# Joint Condensed Matter and Center for Soft Matter and Biological Physics Seminar

## Professor Rui Qiao

## Mechanical Engineering (Virginia Tech)

**"Modeling of Interfacial and Transport Phenomena: Ionic Self-assembly, Active Colloids, and Beyond"**

Monday, September 30, 2019

4:00pm – 5:00pm

304 Robeson Hall

Interfacial and transport processes are at the core of many engineering and biological technologies. Experimental studies of these phenomena often have difficulties in fully resolving their underlying phenomena and pinpointing their physical mechanisms. These difficulties can often be addressed using numerical modeling. Our group specializes in molecular, mesoscopic and continuum simulations of interfacial and transport phenomena, especially those involving ions and non-equilibrium effects. In this talk, I will first introduce our molecular modeling of ionic liquids near electrified interfaces and in nanoscale confinement, with a focus on the self-assembly of ions, the transport of ions under far-from equilibrium conditions, and the effects of impurities. Next, I will introduce our continuum modeling of active colloids, with a focus on their hydrodynamic behavior in multiphase systems and in confinements. Ample time will be left for the discussion of possible collaborative work with the audience.