

Utilizing Environmental Transmission Electron Microscopy to Characterize Catalyst Morphology & Morphology Evolution

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Transmission electron microscopy is unique in its ability to characterize catalytic nanoparticles at atomic resolution through direct image of particle structure and composition. In this presentation I will show how a relatively new technique — that of environmental transmission electron microscopy, wherein catalytic nanoparticles can be exposed to combinations of gaseous environments and high temperatures — can be used to understand details of catalyst morphology and morphological evolution. I will discuss a specific example in detail, that of catalyzed growth of carbon nanotubes, and will describe how these types of experiments are being expanded on in more generalized areas of catalysis science.