



ICAMS Special Seminar

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Fatigue of nanostructured materials

The outstanding mechanical properties of nanostructured (ns) materials and their application are currently under investigation. We will discuss the microstructural changes due to cyclic and monotonic loading and the active deformation mechanisms in nanocrystalline (nc)-Ni, nc-Cu and nanotwinned (nt)-Cu. To observe nc-Cu during mechanical loading, in-situ tensile and fatigue tests were conducted in the TEM.

Furthermore, the inelastic fraction of the cyclic deformation was characterized by Fourier analysis. The peaks representing higher-harmonics in the Fourier spectrum allow to quantify non-linear behavior. A possible interpretation and more general usage will be discussed.