

Candidate for Computational Mathematics, Science and Engineering Colleges of Engineering and Natural Science

> Presentation by Wenxiao Pan Team Lead, Mathematics and Data Division Pacific Northwest National Laboratory January 22, 2016, 9:30 AM; C405 Wells Hall

"Mesoscale Modeling of Complex Fluids and Materials"

Recent applications in micro-/nano-technology, material assembly and biological systems demand robust and accurate computational modeling of multiphysical processes at the mesoscale. In this talk, I will focus on numerical methods and scientific computing that effectively capture mesoscopic multiphysics in complex fluids and materials. I will discuss both top-down and bottom-up approaches. In the top-down approach, the stochastic PDEs with consistent thermal scaling were solved to describe the important effects of thermal fluctuation in mesoscale. In the bottom-up approach, coarse-grained molecular models were developed to conserve both equilibrium and dynamic properties of underlying microscopic systems. Application systems include diffusive mixing, polymer solution, colloid suspension, red blood cell and battery.

Dr. Wenxiao Pan is a scientist and team lead in the Advanced Computing, Mathematics & Data Division at the Pacific Northwest National Laboratory (PNNL). Her research interests focus on computational mathematics and scientific computing in mesoscale modeling for multiphysical systems. She received her Ph.D. in applied mathematics at Brown University and joined PNNL in 2010.

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