

## Functionalization of graphene on metals

Graphene growth on metal surfaces is an exciting field of research from different points of view. For example, layers of graphene on ferromagnetic (FM) surfaces may provide an ideal spin filtering effect in FM/graphene/FM sandwich-like structures. Beyond the utilization of its unique electronic properties, graphene may also be exploited for many other applications, for example, using graphene layer as a template for the growth of regular arrays of nanostructures. On close-packed noble metal surfaces, such as Ir(111), Rh(111), or Ru(0001) graphene forms periodically corrugated moiré patterns with a period of several nanometers, and such superstructures can act as templates for the preparation of exceptionally well-ordered nanocluster lattices. Monodisperse metal cluster arrays on the inert graphene surface can be used in catalysis or magnetic data storage. Within the previous funded period the electronic structure and magnetic properties of the graphene/FM interface as well as the graphene/Rh(111) system were investigated via combination of theoretical and experimental techniques. Now our joint experimental-theoretical work is directed towards studying the interaction between graphene/Rh(111) template and a ferromagnet. The cluster formation on the graphene/Rh(111) will be investigated. Further system of interest is the graphene/Ni/Rh(111) intercalation-like system. This work will be performed in the close collaboration with experimental groups and obtained theoretical results will be compared with available experimental data.