Karen R. Magid

CONTACT INFORMATION

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PERSONAL STATEMENT

A researcher by training who enjoys working at the intersection of technology and society to improve the world around me using all my skills.

CURRENT WORK

Volunteer - Peace Corps Mexico

March 2010 to present

- Currently serving as a Volunteer in the Technology Transfer program in central Mexico. Received 3 months of language, technical, teaching, medical, and security training before starting service in June 2010.
- Designing and implementing a relational database in MySQL and PHP for Mexico Tierra de Amaranto, a local NGO, to organize and systematize their data collection and reporting processes.
- Through two USAID Small Project Assistance grants, working on ameliorating issues of declining biodiversity, environmental impact, and health in rural communities through education, training, and providing green technology such as solar ovens and efficient wood-burning stoves to marginalized families.
- Working on the administration and development of an internal website which is dedicated to enabling volunteers to communicate, collaborate, and share information throughout their service and pass along their knowledge to future volunteers. As chair of the working group I take lead on the administration and governance of the site and working group; however, website content, design, and governance decisions reached through consensus.
- Collaborating on editing, translation, and mentoring projects as a visiting professor in one of Mexico's leading materials research centers.

EDUCATION

The University of California - Berkeley, Berkeley, CA USA

Ph.D., Materials Science and Engineering, October 2007

- Thesis: Hierarchical multiscale characterization of deformation heterogeneities in metal single crystals.
- Advisor: Professor J. W. Morris, Jr.

North Carolina State University, Raleigh, NC USA

M.S., Nuclear Engineering, July 2003

- Thesis: Generation and characterization of micron and sub-micron sized particulate using electrothermal plasma source SIRENS.
- Advisor: Mohammed Bourham
- Minor in Mathematics
- Honors: College of Engineering Dean's Fellowship recipient, NCSU Alumni Association Fellowship recipient, Alpha Nu Sigma nuclear engineering honor society member

B.S., Electrical Engineering, December 2000

- *Summa cum Laude*, Valedictorian
- Communications specialization (emphasis on cellular telephony)
- Honors: National Merit Scholarship recipient, IBM Watson Scholarship recipient

Background

Analytical Skills Developed problem solving skills such as problem definition, analyzing choices, predicting risks and obstacles in both scientific research and community development settings.

Communication & Leadership Project lead on a variety of collaborative, multidisciplinary projects with culturally and linguistically diverse partners; presented numerous technical talks at national and international conferences; and served as a mentor to undergraduate and graduate students. Working on teams that develop community leadership skills, including how to identify social promotors and how to develop processes for those local community leaders.

Data Processing Extensive knowledge of acquisition, processing, and interpretation of data using commercial software and writing my own analysis programs.

Technical Development of testing protocols combining techniques to simultaneously characterize across length-scales; programming in a variety of languages for diverse projects including database implementation and scientific data analysis; extensive expertise in the characterization of mechanical properties and microstructures using synchrotron x-ray techniques and a variety of microscopy techniques.

Teaching Taught in both university and professional environments, leading technical laboratory classes as well as learning sessions designed to integrate people to new software technologies. One-on-one mentoring for website development using a variety of platforms.

Language Skills

- English - Native proficiency
- Spanish - Professional working proficiency
- German - Elementary proficiency
- French - Elementary proficiency

Professional Experience

Postdoctorate Researcher - ETH-Zurich

2007-2010

- Performed research in the Laboratory for Nanometallurgy in the Department of Materials under Professor Ralph Spolenak. Research emphasis was on the mechanical properties of materials across length-scales.

Graduate Student Researcher and Instructor - University of California, Berkeley

2003-2007

- Conducted PhD research and taught laboratory classes as a PhD candidate in the Materials Science and Engineering Department under advisor J.W. Morris, Jr.

Consultant - Alameda Applied Science Corporation

2005

- Conducted software and basic image processing training for particle counting with NIH-Image derived software for industrial applications.

Consultant - State of California Attorney General's Office

2004-2005

- Metallurgical consultant for State of California Attorney Generals Office for case determining extent of lead exposure from costume jewelry.

Lucent Technologies, Raleigh, NC USA

Hardware Engineer **2001**

- Systems test and integration functional testing of OptiStarTM EdgeSwitch and OptiStar (TA1000) Network Adapters
- Designed and implemented state of the art open source high-availability load balancing system supporting thousands of virtual servers.
- Hardware engineering interface between testing and design team members.
- Participated in design reviews

Research Experience

Laboratory for Nanometallurgy,
Department of Materials,
ETH Zurich

Postdoctorate **October 2007 to August 2010**

- Combined in-situ tensile testing with x-ray diffraction for the mechanical properties testing of nacre and antler biomaterials.
- X-ray characterization of microstructural changes upon heating in gold nanocrystalline films.
- Measurement of the scaling effects of the mechanical properties of polymer thin films via nanoindentation.

Department of Materials Science and Engineering,
University of California - Berkeley

Graduate Student **June 2004 to October 2007**

- Characterization of oriented, compressed metals specimens on a variety of length-scales to determine nature of deformation heterogeneities identified by image correlation during compression and with optical and atomic force microscopy slip trace analysis.
- X-ray microdiffraction on beamline 7.3.3 (now 12.3.2) of the Advanced Light Source at Lawrence Berkeley National Lab of metallic specimens of molybdenum, tantalum, copper and zinc.
- Developing transmission electron microscopy (TEM) sample preparation with focused ion beam (FIB), electropolishing, and mechanical polishing for targeted TEM observations in regions noted from X-ray measurements
  - Trained on FEI Strata 235 Dual Beam FIB, Philips CM200/FEG TEM, JEOL 3010 TEM

Department of Nuclear Engineering
North Carolina State University

Graduate Student **August 2001 to July 2003**

- Operated electrothermal, pulsed-power plasma source to generate particulate from a variety of materials including Lexan, copper, aluminum, and Teflon
- Scanning electron microscopy characterization to determine particle composition and size distributions
  - Hitachi 3200 SEM and EDS training completed

Teaching Experience

ETH Zurich

Assistant Lecturer **2009**

- Department of Materials - Materials Behavior in Reduced Dimensions
- Held lectures on specifics topics related to current and prior research for graduate level course to assist Prof. R. Spolenak.

University of California - Berkeley

Teaching Assistant **2005**

- Department of Materials Science & Engineering, Engineering 45: The Structure and Properties of Materials
- Conducted laboratory sections and administered grades for lab reports, midterms, and finals

North Carolina State University

Teaching Assistant **2001-2002**

- Department of Mechanical Engineering courses: Fluid Mechanics, Thermodynamics
- Developed and conducted review sessions and administered all grades for joint Nuclear Engineering and Carolina Power and Light On-Site Engineering Degree program for CP&L nuclear group employees
- Conducted review sessions and administered all grades for several introductory undergraduate Nuclear Engineering courses

Publications

- Field, D.P., and K.R. Magid, I.N. Mastorakos, J.N. Florando, D.H. Lassila, J.W. Morris, Jr. Mesoscale strain measurement in deformed crystals: a comparison of x-ray microdiffraction with electron backscatter diffraction. *Philosophical Magazine* 90(11), April 2010, pp. 1451-1464.
- Magid, K.R., and R.D. Nyilas, R. Spolenak. Metal plasticity by grain rotation - microdiffraction case studies. *Materials Science and Engineering:A* 524(1-2), October 2009, pp. 33-39.
- Magid, K.R., and J.N. Florando, D. Lassial, M.M. Leblanc, N. Tamura, and J.W. Morris, Jr. Mapping mesoscale heterogeneity in the plastic deformation of a copper single crystal. *Philosophical Magazine* 89(1), January 2009, pp. 77-107.

Conference Presentations & Publications

- "Mechanical properties testing of nacre: combined in-situ tensile testing with x-ray diffraction" presented in Symposium Z of the Fall 2008 Meeting of the Materials Research Society, Boston, MA.
- "Mapping Hillocks in Gold Thin Films with X-ray Microdiffraction: Mesoscopic Mapping and In-Situ Growth Studies" presented in Symposium NN of the Fall 2008 Meeting of the Materials Research Society, Boston, MA.
- J.W. Morris Jr., K.R. Magid, N. Tamura and J.N. Florando, "Multiscale Characterization to Clarify Patterns of Deformation." invited talk at the Fourth International Conference on Multiscale Materials Modeling (MMM2008), Tallahassee, Florida.
- "Mesoscale Deformation Patterning in Compressed Copper Single Crystals Measured via X-ray Microbeam Diffraction" presented in the "Plasticity from the Atomic Scale to the Constitutive Laws: Rate Limiting Behavior and Informed Constitutive Laws" symposium of the 2007 annual meeting of the TMS, Orlando, FL.

- "Hierarchical Multiscale Characterization of Compressed Copper Single Crystals" presented in Symposium EE of the Fall 2006 meeting of the Materials Research Society, Boston, MA.
- "Hierarchical Characterization of Deformation Heterogeneities in BCC Crystals." Karen R. Magid, Erica T. Lilleodden, Nobumichi Tamura , Jeff Florando, Dave Lassila, Rozaliya I. Barabash, and J. W. Morris in Dislocations, Plasticity, Damage and Metal Forming: Material Response and Multiscale Modeling, edited by Akhtar S. Khan and Amir R. Khoei, Plasticity 2005 Proceedings, Kauai, HI, 2005, pp.631-633.
- "X-Ray Microdiffraction Characterization of Deformation Heterogeneities in BCC Crystals." K.R. Magid, E.T. Lilleodden, N. Tamura, J.N. Florando, D.H. Lassila, M.M. LeBlanc, R.I. Barabash, and J.W. Morris Jr. in Neutron and X-Ray Scattering as Probes of Multiscale Phenomena, edited by S.R. Bhatia, P.G. Khalifah, D. Pochan, P. Radaelli, Mater. Res. Soc. Symp. Proc. 840, Boston, MA, 2004.

References

References available upon request.