

## **Symposium M**

### **Title:**

Electron Microscopy: from micro to nanoanalysis

### **Scope:**

Electron Microscopy is one of the most powerful tools for materials characterization and it is indispensable for nanoscience and nanotechnology. The combination of electron diffraction, x-ray spectroscopy and electron energy loss spectroscopy with many imaging modes puts electron microscopy among the most powerful and flexible characterization techniques. In recent years, many advances in electron optics and detectors systems have enhanced electron microscopes in several ways. This symposium provides an open forum for the discussion of recent research using electron microscopy techniques applied to Material Science. The symposium aims to gather together scientist and students using electron microscopy to share experience and to learn from each other from basic use of electron microscopy to application reaching the state-of-the-art in the field.

### **Session Topics:**

- TEM and SEM imaging for materials science characterization (including electron diffraction techniques - SAD, NBD, CBED, precession, EBSD);
- High-Resolution TEM imaging (including structural analysis, defects, quantitative analysis, reconstruction methods, HRTEM image simulation, among others);
- STEM and Z-contrast imaging for materials science characterization;
- EDS chemical analysis from micro to atomic scale (qualitative and quantitative analysis, chemical mapping, spectral imaging, multivariate statistical analysis);

- EELS chemical analysis from micro to atomic scale (qualitative and quantitative analysis, chemical state analysis and mapping, spectral imaging, multivariate statistical analysis);
- EFTEM imaging applied to chemical and structural analysis (including energy selected imaging, energy filtered diffraction and chemical mapping);
- In-situ electron microscopy techniques applied to dynamical events characterization;
- Electron microscopy enhancements by aberration corrected imaging;
- Other electron microscopy techniques applied to materials science and nanoanalysis (including tomography, holography, catholuminescence, Lorentz microscopy, environmental electron microscopy).

**Tentative List Invited Speakers:**

Alexander Glotter, Université Paris-Sud, Orsay, France

Raul Arenal, Institute of Nanoscience of Aragon, Spain

Thomas Hansen, Technical University of Denmark, Denmark

Stuart Wright, EDAX-TS, USA

Hugo Sandim, University of São Paulo, Brazil

Angela Halfpenny, CSIRO Earth Science and Resource Engineering, Australia

**Symposium Organizers:**

Carlos Alberto Ospina Ramirez, Brazilian Nanotechnology National Laboratory (LNNano)

Luiz Fernando Zagonel, State University of Campinas Institute of Physics, Brazil

Leonardo Lagoeiro, Federal University of Ouro Preto, Brazil

Luciano Andrey Montoro, Federal University of Minas Gerais, Department of Chemistry, Brazil

Jefferson Bettini , National Center for Research in Energy and Materials, National Nanotechnology Laboratory - LNNano, Brazil,

Paola Barbosa, Federal University of Ouro Preto, Brazil