

**Bonding and Electronic Structure of Nanomaterials and Interfaces
with Electron Energy Loss Spectroscopy**

Prof. Botton Gianluigi Andrea

**Professor, Department of Materials Science and Engineering,
McMaster University**

日時: 2013年2月22日(金) 10:00 - 11:30

会場: 東京大学工学部9号館1F大会議室

要旨

In this presentation we first demonstrate the application of electron energy loss spectroscopy EELS to study plasmonic nanostructures and to understand the electromagnetic response down to the infrared (0.17eV) range. After an overview of the ultimate limits of chemical spectroscopic imaging with reference ordered and disordered oxides, we discuss the application of atomic-resolved EELS mapping in the study of interfaces. We demonstrate how this powerful technique can be used in the study of the structure and substitutional effects on the atomic structure of interfaces and electronic states changes within one or two unit cells from the interface in materials used to study orbital ordering and strain effects. We demonstrate how such spectroscopic technique in the atomic-resolution microscope can be used to detect changes in valence and electronic structure, as well as the termination of substrate surfaces in contact with multiferroic thin films and even the nature of surfaces and their reconstruction.

