Mohsen Farshad

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Education

2014-2020   **Ph.D. in Physical Chemistry**, University of Maine, Orono, ME

- Advisor: Professor Jayendran C. Rasaiah

- Thesis Title: Computer Modeling of Ultra-Small Metal Clusters & ssDNA in Narrow Nanopores.

2010-2012   **M.S. in Physical Chemistry**, Sharif University of Technology, Tehran, Iran

- Advisor: Professor Gholamabbas Parsafar

- Thesis Title: Investigation of Energy and Entropy Effects in the Distribution of Binary Mixture Particles in a nanocube.

2006-2010   **B.S. in Chemistry**, University of Guilan, Rasht, Guilan, Iran

Research Experiences

2010-2012   **Graduate Student Researcher**, M.S. Advisor: Gholamabbas Parsafar, Sharif University of Technology, Tehran, Iran

2014-2020   **Graduate Student Researcher**, Ph.D. Advisor: Jayendran C. Rasaiah Department of Chemistry, University of Maine, Orono, ME

Honors

Ranked 21 in the 2010 national M.S. degree entrance exam in chemistry among ~16000 participants across Iran.

Publications

- Suvlu, D.; **Farshad, M.**; Rasaiah, J. C. Nanocluster Growth and Coalescence Modulated by Ligands. *The Journal of Physical Chemistry C* **2020** 124 (31), 17340-17346. https://doi.org/10.1021/acs.jpcc.0c04459
- **Farshad, M.**; Rasaiah, J. C. Reverse Translocation of Nucleotides through a Carbon Nanotube. *The Journal of Physical Chemistry B* **2020**, 124 (6), 937-943. https://doi.org/10.1021/acs.jpcb.9b09587

- **Farshad, M.**; Rasaiah, J. C. Molecular Dynamics Simulation Study of Transverse and Longitudinal Ionic Currents in Solid-State Nanopore DNA Sequencing. *ACS Applied Nano Materials* **2020**, 3 (2), 1438-1447.
  https://doi.org/10.1021/acsanm.9b02280
- **Farshad, M.**; Suvlu, D.; Rasaiah, J. C. Ligand-Mediated Nanocluster Formation with Classical and Autocatalytic Growth. *The Journal of Physical Chemistry C* **2019**, 123 (49), 29954–29963.
  https://doi.org/10.1021/acs.jpcc.9b07683
- **Farshad, M.**; Perera, D.; Rasaiah, J. C. Theoretical Study of Stability, Structure, and Optical Spectra of Ultra-Small Silver Clusters Using Density Functional Theory. ChemRxiv **2020.**
  https://doi.org/10.26434/chemrxiv.13272443.v1
- **Farshad, M.**; Rasaiah, J. C. Light-Nucleotide Versus Ion-Nucleotide Interactions for Single-Nucleotide Resolution. (Under Review)

In Preparations:

- Moments of Nanocluster Formation and Growth
- Manifestation of Energy and Entropy on Distribution of Particles
- Synthesis of Silver Nanoparticles in a Micromixer (Experimental study)

Presentations

- Poster: 2012 "Molecular distribution in a binary solution with different radii on a nanoscale size" 15th physical chemistry national conference in Tehran university, Tehran, Iran
- Poster: 2018 "Kinetic study of Ag13 silver cluster formation" Gordon Research Seminar/Conference on Noble Metal nanoparticles, Mount Holyoke College, South Hadley, MA
- Oral: 2019 "Kinetics of ligands mediated ultra-small silver cluster formation" APS March Meeting in Boston, MA
- Poster: 2019 "Transverse and longitudinal ionic currents in solid-state nanopore DNA sequencing" Gordon Research Conference on Chemistry and Physics of Liquids in Holderness, NH

Teaching

2014-2020 Teaching Assistant for General Chemistry Laboratory (CHY 123, 124, 133) University of Maine, Orono, ME

Computer Skills

Fortran, Python, MATLAB, NAMD, LAMMPS, VMD, Gaussian, GaussView, Machine Learning

Experimental Skills

Microfluidic mixing, synthesis of nanoparticles, UV-Vis spectrometry, Zetasizer, analyzing TEM images, analyzing XPS spectra

References

Dr. Jayendran C. Rasaiah

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Dr. Brian Frederick

briangf@maine.edu Cell: 207 581 226

Dr. Seneviratne Samaratunga

senevisamara@gmail.com Cell: 207 217 0358