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Closing the gap - towards tender X-rays by means of multi-layer coated gratings as monochromator optics

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State-of-the-art soft X-ray beamlines use collimated plan-grating monochromators (cPGM) as monochromatizing devices. Multi-Layer (ML) coated plane gratings and mirrors allow to extend the available photon energy range of cPGM's towards the so-called tender X-ray photon energy range (up to 5 keV) providing a significantly higher photon flux. This X-ray energy regime covers L- and M-absorption edges of most of the transition and rare-earth metals as well as K-edges of lighter elements such as silicon, sulfur and phosphorus. Recently such a ML based monochromator setup became operational at the U41-PGM1-XM beamline at the BESSY-II storage ring in Berlin. This beamline upgrade enabled for the first-time high resolution spectromicroscopic applications using photon energies up to 3keV. And extend its possibilities to support research e.g. on the field of life-science, semiconductor development and battery research. We will report on the design, commissioning and performance of this beamline and discuss possible options for new developments on the field of beamlines and end-stations in the tender-X-ray energy range (up to 5keV) at existing and future new accelerator-based photon sources.

Journal of Synchrotron Radiation Special Issue: will you submit your contribution?

yes

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