

GRC INTERNATIONAL FRONTIER SEMINAR

Title: 3D-FIB techniques for analysis of meteorites and high-pressure samples

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Date: 6.1.2015 (Mon.) 16:30 – 18:30

Venue: Meeting Room #486, Science Research Bldg 1, Ehime Univ

Focused ion beam (FIB) is a powerful technique for slicing, cutting and preparing thin sections for transmission electron microscopy. There also exists a broad range of potential applications for imaging samples in the volume. I show application of FIB techniques that provides insights into the 3D texture of samples at the micron down to the nanometer scale, that cover a scale range between that of atomic probe or TEM tomography and that of X-ray and X-ray spectroscopic tomography.

3D reconstructions are performed using stack of images acquired sequentially after abrasion of a layer with the ion beam. Different modes of imaging can be used, ranging from standard secondary electrons to energy filtered back-scattered electrons, or energy dispersive X-ray spectroscopy, in order to obtain information on texture and chemistry. Other applications may include 3D characterization of crystal-preferred orientations using electron back-scattering diffraction.

Examples of application are used to discuss the origin and P-T history of meteorites and to describe scale-dependent properties such as porosity in samples recovered from high-pressure and temperature experiments.