Structural Characterization of supramolecule/nanoparticle nanocomposites

YIHAN XIAO, TING XU, University of California - Berkeley, Lawrence Berkeley National Lab — Supramolecular nanocomposites offer great opportunities toward functional materials. However, these systems also challenge our basic understanding in self-assembly in multiple component systems. The multicomponent nature of the supramolecular system introduces significant complexity in mapping out the hierarchical spatial distribution of each building block. To this end, various techniques have been adopted to decouple the convoluted structures. Transmission electron microscopy (TEM), scanning transmission electron microscopy tomography (STEMT) and small-angle X-ray scattering (SAXS) collaboratively determined the hexagonal structure of nanoparticle superlattice. Resonant X-ray scattering (RSoXS) provides a novel opportunity to selectively characterize the lamellar arrangement of supramolecular matrix. Finally, a model is proposed for the nanocomposite morphology based on these results that is critical toward delineation of energetic contribution from individual component.

1The work was supported by the U.S. Department of Energy, Office of Science, Materials Sciences and Engineering Division.

Yihan Xiao
University of California - Berkeley, Lawrence Berkeley National Lab

Date submitted: 11 Nov 2016

Electronic form version 1.4