Canadian Association of Physicists

Association canadienne des physiciens et physiciennes

Contribution ID: **341** Type: **Invited Speaker / Conférencier(ère) invité(e)**

X-Ray Diffractive Optics for Imaging and Other Applications

Wednesday 11 June 2025 14:45 (30 minutes)

The use of X-ray diffraction for manipulating x-ray beams extends to nearly to the beginning of the discovery of x-rays primarily to prepare or analyze x-ray beams. The synchrotron provides an excellent environment to develop x-optics given the large x-ray energy range, the inherent collimation along with the dedicated environments for data acquisition and control. I, my students and colleagues have been involved in several x-ray diffractive optics development projects mostly for biomedical imaging applications at the Canadian Light Source. These projects span from contrast element imaging (spectral K-Edge Subtraction), phase-preserving vertical beam expansion, horizontal beam compression, wide energy range spectral imaging, wide field speciation or near edge imaging and including a discover that led to the ability to measure the synchrotron source position, angle, source size and source divergence at a single location in a beamline. An overview of some of these projects and possible connection to new generations of x-ray sources will be discussed.

Keyword-1

x-ray imaging

Keyword-2

x-ray diffraction

Keyword-3

characterization

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Session Classification: (DCMMP) W2-8 Frontiers of Synchrotron Based Materials Physics | Frontières de la physique des matériaux basée sur le rayonnement synchrotron (DPMCM)

Track Classification: Symposia Day (Wed June 11) / Journée de symposiums (Mercredi 11 juin): Symposia Day (DCMMP - DPMCM) - Synchrotron Physics / Physique des synchotrons