

Materials Science Seminar

Investigating Nanostructure Synthesis Using *In Situ* TEM

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Date: Thursday, September 8th, 2016
Time: 4:00 pm, with refreshments at 3:45 pm
Location: Room 265 - Materials Science & Engineering Bldg.
Host: Song Jin

Abstract:

We are working to develop a real-time understanding of the mechanistic steps taken during crystalline growth or transformation *via* a combination of complementary approaches which incorporate (1) knowledge gained from nanostructure syntheses we perform in the lab, with (2) *in situ* observations of key transformations implemented in real-time using ultra-high resolution transmission electron microscopy (TEM). Our *in situ* experiments include directly performing synthetic steps in the TEM, as well as determining the structural phase transformations of materials under post-synthetic processing conditions. Further, based on an unexpected observation made during one of these *in situ* measurements, we have developed a new approach to directly synthesize arrays of crystallographically well-defined nanoscale interfaces. Several examples will be presented to illustrate our approach, including: the real-time observation of the solid-state reaction of an individual nanowire; a post-synthetic structural phase transformation within an individual nanorod; and finally, the creation of new nanostructured architectures using liquid metal nanodroplets.

