**O 4: Nanostructures at Surfaces**

**Time:** Monday 11:15–12:30  
**Location:** MA 042

**O 4.1 Mon 11:15 MA 042**

*Dynamic processes in metallocarbon networks based on oligopyridines and copper — \( \textbullet \) Achim Breitрук\( \text{c} \)\(^1\), Harry E. Hoster\( \text{c} \)\(^1\), Christoph Meier\( \text{c} \)\(^2\), Ulrich Ziener\( \text{c} \)\(^3\), and R. Jürgen Beind\( \text{c} \)\(^4\) — \( \text{c} \)Institute of Surface Chemistry and Catalysis, Ulm University, D-89069 Ulm — \( \text{c} \)Institute of Organic Chemistry III, Ulm University, D-89069 Ulm*

We report on the dynamics of chiral metallocarbon networks on the basis of Bis-terpyridines (BTP) and copper which were studied by time-resolved scanning tunneling microscopy (STM). Using highly oriented pyrolytic graphite (HOPG) as substrate, the samples were prepared by vapor deposition of oligopyridines to form a quadratic 2D molecular network\(^{[1]}\) and post-deposition of copper under ultra high vacuum (UHV) conditions. At Cu coverage below phase saturation, we observed the formation of a Cu-organic network, consisting of copper-free and copper-containing BTP trimers. At room temperature, this allows the migration of Cu atoms within the network via a hopping mechanism from Cu-containing to Cu-free trimers on a timescale of seconds. The mechanism is accompanied by a local rearrangement of the BTP molecules. Despite the high adlayer dynamics, we find very large enantiopure domains with sizes >10\(^4\) nm\(^2\).


**O 4.2 Mon 11:30 MA 042**

*Mid infrared microspectroscopy: Characterization of diamond-like (DL) and polymer-like (PL) single nanoparticles — \( \textbullet \)Jean-Sebastien Samson\( \text{c} \)\(^1\), Raphaela Weiss\( \text{c} \)\(^2\), Erik Bründermann\( \text{c} \)\(^3\), Jörg Winter\( \text{c} \)\(^4\), and Martina Havenith\( \text{c} \)\(^1\) — \( \text{c} \)Physical Chemistry 2, Ruhr-University Bochum, Bochum, Germany — \( \text{c} \)Experimental Physics 1, Ruhr-University Bochum, Bochum, Germany*

We report on the infrared spectroscopic characterization of plasma nanoparticles formed in a dusty plasma by scanning near-field infrared microscopy (SNIM). We use high power OPO-lasers with up to 2.7 W output power as radiation source\(^{[1]}\) which emit in the so-called fingerprint region (2.5-4 um). We were able to use the characteristic N-H absorption band around 3300 cm\(^{-1}\) to spectrally resolve a shift of the band between the diamond-like and the polymer-like phase.

\(^{[1]}\) A. Böttcher et al. Nanotechnology, 17(2006)

**O 4.3 Mon 11:45 MA 042**

*Nanostructuring of the HOPG surface — \( \textbullet \) Artur Böttcher\( \text{c} \)\(^1\), Markus Cudaj\( \text{c} \)\(^2\), Daniel Lößfler\( \text{c} \)\(^2\), Sharali Malik\( \text{c} \)\(^2\), Manfred Kappel\( \text{c} \)\(^1,2\), Patrick Brenner\( \text{c} \)\(^3\), and Dagmar Geithense\( \text{c} \)\(^1\) — \( \text{c} \)Institut für Physikalische Chemie, Universität Karlsruhe, Karlsruhe, Germany*

We report on the infrared spectroscopic characterization of plasma nanoparticles formed in a dusty plasma by scanning near-field infrared microscopy (SNIM). We use high power OPO-lasers with up to 2.7 W output power as radiation source\(^{[1]}\) which emit in the so-called fingerprint region (2.5-4 um). We were able to use the characteristic N-H absorption band around 3300 cm\(^{-1}\) to spectrally resolve a shift of the band between the diamond-like and the polymer-like phase.

\(^{[1]}\) A. Böttcher et al. Nanotechnology, 17(2006)

**O 4.4 Mon 12:00 MA 042**

*Effect of HF concentration on physical and electronic properties of electrochemical formed nano-porous silicon — \( \textbullet \) Pushpendra Kumar\( \text{c} \)\(^1\), Manash Ghosh\( \text{c} \)\(^1\), Hongdan Yan\( \text{c} \)\(^1\), Frank Ludwig\( \text{c} \)\(^2\), Meinhard Schilling\( \text{c} \)\(^2\), and Peter Lemmens\( \text{c} \)\(^1\) — \( \text{c} \) IPKM, TU-Braunschweig — \( \text{c} \) EMG, TU-Braunschweig*

We report on the preparation and functionalization of porous silicon (PS) using electrochemical etching in hydrofluoric (HF) acid based solutions. The properties of PS such as thickness of the porous layer, porosity and average pore diameter are precisely controlled and characterized using optical absorption, nitrogen sorption isotherms, field emission SEM, Raman and PL spectroscopy. Functionalization was performed by oxidizing and subsequent doping with different dyes and magnetic molecules.

**O 4.5 Mon 12:15 MA 042**

*Preparation and functionalization of porous anodic aluminum oxide templates — \( \textbullet \) Hongdan Yan\( \text{c} \)\(^1\), Seth White\( \text{c} \)\(^1\), Pushpendra Kumar\( \text{c} \)\(^1\), Peter Lemmens\( \text{c} \)\(^1\), and Pengxiang Zhang\( \text{c} \)\(^2\) — \( \text{c} \) IPKM, TU-Braunschweig — \( \text{c} \) IAMPE, Kunming University of Science and Technology, Yunnan, China*

We report on the preparation of porous anodic aluminum oxide templates (AAO) and their functionalization/modification. AAO with nanoporous morphology is a well controlled template material due to the high density and uniformity of nano pores. Free standing, transparent membranes have been prepared and doped with dyes, magnetic molecules. Ni and Fe nano-wires have been grown within the pores by electrodeposition.