Christopher A. Schuh
Danae and Vasilios Professor of Metallurgy
Department of Materials Science and Engineering
Massachusetts Institute of Technology
77 Massachusetts Avenue

I Biographical Information

Birth Date:	August 4, 1975
Citizenship:	U.S.
Permanent Residency:	U.S.

II Education

School	Degree	Date
Northwestern University	PhD	June 2001
University of Illinois at Urbana-Champaign	BS	May 1997, highest honors

III Employment

Position		Beginning	Ending
MIT, Department of Materials Science and Engineering	Professor	July 2011	
	Assoc. Professor (tenured)	July 2007	June 2011
	Assoc. Professor (untenured)	July 2005	June 2007
	Asst. Professor	July 2002	June 2005
Xtalic Corporation, Marlborough MA	Founder and Chief Scientist	July 2005	present
Lawrence Livermore National Laboratory	E. O. Lawrence Post-Doctoral Fellow	May 2001	June 2002

IV Research

A. Areas of Interest

Mechanical metallurgy;
Microstructure design;
Grain boundaries and grain boundary engineering
Nanostructured coatings;
Processing-structure-property relationships in nanostructured and amorphous alloys.

B. Publications

Papers in Refereed Journals:

1. Schuh, C. and D.C. Dunand, "Transformation Superplasticity of Super Alpha-2 Titanium Aluminide," Acta Materialia 46, 5663-5675, 1998

2. Schuh, C. and D.C. Dunand, "Contributions to Transformation Superplasticity of Titanium from Rigid Particles and Pressurized Pores," Scripta Materialia 40, 1305-1312, 1999

3. Schuh, C., D.C. Dunand, A. Wanner and H. Clemens, "Thermal-cycling creep of γ-TiAl-based alloys," Intermetallics 8, 339-343, 2000

4. Schuh, C., P. Noel and D.C. Dunand, "Enhanced Densification of Metal Powders by Transformation-Mismatch Plasticity," Acta Materialia 48, 1639-1653, 2000

5. Schuh, C., "Modeling Gas Diffusion into Metals with a Moving-Boundary Phase Transformation," Metallurgical and Materials Transactions 31A, 2411-2421, 2000

6. Schuh, C., B.Q. Han and D.C. Dunand, "Enhanced Densification of Cavitated Dispersion-Strengthened Aluminum by Thermal Cycling," Metallurgical and Materials Transactions 31A, 2647-2657, 2000

7. Schuh, C. and D.C. Dunand, "Non-Isothermal Transformation-Mismatch Plasticity: Modeling and Experiments on Ti-6Al-4V," Acta Materialia 49, 199-210, 2001

8. Schuh, C. and D.C. Dunand, "Tensile Fracture of Ti-6Al-4V During Deformation by Transformation Superplasticity," Journal of Materials Research 16, 865-875, 2001

9. Schuh, C. and D.C. Dunand, "Whisker Alignment of Ti-6Al-4V/TiB Composites during Deformation by Transformation Superplasticity," International Journal of Plasticity 17, 317-340, 2001

10. Schuh, C. and D.C. Dunand, "Load Transfer During Transformation Superplasticity of Ti-6Al-4V/TiB Whisker-Reinforced Composites," Scripta Materialia 45, 631-638, 2001

11. Schuh, C. and D.C. Dunand, "Internal Stress Plasticity due to Chemical Stress Gradients," Acta Materialia 49, 3387-3400, 2001

12. Schuh, C. and D.C. Dunand, "An Overview of Power-Law Creep in Polycrystalline B-Titanium," Scripta Materialia 45, 1415-1421, 2001

13. Dunand, D.C., C. Schuh and D.L. Goldsby, "Pressure-Induced Transformation Plasticity in H_2O Ice," Physical Review Letters 86, 668-671, 2001

14. Davis, N.G., J. Teisin, C. Schuh and D.C. Dunand, "Synthesis of Titanium Foams by Superplastic Expansion of Inert Gas-Filled Pores," Journal of Materials Research 16, 1508-1519, 2001

15. Frary, M., C. Schuh and D.C. Dunand, "Strain Ratchetting of Titanium Upon Reversible Alloying with Hydrogen," Philosophical Magazine A 81, 197-212, 2001

16. Dunand, D.C., A.M. Hodge and C. Schuh, "Pack Aluminisation Kinetics of Nickel Rods and Foams," Materials Science and Technology 18, 326-332, 2002

17. Schuh, C.A., T.G. Nieh and Y. Kawamura, "Rate Dependence of Serrated Flow during Nanoindentation of a Bulk Metallic Glass," Journal of Materials Research 17, 1651-1654, 2002

18. Schuh, C.A., T.G. Nieh and T. Yamasaki, "Hall-Petch Breakdown Manifested in the Abrasive Wear Resistance of Nanocrystalline Nickel," Scripta Materialia 46, 735-740, 2002

19. Schuh, C.A. and D.C. Dunand, "Enhanced Densification of Zinc Powders Through Thermal Cycling," Acta Materialia 50, 1349-1358, 2002

20. Schuh, C.A., "Approaches to Modeling Chemically-Induced Transformation Superplasticity," Philosophical Magazine A82, 2441-2459, 2002

21. Schuh, C.A., "Dynamic Steady State During Cyclic Diffusional Phase Transformations," Journal of Applied Physics 91, 9083-9090, 2002

22. Minich, R.W., C.A. Schuh and M. Kumar, "The Role of Topological Constraints on the Statistical Properties of Grain Boundary Networks," Physical Review B 66, 052101, 2002

23. Frary, M., C. Schuh and D.C. Dunand, "Kinetics of Biaxial Dome Formation by Transformation Superplasticity of Titanium Alloys and Composites," Metallurgical and Materials Transactions 33A, 1669-1680, 2002

24. Nieh, T.G., C.A. Schuh, J. Wadsworth, and Y. Li, "Strain Rate-Dependent Deformation in Bulk Metallic Glasses," Intermetallics 10, 1177-1182, 2002

25. Schuh, C.A. and D.C. Dunand, "Transformation Superplasticity of Water Ice and Ice Containing SiO_2 Particulates," Journal of Geophysical Research—Planets 107, 11.1-11.10, 2002

26. Schuh, C.A. and T.G. Nieh, "A Nanoindentation Study of Serrated Flow in Bulk Metallic Glasses," Acta Materialia 51, 87-99, 2003

27. Schuh, C.A., T.G. Nieh and H. Iwasaki, "The Effect of Solid Solution W Additions on the Mechanical Properties of Nanocrystalline Ni," Acta Materialia 51, 431-443, 2003

28. Schuh, C.A., M. Kumar and W.E. King, "Analysis of Grain Boundary Networks and Their Evolution During Grain Boundary Engineering," Acta Materialia 51, 687-700, 2003

29. Schuh, C.A., R.W. Minich and M. Kumar, "Connectivity and Percolation in Simulated Grain Boundary Networks," Philosophical Magazine A83, 711-726, 2003

30. Schuh, C.A., M. Kumar and W.E. King, "Connectivity of CSL Grain Boundaries and the Role of Deviations from Exact Coincidence," Zeitschrift für Metallkunde 94, 323-328, 2003 (INVITED)

31. Lund, A.C. and C.A. Schuh, "Atomistic Simulation of Strain-Induced Amorphization," Applied Physics Letters 82, 2017-2019, 2003

32. Schuh, C.A., A.S. Argon, T. G. Nieh, and J. Wadsworth, "Homogeneous vs. Localized Plasticity during Nanoindentation of an Amorphous Metal," Philosophical Magazine 83, 2585-2597, 2003

33. Frary, M. and C.A. Schuh, "Combination Rule for Deviant CSL Grain Boundaries at Triple Junctions," Acta Materialia 51, 3731-3743, 2003

34. Schuh, C.A. and A.C. Lund, "Atomistic Basis for the Plastic Yield Criterion of Metallic Glass," Nature Materials 2, 449-452, 2003

35. Murray, N.G.D., C.A. Schuh and D.C. Dunand, “Solid-State Foaming of Titanium by Hydrogen-Induced Internal-Stress Superplasticity,” Scripta Materialia 49, 879-883, 2003

36. Lund, A.C. and C.A. Schuh, "Yield Surface of a Simulated Metallic Glass," Acta Materialia 51, 5399-5411, 2003

37. Schuh, C.A., K. Anderson, and C. Orme, “Anisotropic Processes on Metal Surfaces: Experiments on the Corrosion of Inconel 600,” Surface Science 544, 183-192, 2003

38. Frary, M. and C. A. Schuh, “Nonrandom Percolation Behavior of Grain Boundary Networks in High-T_c Superconductors,” Applied Physics Letters 83, 3755-3757, 2003

39. Lund, A.C. and C.A. Schuh, “Driven Alloys in the Athermal Limit,” Physical Review Letters 91, 235505, 2003

40. Schuh, C.A. and T.G. Nieh, “A Survey of Instrumented Indentation Studies on Metallic Glasses,” Journal of Materials Research 19, 46-57, 2004

41. Lund, A.C., Nieh, T.G., and C.A. Schuh, “Tension/Compression Strength Asymmetry in a Simulated Nanocrystalline Metal”, Physical Review B 69, 012101, 2004

42. Lund, A.C. and C.A. Schuh, “The Mohr-Coulomb Criterion from Unit Shear Processes in Metallic Glass”, Intermetallics 12, 1159-1165, 2004

43. Lund, A.C. and C.A. Schuh, "Molecular Simulation of Amorphization by Mechanical Alloying," Acta Materialia 52, 2123-2132, 2004

44. Lund, A.C. and C. A. Schuh, “Topological and Chemical Arrangement of Binary Alloys during Severe Deformation,” Journal of Applied Physics 95, 4815-4822, 2004

45. Frary, M.F. and C.A. Schuh, “Percolation and Statistical Properties of Low and High Angle Interface Networks in Polycrystalline Ensembles”, Physical Review B 69, 134115, 2004

46. Schuh, C.A. and A.C. Lund, “Application of Nucleation Theory to the Rate Dependence of Incipient Plasticity during Nanoindentation”, Journal of Materials Research 19, 2152-2158, 2004

47. Lee, M.L., Y. Li, and C.A. Schuh, “Effect of a Controlled Volume Fraction of Dendritic Phases on Tensile and Compressive Ductility in La-Based Metallic Glass Matrix Composites”, Acta Materialia 52, 4121-4131, 2004

48. Lund, A.C., A.M. Hodge, and C.A. Schuh, “Incipient Plasticity during Nanoindentation at Elevated Temperatures”, Applied Physics Letters 85, 1362-1364, 2004

49. Schuh, C.A., A.C. Lund, and T.G. Nieh, “New Regime of Homogeneous Flow in the Deformation Map of Metallic Glasses: Elevated Temperature Nanoindentation Experiments and Mechanistic Modeling”, Acta Materialia 52, 5879-5891, 2004

50. Schuh, C.A., M. Kumar and W. E. King, "Universal Features of Grain Boundary Networks in FCC Materials," Journal of Materials Science, 40, 847-852, 2005 (INVITED)

51. Frary, M., and C.A. Schuh, “Connectivity and Percolation Behavior of Grain Boundary Networks in Three Dimensions”, Philosophical Magazine, 85, 1123-1144, 2005

52. Wu, B.Y.C., P.J. Ferreira, and C.A. Schuh, “Nanostructured Ni-Co Alloys with Tailorable Grain Size and Twin Density”, Metallurgical and Materials Transactions A, 36A, 1927-1936, 2005

53. Lund, A.C., and C.A. Schuh, “Strength Asymmetry in Nanocrystalline Metals under Multiaxial Loading”, Acta Materialia, 53, 3193-3205, 2005

54. Schuh, C.A., Mason, J.K. and A.C. Lund, “Quantitative Insight into Dislocation Nucleation from High Temperature Nanoindentation Experiments”, Nature Materials, 4, 617-621, 2005

55. Frary, M., and C.A. Schuh, “Grain Boundary Networks: Scaling Laws, Preferred Cluster Structure, and Their Implications for Grain Boundary Engineering”, Acta Materialia, 53, 4323-4335, 2005

56. Fu, X.L., Y. Li, and C.A. Schuh, “Contributions to the Homogeneous Plastic Flow of In-Situ Metallic Glass Matrix Composites”, Applied Physics Letters, 8, 241904, 2005

57. Schuh, C.A., and M. Frary, “Correlations Beyond the Nearest-Neighbor Level in Grain Boundary Networks”, Scripta Materialia, 54, 1023-1028, 2006 (INVITED)

58. Mason, J.K. A.C. Lund, and C.A. Schuh, “Determining the Activation Energy and Volume for the Onset of Plasticity during Nanoindentation”, Physical Review B, 73, 054102, 2006

59. Schuh, C.A., C.E. Packard, and A.C. Lund, “Nanoindentation and Contact Mode Imaging at High Temperatures”, Journal of Materials Research, 21, 725-736, 2006

60. Boonyongmaneerat, Y., and C.A. Schuh, “Contributions to the Interfacial Adhesion of Co-Sintered Bilayers”, Metallurgical and Materials Transactions, 37A, 1435-1442, 2006 **

61. Detor, A.J., M.K. Miller, and C.A. Schuh, “Solute Distribution in Nanocrystalline Ni-W Examined through Atom Probe Tomography”, Philosophical Magazine, 86, 4459-4475 2006 **

62. Wang, Y.M., E.M. Bringa, J.M. McNaney, M. Victoria, A. Caro, A.M. Hodge, R. Smith, B. Torralva, B.A. Remington, C.A. Schuh, H. Jamarkani, M.A. Meyers, “Deforming Nanocrystalline Nickel at Ultrahigh Strain Rates”, Applied Physics Letters, 88, 061917 2006

63. Schuh, C.A., “Nanoindentation Studies of Materials”, Materials Today, 9, 32-40, 2006

64. Bastos, A., S. Zaefferer, D. Raabe, and C. Schuh, “Characterization of the Microstructure and Texture of Nanostructured Electrodeposited NiCo Using Electron Backscatter Diffraction”, Acta Materialia, 54, 2451-2462, 2006

65. Chen, Y. and C.A. Schuh, “Diffusion on Grain Boundary Networks: Percolation Theory and Effective Medium Approximations”, Acta Materialia, 54, 4709-4720, 2006

66. Detor, A.J. and C.A. Schuh, “Tailoring and Patterning the Grain Size of Nanocrystalline Alloys”, Acta Materialia, 55, 371-379, 2007

68. Fu, X.L., Y. Li, and C.A. Schuh, “Temperature, Strain Rate and Reinforcement Volume Fraction Dependence of Plastic Deformation in Metallic Glass Matrix Composites”, Acta Materialia, 55, 3059-3071, 2007

69. Chen, Y. and C.A. Schuh, “Percolation of Diffusional Creep: A New Universality Class”, Physical Review Letters, 98, 035701, 2007

70. Fu, X.L., Y. Li, and C.A. Schuh, “Mechanical Properties of Metallic Glass Matrix Composites: Effects of Reinforcement Character and Connectivity”, Scripta Materialia, 56, 617-620, 2007

71. Chen, Y. and C.A. Schuh, “Geometric Considerations for Diffusion through Polycrystals”, Journal of Applied Physics, 101, 063524, 2007

72. Detor, A.J. and C.A. Schuh, “Grain Boundary Segregation, Chemical Ordering, and Stability of Nanocrystalline Alloys: Atomistic Computer Simulations in the Ni-W System”, Acta Materialia, 55, 4221-4232, 2007

73. Lund, A.C. and C.A. Schuh, “Critical Length Scales for the Deformation of Amorphous Metals Containing Nanocrystals”, Philosophical Magazine Letters, 87, 603-611, 2007

74. Fu, X.L., Y. Li and C.A. Schuh, “Homogeneous Flow of Bulk Metallic Glass Composites with a High Volume Fraction of Reinforcement”, Journal of Materials Research, 22, 1564-1573, 2007

75. Gines, M.J.L., F.J. Williams, and C.A. Schuh “Nanostructured Cr-C Coatings for Application at High Temperatures”, Journal of Applied Surface Finishing, 2, 112-121, 2007

76. Gines, M.J.L., F.J. Williams, and C.A. Schuh, “Strategy to Improve the High-Temperature Mechanical Properties of Cr-Alloy Coatings”, Metallurgical and Materials Transactions, 38A, 1367-1371, 2007

77. Schuh, C.A., T.C. Hufnagel, and U. Ramamurty, “Mechanical Behavior of Amorphous Alloys”, Acta Materialia, 55, 4067-4109, 2007

78. Chen, Y. and C.A. Schuh, “Contribution of Triple Junctions to the Diffusion Anomaly in Nanocrystalline Materials”, Scripta Materialia, 57, 253-256, 2007

79. Detor, A.J., M.K. Miller and C.A. Schuh, “Measuring Grain Boundary Segregation in Nanocrystalline Alloys: Direct Validation of Statistical Techniques using Atom Probe Tomography”, Philosophical Magazine Letters, 87, 581-587, 2007

80. Mason, J.K. and C.A. Schuh, “Correlations in Grain Boundary Species Distributions”, Acta Crystallographica A, 63, 315-328, 2007

81. Detor, A.J. and C.A. Schuh, “Microstructural Evolution during the Heat Treatment of Nanocrystalline Alloys”, Journal of Materials Research, 22, 3233-3248 2007

82. Trelewicz, J.R. and C.A. Schuh, “The Hall-Petch Breakdown in Nanocrystalline Metals: a Crossover to Glass-like Deformation”, Acta Materialia, 55, 5948-5958, 2007

83. Chen, Y. and C.A. Schuh, “Coble Creep in Heterogeneous Materials: the Role of Grain Boundary Engineering”, Physical Review B, 76, 064111, 2007

84. Packard, C.E. and C.A. Schuh, “Initiation of Shear Bands at a Stress Concentration in Metallic Glass”, Acta Materialia, 55, 5348-5358, 2007

85. Frary, M. and C.A. Schuh, “Correlation-Space Description of the Percolation Transition in Composite Microstructures”, Physical Review E, 76, 041108, 2007

86. Wu, W.C., Y. Li and C.A. Schuh, “Strength, Plasticity and Brittleness of Bulk Metallic Glasses: Statistical and Geometrical Effects”, Philosophical Magazine, 88, 71-89, 2008

87. San Juan, J.M., Nó, M., and C.A. Schuh, “Superelasticity and Shape Memory in Micro- and Nano-scale Pillars”, Advanced Materials, 20, 272-278, 2008

88. Choi, I.S., A.J. Detor, R. Schwaiger, M. Dao, C.A. Schuh and S. Suresh, “Mechanics of Indentation of Plastically Graded Materials: II. Experiments on Nanocrystalline Alloys with Grain-Size Gradients”, Journal of the Mechanics and Physics of Solids, 56, 172-183 2008

89. Packard, C.E., L.M. Witmer, and C.A. Schuh, “Hardening of a Metallic Glass during Cyclic Loading in the Elastic Range”, Applied Physics Letters, 92, 171911, 2008

90. Choe, H., C.A. Schuh, and D.C. Dunand, “Superplastic Deformation Induced by Cyclic Hydrogen Charging”, Journal of Applied Physics, 103, 103518, 2008

91. Diamanti, M.V., MP. Pedeferri, and C.A. Schuh, “Thickness of Anodic Titanium Oxides as a Function of Crystallographic Orientation of the Substrate”, Metallurgical and Materials Transactions A, 39A, 2143-2147, 2008

92. Boonyongmaneerat, Y., D.C. Dunand, and C.A. Schuh, “Mechanical Properties of Reticulated Aluminum Foams with Electrodeposited Ni-W Coatings”, Scripta Materialia, 59, 336-339, 2008

93. Mason, J.K. and C.A. Schuh, “Hyperspherical Harmonics for the Representation of Crystallographic Texture”, Acta Materialia, 56, 6141-6155 2008

94. Ruan, S. and C.A. Schuh, “Meso-scale Structure and Segregation in Electrodeposited Nanocrystalline Alloys”, Scripta Materialia, 59, 1218-1221, 2008

95. Trelewicz, J.R. and C.A. Schuh, “The Hall-Petch Breakdown at High Strain Rates: Optimizing Nanocrystalline Grain Size for Impact Applications”, Applied Physics Letters, 93, 171916, 2008

96. Chen, Y. and C.A. Schuh, “An Analytical Homogenization Method for Periodic Composites”, Physical Review B, 79, 094104, 2009

97. Trelewicz, J.R. and C.A. Schuh, “Grain Boundary Segregation and Thermodynamically Stabile Nanocrystalline Alloys", Physical Review B, 79, 094112, 2009

98. Packard, C.E., J. Schroers, and C.A. Schuh, “In-situ Measurements of Surface Tension-Driven Shape Recovery in a Metallic Glass”, Scripta Materialia, 60, 1145-1148, 2009

99. Homer, E.R. and C.A. Schuh, “Mesoscale Modeling of Amorphous Metals by Shear Transformation Zone Dynamics", Acta Materialia, 57, 2823-2833, 2009

100. San Juan, J.M., M.L. No, and C.A. Schuh, “Nanoscale Superelastic Alloys with Ultra-High Damping Capacity”, Nature Nanotechnology, 4, 415-419, 2009

101. Ruan, S. and C.A. Schuh, “Electrodeposited Al-Mn Alloys with Microcrystalline, Nanocrystalline, Amorphous, and Nano-quasicrystalline Structures”, Acta Materialia, 57, 3810-3822, 2009

102. Mason, J.K. and C.A. Schuh, “The Generalized Mackenzie Distribution: Disorientation Angle Distributions for Arbitrary Textures”, Acta Materialia, 57, 4186-4197, 2009

103. Mason, J.K. and C.A. Schuh, “Expressing Crystallographic Textures through the Orientation Distribution Function: Conversion between the Generalized Spherical Harmonic and the Hyperspherical Harmonic Expansions”, Metallurgical and Materials Transactions, 40A, 2590-2602, 2009

104. Rodney, D. and C.A. Schuh, “Distribution of Thermally Activated Plastic Events in a Deforming Glass”, Physical Review Letters, 102, 235503 2009

105. Trelewicz, J.R. and C.A. Schuh, “Hot Nanoindentation of Nanocrystalline Ni-W Alloys”, Scripta Materialia, 61, 1056-1059, 2009

106. Rodney, D. and C.A. Schuh, “Yield Stress in Metallic Glasses: The Jamming-Unjamming Transition Studied through Monte Carlo Simulations Based on the Activation-Relaxation Technique”, Physical Review B, 80, 184203, 2009

107. Chen, Y. and C.A. Schuh, “Effective Transport Properties of Random Composites: Continuum Calculations vs. Mapping to a Network”, Physical Review E, 80, 040103(R), Rapid Communication, 2009

108. Chen, Y., X.X. Zhang, D.C. Dunand, and C.A. Schuh, “Shape Memory and Superelasticity in Polycrystalline Cu-Al-Ni Microwires”, Applied Physics Letters, 95, 171906, 2009

109. Packard, C.E., E.R. Homer, N. Al-Aqeeli, and C.A. Schuh, “Cyclic Hardening of Metallic Glasses under Hertzian Contacts: Experiments and STZ Dynamics Simulations”, Philosophical Magazine, 90, 1373-1390, 2010

110. Franke, O., J.C. Trenkle, and C.A. Schuh, “Temperature Dependence of the Indentation Size Effect”, Journal of Materials Research, 25, 1225-1229, 2010

111. Ruan, S. and C.A. Schuh, “Kinetic Monte Carlo Simulations of Nanocrystalline Film Growth”, Journal of Applied Physics, 107, 073512, 2010

112. Homer, E.R., D. Rodney, and C.A. Schuh, “A Kinetic Monte Carlo Study of Activated States and Correlated STZ Activity during Deformation of Amorphous Metal”, Physical Review B, 81, 064204, 2010

113. Trenkle, J.C., C.E. Packard, and C.A. Schuh, “Hot Nanoindentation in Inert Environments”, Review of Scientific Instruments, 81, 073901, 2010

114. Rupert, T.J. and C.A. Schuh, “Sliding Wear of Nanocrystalline Ni-W: Structural Evolution and the Apparent Breakdown of Archard Scaling”, Acta Materialia, 58, 4137-4148, 2010

115. Homer, E.R. and C.A. Schuh, “Three-dimensional Shear Transformation Zone Dynamics Model for Amorphous Metals”, Modelling and Simulation in Materials Science and Engineering, 18, 065009, 2010

116. Jones, A.R, J. Hamann, A.C. Lund, and C.A. Schuh, “Nanocrystalline Ni-W Alloy Coating for Engineering Applications”, Plating and Surface Finishing, 97(4), 52-60, 2010

117. Patala, S. and C.A. Schuh, “Topology of Homophase Grain Boundaries in Two Dimensional Crystals: The Role of Grain Exchange Symmetry”, Computers, Materials, and Continua, 17, 1-18, 2010

118. Packard, C.E., Franke, O., Homer, E.R., and C.A. Schuh, “The Nanoscale Strength Distribution in Amorphous vs. Crystalline Metals”, Journal of Materials Research, 25, 2251-2263, 2010

119. Patala, S. and C.A. Schuh, “A Continuous and One-to-One Coloring Scheme for Grain Boundary Misorientations”, Acta Materialia, 59, 554-562, 2011

120. Chen, Y. and C.A. Schuh, “Size Effects in Shape Memory Alloy Microwires”, Acta Materialia, 59, 537-553, 2011

121. Chianpairot A., Lothongkum G., Schuh C.A., and Y. Boonyongmaneerat, “Corrosion of Nanocrystalline Ni-W Alloys in Alkaline and Acidic 3.5 wt.% NaCl Solutions”, Corrosion Science, 53, 1066-1071, 2011

122. Patala S. and C.A. Schuh, “The Topology of Homophase Misorientation Spaces”, Philosophical Magazine, 91, 1489-1508, 2011

123. Rupert, T.J., Trenkle, J.C., and C.A. Schuh, “Enhanced Solid Solution Effects on the Strength of Nanocrystalline Metals”, Acta Materialia, 59, 1619-1631, 2011

124. Deng, C. and C.A. Schuh, “Atomistic Simulation of Slow Grain Boundary Motion”, Physical Review Letters, 106, 045503, 2011

125. Qiao, L., Rimoli, J.J., Chen, Y., Schuh, C.A., and R. Radovitzky, “Nonlocal Superelastic Model of Size-Dependent Hardening and Dissipation in Single Crystal Cu-Al-Ni Shape Memory Alloys”, Physical Review Letters, 106, 085504, 2011

126. Brunini, V.E, Schuh, C.A. and W.C. Carter, “Percolation in Diffusionally Evolved Two-Phase Systems”, Physical Review E, 83, 021119, 2011

Proceedings of Refereed Conferences:

1. Schuh, C., W. Zimmer, and D.C. Dunand, "Microstructure and Properties of Titanium and Ti-6Al-4V with and without TiC_P Reinforcement Deformed by Transformation Superplasticity," Creep Behavior of Advanced Materials for the 21st Century, TMS, Warrendale PA, 1999, pp. 61-70.

2. Schuh, C., B.Q. Han, and D.C. Dunand, "Accelerated Shrinkage of Creep Cavities by Thermal Cycling of Dispersion-Strengthened Aluminum," Advanced Materials for the 21st Century, TMS, Warrendale PA, 1999, pp. 81-93.

3. Dunand, D.C., C. Schuh, and P. Noel, "Enhanced Densification of Titanium Powders by Cyclic Transformations under Stress," Deformation, Processing, and Properties of Structural Materials, TMS, 1999, pp. 231-242.

4. Schuh, C. and D.C. Dunand, "Assessing Failure Mechanisms During Transformation Superplasticity of Ti-6Al-4V," Superplasticity : Current Status and Future Potential, MRS, 2000, pp. 55-60.

5. Schuh, C. and D.C. Dunand, "Transformation Superplasticity of Ti-6Al-4V and Ti-6Al-4V/TiC Composites at High Stresses," Materials Science Forum 357-359, 177-182, 2001

6. Schuh, C. and D.C. Dunand, "Internal Stress Plasticity-Creep Due to Dynamic Hydrogen Gradients in Ti-6Al-4V," Creep Deformation: Fundamentals and Applications, TMS, 2002, pp. 157-166.

7. Frary, M., C. Schuh, and D.C. Dunand, "Gas Pressure Forming of Titanium Alloys and Composites by Transformation Superplasticity," First and Second International Symposia on Superplasticity and Superplastic Forming, ASM International, 2003, pp. 69-77.

8. Schuh, C. and D.C. Dunand, "Micromechanics of Transformation Superplasticity in Ti-6Al-4V/TiB Composites," First and Second International Symposia on Superplasticity and Superplastic Forming, ASM International, 2003, pp. 60-68.

9. Schuh, C.A. and T.G. Nieh, "Hardness and Abrasion Resistance of Nanocrystalline Nickel Alloys Near the Hall-Petch Breakdown Regime," Nanomaterials for Structural Applications, Materials Research Society Proceedings, 2002, pp. 27-32.

10. Lund, A.C. and C.A. Schuh, “Amorphization of Nanolaminates during Severe Plastic Deformation: Molecular Simulations in the Cu-Zr System”, Mechanical Properties Derived from Nanostructuring Materials, Materials Research Society Proceedings, 2003, pp. U.1.3.1-6.

11. Deopura, M., Y. Fink, and C. A. Schuh, “Optical and Nanomechanical Characterization of a Tin Sulfide-Silica Multilayer System”, Processing and Properties of Structural Nanomaterials, TMS, 2003, pp. 149-156

12. Schuh, C.A., D.T. Schoen and A.C. Lund, “Strength Variations during Mechanical Alloying Through the Nanostructural Range”, Mechanical Properties of

Nanostructured Materials and Nanocomposites, Materials Research Society Proceedings, 2004, pp. Q11.3.1-6.

13. Lund, A.C., and C.A. Schuh, “Plasticity in Nanocrystalline and Amorphous Metals: Similarities at the Atomic Scale”, Amorphous and Nanocrystalline Metals, Materials Research Society Proceedings, 2004, MM7.4.1-6.

14. Frary, M., and C.A. Schuh, “Modeling and Simulation of the Percolation Problem in High-T_c Superconductors: Role of Crystallographic Constraints on Grain Boundary Connectivity”, Interfacial Engineering for Optimized Properties III, Materials Research Society Proceedings, 2004, v. 819, pp. 291-297.

15. Deopura, M., Y. Fink, and C.A. Schuh, “Optical and Nanomechanical Characterization of an Omnidirectional Reflector Encompassing 850 nm Wavelength”, Materials Research Society Proceedings, 2004, L5.8.1-6.

16. Frary, M., and C.A. Schuh, “Applications of Percolation Theory to Grain Boundary Engineering”, ASME International Design Engineering Conference Proceedings, 2004, Paper DETC2004-57640.

17. Boonyongmaneerrat, Y., C.A. Schuh, and T.W. Eagar, “Strategies for Bonding W and Al2O3 at Low Temperatures”, Advances in Ceramic Coating and Ceramic-Metal Systems, Ceramic Engineering and Science Proceedings 26, 399-406, 2005.

18. Schuh, C.A., J. K. Mason, A. C. Lund, and A. M. Hodge, “High Temperature Nanoindentation for the Measurement of Defect Volume and Energy”, Materials Research Society Proceedings, 841, R.4.8.1-6, 2005.

19. Detor, A., M.K. Miller, and C.A. Schuh, “An Atom Probe Tomography Study of Grain Boundary Segregation in Nanocrystalline Ni-W”, Materials Research Society Proceedings, 903E, Z03.01-Z03.06, 2006.

20. Gines, M.J.L., F.J. Williams, and C.A. Schuh, “Nanostructure and Properties of Cr-C Coatings”, SUR/FIN 2006 Surface Finishing Conference Proceedings, 121-132, 2006.

21. Detor, A.J., M.K. Miller, and C.A. Schuh, “An Atom Probe Tomography Study of Grain Boundary Segregation in Heat Treated Nanocrystalline Ni-W Alloys”, Microscopy and Microanalysis, 13 (Suppl. 2), 1644-1645, 2007

22. Martinez, A., D. Blankenship, Y. Boonyongmaneerat, and C.A. Schuh, “Improvement of a Tungsten Facecoat for Titanium Casting”, Proceedings of the Investment Casting Institute, 54th Annual Technical Conference, paper 16, 2006

23. Brunini, V., W.C. Carter, and C.A. Schuh, “Percolation of Diffusionally Evolved Two-Phase Systems”, Materials Research Society Proceedings, Fall 2007 meeting, paper 1059-KK04-05, 2008

24. Ruan, S. and C.A. Schuh, “Solute Distribution in Weakly-Segregating Nanostructured Alloys with Grain Sizes Near the Amorphous Limit”, 31st Annual Risoe Symposium Proceedings, 141-158, 2010

Book Chapters, Edited Books:

1. Schuh, C.A. and Nieh, T.G., Chapter 36: Superplasticity, in Smithells Metals Reference Book, Eighth Edition, T.C. Totemeier, Editor. Butterworth-Heinemann: Oxford, UK, 2004, pp. 36-1—36-20.

2. Lund, A.C. and C.A. Schuh, Mechanical Properties: Strengthening Mechanisms in Metals, in Encyclopedia of Condensed Matter Physics, A. Ruck, Editor. Elsevier: London, 2005, pp. 306-311.

3. Schuh, C.A., Kumar, M., Carter, C.B., and Randle, V., editors. Interfacial Engineering for Optimized Properties III, Materials Research Society: Warrendale, PA, 2004.

4. Lund, A.C. and C.A. Schuh, Modeling and Simulation of Nanostructure Formation in Metals and Alloys Subjected to Extensive Plastic Deformation, in Handbook of Computational and Theoretical Nanoscience, M. Rieth and W. Schommers, Editors. American Scientific Publishers, Santa Barbara, CA, 2005.

5. Kumar, M. and C.A. Schuh, guest editors of Scripta Materialia, special Viewpoint Set on Grain Boundary Engineering, 54, 961-1070, 2006.

6. Packard, C.E., Trenkle, J., and C.A. Schuh, Nanoindentation of Materials: High Temperature, in Encyclopedia of Materials: Science and Technology, K.J. Buschow et al., Editors. Elsevier Science: Oxford, UK, 2008.

7. Mason, J.K. and C.A. Schuh, Representation of Texture, in Electron Backscatter Diffraction in Materials Science, Second Edition, A.J. Schwartz et al., Editors. Springer, 2009

8. Reed, B. and C.A. Schuh, Grain Boundary Networks, in Electron Backscatter Diffraction in Materials Science, Second Edition, A.J. Schwartz et al., Editors. Springer, 2009

Patents:

1. D.C. Dunand and C. Schuh, Densification via Thermal Treatment.
   U.S. Patent No. 6,315,838, 2001.

2. Detor and C. A. Schuh, Method for Producing Alloy Deposits and Controlling the Nanostructure Thereof Using Negative Current Pulsing, and Articles Incorporating Such Deposits
   U.S. Patent No. 7,425,255, 2008.
   Various international patents granted and pending

3. C. A. Schuh and A. C. Lund, Methods for the Implementation of Nanocrystalline and Amorphous Metals and Alloys as Coatings
   U.S. Patent No. 7,521,128, 2009
   Various international patents granted and pending

4. M. J. L. Gines and C. A. Schuh, Preparation and Properties of Cr-C-P Hard Coatings for High Temperature Applications
U.S. Patent No. 7,910,231, 2011

5. C.A. Schuh and S. Ruan, Method for Tailoring the Surface of Nanocrystalline or Amorphous Alloys
Various patents (US and international) pending

6. C.A. Schuh, J.M. San Juan, Y. Chen, Superelastic Alloy Structural Geometry for Ultrahigh Mechanical Damping
Various patents (US and international) pending

7. J. Cahalen, A.C. Lund, and C.A. Schuh, Coated Articles and Methods
Various patents (US and international) pending

8. K. Kita and C.A. Schuh, Thermomechanical Process to Enhance the Quality of Grain Boundary Networks
Various patents (US and international) pending

9. C.A. Schuh and S. Ruan, Electrodeposited Alloys and Methods of Making Same Using Power Pulses
Various patents (US and international) pending

10. J. Trenkle, N. Dadvand, A. Lund, J. Cahalen, and C.A. Schuh, Electrodeposition Baths and Systems
Various patents (US and international) pending

11. J. Trenkle, N. Dadvand, A. Lund, J. Cahalen, and C.A. Schuh, Coated Articles and Methods
Various patents (US and international) pending

12. C.A. Schuh and D.S. Fischer, Silicon Rich Alloys
Various patents (US and international) pending

13. K. Yaguchi and C.A. Schuh, Thermo-mechanical Process to Enhance the Quality of Grain Boundary Networks in Metal Alloys
Various patents (US and international) pending

C. Invited Presentations

January 2002, “Analysis and Characterization of Grain Boundary Networks”, International Workshop on Grain Boundary Engineering, Livermore, CA.

February 2002, “Connectivity and Percolation Along Grain Boundaries”, Mechanical Engineering Department, Brigham Young University, Provo, UT

March 2002, “Hardness and Abrasion Resistance of Nanocrystalline Ni and Ni Alloys”, Defense University Research Initiative on NanoTechnology Meeting, Cambridge, MA

June 2002, “Engineered Microstructures for Advanced Metallic Materials,” Materials Science and Technology Division Seminar, Lawrence Livermore National Laboratory, Livermore, CA; also at Sandia National Laboratory, Livermore, CA, July 2002.

March 2003, “Engineered Microstructures for Advanced Structural Materials”, Tata Steel Company, India (via teleconference).

July 2003, “Percolation Theory for Grain Boundary Networks”, Plasticity 2003, The Tenth International Symposium on Plasticity and its Current Applications, Quebec City, Quebec, Canada.

July 2003, “Simulations of Nanocomposite Formation by Mechanical Alloying”, ICCE-10, The Tenth International Conference on Composites and Nanoengineering, New Orleans, LA

August 2003, “Grain Boundaries: From Classical Microstructures to Modern Materials Design”, Tata Steel Company, Jamshedpur, India

August 2003, “Nanocrystalline and Amorphous Metals: Next Generation Structural Metals”, Research Institute of Industrial Science and Technology, Pohang, South Korea

August 2003, “Grain Boundary Engineering for Structural Metals”, Walsin Lihwa Corporation, Tainan Hsien, Taiwan

October 2003, “Computational Exploration of the Yield Criterion for Metallic Glasses”, Third International Conference on Bulk Metallic Glasses, Beijing, China

January 2004, “Nanocrystalline and Amorphous Metals: Advances in Processing and Deformation Physics”, 3M Corporation, St. Paul, MN

January 2004, “Percolation Problems on Grain Boundary Networks: Crystallographic Constraints and Nonrandom Topologies”, Materials Science and Engineering Department Seminar, The Johns Hopkins University, Baltimore, MD

February 2004, “Nanocrystalline and Amorphous Metals for Coating Applications”, CINI, Center for Industrial Research for the Techint Companies, Campana, Argentina

February 2004, “Grain Boundary Engineering and the Theory of Grain Boundary Networks”, Siderca, Inc. / CINI, Campana, Argentina

February 2004, “Exploring the Deformation Physics of Amorphous and Nanocrystalline Metals through Experiment and Simulation”, Materials Science Seminar, Harvard University, Cambridge, MA

March 2004, “Microstructures by Design: Simulations of Nonequilibrium Processing”, Symposium on Materials by Design: Atoms to Applications, 2004 Annual Meeting of the Minerals, Metals, and Materials Society, Charlotte, NC

March 2004, “Scaling Laws for Grain Boundary Networks”, Symposium on the Role of Grain Boundaries in Materials Design, 2004 Annual Meeting of the Minerals, Metals, and Materials Society, Charlotte, NC

April 2004, “Exploring the Deformation Physics of Nanocrystalline and Amorphous Metals through Experiment and Simulation”, Department of Materials Science and Engineering / Materials Research Laboratory, University of Illinois at Urbana-Champaign, IL

August 2004, “Grain Boundary Network Science: Percolation Theory Meets Crystallography”, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, IL

September 2004, “Applications of Percolation Theory to Grain Boundary Engineering”, American Society of Mechanical Engineers International Design Engineering Conference, Salt Lake City, UT

November 2004, “Towards a Universal Description of the Percolation Transition in Grain Boundary Networks”, Fifth Pacific Rim International Conference on Advanced Materials and Processing, Beijing, China

November 2004, “Grain Boundary Network Science: Percolation Theory Meets Crystallography”, University of Michigan, Material Science and Engineering Department Seminar, Ann Arbor, MI

December 2004, “Nanocrystalline and Amorphous Metals: Next Generation Structural Materials”, 2004 Research and Development Conference of the Industrial Liaison Program, MIT, Cambridge, MA

January 2005, “A Unifying Description of Correlated Percolation Problems on Grain Boundary Networks”, 11th International Conference on Plasticity and its Applications, Kauai, HI

January 2005, “Yield Criteria for Amorphous and Nanocrystalline Metals”, 11th International Conference on Plasticity and its Applications, Kauai, HI

March 2005, “Grain Boundary Network Science: Percolation Theory Meets Crystallography”, Carnegie Mellon University, Department of Materials Science and Engineering Seminar, Pittsburgh, PA;

also at Drexel University, Department of Materials Science and Engineering Seminar, April 2005.

May 2005, “Deformation of Metallic Glasses at High Rates and Temperatures: New Insights from Nanoindentation Experiments”, 4th International Conference on Bulk Metallic Glasses, Gatlinburg, TN

July 2005, “High Temperature Nanoindentation for Property Measurements and Fundamental Studies of Defects”, 3rd International Conference on Materials for Advanced Processing Technologies, Singapore

July 2005, “Nanoindentation Studies of Shear Band Dynamics in Metallic Glasses: Effects of Rate and Temperature”, 12th International Symposium on Metastable and Nano Materials, Paris, France

August 2005, “Extracting the Activation Parameters of Flow Defects from Nanoindentation Experiments”, Friction, Fracture and Earthquake Physics Conference, Kavli Institute for Theoretical Physics, Santa Barbara, CA

September 2005, “High-Temperature Nanoindentation for Quantitative Study of Defects”, International Conference on Micromechanics and Microstructure Evolution, Madrid, Spain

September 2005, “High-Temperature Nanoindentation for Mechanical Property Measurements and Fundamental Studies of Plasticity”, Tufts University, Department Seminar, Mechanical Engineering, Medford, MA

also at Hysitron, Inc., Minneapolis, MN, October 2005

November 2005, “High-Temperature Nanoindentation for Fundamental Studies in Plasticity”, 2005 ASME International Mechanical Engineering Congress, Orlando, FL

December 2005, “Temperature and Rate Dependence of Incipient Plasticity during Nanoindentation”, 2005 Fall Meeting of the Materials Research Society, Boston, MA

January 2006, “Fundamental Studies of Deformation Physics in Amorphous Metals”, Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson Air Force Base, OH

January 2006, “Design of a Stable Nanocrystalline Alloy Coating”, U.S. Army ARDEC, Picatinny Arsenal, NJ

February 2006, “Grain Boundary Network Science: Percolation Theory Meets Crystallography”, Michigan State University, Department of Physics and Astronomy “Science at the Edge” Seminar Series, East Lansing, MI

February 2006, “The Next Generation of Strong Alloys: Nanocrystalline and Amorphous Alloys”, Boise State University, College of Engineering Seminar Series, Boise, ID

March 2006, “Statistics of Shear Band Activation in Metallic Glasses”, Symposium on Bulk Metallic Glasses, 2006 Annual Meeting of the Minerals, Metals, and Materials Society, San Antonio, TX

March 2006, “Nanoindentation at Elevated Temperatures: Applied and Fundamental Studies of Materials Mechanics”, Symposium on Deformation and Fracture from Nano to Macro, 2006 Annual Meeting of the Minerals, Metals, and Materials Society, San Antonio, TX

April 2006, “High-Temperature Nanoindentation for Mechanical Property Measurements and Fundamental Studies of Plasticity”, Department of Materials Science and Engineering Seminar, University of Tennessee, Knoxville, TN

May 2006, “Grain Boundary Engineering: Composite Modeling of Grain Boundary Networks”, Annual TMS Workshop: Composite Materials and Structures, General Electric Global Research, Schenectady, NY

July 2006, “Effective Medium and Percolation Theories in Grain Boundary Engineering”, 12th International Conference on Plasticity and its Applications, Halifax, Nova Scotia, Canada

August 2006, “High Temperature Nanoindentation for Fundamental Studies of Materials”, National Technical University of Norway, NTNU Nanomechanical Laboratory, Trondheim, Norway

October 2006, “Mechanics of in-situ Metallic Glass Matrix Composites”, BMGV, Fifth International Conference on Bulk Metallic Glasses, Awaji Island, Japan

October 2006, “Engineering Grain Boundaries in Advanced Structural Metals”, Research and Development Center, Bekaert, Inc., Swevegem, Belgium

November 2006, “Segregation and Ordering in Nanocrystalline Ni-W Alloys”, 2006 Fall Meeting of the Materials Research Society, Boston, MA

January 2007, “Mechanical Behavior of Metallic Glass Matrix Composites”, International Workshop on Bulk Metallic Glasses, Indian Institute of Science, Bangalore, India

February 2007, “Tailoring and Patterning the Grain Size of Nanocrystalline Alloys”, Symposium on Nanostructured Metals, 2007 Annual Meeting of the Minerals, Metals, and Materials Society, Orlando, FL

March 2007, “Design of Stable Nanocrystalline Alloys for Coating Applications”, Civil, Mechanical, and Materials Engineering Seminar, Washington University, St. Louis, MO

also at University of Pennsylvania, Department of Materials Science and Engineering Seminar, March 2007

also at Texas A&M University, Department of Mechanical Engineering Seminar, April 2007

June 2007, “Design of Nanocrystalline Materials”, presentation to the Dow Corning Technical Advisory Board, Cambridge, MA

June 2007, “Nanostructured Metal Coatings”, Science and Engineering Program for Teachers Conference, Cambridge, MA

July 2007, “The Structure-Property Relation in Grain Boundary Engineering”, XII International Conference on Intergranular and Interphase Boundaries, Barcelona, Spain

October 2007, “The Nanoscale Strength Spectrum and its Connection to Deformation Mechanisms”, Keynote address at the 2007 Society of Engineering Sciences Conference, College Station, TX

November 2007, “Progress in High Temperature Nanoindentation”, 2007 Fall Meeting of the Materials Research Society, Boston, MA

December 2007, “Probing the Transition between Nanocrystalline and Amorphous Metals”, METALLO 2007 International Conference on Metals and Alloys: Past, Present and Future, Kanpur, India

January 2008, “Design of Stable Nanocrystalline Alloys for Coating Applications”, Mechanical Engineering Department Seminar, Northeastern University, Boston, MA

also at Yale University, Department of Mechanical Engineering Seminar, New Haven, CT, January 2008

March 2008, “Developing Design Principles for Nanocrystalline Alloys”, Tata Steel Company, Jamshedpur, India (via teleconference)

April 2008, “Advances in Structural Metallurgy by Engineering Grain Boundaries”, Mitsubishi Materials Corporation, Kitamoto City, Japan

also at Komatsu, Inc., Hiratsuka, Japan, and Hitachi Metals Corporation, Tokyo Japan, April 2008

May 2008, “From the Ivory Tower to the Factory Floor: An NU Metallurgist’s Effort to Vertically Integrate”, Keynote Address, John E. Hilliard Symposium, Department of Materials Science and Engineering, Northwestern University, Evanston IL

September 2008, “Probing the Transition Between Amorphous and Nanocrystalline Metals”, International Workshop on the Plasticity of Nanocrystalline Metals, Lake Bostal, Germany

October 2008, “Design of a Stable Nanocrystalline Metal Coating”, Department of Materials Science and Engineering Seminar, The Pennsylvania State University, State College, PA

December 2008, “Collective Dynamics of Shear Transformation Zones in Metallic Glass”, 2008 Fall Meeting of the Materials Research Society, Boston, MA

December 2008, “Stabilized Nanocrystalline Metals for Structural Applications”, Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Grounds, MD

January 2009, “Designing Nanocrystalline Coatings with Superior Properties and Lower Environmental Impact”, Xerox Research, Webster, NY

February 2009, “Stability of Nanocrystalline Ni-W Electrodeposits”, 2009 Annual Meeting of the Minerals, Metals, and Materials Society, San Francisco, CA

February 2009, “Cyclic Hardening in Metallic Glass”, 2009 Annual Meeting of the Minerals, Metals, and Materials Society, San Francisco, CA

February 2009, “Systematic Studies of the Hall-Petch Breakdown”, 2009 Annual Meeting of the Minerals, Metals, and Materials Society, San Francisco, CA

March 2009, “Strategy to Control the Grain Size in Nanocrystalline Alloys”, Max Planck Society/MIT Winter School, Stuttgart, Germany

March 2009, “Harder, Cheaper, Greener: The Materials Science and Engineering of Nanocrystalline Coatings”, Spring 2009 John Wulff Lecture, DMSE, MIT

also at Drexel university, Department of Materials Science and Engineering Seminar Series, September 2009

also at the 5th Annual Minnesota Nanotechnology Conference, Minneapolis, MN, November 2009

also at the University of Texas, Austin, College of Engineering Distinguished Lecture Series, April 2010

June 2009, “Towards Multiscale Modeling of Metallic Glasses”, International Workshop on the Structural and Mechanical Properties of Metallic Glasses, Barcelona, Spain

October 2009, “Progress on the Hyperspherical Harmonic Representation of Orientation Distributions”, Materials Science and Technology Annual Conference (ASM/TMS/ACerS), Symposium on Microstructure Characterization and Design, Pittsburgh PA

October 2009, “Grain Boundary Relaxation in Nanocrystalline Alloys and its Effect on Mechanical Properties”, Materials Science and Technology Annual Conference (ASM/TMS/ACerS), Symposium on Mechanical Properties and Grain Boundaries, Pittsburgh PA

December 2009, “Plasticity in Confined Volumes of Metallic Glass: Experiments and Simulations”, 2009 Fall Meeting of the Materials Research Society, Boston, MA

December 2009, “Castable Engineering Ceramics”, Meeting of the Technical Advisory Board of Dow-Corning Corporation, Midland, MI

January 2010, “Alloys with Grain Sizes Approaching the Amorphous Limit: Open Questions in Structure and Mechanical Properties”, Spallation Neutron Source VULCAN Commissioning Workshop, Oak Ridge National Laboratory, Oak Ridge, TN

March 2010, “Nanocrystalline Ni-W Alloy Coatings in Industrial Service”, Symposium on Nanostructured Materials, International Conference on Computational and Experimental Engineering Science, Las Vegas, NV

March 2010, “Theoretical Aspects of Grain Boundary Networks”, CMC Special Symposium on Advanced Materials, International Conference on Computational and Experimental Engineering Science, Las Vegas, NV

April 2010, “Achieving Control over Topological Disorder in Alloys”, National Research Council, Standing Committee on Condensed Matter and Materials Research, Washington DC

May 2010, “Design of Stabilized Nanocrystalline Metals”, Condensed Matter Theory Seminar, Harvard University, Cambridge, MA

May 2010, “Polycrystalline Materials: Greater than the Sum of their Crystals”, Plenary lecture, Society of Industrial and Applied Mathematics Conference on Mathematical Aspects of Materials Science, Philadelphia PA

June 2010, “Electroformed Nanostructured Aluminum: Alloy Design, Processing Science, Characterization and Mechanical Properties”, 47th Sagamore Army Materials Research Conference on Lightweight Structural Metals, St. Michaels MD

June 2010, “Deformation of Metallic Glasses: Experimental Puzzles and Theoretical Needs”, Program on Supercooled Liquids and Glass Physics, Kavli Institute for Theoretical Physics, Santa Barbara, CA

July 2010, “Progress in Hot Nanoindentation”, Gordon Research Conference on Thin Film and Small-Scale Mechanical Behavior, Waterville ME

September 2010, “Solute Distribution in Weakly Segregating Nanostructured Alloys”, 2010 Annual Risoe Symposium, Risoe National Laboratory for Sustainable Energy, Roskilde Denmark

November 2010, “Nanocrystalline Metals: Processing, Emerging Alloy Design Principles, Properties and Applications”, Tenaris University, Tenaris, Inc., “webinar” to locations in the US, Canada, Mexico, Argentia, Italy, and Romania

January 2011, “Harder, Cheaper, Greener: the Materials Science and Engineering of Nanocrystalline Alloy Coatings”, McGill University, Department of Materials Science and Engineering Seminar, Montreal, Quebec, Canada

Also at Ohio State University, February 2011
Also at Arizona State University, April 2011

February 2011, “Shear Transformation Zone Dynamics Modeling of Metallic Glass”, TMS Annual Meeting, Symposium on Massively Parallel Computer Simulation of Materials, San Diego CA

D. Awards

Materials Research Society Outstanding Paper	2011
Raph R. Teetor Educational Award, SAE International	2011
MIT MacVicar Faculty Fellow	2011
S. Chandrashekar Young Investigator Award in Theory (Int'l Conf. on Comp. and Experimental Engineering and Sciences)	2010
Materials Research Society Outstanding Paper	2010
Distinguished Young Alumnus Award (University of Illinois Mater. Sci. Eng.)	2009
Frontiers of Engineering, US National Academy of Engineering	2008
Kavli Frontiers of Science, US National Academy of Sciences	2007
MIT Graduate Materials Council Outstanding Graduate Advisor Award	2005
Danae and Vasilios Salapatas Chair of Metallurgy, DMSE	2004
Presidential Early Career Award in Science and Engineering (from the White House Office of Science and Technology Policy)	2004
U.S. Office of Naval Research Young Investigator Award	2004
U.S. National Science Foundation Career Award (division of materials research, DMR)	2004
Robert Lansing Hardy Award (young investigator award of TMS)	2004
Rossiter W. Raymond Memorial Award (TMS-AIME) (best article published by AIME by a young author)	2002
Henry Marion Howe Medal (ASM International) (best article of 2000 in *Metallurgical and Materials Transactions*)	2001
Ernest O. Lawrence Post-Doctoral Fellowship (Lawrence Livermore National Laboratory)	2001-2002
National Defense Science and Engineering Graduate Fellowship	1999-2001

E. Students and Postdocs

Current Graduate Students:

Tongjai Chookajorn, Ph.D. to be completed 2012
Sam Cross, Ph.D. to be completed 2014
Sam Humphry-Baker, Ph.D. to be completed 2013
Alan Lai, Ph.D. to be completed 2014
Heather Murdoch, Ph.D. to be completed 2012
Srikanth Patala, Ph.D. to be completed 2011
Mansoo Park, Ph.D. to be completed 2014
Timothy Rupert, Ph.D. to be completed 2011
Aparna Singh, Ph.D. to be completed 2011
Max Solar, Ph.D., to be completed 2014
Erik Szablinski, Ph.D. to be completed 2014
Stian Ueland, M.S. to be completed 2011
Tiffany Ziebell, Ph.D. to be completed 2011

Past Graduate Students:

Shiyun Ruan, Ph.D. 2010
David Fisher, Ph.D. 2010
Eric Homer, Ph.D. 2010
Jeremy Mason, Ph.D. 2009
Corinne Packard, Ph.D. 2008

Jason Trelewicz, Ph.D. 2008
Ying Chen, Ph.D. 2008
Wang Lei, M.Eng. 2008
Andrew J. Detor, Ph.D. 2007
Xiaoling Fu, Ph.D. (SMA) 2007
Yuttanant Boonyongmaneerat, Ph.D. 2006
Megan E. Frary, Ph.D. 2005
Jeffrey Zielinski, M.Eng. 2005
Stewart Ongchin, M.S. 2005
Bruce Y. C. Wu, M.S. 2004
Manish Deopura, M.S. 2003

Postdocs (current and past):

Dr. Srikant Gollapudi, Ph.D. North Carolina State University, 2008
Dr. Hunkee Lee, Ph.D. POSTECH, South Korea, 2009
Dr. Wenjun Cai, Ph.D. University of Illinois at Urbana-Champaign, 2010
Dr. Ying Chen, Ph.D. MIT, 2008
Dr. Oliver Franke, Ph.D. University of Erlangen-Nürnberg, Germany, 2009
Dr. Chuang Deng, Ph.D. University of Vermont, 2010
Dr. Naser Al-Aqeeli, Ph.D. McGill University, 2008
Dr. Jonanthan Trenkle, Ph.D. 2007 Johns Hopkins University
Dr. Pablo Castro, Ph. D. 2001 University of Buenos Aires
Dr. Alan Lund, Ph.D. 2002 Northwestern University

V. Teaching and Education

Fall 2002	MIT 3.13, Structure of Materials, Lectures and Recitations
Spring 2003	MIT 3.082, Materials Processing Laboratory, Laboratory
Fall 2003	MIT 3.14, Physical Metallurgy, Lecture
Spring 2004	MIT 3.52J, Materials Processing, Lecture
Fall 2004	MIT 3.14, Physical Metallurgy, Lecture
Spring 2005	MIT 3.52J, Materials Processing, Lecture
Fall 2005	MIT 3.14, Physical Metallurgy, Lecture
Spring 2006	MIT 3.22, Mechanical Properties of Materials, Lecture
Spring 2006	MIT 3.52J, Advanced Materials Processing, Lecture
Spring 2006	MIT 3.04, Advanced Physical Metallurgy, Laboratory
Fall 2006	MIT 3.14, Physical Metallurgy, Lecture
Spring 2007	MIT 3.048/3.52J, Advanced Materials Processing, Lecture/Disc.
Fall 2007	MIT 3.699, Teaching Materials Science and Engineering
Spring 2008	MIT 3.044, Materials Processing, Lecture
Fall 2008	MIT 31.4/3.40, Physical Metallurgy, Lecture
Spring 2009	MIT 3.044, Materials Processing, Lecture
Fall 2009	MIT 31.4/3.40, Physical Metallurgy, Lecture
Spring 2010	MIT 3.044, Materials Processing, Lecture
Spring 2011	MIT 3.044, Materials Processing, Lecture