

Monash Centre for Electron Microscopy Seminar

Analytical STEM at 30 keV



Thursday 1 February, 2018



3.00pm



**Lecture Theatre S1,
16 Rainforest Walk (Bldg 25)
Monash Clayton Campus**

Presenter

Pr. Raynald Gauvin

**McGill University
Canada**

Abstract

This seminar will present state of the art results acquired with the new SU-9000EA dedicated 30 keV (and less) STEM that is the first in the world to have EELS capabilities. It has a resolution of 0,22 nm in bright field STEM without aberration correctors. It is equipped with an Extreme SDD EDS detector that allows Lithium detection. With EELS and EDS, results for Li detection will be presented and the challenges, in regards of quantification and beam damage, will be covered. Examples of EELS analysis at 30 keV for nanomaterials will be presented, including surface plasmon. The SU-9000EA allows to perform electron diffraction and CBED patterns acquired at the nanoscale will be presented. Finally, the concepts of Bohmian mechanics to compute electron trajectories will be covered.



About the Presenter

Professor Raynald Gauvin received his Ph.D. in 1990 at École Polytechnique de Montréal in Metallurgical Engineering. He was then appointed as an assistant professor in Mechanical Engineering at Université de Sherbrooke where he became associate Professor in 1995 and full Professor in 1998. In 2001, he joined the department of Mining and Materials Engineering of McGill University, Montréal, Canada, as a full Professor. Pr. Gauvin's research interest are related in developing new methods to characterize the microstructure of materials using high resolution scanning electron microscopy with x-ray microanalysis and Monte Carlo simulations. He is the creator of the CASINO program that is used by more than 10 000 users in the world. He has more than 300 papers in scientific journals and conference proceedings. He was Invited Speaker in more than 100 international scientific conferences. He won several scientific prizes, most notably the 31st Canadian Materials Physics Medal in 2007 by the Metallurgical Society of the Canadian Institute of Mining, the Heinrich Award in 1997 from the Microbeam Analysis Society of America and the Prix d'excellence du président de l'École Polytechnique de Montréal. Pr. Gauvin was the President of the Inter American Societies of Electron Microscopy (CIASEM) from 2009 to 2011, the President of the Microbeam Analysis Society of America (MAS) from 2005 to 2006, the President of the Microscopical Society of Canada (SMC) from 2001 to 2003 and the President of the International Union of the Microbeam Analysis Societies (IUMAS) from 2000 to 2005. He is currently the holder of the Birks Chair in Metallurgy. He was appointed in 2017 Honorary Member of the European Microbeam Analysis Society (EMAS).

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