

### “Ionizable Macromolecular: Where Computations Meet Neutron Scattering”

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Host: Shengfeng Cheng



**Abstract:** The fascinating coupling of broad time and length scales that control complex fluids formed by ionic polymers enables a rich variety of technologies. The interplay between their chemical diversity and topology offers an exquisite manifold of structures for engineering new materials. Of particular significance is the interplay between the long range interactions introduced by the ionic groups and the structure and dynamics of the macromolecules that arises from their inherent chemistries and topology. One outstanding issue is correlating the effects of the chemistries of polymers which are on the 0.1-1 nm scale with large mesoscopic structures on the length scales of 10-100 nm. Here coupling results from computational studies with multitude of neutron based techniques the structure and dynamics in structured ionic polymers will be discussed along with the mechanism through which ionic groups lock the macromolecules into long-lived structures that dominate their many applications.

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**Bio:** Dvora Perahia’s research focuses on understanding the structure and dynamics of soft matter and polymers. Using neutron and X-ray scattering coupled with large scale molecular dynamics simulations here research probes the physics that underlines assembly of soft materials. Perahia received her Ph. D. From the Weizmann Institute of Science in Israel. She joined Exxon Research and Engineering as a postdoctoral fellow where she was first introduced to the power of neutron techniques for the study of soft matter. Following a year at the Physics Department at Princeton University as a research associate, she joined Clemson University. She is a professor of Chemistry with a joint appointment in Physics. She is a Fellow of the American Physical Society.

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**DATE:** FEBRUARY 7, 2018  
**TIME:** 11:15AM-12:15PM  
**LOCATION:** FRALIN AUDITORIUM

