



Contribution ID: 26

Type: **not specified**

Nanofabrication of diffractive X-ray optics – opportunities for neutron imaging?

Friday, 3 March 2023 12:00 (30 minutes)

X-rays are used in a wide range of scientific experiments to investigate the structure of matter. They have the ability to penetrate thick samples, and provide information on the elemental and even chemical composition. Moreover, their short wavelength enable excellent spatial resolution down to the atomic scale. In practice, the spatial resolution of x-ray probes and x-ray microscopes are limited by the quality of the available x-ray optics.

We report on the development of diffractive X-ray optics for imaging applications at synchrotron sources. In order to obtain good resolution and efficiency, diffractive structures with dimensions ranging from microns down to the nanoscale have to be produced by lithography techniques. Examples for the fabrication and application of such optics will be presented.

The presented technological concepts and developments also have potential for neutron imaging. Already more than 15 years ago, the concept of grating based phase contrast and dark field imaging has been successfully transferred from X-rays to neutron radiation. Presently we are investigating the concept of achromatic X-ray lenses for applications in neutron microscopy.

Primary author: DAVID, Christian (PSI - Paul Scherrer Institut)

Presenter: DAVID, Christian (PSI - Paul Scherrer Institut)