UNIVERSITY of HOUSTON
CULLEN COLLEGE of ENGINEERING

Neutron Scattering and Materials Science at Oak Ridge National Laboratory – Opportunities for Soft Matter Research

William Heller, Brad Lokitz, Oak Ridge National Laboratory

September 20, 2018, 8:45-9:45am
Student Center South, Bayou City Room (219)

Oak Ridge National Laboratory is home to several DoE user facilities. The capabilities of these user facilities for soft condensed matter and polymer research are not everywhere well known. In the following presentations we will give an overview of the possibilities within these user facilities.
The close collaboration between the Center for Nanomaterial Sciences and the Neutron Scattering Division creates unique opportunities for external users. Based upon the presentations we hope to come to a dialogue in which we can define potential new experiments, for both the well-seasoned neutron scattering user, as well as the novice who hasn't used our facilities yet but whom could benefit from the use of neutron based techniques and the nano-materials synthesis possibilities.

William Heller, Neutron Scattering Division, Oak Ridge National Laboratory

The ORNL Neutron Scattering Division enables a user program on the Spallation Neutron Source (SNS) and the High Flux Isotope Reactor (HFIR), which are both DOE user facilities that are equipped with instruments with a diverse range of capabilities. The instrument suite covers both the structures and dynamics of materials over length and time scales that are excellently suited to a wide range of topics, including studies of polymers, biomaterials and structural biology. An overview of the unique information that can be obtained using neutron scattering will be presented, as will the instruments and techniques that are best suited to their study. Examples that demonstrate the unique information that can be gained using neutron scattering will also be discussed.

Brad Lokitz, Center for Nanomaterial Sciences, Oak Ridge National Laboratory

The Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory (ORNL) is a DOE Office of Science User Facility that provides an international user community access to expertise and equipment for a broad range of nanoscience research, including nanomaterials synthesis, nanofabrication, imaging/microscopy/characterization, and theory/modeling/simulation. In-house science focuses on understanding and controlling formation and function of materials at the nanoscale. Distinguishing capabilities include 3D nanofabrication, atom-precise synthesis, electron and scanning probe microscopies, and functional characterization, all in conjunction with theory, modeling, and advanced data analytics. Work in our Macromolecular Nanomaterials group enables a wide range of polymer synthesis capabilities with special emphasis on selective deuteration, topologically complex and ionic polymers.

Seminar is sponsored by the UH Society of Plastics Engineers Chapter:
http://www.chee.uh.edu/people/society-of-plastics-engineers