Session 6: Optics and Beam Coherence

Date: Tuesday 3 August
Time: 10:30 AM - 11:50 AM

Session Chairs: Kawal J. S. Sawhney, Diamond Light Source Ltd. (United Kingdom); Brian W. Yates, Canadian Light Source Inc. (Canada)

Micro-imaging performance of multilayers used as monochromators for coherent hard X-ray synchrotron radiation

Paper 7802-22
Time: 10:30 AM - 10:50 AM

Author(s): Alexander Rack, Timm Wedikamp, European Synchrotron Radiation Facility (France); Markus Riotte, Daniel Grigoriev, Tatjana Rack, Lukas Helfen, Tib Baumbach, Karlsruher Institut für Technologie (Germany); Renee Deutsch, Thomas Hole, Markus Krämer, AXO Dresden GmbH (Germany); Frank Stewert, Helmholtz Zentrum Berlin (Germany); Mojmir Meduna, Masaryk Univ. (Czech Republic); Peter Coubens, Eric Ziegler, European Synchrotron Radiation Facility (France)

We present a systematic study in which multilayers of different composition (W/Si, Mo/Si, Pd/B4C), periodicity (from 2.5 to 5.5 nm), and numbers of layers have been characterised. Particularly, we investigated the intrinsic quality (roughness and reflectivity) as well as the performance (flatness and coherence of the outgoing beam) as a monochromator for synchrotron radiation hard X-ray micro-imaging. These results can contribute to a better exploitation of the advantages of multilayer monochromators over crystal-based devices; i.e., larger spectral bandwidth and high photon flux density, which are particularly useful for synchrotron-based microradiography and -tomography.