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SEMINAR

aus

Halbleiterphysik und Nanotechnologie

Fr, 24.1.2014, 13:15 Uhr

Hörsaal für Physik

„Atomic-scale friction on stepped surfaces of single crystal semiconductors“

Prof. Dr. Franciszek Krok

Institute of Physics, Jagiellonian University, Krakow, Poland

In the talk I will report on investigations of the reconstructed InSb(100) and Ge(100) surfaces under UHV conditions employing high-resolution lateral force microscopy (LFM) which is a variant of atomic force microscopy. The LFM measurements were performed on clean atomically flat surfaces prepared by ion sputtering and annealing. Both “standard” contact mode and force modulation (FM) mode were used for acquiring the lateral force maps. In FM-LFM measurements, the cantilever was excited close to its contact resonance frequency. The LFM measurements were performed in smooth sliding regime in order to minimize the frictional interaction between the tip and the surface thus allowing us the terraces and the step edges to be imaged with the lateral resolution down to the atomic scale. In order to explain the observed contrasts in the acquired lateral and normal force maps numerical simulations based on a semi-classical potential were performed. The results of the simulations indicate that the observed patterns in the lateral and normal force maps can be attributed to the atomic arrangement of the respective reconstructed surfaces.