

# Dr. Andrew Minor

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11:10AM-12:00PM

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## Quantitative Nanomechanical Testing in a TEM

**Abstract:** Recent progress in both in situ and ex situ small-scale mechanical testing methods has greatly improved our understanding of mechanical size effects in volumes from a few nanometers to a few microns. Besides the important results related to the effect of size on the strength of small structures, the ability to systematically measure the mechanical properties of small volumes through mechanical probing allows us to test samples that cannot easily be processed in bulk form, such as a specific grain boundary or a single crystal. In the case of individual nanostructures, the need to address the nanostructure in a direct manner is even more acute, and in situ TEM in many cases makes this possible. This talk will describe our recent results from in situ compression and tensile testing of metals to illuminate the origin of size-dependent yield strength behavior and fundamental deformation structures in nanoscale samples. In addition, comparing in situ compression and tensile testing has led to some interesting observations regarding the evolution of flow strength in nanoscale samples during testing.

**Bio:** Andrew Minor is an Associate Professor in the Department of Materials Science and Engineering at University of California, Berkeley. Minor received a B.A. in Mechanical Engineering and Economics from Yale University, and a M.S. and Ph.D. in Materials Science and Engineering from UC Berkeley. He also holds a joint appointment as a Faculty Scientist at the National Center for Electron Microscopy, at the Lawrence Berkeley National Laboratory. His research group uses advanced electron microscopy-based materials characterization to investigate both organic and inorganic materials. They focus on nanomechanical size effects, characterization of soft materials, and novel in-situ TEM methods for materials science research.