Nouamane Laanait

Eugene P. Wigner Fellow
Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
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Education

Ph.D.	Condensed Matter Physics, University of Illinois, Chicago. Thesis: Ion Correlations at Electrified Soft-Matter Interfaces. Advisor: Prof. Mark L. Schlossman	2011
B.S.	Physics, University of Illinois, Chicago. Graduated Magna Cum Laude (GPA: 3.87/4.) with the Highest Distinction from the Physics Department.	2005

Fellowships, Awards, And Honors

- Eugene P. Wigner Fellowship, Oak Ridge National Laboratory. 2014
- Springer Theses Award, Springer. 2013
- GAANN Fellowship (twice), U.S Dept. of Education. 2008, 2009
- University Fellowship (twice), University of Illinois. 2006, 2010

Research and Professional Experience

Materials Scientist 2014-present
Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
Developing novel approaches to local investigations of disordered systems such as van der Waals heterostructures by multimodal imaging with advanced scanning probe and x-ray microscopies, and blending techniques from the fields of machine learning, condensed matter physics, and high-performance computing. Leading divisional research thrust in modeling and understanding dissipative processes in systems driven away from equilibrium by nanobeams.
Reference: Sergei Kalinin, sergei2@ornl.gov

Postdoctoral Fellow 2011-2014
Chemical Sciences and Engineering Division, Argonne National Laboratory
Designed and built a world-wide unique full-field hard x-ray microscope at the Advanced Photon Source for real-time nanoscale imaging of the atomic structure of thin-films and interfaces of solids. Investigated the local structure of topological insulators thin-films, Phase transformations in multiferroics, and non-equilibrium processes at liquid/solid interfaces.
Reference: Paul Fenter, fenter@anl.gov

Research Fellow and Assistant 2007-2011

Department of Physics, University of Illinois, Chicago

Investigated ion correlations at liquid/liquid interfaces using nonlocal density functional theories, synchrotron x-ray measurements and computer simulations. Developed hybrid density functional theories and associated numerical codes to predict ion distributions at liquid interfaces, liquid interfacial structure and nonlocal correlation effects. Designed x-ray experiments to probe the structure of liquid/vapor and liquid/solid interfaces.

Reference: Prof. Mark Schlossman, schloss@uic.edu

Visiting Research Fellow 2008-2009

Department of Chemistry, University of California, Santa Cruz

Performed computational studies of liquid/liquid interfaces using Classical Molecular Dynamics and ab initio quantum computations. Derived interatomic potentials from quantum simulations to simulate classical ionic behavior at interfaces.

Reference: Prof. Ilan Benjamin, ilan@ucsc.edu

Teaching Experience

Teaching Assistant 2006-2008

Department of Physics, University of Illinois, Chicago

Taught discussion classes of introductory physics at the undergraduate level to review and complement the material covered in lectures. Assisted the students with problem solving strategies and administered quizzes to gauge their mastery of the main concepts. Presided over experimental laboratory sessions to provide the students with a practical understanding of the studied concepts.

Selected Publications

- N. Laanait*, E. B. Callagon, Z. Zhang, N. Sturchio, S. S. Lee, P. Fenter 'X-ray Driven Reaction Front Dynamics at Mineral/Aqueous Interfaces' Science, 349 (6254), p. 1330, (2015). *Corresponding author.
- N. Laanait, "Ion Correlations at Electrified Soft-Matter Interfaces", Springer Theses Series, Springer International Publishing (2013).

- N. Laanait*, M. Mihaylov, B. Hou, H. Yu, P. Vanysekm M. Meron, B. Lin, I. Benjmain, M. L. Schlossman.
  'Tuning Ion Correlations at an Electrified Soft Matter Interface'
  Proceedings of the National Academy of Sciences, 109, 20326-20331 (2012).
  *Corresponding author.