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GENERAL INTERESTS

Nanomaterials; nanomechanics
Nanoscale Plasticity
Multiscale modeling; molecular simulation
Atomic force microscopy

EDUCATION

Ph.D. in Materials Science and Engineering with Honors, 2000
Ecole des Mines, Paris, France. Advisor: Prof. Andre Pineau.

M.S. in Materials Science and Engineering, 1996
Ecole Nationale Supérieure de Mécanique et Aérotechnique, Poitiers, France. Advisor: Dr. Michel Gerland.

Engineer in Mechanical and Aerospace Engineering, 1996
Ecole Nationale Supérieure de Mécanique et Aérotechnique, Poitiers, France.

Preparatory Classes, Math Sup/Math Spe, 1991-1993
Lycée Michel Montaigne, Bordeaux, France.

APPOINTMENTS

2004-present	Assistant Professor of Mechanical Engineering and Materials Science University of Vermont, Burlington, VT, USA
2002-2003	Postdoctoral Fellow, Department of Mechanical Engineering, The Johns Hopkins University, Baltimore, MD, USA
2001-2002	Postdoctoral Fellow, Department of Mechanical Engineering and Applied Mechanics, University of Rhode Island, Kingston, RI, USA
2000-2001	Military Service, Overseas Research Fellow, SNECMA/ French Ministry of Foreign Affairs
1996-2000	Graduate Research Assistant, Centre des Matériaux, Ecole des Mines de Paris, Evry, France
1997-1999	Graduate Teaching Assistant, Department of Engineering, University of Evry, Evry, France
1996	Undergraduate Res. Assistant, Lab. of Phys. and Mech. of Mater., ENSMA, Poitiers, France
1995	Summer Engineering Internship, Atomic Energy Agency (CEA), Saclay, France

HONORS AND AWARDS

2009	UVM College of Engineering and Mathematical Sciences' Milt Silveira Junior Faculty Award
2008	National Science Foundation CAREER Award
2007	Honorable mention, TMS Early Career Faculty Fellow Award
2005-07	Three times nominee for Best Poster Award, Materials Research Society Meetings
2005	2 nd Prize, "Science as Art" competition, Materials Research Society Spring Meeting
2000-01	SNECMA moteurs/French Ministry of Foreign Affairs Overseas Research Fellowship

PUBLICATIONS

Book Chapters

1. **(invited)** V. Dupont and F. Sansoz, "Multiscale Modeling of Contact-induced Plasticity in Nanocrystalline Metals", Book Chapter in *Trends in Computational Nanomechanics: Transcending Time and Space*, T. Dumitrica (Volume Ed.), Springer Series: Challenges and Advances in Computational Chemistry and Physics. To appear in December 2009.

Peer-reviewed Journal Articles

1. C. Deng and F. Sansoz, "Near-Ideal Strength in Gold Nanowires Achieved through Microstructural Design", **ACS Nano**, 3, 3001-3008 (2009).
2. C. Deng and F. Sansoz, "Fundamental Differences in the Plasticity of Periodically Twinned Nanowires in Au, Ag, Al, Cu, Pb and Ni", **Acta Materialia**, 57, 6090-6101 (2009).
3. C. Deng and F. Sansoz, "Size-Dependent Yield Stress in Twinned Gold Nanowires Mediated by Site-Specific Surface Dislocation Emission", **Applied Physics Letters**, 95, 091914 (2009).
4. C. Deng and F. Sansoz, "Enabling Ultrahigh Plastic Flow and Work Hardening in Twinned Gold Nanowires", **Nano Letters**, 9 (4), 1517-1522 (2009).
5. V. Dupont and F. Sansoz, "Molecular Dynamics Study of Crystal Plasticity during Nanoindentation in Ni Nanowires", in *Focus Issue on Indentation Methods in Advanced Materials Research*, **Journal of Materials Research**, 24 (3), 948-956 (2009).
6. D.L. Langerand, H. Zhang, K.T. Ramesh, N.S. Murthy, and F. Sansoz, "Inelastic Behavior and Fracture of High Modulus Polymeric Fiber Bundles at High-Strain Rates", **Materials Science and Engineering A**, 500, 216-224 (2009).
7. V. Dupont and F. Sansoz, "Quasicontinuum Study of Incipient Plasticity under Nanoscale Contact in Nanocrystalline Aluminum", **Acta Materialia**, 56, 6013-6026 (2008).
8. **(invited review paper)** F. Sansoz, H. Huang and D.H. Warner, "An Atomistic Perspective on Twinning Phenomena in Nano-enhanced FCC Metals", **JOM**, 9, 79-84 (2008).
9. F. Sansoz and C. Deng, "Comment on "Deformation mechanisms of face-centered-cubic metal nanowires with twin boundaries" Appl. Phys. Lett. 90, 151909 (2007)", **Applied Physics Letters**, 93, 086101 (2008). Also appearing in the September 8, 2008 issue of *Virtual Journal of Nanoscale Science & Technology*.
10. F. Sansoz, K.D. Stevenson, R. Govinhasamy, and N. S. Murthy, "Making the Surface of Nanocrystalline Ni on an Si Substrate Ultrasoother by Direct Electrodeposition", **Scripta Materialia**, 59, 103-106 (2008).
11. F. Bedoui, F. Sansoz and S. Murthy, "Incidence of Nanoscale Heterogeneity on the Nanoindentation of a Semicrystalline Polymer: Experiments and Modeling", **Acta Materialia**, 56, 10, 2296-2306 (2008).
12. R.L. Headrick, S. Wo, F. Sansoz, J.E. Anthony, "Anisotropic Mobility in Large Grain Size Solution Processed Organic Semiconductor Thin Films", **Applied Physics Letters**, 92, 063302 (2008).
13. K. A. Afanasyev and F. Sansoz, "Strengthening in Gold Nanopillars with Nanoscale Twins", **Nano Letters**, 7(7), 2056-2062 (2007).
14. F. Sansoz and V. Dupont, "Atomic Mechanism of Shear Localization during Indentation of a Nanostructured Metal", **Materials Science and Engineering C**, 27, 1509-1513 (2007).
15. F. Sansoz and J.F. Molinari, "Size and Microstructure Effects on the Mechanical Behavior of FCC Bicrystals by Quasicontinuum Method", **Thin Solid Films**, 515/6, 3158-3163 (2007).
16. R.T. Ott, F. Sansoz, T. Jiao, D. Warner, C. Fan, J.F. Molinari, K.T. Ramesh, and T.C. Hufnagel, "Yield Criteria and Strain-Rate Behavior of Zr_{57.4}-Cu_{16.4}-Ni_{8.2}-Ta₈-Al₁₀ Metallic-Glass-Matrix Composites", **Metallurgical and Materials Transactions A**, 37A, 3251 (2006).
17. F. Sansoz and V. Dupont, "Grain Growth Behavior at Absolute Zero during Nanocrystalline Metal Indentation", **Applied Physics Letters**, 89, 111901 (2006).
18. D. Warner, F. Sansoz, and J.F. Molinari, "An Atomistic-Based Continuum Investigation of Plastic Deformation in Nanocrystalline Copper", **Int. J. Plasticity**, 22, 754-774 (2006).

19. F. Sansoz and J.F. Molinari, "Mechanical Behavior of Sigma Tilt Grain Boundaries in Nanoscale Cu and Al: a Quasicontinuum Study", *Acta Materialia*, 53, 7, 1931-1944 (2005).
20. R.T. Ott, F. Sansoz, J.F. Molinari, J. Almer, K.T. Ramesh, and T.C. Hufnagel, "Micromechanics of Deformation of Metallic-Glass-Matrix Composites from in-situ Synchrotron Strain Measurements and Finite Element Modeling", *Acta Materialia*, 53, 7, 1883-1893 (2005).
21. F. Sansoz, M. Almesallmy and H. Ghonem, "Ductility Exhaustion Mechanisms in Thermally Exposed Thin Sheets of a Near- β Titanium Alloy", *Metallurgical and Materials Transactions A*, 35A, 10, 3113-3127 (2004).
22. F. Sansoz and J.F. Molinari, "Incidence of Atomic Shuffling on the Shear and Decohesion Behavior of a Symmetric Tilt Grain Boundary in Copper", *Scripta Materialia*, 50, 10, 1283-1288 (2004).
23. F. Sansoz and H. Ghonem, "Fatigue Crack Growth Mechanisms in Ti6242 Lamellar Microstructures: Influence of Loading Frequency and Temperature", *Metallurgical and Materials Transaction A*, 34A, 11, 2565-2577 (2003).
24. F. Sansoz and H. Ghonem, "Effects of Loading Frequency on Fatigue Crack Growth Mechanisms in alpha/beta Ti Microstructures with Large Colony Size", *Materials Science and Engineering A*, 356, 1-2, 81-92 (2003).
25. F. Sansoz, B. Brethes and A. Pineau, "Propagation of Short Fatigue Cracks from Notches in a Ni base Superalloy: Experiments and Modelling", *Fatigue & Fracture of Engng. Mater. & Structures*, 25, 1, 41-53 (2002).

Peer-reviewed Journal Articles – Submitted, under review.

26. Chuang Deng and Frederic Sansoz, "Mechanisms for Dislocation Emission from the Junction of $\Sigma 3(111)$ Twin Boundaries with Free Surfaces", *Int. J. Plasticity*, under review.

Refereed Conference Proceedings

27. **(invited paper)** F. Sansoz and C. Deng, "Size-dependent Plasticity in Twinned Metal Nanowires", *Proceedings of The International Conference on Fracture (ICF) 12*, Ottawa, Canada (2009).
28. J. Gu and F. Sansoz, "Mechanical Properties in Individual Carbon Nanofibers at High Temperature and High Pressure by Molecular Dynamics Simulations", *Mater. Res. Soc. Symp. Proceeding* 1137E, 1137-EE10-05 (2009).
29. C. Deng and F. Sansoz, "Uniaxial Compression Behavior of Bulk Nano-twinned Gold from Molecular Dynamics Simulation", *Mater. Res. Soc. Symp. Proceeding* 1049, 1049-AA08-05 (2007).
30. J. Frolik, F. Sansoz, D. Rizzo, A. Sadek, "A Multidisciplinary Curricular Effort Incorporating Wireless Sensors", *Proc. of The 2007 Asee Annual Conference & Exposition* (2007). **EDUCATION PAPER.**
31. N.S. Murthy, F. Bedoui, F. Sansoz and D.T. Grubb, "Recent Observations on the Structure and their Influence on Properties in Semicrystalline Polymers", *Proc. of The Macro2006 Conference – Polymer For Advanced Technologies*, (2006).
32. V. Dupont and F. Sansoz, "Grain Boundary Structure Evolution in Nanocrystalline Al by Nanoindentation Simulations", in *Amorphous and Nanocrystalline Metals for Structural Applications*, edited by E. Ma, C. A. Schuh, Y. Li, M. K. Miller, *Mater. Res. Soc. Symposium Proceeding*. 903E, 0903-Z06-05.1 (2005).
33. D.H. Warner, F. Sansoz and J.F. Molinari, "Modeling of Deformation in Nanocrystalline Copper Using An Atomistic-Based Continuum Approach", *Mater. Res. Soc. Symposium Proceeding*, 791, Q5.31.1-Q5.31.6 (2004).
34. R.T. Ott, F. Sansoz, J.F. Molinari, J. Almer, C. Fan and T.C. Hufnagel, "Synchrotron Strain Measurements for in-situ Formed Metallic Glass Matrix Composite", *Mater. Res. Soc. Symposium Proceeding*, 806, MM8.12.1-MM8.12.6 (2004).
35. F. Sansoz and H. Ghonem, "Fatigue Crack Growth Mechanisms in Fully Lamellar Ti6242 Alloy at 520°C", in *Proc. of The Camp2002 High Temperature Fatigue Conference*, G. Ballias, H.J. Maier, O. Hahn, K. Herrmann, F. Vollertsen, eds., Paderborn, Germany, pp. 155-168 (2002).
36. F. Sansoz, B. Brethes and A. Pineau, "Growth of Short Fatigue Cracks from Stress Concentrations in N18 Superalloy", in *Proc. Of The 9th International Spring Meeting Of Sf2m on Temperature-Fatigue Interaction*, Paris, France, 2001, pp. 341-350.
37. F. Sansoz, B. Brethes and A. Pineau, "Propagation des petites fissures de fatigue dans les zones de concentration de contraintes dans un superalliage base Ni", *J. Phys. IV*, 10, Pr4, 235-240 (2000).

38. F. Sansoz, B. Brethes and A. Pineau, "Short Fatigue Crack Propagation from Notches in N18 Ni based Superalloy", in **Proc. of The European Conference On Fracture 12**. M.W. Brown, E.R. de Los Rios, K.J. Miller, 1, 61-66 (1998).

Non-Refereed Conference Papers

39. F. Sansoz and V. Dupont, "Deformation of Nanocrystalline Metals under Nanoscale Contact", in **Proceedings of The Nsti Nanotech 2006 Conference**, Boston, MA (2006).
40. C. Sarrazin-Baudoux, F. Sansoz, and H. Ghonem, "Influence of Environment, Loading Frequency and Temperature on Fatigue Crack Growth Mechanisms in Titanium Lamellar Microstructures", in **Proc. of The 11th International Conference On Fracture (Ic11)**, Turin, Italy (2005).

Other Publications

41. F. Sansoz, "Growth of Short Fatigue Cracks under Stress Concentration in the N18 Superalloy", **Ph.D. Thesis**, Ecole des Mines de Paris (2000). In French.
42. F. Sansoz, "Calculation of crack closure by a node release method", **Gazette Zebulon**, no. 13 (December 1998). In French.

PRESENTATIONS

Invited Presentations

1. F. Sansoz and C. Deng, "Size-Dependent Plasticity in Twinned Metal Nanowires", 2010 US National Congress on Theoretical and Applied Mechanics (USNCTAM 2010), State College, PA, **invited talk** (June 2010).
2. F. Sansoz and C. Deng, "Plasticity of Twinned Metal Nanowires from Atomistic Simulations", 2010 European Conference on Computational Mechanics (ECCM 2010), Paris, France, **invited talk** (May 2010).
3. F. Sansoz, "Size-dependent Strength and Fracture of Twinned Metal Nanowires through Surface Engineering and Microstructural Design", DFG-NSF Joint Research Conference on Sustainable Use of Nanomaterials for Engineering Solutions, New York City, NY, **invited poster presentation** (October 2009).
4. F. Sansoz and C. Deng, "Size-Dependent Plasticity in Twinned Metal Nanowires" in 12th International Conference on Fracture (ICF12), Symposium: Atomistic Plastic Deformation and Fracture, **invited Keynote Lecture** (July 2009).
5. F. Sansoz, "Nanoscale Plasticity from Atomistic Simulations", Materials Science and Engineering Seminar Series, Texas A&M University, College Station, TX, **invited seminar** (Nov. 2008).
6. F. Sansoz, "Nanocrystalline Metal Indentation", Center for Nanomaterials Research, Dartmouth College, Hanover, NH, **invited seminar** (May 2006).
7. F. Sansoz, "Deformation at the Nanometer Length Scale: Why Should We Be Interested in Crystalline Interfaces?", Mechanical and Aerospace Engineering Department Seminar, Clarkson University, Potsdam, NY, **invited seminar** (April 2005).
8. F. Sansoz, "Why is Nanomechanics so Important to Polymer and Composites Research?", Vermont EPSCoR Annual Meeting, University of Vermont, Burlington, VT, **invited seminar** (February 2005).
9. F. Sansoz, "Why Should We Be Interested in the Atomic Structure of Interfaces?", Department of Mechanical Engineering, University of Vermont, Burlington, VT, **invited seminar** (May 2003).

Oral Presentations

10. F. Sansoz (speaker), V. Dupont, T. Gang and K. D. Stevenson: Local Plasticity during Nanoindentation of Nanocrystalline FCC Metals using Quasicontinuum Simulation and Nanomechanical Experiment, in Symposium HH: Multiscale Polycrystal Mechanics of Complex Microstructures, 2009 MRS Fall Meeting, Boston, MA (December 2009).
11. F. Sansoz (speaker): Size Effects on the Yielding and Plasticity of Nanotwinned Gold: From Bulk to Nanowires, in Symposium GG: Plasticity in Confined Volumes, 2009 MRS Fall Meeting, Boston, MA (December 2009).
12. C. Deng (speaker) and F. Sansoz: Yielding and Plasticity of Periodically-twinned Nanowires in FCC Metals from Molecular Dynamics Simulations, in Symposium FF: Mechanical Behavior of Nanomaterials--Experiments and Modeling, 2009 MRS Fall Meeting, Boston, MA (December 2009).

13. C. Deng (speaker) and F. Sansoz: Nanoscale plasticity and size effects in twinned gold nanowires from molecular dynamics simulations" in Symposium: Recent Advances in Computational Study of Nanostructures, 10th US National Congress on Computational Mechanics, Columbus, OH (July 2009).
14. C. Deng (speaker) and F. Sansoz: Size-Dependence of Yield Stress in Twinned Gold Nanowires under Uniaxial Tension, TMS 2009 Annual Meeting & Exhibition, San Francisco, CA (Feb. 2009).
15. F. Sansoz (speaker) and C. Deng: Strengthening Mechanisms in Nanotwinned Gold: From Bulk to Nanowires, PLASTICITY 2009 – Symposium “Plasticity and Fracture of Nano-Materials”, St Thomas, US Virgin Islands (Jan. 2009)
16. F. Sansoz (speaker), C. Deng and K. Afanasyev: Atomistic Simulations of Strengthening Mechanisms in Nanotwinned Gold: From Bulk to Nanowires, American Society of Mechanical Engineers IMECE, track 12-12: Modeling and Experiments in Nanomechanics and Nanomaterials, Boston, MA (November 2008).
17. F. Sansoz (speaker), and V. Dupont: Quasicontinuum and Molecular Dynamics Simulations of Contact Plasticity in Nanocrystalline Metals, American Society of Mechanical Engineers IMECE, track 13-3: Recent Advances in Computational Study of Nanostructures, Boston, MA (November 2008).
18. C. Deng (speaker) and F. Sansoz: Molecular Dynamics Simulations of Size Effects on Yielding Phenomena in Twinned and Single Crystal Au Nanowires, American Society of Mechanical Engineers IMECE, track 13-3: Recent Advances in Computational Study of Nanostructures (November 2008).
19. F. Sansoz (speaker), C. Deng and K.A. Afanasyev: Size-dependent strengthening in bulk and nano-sized gold with nanoscale growth twins, in Symposium U: Mechanics of Nanoscale Materials, 2008 MRS Spring Meeting, San Francisco, CA (March 2008).
20. R.L. Headrick (speaker), S. Wo, F. Sansoz, J.E. Anthony: Control of Grain Structure and Interface Structure in Solvent Deposited Organic Semiconductor Thin Films. 3rd Annual Organic Microelectronics Workshop, Seattle, Washington (July 2007).
21. J. Frolik (speaker), F. Sansoz, D. Rizzo, A. Sadek: A Multidisciplinary Curricular Effort Incorporating Wireless Sensors, 2007 American Society of Engineering Education (ASEE) Annual Conference & Exposition, Honolulu, Hawaii (June 2007).
22. F. Sansoz (speaker) and V. Dupont: Atomic mechanism of stress-assisted grain coarsening during indentation of a nanostructured metal, Symposium on Mechanical Behavior of Nanostructured Materials, in Honor of Carl Koch, TMS 2007 Annual Meeting & Exhibition, Orlando, FL (Feb. 2007).
23. F. Sansoz (speaker) and K. Afanasyev: Effects of Twin boundaries on the Slip Activity of Nanosized FCC Metallic Pillars, Symposium on Plasticity From the Atomic Scale to Constitutive Laws, TMS 2007 Annual Meeting & Exhibition, Orlando, FL (Feb. 2007).
24. V. Dupont (speaker) and F. Sansoz: Contact-Induced Shear Localization in Nanocrystalline Al by Atomistic Simulation, Symposium on Plasticity From the Atomic Scale to Constitutive Laws, TMS 2007 Annual Meeting & Exhibition, Orlando, FL (Feb. 2007).
25. N.S. Murthy (speaker), F. Bedoui, F. Sansoz and D.T. Grubb: Recent Observations on the Structure and their Influence on Properties in Semicrystalline Polymers, MACRO2006 – Polymer for Advanced Technologies, Pune, India (December 2006).
26. F. Sansoz (speaker) and V. Dupont: An atomistic model of grain coarsening during nanocrystalline metal indentation, in Symposium EE: Size Effects in the Deformation of Materials -- Experiments and Modeling, 2006 MRS Fall Meeting, Boston, MA (December 2006).
27. F. Sansoz (speaker), V. Dupont and K.D. Stevenson: AFM Contact Studies of Metallic Nanostructures: Direct Insight from Atomistic Simulations, in Symposium A: Trends in Nanoscience - From Materials to Applications, E-MRS 2006 Spring Meeting, Nice, France (June 2006)
28. K. Stevenson (speaker) and F. Sansoz, AFM Characterization and Surface Modification of Nanocrystalline Ni Films, TMS 2006 Annual Meeting, San Antonio, TX (March 2006).
29. V. Dupont (speaker) and F. Sansoz, Atomistic Simulation of Metal Surface Indentation Including Interface Friction and Surface Energy, TMS 2006 Annual Meeting, San Antonio, TX (March 2006).
30. F. Sansoz (speaker) and H. Ghonem, Investigation of Ductility Loss in a Thermally Exposed Near-Beta Ti Alloy, TMS 2006 Annual Meeting, San Antonio, TX (March 2006).

31. V. Dupont and F. Sansoz (speaker): Grain Boundary Structure Evolution in Nanocrystalline Al by Nanoindentation Simulations, 2005 MRS Fall Meeting - Symposium Z - Amorphous and Nanocrystalline Metals for Structural Applications, Boston, MA (December 2005).
32. V. Dupont (speaker) and F. Sansoz: Nanoindentation of Single Crystals: Effects of Interface Friction and Adhesion Energy, 2005 MRS Fall Meeting - Symposium AA - Micro- and Nanomechanics of Structural Material, Boston, MA (December 2005).
33. T.C. Hufnagel (speaker), R.T. Ott, F. Sansoz, J.F. Molinari, K.T. Ramesh, J. Almer: Micromechanics of Deformation in Metallic-Glass-Matrix Composites, Fourth International Conference on Bulk Metallic Glasses (BMG IV), Gatlinburg, TN (May 2005).
34. F. Sansoz, Mechanical Engineering Department Seminar, University of Vermont, Burlington, VT (April 2005).
35. F. Sansoz (speaker) and R.E. Miller: Concurrent Multiscale Modeling of Contact and Friction with Multiple Asperities, 2005 MRS Spring Meeting, Symposium EE: Linking Length Scales in the Mechanical Behavior of Materials, San Francisco, CA (March 2005).
36. H. Ghonem (speaker), C. Sarrazin-Baudoux, and F. Sansoz: Influence of Environment, Loading Frequency and Temperature on Fatigue Crack Growth Mechanisms in Titanium Lamellar Microstructures, 11th International Conference on Fracture (ICF11), Turin, Italy (March 2005).
37. F. Sansoz (speaker) and E. Buchovecky: Contact-Induced Plasticity of Rough Surfaces Under Nanoindentation, 2005 TMS Annual Meeting & Exhibition, San Francisco, CA (February 2005).
38. F. Sansoz (speaker) and J.F. Molinari: Investigation of Size Effects in the Mechanical Behavior of FCC Bicrystals by Quasicontinuum Method, 2005 TMS Annual Meeting & Exhibition, San Francisco, CA (February 2005).
39. R.T. Ott (speaker), F. Sansoz, J.F. Molinari, J. Almer, T.C. Hufnagel: Micromechanics and Macroscopic Mechanical Behavior of In Situ Formed Metallic Glass Matrix Composites, 2005 TMS Annual Meeting & Exhibition, San Francisco, CA (February 2005).
40. D. Warren, F. Sansoz, and J.F. Molinari (speaker): A Continuum Mechanics Model For Grain Boundary Sliding In Nanocrystalline Materials, International Conference on Experimental Mechanics (ICEM12), Bari, Italy (August 2004).
41. D. Warner (speaker), F. Sansoz and J.F. Molinari: Deformation of Polycrystals with Micro to Nanoscale Grain Size using Atomistic-based Continuum Modeling, in 2003 ASME International Mechanical Engineering Congress, Washington, DC, (November 2003).
42. F. Sansoz (speaker), M. Shazly and H. Ghonem: Time-Dependent Damage Mechanisms at Elevated Temperature in Fully Lamellar Ti6242 Alloy, 9th SF2M Spring Meeting on Temperature-Fatigue Interaction, Paris, France (2001).
43. F. Sansoz (speaker), B. Brethes and A. Pineau: Propagation des petites fissures de fatigue dans les zones de concentration de contraintes dans un superalliage base Ni, 42e Colloque de métallurgie de l'INSTN: Matériaux pour les machines thermiques, CEA Saclay, France (2000).
44. F. Sansoz (speaker) and S. Ponnelle: Fatigue Crack Propagation at High Temperature in Ni base Superalloys for HP Turbine Disks, SF2M Workshop on High Temperature, Paris, France (1999).
45. F. Sansoz (speaker), B. Brethes and A. Pineau: Short Fatigue Crack Propagation from Notches in N18 Ni based Superalloy, European Conference on Fracture (ECF) 12, Sheffield, UK (1998).
46. F. Sansoz (speaker), Seminar of the Centre des Matériaux, Ecole des Mines de Paris, Evry, France (1998).

Poster Presentations

47. F. Sansoz, "Size-dependent Strength and Fracture of Twinned Metal Nanowires through Surface Engineering and Microstructural Design", DFG-NSF Joint Research Conference on Sustainable Use of Nanomaterials, New York City, NY, (October 2009).
48. J. Gu and F. Sansoz: Mechanical Properties in Individual Carbon Nanofibers at High Temperature and High Pressure by Molecular Dynamics Simulations, 2008 MRS Fall Meeting, in Symposium EE: Nano- and Microscale Materials--Mechanical Properties and Behavior under Extreme Environments, Boston, MA (December 2008).
49. C. Deng, K. A. Afanasyev and F. Sansoz: Gold nanopillar compression: Strengthening mechanisms with nanoscale growth twins, 2007 MRS Fall Meeting, in Symposium AA: Fundamentals of Nanoindentation and Nanotribology IV, Boston, MA (December 2007). **NOMINEE FOR BEST POSTER AWARD**

50. K. Afanasyev and F. Sansoz: Atomic mechanisms of plasticity in twin-dominated metal nanopillars, *2006 MRS Fall Meeting*, in Symposium EE: Size Effects in the Deformation of Materials -- Experiments and Modeling, Boston, MA (December 2006). **NOMINEE FOR BEST POSTER AWARD**
51. V. Dupont and F. Sansoz: Deformation of Nanocrystalline Metals under Nanoscale Contact, *NSTI Nanotech 2006*, Boston, MA (May 2006).
52. F. Sansoz and J.F. Molinari: The Relation between Sliding and Structure at Grain Boundaries in Nanoscale FCC Bicrystals, *2005 MRS Spring Meeting*, Symposium BB: Mechanical Properties of Nanostructured Materials: Experiments and Modeling, San Francisco, CA (March 2005). **NOMINEE FOR BEST POSTER AWARD.**
53. C.V. Wolf, G. Gary and F. Sansoz: Bio-Transport in Nanoporous Synthetic Membranes: Synthesis, Testing, and Molecular Modeling, *Vermont EPSCoR Annual Meeting*, University of Vermont, Burlington, VT (February 2005).
54. D. L. Languerand, N.S. Murthy, and F. Sansoz: Multiscale Investigation of Mechanical Properties in High-Strength Polymeric Fibers, *Vermont EPSCoR Annual Meeting*, University of Vermont, Burlington, VT (February 2005).
55. K.D. Stevenson and F. Sansoz: Electrodeposition of Nanocrystalline Ni Thin Films for MEMS Technology, *Vermont EPSCoR Annual Meeting*, University of Vermont, Burlington, VT (February 2005).
56. F. Sansoz and J.F. Molinari: Mechanical Behavior of Tilt Grain Boundaries in FCC Metals from Quasicontinuum Simulations, *Gordon Research Conference on Physical Metallurgy*, Plymouth, NH (July 2004).
57. C. Sarrazin-Baudoux, F. Sansoz and H. Ghonem: Microstructure-Environment Interactions in Fatigue Crack Growth Mechanisms of Alpha/Beta Titanium Alloys at High Temperature, *Euromat 2003*, Lausanne, Switzerland (2003).
58. D.H. Warner, F. Sansoz and J.F. Molinari: Modeling of Deformation in Nanocrystalline Copper using an Atomistic-Based Continuum Approach, *2003 MRS Fall Meeting*, Symposium Q: Mechanical Properties of Nanostructured Materials and Nanocomposites, Boston, MA (2003).
59. R.T. Ott, F. Sansoz, J.F. Molinari, J. Almer, C. Fan and T.C. Hufnagel: Synchrotron Strain Measurements for in-situ Formed Metallic Glass Matrix Composite, *2003 MRS Fall Meeting*, Symposium MM: Amorphous and Nanocrystalline Metals, Boston, MA (Dec. 2003)
60. F. Sansoz, B. Brethes and A. Pineau: Growth of Short Fatigue Cracks from Stress Concentrations in N18 Superalloy, *9th SF2M Spring Meeting on Temperature-Fatigue Interaction*, Paris, France (2001)
61. F. Sansoz: The Propagation of Short Fatigue Cracks from Notches in a Ni based Superalloy, *Junior Euromat 98*, Swiss Federal Institute of Technology, Lausanne, Switzerland (1998).

PAST ADVISORS

Postdoctoral Advisors: Dr. Jean-Francois Molinari, Johns Hopkins University
 Dr. Kevin Hemker, Johns Hopkins University
 Dr. Hamouda Ghonem, University of Rhode Island
Ph.D. Advisor: Dr. Andre Pineau, Ecole des Mines, Paris
M.S. Advisor: Dr. Michel Gerland, ENSMA, Poitiers

ADVISED STUDENTS AND SCHOLARS

Graduate Students (current)

1. Chuang Deng, Ph.D. candidate, year 4. Nanoscale Plasticity of Face-centered Cubic Metal Nanowires from Molecular Dynamics Simulations.
2. Jingjun (Jessie) Gu, Ph.D. candidate, year 2. Thermomechanical Behavior of Carbon-based Nanomaterials for Extreme Thermal Environment and Protection Systems.
3. Carl Wolf, Ph.D. candidate, year 5. Phonon Engineering in Confined Systems.
4. Erin Wood, Ph.D. candidate, year 1. Synthesis and Mechanical Behavior of Self-assembled Metal Nanowires
5. Evan Malina, M.S. candidate, year 1. Determination of Mechanical Properties by Indentation in Nanoscale Metallic Wires using Atomic Force Microscopy.

Graduate Students (past)

6. Virginie Dupont, Ph.D. Mechanical Engineering, 2008. Multiscale Modeling of Contact Plasticity and Nanoindentation in Nanostructured FCC Metals.
7. Konstantin Afanasyev, M.S. Physics, 2007. Atomistic Simulations of Twin Boundary Effects on Deformation in Gold Nanobeams and Nanopillars.
8. Dulcie Languerand, M.S. Mechanical Engineering, 2007. Multiscale Investigations of Deformation in High-Strength Polymeric Fibers. (co-advised with Prof. Sanjeeva Murthy, Physics Department, UVM)
9. Kevin Stevenson, M.S. Mechanical Engineering, 2006. Electrochemical Synthesis and Mechanical Properties of Ni Nanostructures.
10. Eric Buchovecky, Graduate Research Assistant (Jan 04-to Aug. 04). Quasicontinuum Simulations of Single Crystal Nanoindentation.
11. Jose Arteiro, M.S. Mechanical Engineering 2002 (University of Rhode, co-advised with Prof. Hamouda Ghonem). Effects of Heat Treatment on Microstructure and Fatigue Crack Growth in Near-alpha Titanium Alloy IMI 834 at Elevated Temperature

Visiting Scholars/PostDocs (past)

12. Vincent Peron-Luhrs, Visiting graduate student from University of Liege, Belgium, September 2009. Quasicontinuum Modeling and Simulation of Sigma Tilt Grain Boundaries in Metals.
13. Dr. Fahmi Bedoui, Postdoctoral researcher, July 06-Dec. 06 (in collaboration with UVM Physics Department). AFM-Based Nanoindentation of Micro- and Nano-structured Polymers.

Undergraduate Research Assistants (current & past)

14. Trevor Avant, Honors College Thesis. Mechanics of Contact in Nanowires from Atomistic Simulations.
15. Evan Malina, Undergraduate Research Endeavor Competitive Award (URECA) (Spring 09-Fall 09). Determination of Mechanical Properties by Indentation in Nanoscale Metallic Wires using Atomic Force Microscopy
16. Zach Burchman, Honors College Senior Thesis (Fall 07-Spring 08). Growth, Structure and Mechanical Properties of Single Crystal and Polycrystalline Nickel Nanowires
17. Travis Gang, (1) Undergraduate Research Endeavor Competitive Award (URECA) (Spring 07-Fall 07). Determination of atomic force microscope cantilever spring constants via finite element modeling for nanomechanical analysis; (2) Helix Summer Intern (Summer 07) Effects of Surface Morphology on Elastic and Plastic Properties in Nanocrystalline Ni Electrodeposits.
18. Grant Gary, Undergraduate Research Endeavor Competitive Award (URECA) (Spring 05-Spring 06). Synthesis of Ni Nanowires by Template-Assisted Electrodeposition.
19. John B. Marking, ME Undergraduate Research Assistant (Summer 04). Fabrication of ultra sharp scanning tunneling tips.

TEACHING

University of Vermont

- ME350 – Multiscale Modeling. Credits: 3. Level: Graduate
Student enrollment: 10 (Spring 07).
- ME255 – Advanced Engineering Materials. Credits: 3. Level: Graduate/senior elective
Student enrollment: 27 (Fall 08), 25 (Fall 09).
- ME252 – Mechanical Behavior of Materials. Credits: 3. Level: Graduate/senior elective
Student enrollment: 11 (Fall 04), 16 (Fall 05), 10 (Fall 06), 14 (Spring 08), 11 (Spring 09), TBD (Spring 2010)
- ME124 – Mechanical Engineering Lab III. Credits: 2. Level: Junior
Student Enrollment: 40 (Spring 06), 34 (Spring 07), 40 (Spring 08), 66 (Spring 09), TBD (Spring 2010)
- ME101 – Engineering Materials I. Credits: 3. Level: Junior
Student enrollment: 39 (Fall 05), 41 (Fall 06), 44 (Fall 07).
- ME014 – Mechanics of Solids. Credits: 3. Level: Sophomore;
Student enrollment: 36 (Spring 04), 38 (Spring 05), 42 (Spring 06).

Other Teaching Experience

- University of Rhode Island (2001-2002):
Supervised two MS students and one PhD student in their research.
- Ecole des Mines, Paris, Centre des Materiaux P.M. Fourt (1998-1999):
-MS students co-advising for research projects in the Mechanics and Materials Master program. -Advising of undergraduate research projects (Students from Ecole des Mines and Ecole Polytechnique).
- University of Evry, Department of Engineering (1997-1999):
Graduate teaching assistant. Lecturing and grading. Courses taught:
-Diffusion in Solids and Heat transfer. Student enrollment: 60.
-Mechanical Behavior of Materials. Student enrollment: 30.

RESEARCH FUNDING

Major US Federal Grants

1. Project Title: "CAREER: Microstructure and Size Effects on Metal Plasticity at Limited Length Scale"
Source: National Science Foundation – Division of Materials Research – Metals Program
Program: Faculty early career development (CAREER) award
Role: **Principal Investigator, 100% effort**
Amount awarded: **\$400,000**
Project duration: 04/01/08-03/31/13
2. Project Title: "Investigation of Critical Aerothermodynamic Phenomena for Hypersonic Vehicles"
Source: NASA
Program: Experimental Program to Stimulate Competitive Research (EPSCoR)
Role: **Co-I** (PD/PI: Douglas Fletcher; other Co-Is: Y. Dubief, D. Huston, D. Hitt); **20% effort**
Amount awarded: **\$1,511,027** (\$750,000 from NASA, \$761,028 from in-kind UVM matching funds)
Project duration: 09/01/07-08/31/10

Other Funding

1. Project Title: "Determination of mechanical properties by indentation of nanoscale metallic wires using atomic force microscopy"
Source: University of Vermont – Vermont Space Grant Consortium
Program: Undergraduate Research Endeavor Competitive Award (URECA!)
Role: **Faculty Mentor**
Amount awarded: **\$3,000**
Project duration: 05/01/09-04/30/10
2. Project Title: "Self-healing H2 Storage"
Source: Vermont EPSCoR

Program: Innovation Fund
Role: **Co-PI** (PI: Dryver Huston); **33% effort.**
Amount awarded: **\$5,000**
Project duration: 03/01/08-09/31/08

3. Project Title: "Determination of atomic force microscope cantilever spring constants via finite element modeling for nanomechanical analysis"
Source: University of Vermont – Vermont Space Grant Consortium
Program: Undergraduate Research Endeavor Competitive Award (URECA)
Role: **Faculty Mentor**
Amount awarded: **\$3,000**
Project duration: 01/01/07-09/30/07
4. Project Title: "Computer Simulation of Thermal Phenomena and Energy Conversion in Molecular Scale Devices"
Source: Vermont Space Grant Consortium
Program: Graduate Research Assistantship
Role: **Faculty Mentor**
Amount awarded: **\$20,000**
Project duration: 09/01/06-08/31/07
5. Project Title: "A Curriculum Development Laboratory for Sensor System Courses"
Source: University of Vermont
Program: Instructional Incentive Grant
Role: **Co-PI** (PI: Jeff Frolik)
Amount awarded: **\$10,000** (including cost sharing from College of Engineering and Math. Sci.)
Project duration: 07/01/06-06/30/08
6. Project Title: "Computation in Mechanical Engineering and the Physical Sciences: Calculation and simulation from the mesoscale to the nanoscale"
Source: Vermont Advanced Computing Center
Program: Planning Proposal
Role: **Co-PI** (PI: Kelvin Chu)
Amount awarded: **\$5,000**
Project duration: 01/01/06-12/31/06
7. Project Title: "Acquisition of a metal sputtering system"
Source: National Science Foundation - Vermont EPSCOR
Program: Polymer/Composites Group Fund – Small equipment grant
Role: **Principal Investigator**
Amount awarded: **\$8,445**
Project duration: 02/01/06-12/31/06
8. Project Title: "Enabling *In-Situ* AFM-Based Indentation"
Source: College of Engineering and Mathematical Sciences
Program: Outwater Funding Award
Role: **Principal Investigator**
Amount awarded: **\$6,900**
Project duration: 02/01/06-12/31/06
9. Project Title: "Enabling Advanced AFM Probe Positioning For Nanomaterials and Nanofluidics Research "
Source: National Science Foundation – Vermont EPSCOR
Program: Small Equipment Acquisition
Role: **Principal Investigator**
Amount awarded: **\$16,125**
Project duration: 10/01/05-3/31/06
10. Project Title: "Mechanosensing in Nanopores: A Massively-Parallel Molecular Dynamics Study"
Source: Vermont Space Grant Consortium
Program: Graduate Research Assistantship
Role: **Faculty Mentor**
Amount awarded: **\$19,000**
Project duration: 09/01/05-08/31/06
11. Project Title: "Nanoporous Polymeric Membranes: Molecular Templating and Testing"
Source: University of Vermont
Program: Undergraduate Research Endeavor Competitive Award (URECA)

Role: **Faculty Mentor**

Amount awarded: **\$3,000**

Project duration: 01/01/05-09/30/05

12. Project Title: "Advanced Materials Initiatives using Scanning Electron Microscopy in Engineering Research"
Source: National Science Foundation – Vermont EPSCOR
Program: Small Equipment Acquisition
Role: **Principal Investigator**
Amount awarded: **\$18,000**
Project duration: 03/31/04-3/31/05
13. Project Title: "Enabling Technology for High Speed Computing"
Source: National Science Foundation – Vermont EPSCOR
Program: Small Equipment Acquisition
Role: **co-PI** (PI: Prof. Georges Pinder)
Amount awarded: **\$20,000**
Project duration: 03/31/04-3/31/05

PROFESSIONAL ACTIVITIES

Service for the University of Vermont

Regular Faculty Committees

Fall 06 - present	Member, Materials Science Program Steering Committee
Fall 06 - present	Member, College of Engineering & Mathematical Sci. Faculty Advisory Council
Fall 09 - present	Chair, Mechanical Engineering Laboratory Planning Committee
Spring 04 - present	UVM Graduate Faculty
Spring 07 – Fall 07	Point Person, Multiscale System Focus Group, School of Engineering
Fall 06 - Spring 07	Co-Graduate Program Coordinator, Mechanical Engineering Program
Fall 05 - Spring 06	Chair, Mechanical Engineering Curriculum Committee
Fall 04 - Spring 05	Information Technology Committee, Mechanical Eng. Representative

Faculty/Staff Searches

Summer 09	Member, Mechanical Engineering Lecturer Search Committee
Fall 08 – Spring 09	Member, School of Engineering Director Search Committee
Fall 08 – Spring 09	Member, Physics Faculty Search Committee in Condensed Matter Experiments
Fall 08 – Spring 09	Member, Physics Faculty Search Committee in Condensed Matter Theory
Fall 07 – Spring 08	Member, Bioengineering Faculty Search Committee
Summer 07	Member, Electrical Engineering Laboratory Technician Search Committee
Fall 06 – Spring 07	Member, Bioengineering Junior Faculty Search Committee
Spring 05	Member, Mechanical Engineering Junior Faculty Search Committee

Graduate Student M.S./Ph.D. Defense

TBD	Chairperson, Adam Richardson (Chemistry), Doctoral defense
Fall 09	Member, Wenjie Wang (Materials Science), Doctoral defense
Fall 09	Member, Lan Zhou (Materials Science), PhD proposal
Fall 09	Member, Ana Barbir (Mechanical Engineering), PhD proposal
Summer 09	Member, Songtao Wo (Materials Science), PhD proposal
Summer 09	Member, Art Michalek (Mechanical Engineering), Doctoral defense
Spring 09	Chairperson, Shay Romine (Geology), M.S. proposal
Spring 09	Member, Sredhar Manchu (Mechanical Engineering), Ph.D. proposal
Spring 08	Chairperson, Christopher Massa (Bioengineering), M.S. defense
Fall 04	Member, Matt Mc Garry (Mechanical Engineering), Doctoral defense

Service for the Research Community

Conference Symposium Organization:

- a. Co-organizer, symposium "Mechanical Behavior of Low Dimensional Materials", Materials Science & Technology 2010, Houston, TX.

Session Chair:

- a. 2009 International Conference on Fracture, Symposium: Atomistic Deformation and Fracture.

- b. 2008 ASME/IMECE congress, track 12-12: Modeling and Experiments in Nanomechanics and Nanomaterials
- c. 2008 ASME/IMECE congress, track 13-3: Recent Advances in Computational Study of Nanostructures
- d. 2005 MRS Fall meeting, symposium Z: Amorphous and Nanocrystalline Metals for Structural Applications

Book Reviews: Oxford University Press, Cambridge University Press.

Reviewer for Conference Proceedings:

2007 TMS annual meeting – Symposium: Mechanical Behavior of Nanostructured Materials, in Honor of Carl Koch

2006 MRS Fall Meeting – Symposium EE: Size Effects in the Deformation of Materials

2005 MRS Spring Meeting – Symposium BB: Mechanical Properties of Nanostructured Materials - Experiments and Modeling

Reviewer for Referred Journals:

ACS Nano	Journal of Materials Science
Acta Materialia	JOM
ASME Journal of Tribology	Materials Science and Engineering A
Computational Materials Science	Multiscale Modeling in Materials and Structures
Current Nanoscience	Physical Review B
Experimental Mechanics	Philosophical Magazine
International Journal of Plasticity	Surface and Coatings Technology
Journal of Alloys and Compounds	Scripta Materialia
Journal of Applied Physics	The Open Electrochemistry Journal
Journal of the Electrochemical Society	Tribology Transactions
Journal of Materials Research	

Reviewer for Funding Agencies:

ACS – Petroleum Research Fund
 Air Force Office of Scientific Research
 Fonds Québécois de la Recherche sur la Nature et les Technologies (Quebec Research Foundation for Nature and Technologies)
 US National Science Foundation
 Vermont EPSCoR

Proposal Review Panels:

Spring 2009: US National Science Foundation-Division of Materials Research

Affiliations

Materials Research Society (MRS), member
 The Minerals, Metals and Materials Society (TMS), member
 American Society of Mechanical Engineers (ASME), member

High-School Outreach and Mentoring

Faculty mentor (summer 2005), Vermont HELiX program (www.uvm.edu/~helix/). Develop a project with two high-school students and their teacher on the topic of *Bringing Science Photography to Life: Nanotechnology Inspired by Nature*.

PERSONAL DATA

Citizenship: French, US permanent resident

Married, two children (Clarisse and Ulysses)

Age: 36; Date of Birth: March 20, 1973

Past hobbies: BMX Racing (Amateur-level, 1986-1995; Professional/Elite, 1996)