

PHYSICAL COLLOQUIUM

INVITATION

Monday, 15.04.2019, 4.15 p.m., W2-1-148

speaks

Dr. Markus Heyde

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about

*“Resolving the Structure of Thin Glass Films by Using Scanning Probe
Microscopy Methods”*

The difficulty to reveal the atomic structure of bulk amorphous materials can be overcome by using a thin film approach. The development of an amorphous two dimensional (2D) silica bilayer has allowed deriving the atomic positions by using scanning tunneling microscopy (STM), atomic force microscopy (AFM) [1] and transmission electron microscopy (TEM) [2]. In order to establish a general understanding of amorphous networks, structural characterization of glass-forming materials as well as their mixtures is of great interest.

Recently, we have been able to develop also germania thin films [3] grown on Ru(0001) and Pt(111) by physical vapor deposition and subsequent annealing in oxygen. These atomically defined films have also been characterized by combining intensity-voltage low energy electron diffraction (I/V-LEED) and ab initio density functional theory (DFT) analysis together with high-resolution STM imaging.

Furthermore, these thin film glass systems have gained impact as a new 2D material class with interesting material properties [4, 5].

[1] L. Lichtenstein, et al., *Angew. Chem., Int. Ed.* **51** (2012) 404

[2] P. Y. Huang, et al., *Nano Letters* **12** (2012) 1081

[3] A. L. Lewandowski, et al., *Phys. Rev. B* **97** (2018) 115406

[4] C. Büchner, et al., *ACS Nano* **10** (2016) 7982

[5] C. Büchner, et al., *Phys. Rev. Lett.* **120** (2018) 226101

All interested persons are cordially invited.

Sgd. Prof. Dr. Niklas Nilius