Corinne L. Carpenter, Ph.D.

Email: corinnec@mit.com LinkedIn: linkedin.com/in/corinne-carpenter Cell: (339) 793-3248

SUMMARY

Researcher and Consultant in materials science and engineering, with specialization in computation and simulation. Experienced with mechanical, morphological, and thermodynamic analysis of materials systems.

ANALYTICAL SKILLS

Simulation: Self-consistent field theory, molecular dynamics, Monte Carlo
Software: MATLAB, LAMMPS, Microsoft Excel, Powerpoint, gnuplot, Ovito
Languages: C++, Python, LaTeX, Bash, VBasic

EDUCATION

Ph.D., Chemical Engineering, University of California, Santa Barbara — June 2017
B.S, Chemical Engineering, University of Massachusetts, Amherst — May 2013

PROFESSIONAL EXPERIENCE

Postdoctoral Associate — Aug. 2018-Present
Massachusetts Institute of Technology — Cambridge, MA

- Determine crystallization kinetics of polymeric systems in the presence of nucleating agents using LAMMPS
- Develop new optimization techniques for application to highly stochastic, computationally extensive, high-dimensional systems
- Enable design and discovery of additives for controlling polymer morphology and performance through crystallization kinetics

Engineering Consultant — June 2018-Aug. 2018
Independent Consultant — Boston, MA

- Provided engineering advice and expertise to industrial steelmaking company in order to guide decision-making
- Designed and implemented model for evaluating and optimizing processing conditions to create desired product steel efficiently and cost-effectively
- Re-engineered C++ code of plant operation software for determining process input requirements under real-world, real-time conditions, including optimization based on fuel minimization and cost reduction

Graduate Research Scientist — Sept. 2013-Aug. 2017
University of California, Santa Barbara — Santa Barbara, CA

- Generated independent computational research that guided industrial research efforts through a 3+ year collaboration with Intel Corporation
- Evaluated viability of patterning technique for Intel Corporation resulting in multi-million dollar decision
- Applied regression analysis to large, complicated file sets (>10TB, 50,000 files) to extract quantitative data for further statistical analysis

Summer Graduate Research Intern — Jun. 2015-Sept. 2015
Intel Corporation — Hillsboro, OR

- Used self-consistent field theory simulations to study orientation in block copolymer nanomeshes
- Coordinated with both theoretical and experimental groups to inform simultaneous research projects

Undergraduate Research Scientist — Jun. 2011-Sept. 2013
University of Massachusetts, Amherst — Amherst, MA

- Used molecular dynamics simulations to research structural and mechanical properties of defected graphene
- Generated three first-author peer-reviewed articles in Applied Physics Letters

SELECTED PUBLICATIONS (OF 8 TOTAL)

Carpenter, C. L., Nicaise, S., Theofanis, P. L., Shykind, D., Berggren, K. K., Delaney, K. T., Fredrickson, G. H., 'Orientational preference in multilayer block copolymer nanomeshes with respect to layer-to-layer commensurability,' Macromolecules 50, 20 (2017).

Farmer, T. C., **Carpenter, C. L.**, Doherty, M. F., "Polymorph selection by continuous crystallization." AIChE Journal 62, 9 (2016).