Graphene - from flakes to wafers

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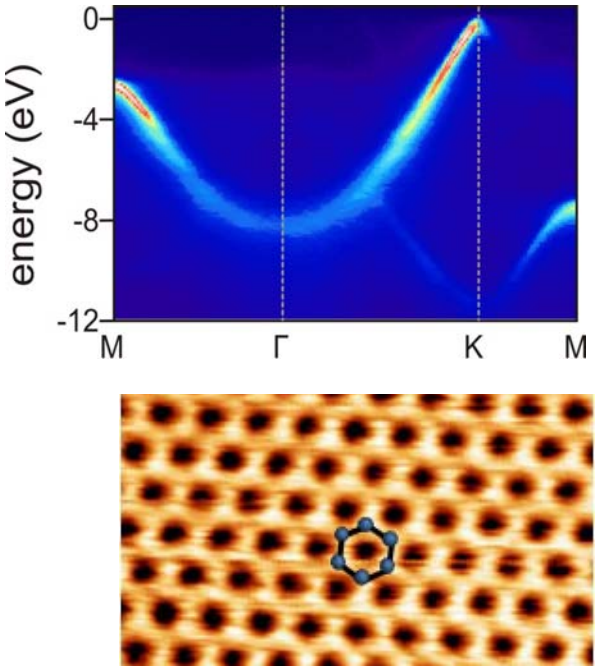
Graphene, the 2-dimensional crystal of sp^2-bonded carbon atoms, is currently one of the hottest topics in solid state physics. The electronic structure of the charge carriers in graphene is described by the Weyl-Hamiltonian for massless particles. This results in interesting properties such as an unusual quantum Hall effect or Klein tunneling, which represent interesting topics to study in more detail. Charge carriers in graphene, whose density and type (electrons or holes) can be tuned by an external gate, are characterized by a high mobility. This makes graphene interesting for electronic applications. Furthermore, graphene is mechanically very stable and thereby almost completely transparent which may be exploited in flexible and transparent electrodes. 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. In my talk I will survey the properties of epitaxially grown graphene.



Electroni structure and atomic structure of quasi-freestanding graphene on SiC(0001) determined by ARPES and STM, respectively.