Eric S. Harper

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Education

2018: Ph.D. in Materials Science and Engineering, University of Michigan
- Thesis Topic: *The Nature of the Entropic Bond* (Defended Sept. 22, 2017)

2014: M.S. in Materials Science and Engineering, University of Michigan. GPA: 3.774/4.000
2011: Bachelor of Chemical Engineering, University of Dayton. GPA: 3.92/4.00

Skills

- Simulation Techniques: Molecular Dynamics, Monte Carlo, Genetic Algorithms/Optimization, Rigorous Coupled Wave Analysis, Finite Element Analysis
- Machine Learning: Scikit-Image, Scikit-learn, Keras, Tensorflow
- Programming: Python, C++ (CUDA, MPI, OpenMP, Intel Thread Building Blocks), Julia, Haskell
- Remote Unix/Linux system usage and administration including Flux at UM, Blacklight at Pittsburgh, Stampede at UT-Austin, and Comet at SDSC

Experience

2018 - Present: *STFP Postdoctoral Fellow*, Air Force Research Labs, Dayton, OH
- Modeling and design of anisotropic dielectric metamaterials and photonic devices

2017 - 2018: *Computational Scientist*, Azimuth Corporation at Air Force Research Labs, Dayton, OH
- Modeling non-linear mechanical properties in liquid-crystalline elastomers (LCEs)

2011 - 2017: *Graduate Student Research Assistant*, Glotzer Group, University of Michigan
- Lead Developer of analysis software suite Freud
- Junior system administrator for group computational resources
- Instructor, MSE 365 Undergraduate Lab

2010 - 2011: *Teaching Associate*, University of Dayton, Chemical Engineering
- Chemical Engineering Computations; Separation Techniques; Process Dynamics and Control

2010 - 2011: *Consultant*, Composite Technical Services, Dayton, OH
- Conducted Life Cycle Assessments on composite and foam product lines
- Developed rigid foam formulations and conducted flame tests on foam samples

2008 - 2009: *Undergraduate Research Assistant*, Air Force Research Labs, Dayton, OH
- Presented photvoltaic research at American Chemical Society CeRMACS Conference (6/2010)

Selected Publications and Presentations

- Hierarchical self-assembly of hard cube derivatives, Soft Matter, 2019. DOI: 10.1039/c8sm02619j
- Nature of the Entropic Bond in Particle Assemblies, submitted to Nature, 2018
  - Oral Presentation, APS March Meeting
- Freud: a software suite for high-throughput simulation analysis (https://bitbucket.org/glotzer/freud/)
  - Oral Presentation, AICHE Fall Meeting, APS Spring Meeting
- Shape Allophiles Improve Entropic Assembly, Soft Matter, 2015. DOI: 10.1039/c5sm01351h
  - Oral Presentation, MRS Fall Meeting, APS Spring Meeting

Grants, Honors, and Awards

2018 – 2020: STFP Postdoctoral Fellowship Program (formerly NRC Research Associate Program)
2016 – 2017: MICDE Fellowship, University of Michigan
2012 – 2014: NSF Open Data IGERT Fellow, University of Michigan