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# Novel Reflection High-energy Positron Diffractometer at NEPOMUC

*Thursday, 22 June 2017 11:00 (5 minutes)*

The precise knowledge of the surface structure is essential to understand e.g. chemical reactions, optimize catalytic techniques or develop nanoelectronic devices. It has been shown that Total Reflection High-energy Positron Diffraction (TRHEPD) is a powerful tool to determine the positions of adatoms and topmost layers of reconstructed surfaces with unprecedented accuracy. In contrast to the application of high-energy electrons in RHEED, positrons exhibit the phenomenon of total reflection at surfaces due to their positive scattering potential. For this reason, TRHEPD shows outstanding surface sensitivity and thus provides information, which cannot be obtained with other techniques such as RHEED or SXRD.

In order to enable TRHEPD experiments, we intend to set up a new positron diffractometer coupled to the high-intensity positron beam NEPOMUC. Beside the identification of surface structures, this setup will also enable us to investigate surface related phenomena such as phase transitions, reconstruction or surface melting. This project is supported by the BMBF (funding number 05K16WO7).

**Primary authors:** Mr HUGENSCHMIDT, Christoph (E21/NEPOMUC); Mr DODENHÖFT, Matthias (E21/NEPOMUC)

**Presenter:** Mr DODENHÖFT, Matthias (E21/NEPOMUC)

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