

## Ph.D. positions

# Functional properties of 2D supramolecular nanoarchitectures

Molecular self-assembly at surfaces enables preparation of nanostructures with atomic precision with future prospects for molecular electronics and spintronics, heterogeneous catalysis, and molecular templating among other topics. STM will enable to visualize the resulting structures at atomic/molecular level.

### Supramolecular self-assembly at surfaces

The research within the Ph.D. study aims at the understanding of self-assembly phenomena of complex systems at metal and graphene surfaces. The graphene surface offers the interesting possibility to externally control (via gate voltage) the self-assembly process to prepare nanostructures not achievable otherwise.

### Functional properties of 2D supramolecular nanoarchitectures

The Ph.D. study aims at catalytic properties of these structures, in particular, understanding the interaction of metal-organic coordination centers with gas molecules, which may lead to development of novel heterogeneous catalysts.

### Externally controllable organic quantum bits

The current project offers an opportunity to study the magnetic properties of the nanostructures and their interaction with the environment.

*In relation to a proposed project with Olomouc and Stuttgart we seek a colleague for preparation of graphene transistors and their functionalization with magnetic molecules. The goal is to get organic quantum bits – the basic units of quantum computers.*

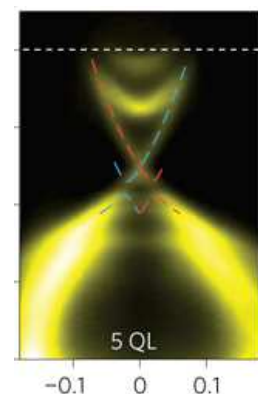
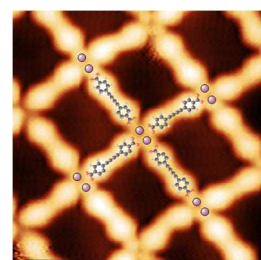
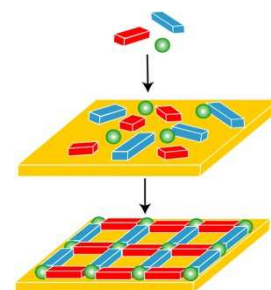
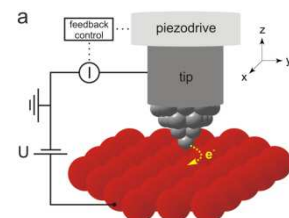
### Monitoring the self-assembly by electron microscopies and spectroscopies

Within the Ph.D. study, the low energy electron microscopy (LEEM) and electron spectroscopies (XPS, AR-PES) will be used to determine properties of nanostructured surfaces and to monitor the evolution of the systems comprising metal atoms, organic molecules and nanoparticles.

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