

Characterization of dynamics using ultrafast transmission electron microscopy

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Ultrafast transmission electron microscopy (UEM) methods have become a new frontier in materials science due to the ability to follow dynamics on time scales down to hundreds of femtoseconds with nanometer spatial resolution. Imaging on ultrafast time scales reveals nonequilibrium metastable states of matter, phonon transport pathways in materials, and plasmon dynamics. This presentation will overview some of these ultrafast methods, and provide examples of how they have been used to enable new understanding of materials at the Center for Nanoscale Materials at Argonne National Laboratory.