

ABHISHEK JAISWAL

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EDUCATION	University of Illinois at Urbana-Champaign , Urbana, IL USA Department of Nuclear, Plasma, and Radiological Engineering <i>Ph.D. Candidate</i> , Nuclear Engineering (expected: 08.2016) <ul style="list-style-type: none">• Dissertation Topic: “Study of atomic-scale dynamics of glass-forming metallic liquids”• Advisor: Yang Zhang <i>Master of Science</i> , Nuclear Engineering 05.2013 <ul style="list-style-type: none">• Thesis Topic: “Parametric study of boric acid transport and chemistry in nuclear fuel corrosion deposits”• Advisor: Barclay G. Jones Idaho State University , Pocatello, ID USA Department of Mechanical and Nuclear Engineering <i>Bachelor of Science</i> , Mechanical and Nuclear Engineering 08.2010
RESEARCH INTERESTS	statistical mechanics of liquids, glasses and materials far from equilibrium; atomistic modeling; neutron and x-ray scattering; thermal hydraulics; materials under irradiation; machine learning.
APPOINTMENTS	<i>Research Assistant</i> , Zhang’s Research Group, 05.2013 – present <i>Research Assistant</i> , Jones’s Research Group, 08.2011 – 04.2013 <i>Teaching Assistant</i> , NPRE 402, 08.2010 – 05.2011 <ul style="list-style-type: none">• Department of Nuclear, Plasma, and Radiological Engineering, UIUC
HONORS AND AWARDS	Computational Science and Engineering Fellow 2015 – 2016 Block Grant Fellowship, NPRE 05.2015 Best Group Presentation Award, NCNR Summer School 06.2013 Barclay G. Jones Fellowship for excellent research in thermal-hydraulics 2011 – 2013 Tau Beta Pi National Fellowship for Graduate Studies 2010 – 2011 Areva 2+2 Nuclear Engineering Scholarship 2008 – 2010 Bob Thompson Memorial Scholarship 2009 – 2010 Tau Beta Pi Stabile Scholarship 2008 – 2009 Richard C. Dues Trust Scholarship 2007 – 2009 Associated Students of Idaho State University Scholarship 2007 – 2008
COMPUTER SKILLS	C, C++, FORTRAN, Python, Matlab, Mathematica, IGOR Pro, OriginPro, L ^A T _E X, LAMMPS, GROMACS, VASP, VMD, Dave, LabVIEW, AutoCAD, SolidWorks, HyperWorks
CERTIFICATIONS	Engineer in Training (EIT) certified by Idaho Board of Licensure of Professional Engineers and Professional Land Surveyors (E-7499) 2011

- PRESENTATIONS
- Contributed Talk, Materials Research Society Fall Meeting and Exhibit, “*Onset of Cooperative Dynamics in Glass-Forming Metallic Liquids*” 12.2015
- Contributed Talk, American Physical Society March Meeting, “*Collective Relaxations in a Bulk Metallic Glass-Forming Liquid*” 03.2015
- Contributed Talk, Materials Research Society Fall Meeting and Exhibit, “*Atomic-Scale Dynamics of Glass-Forming Metallic Liquids*” 12.2014
- Contributed Talk, American Conference on Neutron Scattering, “*Relaxational Dynamics of Glass-Forming Metallic Liquids*” 06.2014
- Poster, Computational Science and Engineering Annual Meeting, “*Unusual Collective Relaxation Time in Glass-forming Metallic Liquids*” 04.2014
- Poster, Undergraduate Research Symposium, Idaho State University, “*Design of a prototype robotic hand*” 04.2010
- Talk, Center for Advanced Energy Studies, Idaho Falls, “*Power Conversion Cycles for the Fission Surface Power System,*” 08.2009
- SYNERGISTIC ACTIVITIES
- Session Chair, Symposium BBB: Liquids and Glassy Soft Matter – Theoretical and Neutron Scattering Studies, MRS Fall Meeting and Exhibit, Boston, MA 2015
- Symposium Assistant, Symposium BBB: Liquids and Glassy Soft Matter – Theoretical and Neutron Scattering Studies, MRS Fall Meeting and Exhibit, Boston, MA 2015
- Reviewer for:
- Nanoscience and Nanotechnology Letters
 - Soft Matter
- PUBLICATIONS
- [1] **A. Jaiswal**, S. O’Keefe, R. Mills, A. Podlesynak, G. Ehlers, W. Dmowski, K. Lokshin, T. Egami, Y. Zhang, “*Onset of cooperative dynamics in an equilibrium glass-forming metallic liquid,*” J Phys. Chem. B, in press (2015).
- [2] **A. Jaiswal**, Y. Zhang, “*Robustness of dynamical cluster analysis in a glass-forming metallic liquid using an unsupervised machine learning algorithm,*” MRS Advances, in press (2015).
- [3] **A. Jaiswal**, A. Podlesynak, G. Ehlers, R. Mills, S. O’Keefe, J. Stevick, J. Kempton, G. Jelbert, W. Dmowski, K. Lokshin, T. Egami, Y. Zhang, “*Coincidence of collective relaxation anomaly and specific heat peak in a bulk metallic glass-forming liquid,*” Phys. Rev. B 92, 024202 (2015).
- [4] **A. Jaiswal**, T. Egami, Y. Zhang, “*Atomic-scale dynamics of a model glass-forming metallic liquid: dynamical crossover, dynamical decoupling, and dynamical clustering,*” Phys. Rev. B 91, 134204 (2015).
- [5] **A. Jaiswal**, Y. Zhang, “*Coherent quasi-elastic neutron scattering studies of the collective diffusion of glass-forming metallic liquids,*” in Trans. Am. Nucl. Soc. (2014), pp 942-943.
- [6] D. Crawford, N. Jerred, D. Chang, **A. Jaiswal**, S. Reddy, S. Howe, “*First principles analysis of heat exchanger concepts and designs for a closed CO₂ Brayton cycle with regeneration for a lunar fission to surface power system,*” Proc. Inst. Mech. Eng. Part G, J. Aerosp. Eng. 225, 194 (2011).
- RESEARCH EXPERIENCE
- Ph.D. Research:* 2013 – present
- Contributed to the theoretical understanding of liquid and glassy metallic systems using experimental and computational tools.
 - Performed neutron scattering experiments and developed models to analyze measured data of glass forming metallic liquids.

- Performed large scale atomistic simulations to understand origin of dynamical crossover phenomenon in transport properties of metallic liquids.
- Developed in-house codes for analysis of neutron scattering relevant quantities using molecular dynamics simulation trajectories.
- Utilizing advanced machine learning techniques to create scientific visualizations of post-simulation data.
- Employing MD and *ab initio* simulations to study the influence of impurities in liquid Lithium transport relevant to fusion applications.

- Master's Research:* 2010 – 2013
- Performed numerical analysis of coupled (heat, mass, and momentum) transport of boric acid in nuclear fuel corrosion deposits important to crud induced power shift (CIPS).
 - Developed methodology and successfully simulated effects of radiolysis products diffusing in porous crud media.
 - Modeled the chemical kinetics of several diffusing species during CIPS.

- Research Fellow @ CSNR, Idaho National Laboratory* 2009
- Developed concepts for power conversion system for NASA's space applications
 - Researched, designed and compared heat exchanger designs (shell and tube, plate and fin etc.) and power conversion cycles (Brayton, Stirling) through extensive literature search, review, engineering analysis and computer simulations

- Undergraduate Research Assistant @ Idaho State University* 2008 – 2009
- Successfully wrote and received funding for a research grant proposal to develop a two-fingered robotic hand prototype.
 - Developed and tested a working prototype made using 3D printed gear assembly and DC motors.

PROFESSIONAL
INTERNSHIP

- Mechanical Engineering Intern,*
Premier Technologies Inc., Blackfoot, ID 05.2010 – 08.2010
- Performed engineering design, CAD model development, and Finite Element Analysis (FEA) of mechanical equipment (heat exchangers, mechanical hangers etc.) and welds conforming to ASME and AWS standards
 - Wrote technical proposals and engineering reports for clients and worked in a strict timeline
 - Met with clients to discuss key deliverables, project outcomes and methodology of engineering design

MEMBERSHIPS &
ASSOCIATIONS

- American Physical Society, Materials Research Society, American Nuclear Society, Neutron Scattering Society of America, Tau Beta Pi, Alpha Nu Sigma, American Society of Mechanical Engineers
- Served in executive positions in student chapters of ASME and TBP at ISU
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