WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

Multiple Postdoc and PhD Open Positions in Polymer Modeling and Machine-Learning at University of Wisconsin-Madison

Postdoc Open Positions

Postdoc positions with financial support (up to 3 years) are immediately available in the Department of Mechanical Engineering, University of Wisconsin-Madison (UW-Madison).

Required Degree:

Ph.D. in Engineering Mechanics, Chemical, Mechanical, or Civil Engineering, Material Science, Condense Matter Physics, or Computational Chemistry.

Required Skills:

- Micromechanics modeling: sufficient familiarity with lower scale methods to take advantage of emergent phenomena accessible from molecular dynamic simulations and coarse-grained techniques
- Broad knowledge of Computational Material and Polymer Physics
- Extensive experience in multiscale modeling which should include the integration of Molecular Dynamic Simulation, Coarse-grained modeling, and Continuum Mechanics
- Experience conducting computational analysis in multi-physics context
- Polymer Physics -- Solid-state mechanics
- Knowledge of constitutive models for polymers or their composites

Preferred Optional Qualifications:

- Polymer Physics -- thermodynamics and statistical mechanics
- Experience with the software on massively parallel computer systems (such as LAMMPS, GROMACS)
- Applied Math, Applied Physics, Computational Sciences: optimization, numerical analysis, numerical linear algebra
- Familiarity with MATLAB, Python, C++, or other scripting languages
- Ability to work independently and multi-task effectively
- Demonstrate understanding of projects from both technical and end-user perspectives
- Excellent communication skills; ability to understand and synthesize researcher's experimental data

Department of Mechanical Engineering
University of Wisconsin–Madison 1513 University Ave Madison, Wisconsin 53706
608-265-0577 Email: yli2562@wisc.edu https://directory.engr.wisc.edu/me/Faculty/Li_Ying/

- Flexible and willing to adapt to changes in priorities as necessary in a dynamic and fast-paced environment
- Demonstrated leadership abilities and team player attitude, as well as the ability to accomplish tasks independently under minimal direction and supervision
- Willing to learn new technologies
- Strong attention to detail
- Machine Learning experience would be a major plus

Interested candidates should send a cover letter, one-page research statement, CV, 3 representative publications, and the contact information of at least three professional references to Dr. Ying Li at **yli2562@wisc.edu**.

Ph.D. Open Positions

Ph.D. positions with financial support in the form of research assistant/teaching assistant are available in the Department of Mechanical Engineering, University of Wisconsin-Madison (UW-Madison).

This specific position is offered by the laboratory of computational materials design in the department. **GOAL of Research Lab**: Multiscale and multi-physics modeling to computationally design advanced polymeric materials, with emphasis on energy absorption, sustainable energy solution, and biomedical application, to provide scientific insights into their synthesis-structure-property relationships. The research team will focus on the development of novel computational methods with data-driven techniques and apply these methods for extremely large-scale simulations to access the experimentally unapproachable phenomena.

Required Qualifications:

§ B.S. in Engineering Mechanics, Civil Engineering, Materials Science, Mechanical Engineering, Chemical Engineering, or a closely related area. MS with project experience and good publication is a plus.

§ Programming skills in MATLAB, Fortran, C/C++, or Python. Experience in parallel computing is a plus.

§ Experience in running molecular dynamics simulations and finite element analysis.

§ Broad knowledge of computational material science and polymer physics will be a plus.

About UW-Madison: UW-Madison is ranked among the top 10 public schools (38 among all national universities) in the United States by US News. In the 2021 *QS World University Rankings*, UW-Madison was ranked 65th in the world. The 2021 *Times Higher Education World University Rankings* placed UW-Madison 58th worldwide, based primarily on surveys administered to students, faculty, and recruiters. For 2021, UW-Madison was ranked tied for 41st by *U.S. News & World Report* among global universities. UW-Madison was ranked 31st among world universities in 2021 by the *Academic Ranking of World Universities*, which assesses academic and research performance. For the second year in a row, Madison has been identified as one of the best places to live throughout the United States, according to research and data compiled from Livability,

coming in at the top spot. Overall, UW-Madison is an excellent place for research, and Madison is a wonderful city to live in. Please check out these videos (Why UW-Madison, Madison).

PI's info: Dr. Li joined the University of Wisconsin-Madison in August 2022 as an Associate Professor of Mechanical Engineering. From 2015 to 2022, he was an Assistant Professor of Mechanical Engineering at the University of Connecticut and was promoted to Associate Professor. He received his Ph.D. in 2015 from Northwestern University, focusing on the multiscale modeling of soft matter and related biomedical applications. His current research interests are: multiscale modeling, computational materials design, mechanics and physics of polymers, and machine learning-accelerated polymer design. Dr. Li's achievements in research have been widely recognized by fellowships and awards, including NSF CAREER Award (2021), Air Force's Young Investigator Award (2020), 3M Non-Tenured Faculty Award (2020), ASME Haythornthwaite Young Investigator Award (2019), NSF CISE Research Initiation Initiative Award (2018) and multiple best paper awards from major conferences. He has authored and co-authored more than 100 peer-reviewed journal articles, including Physical Review Letters, ACS Nano, Biomaterials, Nanoscale, Macromolecules, Journal of Mechanics and Physics of Solids, and Journal of Fluid Mechanics, etc. He has been invited as a reviewer for more than 90 international journals, such as Nature Communications and Science Advances. Dr. Li's lab is currently supported by multi-million-dollar grants and contracts from NSF, AFOSR, AFRL, ONR, DOE/National Nuclear Security Administration, DOE/National Alliance for Water Innovation, and industries.

Interested candidates should send a CV, transcripts, TOEFL/GRE scores, and the contact information of at least three professional references to Dr. Ying Li at **yli2562@wisc.edu**.