



TECHNISCHE
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ANGEWANDTE PHYSIK
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IAP-SEMINAR

EINLADUNG

Termin: **Dienstag, 26.6.2012 um 16:00 Uhr**
Ort: **Technische Universität Wien,
Institut für Angewandte Physik,
Seminarraum 134A, Turm B (gelbe Leitfarbe), 5. OG
1040 Wien, Wiedner Hauptstraße 8-10**

Vortragender: **Dr. Ulrich Starke**
Max-Planck-Institut für Festkörperforschung, Stuttgart/Germany

Thema: **Intercalation in epitaxial graphene on SiC: From quasi-free
standing graphene to superlattices**

Kurzfassung

Epitaxial graphene on SiC(0001) promises a scalable graphene technology. Different methods for homogeneous graphene growth and experimental techniques for layer counting will be reviewed. The graphene layers are n-doped due to the influence of a covalently bonded carbon interface layer. This influence can be completely eliminated by atomic intercalation. Hydrogen for example migrates under the interface layer, passivates the underlying SiC layer and decouples the graphene from the substrate. The interface layer alone transforms into a quasi-free standing monolayer while monolayers and bilayers turn into decoupled bilayers and trilayers. As a result, charge neutral quasi free graphene layers can be obtained. By intercalation of Germanium the graphene layers can also be decoupled. In this process both p- and n-doping can be produced, depending on the amount of Ge material intercalated. Both phases can be prepared in coexistence on the surface. In this way, lateral p-n junctions can be obtained on a sub-micron scale. Intercalation of Cu induces a coincidence superstructure on top of the SiC surface, which originates from periodic regions of different bond configuration for the carbon atoms in the graphene layer. As a result, a long range periodic potential is imposed onto the graphene layer, which leads to a profound modification of its electronic spectrum. A surprisingly strong doping and the development of mini-Dirac cones are observed.

*Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar
(45 min mit anschließender gemeinsamer Diskussion) herzlich eingeladen.*

*J. Redinger e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*