

# Strain Mapping with a Fast TEM Camera

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The Wisconsin MRSEC is developing an ultrafast direct electron camera for use on a scanning transmission electron microscope (STEM) in its Shared Instrument Facilities. One application of the camera will be experiments to map strains – tiny variations in the distance between atoms – inside materials caused by defects in the crystal lattice or interfaces between two different materials.

The MRSEC acquired an existing, slower camera to support technique development before the new camera arrives. An example strain map is shown to the right. The gray-scale image is a small Nb particle formed inside a larger Zr crystal. The color image shows the rotation of the Zr lattice caused by the interface between the two materials. Higher sensitivity maps covering larger areas with more points will be possible with the new camera.

