Wells, J., Kirkegaard, C., Li, Z., Hoffmann, S.V., Gayone, J.E., Fernandez-Torrente, I., Häberle, P., Pascual, J.I., Moore, K.T., Schwartz, A.J., He, H., Spence, J.C.H., Downing, K.H., Lazar, S., Tichelaar, F.D., Borisenko, S.V., Knupfer, M., and Hofmann, Ph., "Evidence against a charge density wave on Bi (111)," *Physical Review B*, **72**, 085440 (2005).

Schwartz, A.J., Wall, M.A., Zocco, T.G., and Blobaum, K.J.M., "Transmission Electron Microscopy Characterization of Helium Bubbles in Aged Plutonium," *Materialovedenie*, **7**, 42-53 (2005).

Tobin, J.G., Moore, K.T., Chung B.W., Wall, M.A., Schwartz, A.J., van der Laan, G., and Kutepov, A.L., "Competition Between Delocalization and Spin-Orbit Splitting in the Actinide 5f States," *Physical Review B,* **72**, 085109 (2005).

Jin, Y.M., Wang, Y.U., Khachaturyan, A.G., Krenn, C.R., and Schwartz, A.J., "Crystallography of the δ → α Martensitic Transformation in Plutonium Alloys," *Metallurgical and Materials Transactions A*, **36A**, 2031-2047 (2005).

Schwartz, A.J., Wall, M.A., Zocco, T., Schaldach, C., and Wolfer, W.G., "Characterization and Modeling of Helium Bubbles in Self- Irradiated Plutonium Alloys," *Philosophical Magazine*, **85** (4-7) 479-488 (2005).

Arsenlis, A., Wolfer, W.G., and Schwartz, A.J., "Change in Flow Stress and Ductility of δ-Phase Pu-Ga Alloys due to Self-Irradiation Damage," *Journal of Nuclear Materials*, **336**, Issue 1, 31-39 (2005).

Schwartz, A.J., Kumar, M., and Lassila, D.H., "Analysis of Intergranular Impurity Concentration and the Effects on the Ductility of Copper Shaped Charge Jets," *Metallurgical and Materials Transactions A*, **35A**, 2567-2573 (2004).

Minich, R.W., Cazamias, J.U., Schwartz, A.J., and Kumar, M., "Effect of Microstructural Length Scales on Spall Strength of Copper," *Metallurgical and Materials Transactions A*, **35A**, 2663-2673 (2004).

van der Laan, G., Moore, K.T., Tobin, J.G., Chung, B.W., Wall, M.A., and Schwartz, A.J., "Applicability of the spin-orbit sum rule for the actinide 5f states," *Physical Review Letters*, **93**, (9) 097401-1-4 (2004).

Hsiung, L.M., Schwartz, A.J., and Nieh, T.G., "*In situ* TEM observations of interface sliding and migration in a refined lamellar TiAl alloy," *Intermetallics*, **12**, 727-732 (2004).

Moore, K.T., Chung, B.W., Morton, S.A., Schwartz, A.J., Tobin, J.G., Lazar, S., Tichelaar, F.D., Zandbergen, H.W., Söderlind, P., and Van der Laan, G., "Changes in the electronic structure of cerium due to variations in close-packing, *Physical Review B*., **69**, 193104 (2004).

Wong, J., Wall, M., Schwartz, A.J., Xu, R., Holt, M., Hong, H., Zschack, P., and Chiang, T.-C., "Imaging of phonons in fcc Pu-Ga alloy by thermal diffuse x-ray scattering," *Applied Physics*

Letters, **84**, No. 18, 3747-3749 (2004).

Moore, K.T., Wall, M.A., Schwartz, A.J., Chung, B.W., Morton, S.A., Tobin, J.G., Lazar, S., Tichelaar, F.D., Zandbergen, H.W., Söderlind, P., and van der Laan, G., "Electron-energy-loss and X-ray absorption spectroscopy as complementary probes for complex f- electron metals: cerium and plutonium," *Philosophical Magazine*, **84**, No. 10, 1039-1056 (2004).

Dave, V.R., Cola, M.J., Kumar, M, Schwartz, A.J., and Hussen, G.N.A., "Grain boundary character in Alloy 690 and ductility-dip cracking susceptibility," *WELDING JOURNAL*, **B** (1), 1S-5S (2004).

Nelson, E.J., Blobaum, K.J.M., Wall, M.A., Allen, P.G., Schwartz, A.J., and Booth, C.H., "Local structure and vibrational properties of α'-Pu martensite in Ga stabilized δ-Pu, *Physical Review B*, **67**, 224206 (2003).

Martz, J.C., and Schwartz, A.J., "Plutonium: Aging Mechanisms and Weapon Pit Lifetime Assessment," *JOM*, **55**, No. 9, 19-23 (2003).

Zocco, T.G., and Schwartz, A.J., "A Brief History of TEM Observations of Plutonium and Its Alloys," *JOM*, **55**, No. 9, 24-27 (2003).

Wong, J., Krisch, M., Farber, D.L., Occelli, F., Schwartz, A.J., Chiang, T.-C., Wall, M.A., Boro, C., and Xu, R., "Phonon Dispersions of fcc δ-Plutonium-Gallium by Inelastic X-ray Scattering," *Science*, **301**, 1078-1080 (2003).

Moore, K.T., Wall, M.A., Schwartz, A.J., Chung, B.W., Schulze, R.K., and Tobin, J.G., "The Failure of Russell-Saunders Coupling in the 5f States of Plutonium," *Physical Review Letters*, **90**, Number 19, 196404 (2003).

Moore, K.T., Wall, M.A., and Schwartz, A.J., "Experimental verification of the existence and structure of ζ Pu6Fe in a Pu-Ga alloy using electron diffraction and EDXS in a TEM," *Journal of Nuclear Materials*, **306**, Issues 2-3, 213-217 (2002).

Kumar, M., Schwartz, A.J., and King, W.E., "Microstructural Evolution in FCC Materials During Sequential Thermomechanical Processing: Implications for Grain Boundary Engineering," *Acta Materialia*, Vol. **50**, 2599-2612 (2002).

Terminello, L.J., Caturla, M.J., Fluss, M.J., Gouder, T., Haire, R.G., Haschke, J.M., Hecker, S.S., Lander, G., Rebizant, J., Schwartz, A.J., Silva, R.J., Wall, M.A., Wastin, F., Weber, W.J., Wirth, B.D., and Wolfer, W.G., "Challenges in plutonium and actinide materials science," *MRS Bulletin*, **26**, No. 9, 667–671 (2001).

Wirth, B.D., Schwartz, A.J., Fluss, M.J., Caturla, M.J., Wall, M.A., and Wolfer, W.G., "Fundamental Studies of Plutonium Aging," *MRS Bulletin*, **26**, No. 9, 679–683 (2001).

Kumar, M., Schwartz, A.J., and King, W.E., "Correlating observations of deformation microstructures by TEM and automated EBSD techniques," *Materials Science and Engineering, A*, **A309-310**, 78-81 (2001).

Wall, M.A., Schwartz, A.J., and Nguyen, L., "A High-Resolution Serial Sectioning Preparation Technique for Application to Electron Backscatter Diffraction," *Ultramicroscopy,* **88**, 73-83 (2001).

Schwartz, A.J., Stölken, J.S., King, W.E., and Campbell, G.H., "Lattice rotations during the compression deformation of a [011] Ta single crystal," *Materials Science and Engineering A*, Volume **A317**, 77-84 (2001).

Kumar, M., Schwartz, A.J., and King, W.E., "Modifications to the microstructural topology in F.C.C. materials through thermomechanical processing," *Acta Materialia*, **48**, 2081 (2000).

Schwartz, A.J., King, W.E., Campbell, G.H., Stölken, J.S., Lassila, D.H., Sun, S., and Adams, B.L., "Orientation imaging microscopy investigation of the compression deformation of a [110] Ta single crystal," *Transactions of the ASME, Journal of Engineering Materials and Technology*, **121**,178 (1999).

Kumar, M., Sriram, S., Schwartz, A.J., and Vasudevan, V.K., "Weak- beam analysis of dissociated 1/2<112] superdislocations in γ-TiAl," *Philosophical Magazine Letters*, **79**, No. 6, 315 (1999).

Schwartz, A.J., Lassila, D.H., and LeBlanc, M.M., "The effects of tungsten addition on the microtexture and mechanical behavior of tantalum plate," *Materials Science and Engineering A*, **244**, 178 (1998).

Schwartz, A.J., and King, W.E., "On the potential to engineer grain boundaries through thermomechanical processing," *Journal of Metals*, **50**, No. 2, 50 (1998).

King, W.E., and Schwartz, A.J., "Toward optimization of the grain boundary character distribution in OFE copper," *Scripta Materialia*, **38**, No. 3, 449 (1998).

Hsuing, L.M., Schwartz, A.J., and Nieh, T.G., "*In situ* observation of deformation-induced interface migration in a fully-lamellar TiAl alloy," *Scripta Materialia*, **36**, No. 9, 1017 (1997).

Nieh, T.G., Schwartz, A.J., and Wadsworth, J., "Superplasticity in a 17 vol % SiC particulate-reinforced ZK60A magnesium composite (ZK60/SiC/17p)," *Materials Science and Engineering A*. **208**, 30 (1996).

Wang, J.N., Schwartz, A.J., and Nieh, T.G., "Reduction of primary creep in TiAl alloys by prestraining," *Materials Science and Engineering A*. **206**, 63 (1996).

Schwartz, A.J., Paciornik, S., Kilaas, R., and Tanner, L.E., "Quantification of the modulated structures in TiPdCr alloys," *Journal of Microscopy*, **180**, Pt. 1, 51 (1995).

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Zheludev, A., Shapiro, S.M., Wochner, P., Schwartz, A., Wall, M., and Tanner, L.E., "Phonon anomaly, central peak, and microstructures in Ni2MnGa," *Physical Review B*. **51**, No. 17,

11311 (1995).

Schwartz, A.J., and Tanner, L.E., “Phase transformations and phase relations in the TiPd - TiCr pseudobinary system: experimental observations,” *Scripta Metallurgica et Materialia*, **32**, No. 5, 675 (1995).

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Kilaas, R., Paciornik, S., Schwartz, A.J., and Tanner, L.E., “Quantitative analysis of atomic displacements in HRTEM images,” *Journal of Computer Assisted Microscopy*, **6**, No. 3, 129 (1994).

Duan, S., Zhang, B., Gao, C., Rauch, G., Pressesky, J., and Schwartz, A.J., “Study of magnetic recording media on glass substrates,” *IEEE Transactions on Magnetics*, **30**, No. 6, 3966 (1994).

Schwartz, A.J., and Soffa, W.A., “Decomposition of beta-phase Co- Al alloys: precipitate crystallography and morphology,” *Scripta Metallurgica et Materialia,* **25**, 185 (1991).

Schwartz, A.J., and Soffa, W.A., “Magnetic viscosity studies of cobalt-aluminum fine-particle ferromagnets,” *IEEE Transactions on Magnetics,* **26**, No. 5, 1816 (1990).

Zeltzer, A.M., Schwartz, A.J., and Soffa W.A., “The decomposition of Beta-Phase Co-Al alloys and Fine-Particle Ferromagnets,” *Journal of Metals*, **39** (7) A37, 1987.