

Colloquium Cukrovarnická

ve čtvrtek dne 28. dubna 2011 v 15:00 hod.
ve Fyzikálním ústavu Cukrovarnická v seminární
místnosti (budova A, 1. patro)

Electronic transport on the nanoscale



Rolf Moeller

University of Duisburg Essen, Germany

Scanning multiprobe microscopy is ideally suited to analyze the electronic transport in detail. Two different configurations will be discussed. The lateral transport of electrons may be studied by using two tips to drive a current parallel to the surface. A third tip enables to map the corresponding electrochemical potential. Measurements for a 2D conducting layer will be discussed. To analyze the transport perpendicular to the surface, a thin metallic layer is placed on a semi conducting surface. At the interface a Schottky barrier is formed, which can only be overcome by electrons of sufficient energy. This may be used to split the tunnelling current coming from the tip of the microscope, into the ballistic electrons and the electrons which underwent inelastic scattering processes. The results reveal details of the processes at the interface as well as the ballistic transmission through individual objects. In addition the fluctuations in the tunnelling current due a hindered rotation of a molecule will be discussed.