

Séminaire SOLEIL

High efficiency zone plate optics for multi-keV X-ray focusing

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Séminaires

Most scanning based X-ray microscopy methods at synchrotron radiation facilities rely on focusing X-ray optics to obtain high spatial resolution and high flux density in the focal spot. Conventional binary Fresnel zone plates serve as compact, easy to align focusing elements. Their main drawback is their relatively low efficiency, fundamentally limiting the intensity of the first order focus up to 40:5% of the incident intensity for an ideal non-absorbing binary zone plate. In order to overcome this limitation we approximate the ideal parabolic lens profile with asymmetric multilevel zone plates. Here we demonstrate the 2, 3, 4 and 6 level multilevel zone plates with smallest zone width of 200 nm, using the blazed stacking of Fresnel zone plates. By stacking binary and three level zone plates with an additional binary zone plate, we doubled the number of levels in the optical transmission function, resulting in 4 and 6 level profiles, respectively. We have experimentally obtained focusing efficiencies up to 47.1% for four level, and up to 53.7% for 6 level profiles at 6.5 keV photon energy using a compact alignment apparatus based on piezoelectric actuators.

**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 pièce d'identité (à échanger à l'accueil contre un badge d'accès).

SYNCHROTRON SOLEIL

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