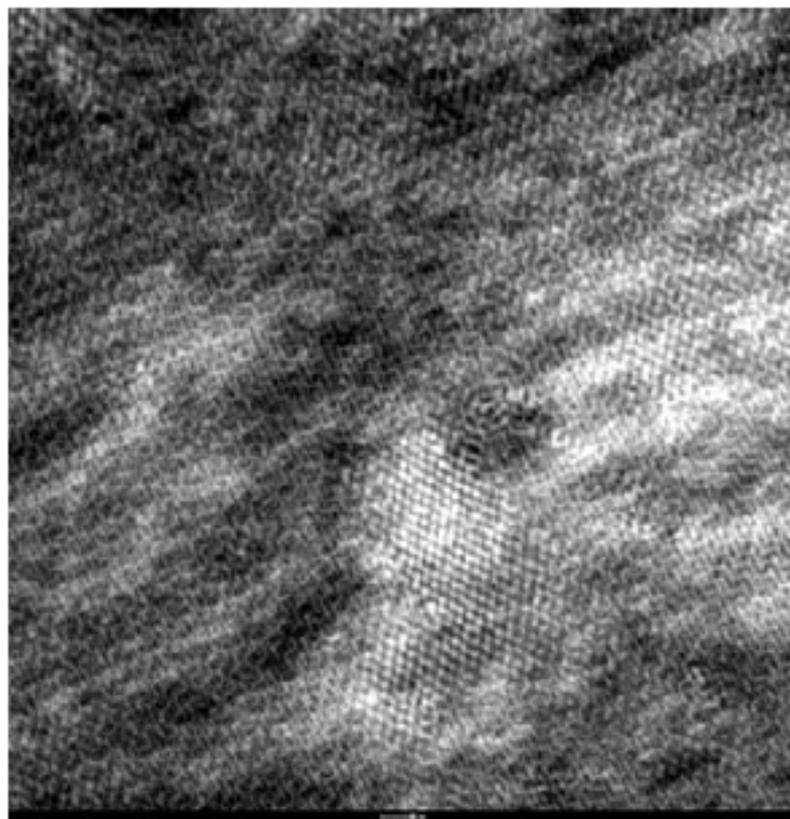


Energy Filtered Transmission Electron Microscope (EFTEM)

A versatile tool for the materials scientist, polymer chemist, food scientist and biologist. Unlike conventional TEM (Transmission Electron Microscopy), the LEO 922 EFTEM allows the user to separate electrons according to their energy (wavelength) via a spectrometer. The spectrometer is used to select energy and bandwidth. This additional electron selection results in contrast enhancement for all imaging modes and also provides the possibility of selecting electrons with specific scattering effects for imaging. As a result of energy filtering, conventional specimens have more brilliance. Unstained and very thin samples have much higher contrast. We can now obtain new specimen information through structure and element sensitive contrast. Element imaging and comprehensive element analysis with high detection sensitivity with maximum local resolution is now a reality. And now we have the ability to image thick specimens because of optimal depth of focus and individual contrast.

Because of its versatility, the LEO 922 EFTEM gives researchers a important new tool that can answer many key questions across a broad range of disciplines. With all of the 922's capabilities and ease of operation we are looking at an exciting era of research in the CCMR Electron & Optical Microscopy Facility. Interested users should contact the Center <ccmr@ccmr.cornell.edu> or John Grazul (the TEM facility manager) at (607) 255-6421 <grazul@ccmr.cornell.edu>

EFTEM Displays Characteristics of Nanocomposite



100 nm

The image at left of an aluminum silicate polymer hybrid was taken with the CCMR Energy Filtering Transmission Electron Microscope. The sample is nanostructured through self-assembly. Unlike conventional TEM, this image shows remarkable contrast and high resolution. The image was taken using inelastic dark field imaging with the bright portions being the silicate and the dark being the polymer. Energy filtering has several advantages including the ability to select the element to look at (Si in this case) and the enhanced resolution.

Image courtesy of CCMR/Wiesner group