

Subin Sahu

National Institute of Standards and Technology
Center for Nanoscale Science and Technology
100 Bureau Drive, MS 6203,
Gaithersburg, MD 20899

(541) 908-4603
subin.sahu@nist.gov
subinsahu@gmail.com

Research Interests

My research interests are in transport phenomena and nonlinear behavior in nanoscale and molecular systems, such as ion transport through nanopores, thermal transport in low-dimensional materials and DNA denaturation. I use mathematical modeling and computational techniques to investigate these processes. I have expertise in molecular dynamics simulation (expert user of NAMD for large all atom systems). I also develop my own codes to perform molecular dynamics, as well as Monte Carlo simulations and analysis.

Education

PhD Physics

Oregon State University, Corvallis, OR
GPA 3.9/4.0, Expected graduation June 2017
PhD Advisor: Michael Zwolak

2011-present

Masters of Science, Physics

Tribhuvan University, Nepal

2008

Bachelor of Science, Physics

Tribhuvan University, Nepal

2006

Professional Experience

National Institute of Standards and Technology , Gaithersburg, MD

CNST/UMD Graduate Researcher, Center of Nanoscale Science and Technology

June 2015 – Present

Oregon State University, Corvallis, OR

Research Assistant, Department of Physics

Sep. 2012 – Sep. 2014

Teaching Assistant, Department of Physics

Sep. 2011 – Sep. 2015

Khwopa Higher Secondary School, Nepal

General Physics Tutor

2010-2011

Professional Skills

- Molecular Dynamics Simulation using **NAMD** and homegrown codes (4+ years experience)
- Scientific computing including Coarse Grained Molecular Dynamics Simulation and Monte Carlo Simulation using **Fortran** (3+ years experience)
- Modeling, visualization and analysis of bio-molecule and nanofluidic device using **VMD** and **TCL/Tk** (4+ years experience)
- High performance computing in PBS and SLURM cluster/queuing system (4+ years experience)



- Statistical Analysis and Problem Solving using Python, Awk, Bash, Matlab/Octave, C/C++, COM-SOL, Mathematica
- Typesetting and graphics: LaTeX, LyX, gnuplot
- Collaboration Skills: technical papers, teaching, research

Publications

- “Access resistance in ion transport through graphene nanopores”, **S. Sahu** & M. Zwolak (in preparation)
- “Ionic selectivity and filtration from fragmented dehydration in multilayer graphene nanopores”, **S. Sahu** & M. Zwolak *arXiv* 1705.04538 (2017)
- “Enabling photoemission electron microscopy in liquids via graphene-capped microchannel arrays”, H. Guo, E. Strelcov, A. Yulaev, J. Wang, N. Appathurai, S. Urquhart, J. Vinson, **S. Sahu**, M. Zwolak, & A. Kolmakov, *Nano Lett.* 17(2), 1034-1041 (2017)
- “Dehydration as a Universal Mechanism for Ion Selectivity in Graphene and Other Atomically Thin Pores”, **S. Sahu**, M. Di Ventra & M. Zwolak, *arXiv* 1605.03134 (2016) (under review at Nano Letters)
- “Crossover behavior of the thermal conductance and Kramers transition rate theory”, K. Velizhanin, **S. Sahu**, C.-C. Chien, Y. Dubi & M. Zwolak, *Sci. Rep.* 5, 17506 (2015)

Presentations

- “Dehydration as a universal mechanism for ion selectivity in graphene and other atomically thin pores”, APS March Meeting, New Orleans LA (2017)
- “Access resistance in ion transport through graphene nanopores”, APS March Meeting, New Orleans LA (2017)
- “Ion transport and dehydration in sub-nanoscale pores”, BPS 61st Annual Meeting, New Orleans LA (2017)
- “Ion transport and dehydration in sub-nanoscale pores”, APS March Meeting, Baltimore MD (2016)
- “Crossover behavior of the thermal conductance and Kramer’s transition rate theory”, APS March Meeting, San Antonio TX (2015)
- “Ion transport through Graphene Nanopore”, Sigma Xi Student Research Symposium, Portland OR (2013)

Awards

- College of Science Disease Mechanism and Prevention Fund Fellowship, Oregon State University (2014)
- Provost Distinguish Fellowship Award, Oregon State University (2011)

