



TECHNISCHE
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IAP-SEMINAR

EINLADUNG

- Termin: **Dienstag, 25.1.2011 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**
- Vortragende: **Petra Rudolf**
Zernike Institute of Advanced Materials, University of Groningen,
The Netherlands
- Thema: **High quality pentacene thin films by supersonic molecular beam
deposition**

Kurzfassung

In recent years, organic transistors have been attracting considerable attention because of their unique natures such as mechanical flexibility, low process costs and easiness of a large-area fabrication. However, due to the lower mobility of organic semiconductors, the performance of organic transistors is in general inferior to that of the inorganic ones. We adopted supersonic molecular beam deposition (SuMBD) to control the quality of thin film growth to investigate the relationship between the structure and electronic/electrical properties of small-molecule high-mobility organic semiconductor thin films, such as pentacene. The morphology and crystallinity in the SuMBD grown pentacene first monolayer on the SiO₂ surface can in fact be controlled by the kinetic energy and the momentum of the impinging molecules.

In this talk, I shall emphasize the significant differences between pentacene (sub-)monolayer growth by the thermal sublimation and by SuMBD. By using transverse shear microscopy, we demonstrate that islands grown by SuMBD are single crystalline while those deposited by thermal sublimation have a polycrystalline structure. Very large single crystal grains (~ 10microm) can be obtained in pentacene monolayers growth with $E_k=6.4$ eV. First results on top as well as bottom contact OFETs with SuMBD deposited pentacene films will be discussed.

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

*U. Diebold e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*