



Contribution ID: 332

Type: **Talk**

Metrology with Synchrotron Radiation

Tuesday, 18 September 2018 14:45 (15 minutes)

For more than 35 years, Germany's national metrology institute PTB uses synchrotron radiation for radiometry and further metrological tasks. Currently, the electron storage rings BESSY II and PTB's own Metrology Light Source (MLS) in Berlin-Adlershof are used for this purpose. Basic methods refer to source-based radiometry (operating the storage rings as primary source standards), detector-based radiometry (using cryogenic substitution radiometers as primary detector standards), and reflectometry. Apart from customer services, the work is performed within the framework of scientific cooperations with partners from industry and research. Topics are the characterization of space instruments and optics for EUV lithography, FEL photon diagnostics, nanometrology, and quantitative materials characterization by X-ray, VUV, and IR spectrometry. The contribution will give an overview of the facilities, capabilities, and activities in the field of metrology with synchrotron radiation at PTB.

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Session Classification: Parallel session 1

Track Classification: P1 Instrumentation and methods