

Seminář odd. 26

Tenkých vrstev a nanostruktur

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TÉMA

Epitaxial Graphene on SiC

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Ten years ago, ground-breaking experimental studies of graphene – a monolayer of carbon with honeycomb structure – were reported. Charge carriers in graphene are described by the Weyl-Hamiltonian for massless particles, resulting in interesting properties such as an unusual quantum Hall effect or Klein tunneling which sparked the interest of scientists around the world. They are characterized by a high mobility, which makes graphene interesting for electronic applications such as high frequency transistors and frequency mixers. Furthermore, graphene is mechanically very stable but also flexible and at the same time almost completely transparent which may be exploited in flexible and transparent electrodes for displays or solar cells. These are but a few possible applications of graphene.

In order to bring graphene from the lab into the application, methods must be developed for a large scale production of graphene by epitaxial growth on a substrate. Epitaxial graphene on SiC(0001) grows via thermal decomposition of the SiC substrate surface at elevated temperatures. Because epitaxial graphene is atomically thin and recumbent on a substrate, it is an ideal subject for surface science tools. In my presentation I will demonstrate how various tools can be used to understand the properties of epitaxial graphene, to study and improve its growth, and to devise methods for manipulating its interaction with the substrate.

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