REFLEXIONS UPGRADE TABLES RONDES

Energie et Développement Durable

SEMINAIRE

In-situ opportunities for Bragg Coherent Diffraction Imaging of Materials

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Lundi 19 mars 2018 – 14h00
Amphithéâtre SOLEIL

The Bragg Coherent Diffraction Imaging (BCDI) method will be discussed for its abilities for *in-situ* imaging of energy materials. BCDI's greatest strength is to reveal 3D phase-contrast images of the interiors of crystals with image resolution in the 30nm range. It achieves this through the projection of lattice displacements onto the diffraction Q-vector, showing up as a phase shift on a very sensitive scale: one lattice constant results in a phase shift of 2π. Using this new channel of information about the detailed structures of crystals, we have found striking patterns of phase nano-domains within otherwise solid-looking crystals of micron dimension. Since almost all materials are made up of microcrystals, this method has wide application in materials science and engineering and lies at the heart of a case for a new beamline at NSLS-II.

The presentation will discuss various materials studied by BCDI: domains introduced in Au by interdiffusion of Cu, faulted misfit domains on the surface of Au induced by Fe diffusion, insect virus crystals, SAPO-34 zeolite catalyst crystals and the Perovskite $La_{0.5}Ca_{0.5}MnO_3$ (LCMO). Some of these images are shown below.

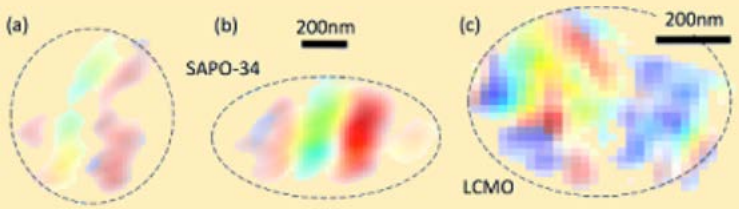

Figure 1: BCDI images of phase cross sections through SAPO-34 catalyst and LCM Perovskite crystals

Ce séminaire sera suivi d'une pause café

Formalités d'entrée : accès libre dans l'amphi du pavillon d'Accueil.
Si la manifestation a lieu dans le Grand Amphi SOLEIL du Bâtiment Central merci de vous munir d'une piece d'identité (à échanger à l'accueil contre un badge d'accès)

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