

June 29 (Fri), 2018 @ Rm.101

ESISM Seminar (host: N.Tsuji (5462))



電子顕微鏡を用いた材料研究で著名な Andy Minor 教授 (UC Berkeley) による下記のセミナーを、6月29日(金)に行います。多数のご聴講を歓迎いたします。

辻 (5462)

Date: June 29th (Fri), 2018, 10:30-12:00

Place: Rm. 101

New modes of imaging for in situ TEM nanomechanical testing

Andrew M. Minor

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Abstract:

This talk will highlight recent advances with in situ Transmission Electron Microscopy (TEM) nanomechanical testing and imaging techniques that provide insight into small-scale plasticity and the evolution of defect structures in materials. In addition to measuring the strength of small-volumes, measuring the evolution of strain during plastic deformation is of great importance for correlating the defect structure with material properties. Here we demonstrate that strain mapping can be carried out during in-situ deformation in a TEM with the precision of a few nanometers without stopping the experiment. Our method of local strain mapping consists of recording large multidimensional data sets of nanodiffraction patterns using a high-speed direct electron detector. This dataset can then be reconstructed to form a time-dependent local strain-map with sufficient resolution to measure the transient strains occurring around individual moving dislocations. This talk will describe our recent results from in situ TEM nanomechanical testing that provide insight into multiscale metallurgical phenomena using these techniques, such as the role of short range ordering in Ti alloys and deformation phenomena in metallic glasses.

Short Bio for Andrew M. Minor:

Andrew Minor can be reached at aminor@berkeley.edu. He received a B.A. in Economics and Mechanical Engineering from Yale University and his MS and Ph.D. in Materials Science and Engineering from the University of California, Berkeley. Currently, he is a Professor at U.C. Berkeley in the Department of Materials Science and Engineering and also holds a joint appointment at the Lawrence Berkeley National Laboratory where he is the Facility Director of the National Center for Electron Microscopy in the Molecular Foundry. He has co-authored over 160 publications and presented over 100 invited talks on topics such as nanomechanics, lightweight alloy development, characterization of soft materials and *in situ* TEM technique development. His honors include the LBL Materials Science Division Outstanding Performance Award (2006 & 2010), the AIME Robert Lansing Hardy Award from TMS (2012) and the Burton Medal from the Microscopy Society of America (2015).

