

Seminář odd. 26

Tenkých vrstev a nanostruktur

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TÉMA

Atomic-Scale Engineering of Solid Interfaces: Towards Enhanced Electronic and Optoelectronic Functionalities

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Electronics and optoelectronics technologies rely on the control of electric charge at the interfaces between active materials of solid-state devices. This behaviour is dictated by quantum mechanical phenomena unfolding at the nanoscale and depends strongly on the atomic-scale morphology of these systems. Controlling the atomic-scale structure of such interfaces is hence essential for optimizing the electronic and optoelectronic properties of solid-state systems, with potential for developing enhanced nanoelectronics, light-harvesting and light-emitting technologies.

Here, I will show how supramolecular chemistry on surfaces – where organic molecules and atoms are used as building units for the assembly of well-defined nanostructures – offer compelling avenues for designing materials with atomic-scale precision and tailored electronic properties. I will focus on 1D and 2D organic and metal-organic nanostructures, resulting from on-surface non-covalent and metal-ligand interactions between π -conjugated molecules and transition metal adatoms.

I will also discuss experiments dealing with ultrafast photo-induced electron dynamics in photoactive supramolecular nano-assemblies on surfaces.

odborný garant: *Ing. Pavel Jelínek, Ph.D.*