

# An XUV At-Wavelength Metrology facility at BESSY-II for precision diffraction gratings

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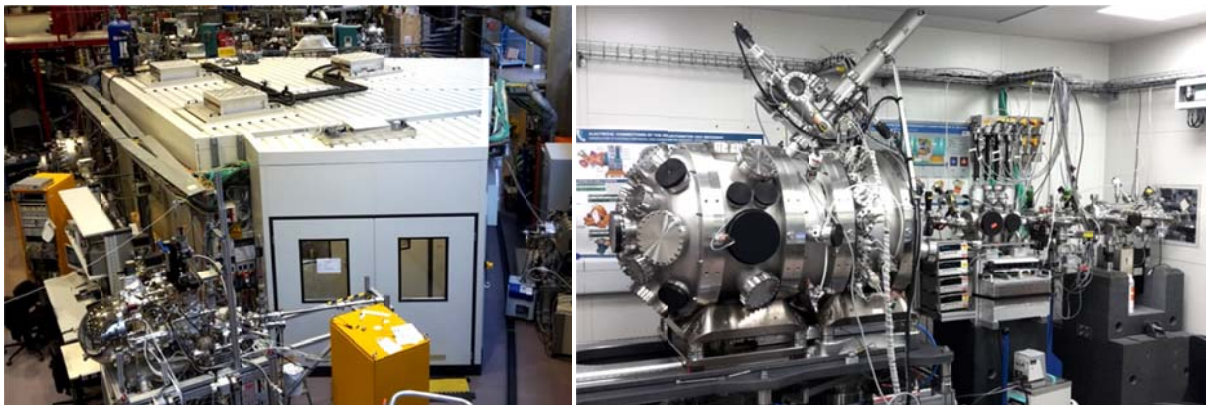
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The At-Wavelength Metrology Station at the BESSY-II storage ring is successfully operating since 2015 [1, 2]. The setup provides accurate metrology in a broad energy range from EUV to XUV. High spectral purity of the incident beam and energy scale calibration are achieved by a set of 12 absorption filters. For even higher spectral purity a four mirror-based High-Order Suppressor System (HiOS) can be used. It was experimentally tested that this system gives a nearly high-order free beam between 17.5 eV and 1800 eV. The monochromator will be upgraded with a new in-house produced low density grating specially designed for reduced high-order transmission in UV-range, this will extend the workable energy range down to 10 eV.

The versatile 11-axes UHV-Reflectometer has a flexible sample support, alignment and mapping system based on an UHV-tripod with six degrees of freedom. A load-lock system for up to five samples of  $60 \times 40 \times 10 \text{ mm}^3$  has recently been installed.

The present status of the metrology station, its upgrade projects and recent results will be presented.



## References

- [1] F. Schäfers et al., *The At-Wavelength Metrology Facility for UV- and XUV-Reflection and Diffraction Optics at BESSY-II*, Journal of Synchrotron Radiation, Proc. PhotonDiag workshop Trieste **23**(1), 67-77 (2016)
- [2] A. Sokolov et al., *At-Wavelength Metrology facility for XUV reflection gratings*, Rev. Sci. Instrum. **87**, 052005-1-7 (2016)