Nebraska Center for Materials and Nanoscience

2018 Spring Seminar Series

Dvora Perahia

"Soft Nanoparticles: from a new concept in polymer physics to responsive nano-building blocks"

Luminescent rigid polymers confined into nanoparticles, or polydots, are emerging as a promising tool for a large variety of applications from nano medicine to supramolecular solar cells. The constrained architecture of a rigid backbone trapped in nano-dimensions results in highly absorbing/ emitting particulates whose photophysics differs from that of spontaneously assembled rigid polymers, whose luminescence is often quenched by the interactions between the chromophores. These nano-particles are long lived structures whose photophysics depends on the conformation of the backbone, making them responsive to their environment.

The talk will introduce the unique challenges associated with controlling the response of soft nano particles. Results presenting the structure and dynamics of these new NPs attained from neutron techniques and fully atomistic molecular dynamics simulations on polydots formed by one polymer, dialkyl p-phenylene ethynylene confined into polydots will be discussed.

Dr. Perahia earned her B.Sc. from the Hebrew University in 1981. Her M.Sc. (1984) and Ph.D. (1991), awarded from the Weizmann Institute of Science with Professor Zeev Luz, focused on NMR in soft materials.

After graduating she specialized in polymer physics, first with Dr. Jacob Klein at the Weizmann institute (1991-1992), and then with Dr. Sunil K. Sinha at Exxon R&E in New Jersey (1992-1996), focusing on resolving forces and structure of polymers and complex fluids, with X-rays. She spent an additional year at the Physics Department, Princeton University before joining the Chemistry Department, Clemson University in 1997. Dr. Perahia is also a member of the Physics Department, and was awarded an honorary position at the Beijing University of Chemical Technology in Beijing, China. Dr. Perahia became a fellow of the American Physical Society in 2013.

NCMN

April 11, 2018 | 4 p.m. | 136 Jorgensen Hall

Refreshments in 1st floor vending area at 3:45

Host: Chris Cornelius

Department of Chemical & Biomolecular Engineering