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At-Wavelength Metrology facility for EUV, XUV and tender X-ray energy range optics

An accurate characterization of the real performance sophisticated reflective or diffractive optics including such cases as XUV reflective zone plates (RZP) or multilayer coated gratings is extremely demanding task to experimental conditions. An At-Wavelength Metrology facility for EUV and XUV optics is under operation since many years at the BESSY-II storage ring. As the main instrument a versatile 11-axis UHV-reflectometer is permanently connected to a dedicated Optics beamline. The setup is suitable for measurements on both small test samples and real size optics up to 360 x 60 x 60 mm3. 6-degrees of freedom in alignment and surface mapping of tested optical elements are possible due to flexible sample stage support system based on an UHV-tripod. It is possible to care out measurements with beam incident angle from 0 to 88.9 degrees and scan outgoing radiation in almost complete in-plane circle as well to continuously rotate whole system from s- to p- polarization geometry. High spectral purity beam in energy range from 13.5 eV ato 1800 eV is provided by 4-mirorrs High-Order Suppressor System. In additional to that a small Reflectometer as a portable end-station is used to get access to UV-EUV or X-ray energy ranges by setting it up at U125-2_NIM (4eV –30eV) and KMC-1 (2keV –10keV) beamlines at BESSY-II. The present status of the metrology facility, their latest upgrade projects and most challenging results will be presented in our contribution.

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

no

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