DS 11 Thin organic films II

Time: Tuesday 11:15–12:15 Room: GER 38

DS 11.1 Tue 11:15 GER 38

Molecular Ordering of Thin DNA Base Films on Vicinal Silicon Surfaces — •Simona Silaghi[1], Dietrich Zahn[2], and Norbert Esser[1] — [1]ISAS - Institute for Analytical Sciences, Department Berlin, D-12489, Germany — [2]Institute of Physics, TU Chemnitz, D-09107, Germany

The adsorption of DNA bases particularly on semiconductor surfaces is motivated by biosensing and nanotechnology applications [1]. An important issue for future applications is the capability to fabricate well-ordered structures with characteristic dimensions in the nanometer range. In this sense vicinal surfaces may serves as suitable templates for molecular ordering. Here, reflectance anisotropy spectroscopy (RAS) is employed for monitoring the molecular ordering of DNA bases on vicinal H:Si(111). It is observed that DNA bases behave differently on the vicinal surfaces. The first transition dipole moments of adenine and thymine molecules align mainly perpendicular to the step edge direction while for guanine and cytosine they align parallel to this direction [2]. Additionally, time-resolved RAS measurements demonstrate the sensitivity to the biomolecular/inorganic interface formation.

[1] K. Meeker and A.B. Ellis, J. Phys. Chem. B 104 (2000) 2500

[2] D.R.T. Zahn, S.D. Silaghi, C. Cobet, M. Friedrich, and N. Esser, Phys.stat.sol. (b) 242 (13) (2005) 2671

Invited Talk

DS 11.2 Tue 11:30 GER 38

Fluorescence from ultrathin organic films on crystalline surfaces — •Moritz Sokolowski — Institut für Physikalische und Theoretische Chemie, Universität Bonn, Germany

Ultrathin ordered films of fluorescent organic molecules grown by vapour deposition on crystalline and atomically well-defined surfaces are presently of interest under both applied and fundamental aspects. In particular, they offer a possibility to study basic processes of excitons in molecular materials, e.g., in relation to the film structure, morphology, and thickness. This approach also makes use of the possibility that thin organic films can often be grown in different polymorphic, partly metastable, structures on surfaces, as a consequence of the chemical bonding of the molecules to the substrate surface, and can thus lead to new optical properties. We discuss fluorescence spectra of several examples of films of aromatic molecules, e.g., films of tetracene, grown on metallic and dielectric substrates. This work was supported by the DFG.