

***Advanced Macromolecular Systems Across the Length Scales - Part 2***  
***26-27 April 2007***

The second workshop of the "Advanced Macromolecular Systems Across the Length Scales" series, chaired by Prof. G. Julius Vancso and Dr. Holger Schönherr (Materials Science and Technology, MESA<sup>+</sup> Institute for Nanotechnology), was organized under the auspices of the European Union 6<sup>th</sup> framework **Networks of Excellence** FRONTIERS and Nano2Life, as well as the MESA<sup>+</sup> Institute for Nanotechnology. This interdisciplinary workshop took place on April 26<sup>th</sup> and 27<sup>th</sup> 2007 in Enschede (The Netherlands) and was attended by more than 60 international participants, incl. more than 45 students, postdocs and young researchers from FRONTIERS.

*AMSALS II* was focused on biomacromolecular platforms and platforms for biodiagnostics and -sensing. Central aspects of the workshop included topics, such as controlled fabrication of micro- and nanostructures, surface functionalization using polymers, function of complex supramolecular architectures, molecular surface engineering, single molecule interactions, and cell - surface / nanostructure interactions.

In his lecture on "Sensing single molecular recognition sites with the AFM" Prof. Dr. Peter Hinterdorfer (Johannes Kepler University of Linz, Austria) started the workshop focusing on the detection and precise assessment of single molecule interactions of biological relevance. The mapping of receptors on cell surfaces received particular attention. From single molecules the focus was shifted towards controlled surface modification using clever bioconjugation chemistry and polymer brush (grafting-from) approaches. In the center of Prof. Dr. Harm-Anton Klok's (Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland) lecture were hence polymer brushes for biomedical and bioanalytical applications. The cycle from surface modification to micro- and nanoscale patterning was entirely closed by Prof. Dr. János Vörös (ETH Zürich, Switzerland), who introduced novel approaches to pattern biomolecules for biodiagnostics. In his lecture a large variety of "biolithography" techniques was introduced to pattern surfaces.

Following the excellent lectures of the three invited speakers of day 1, the young scientists introduced their research to be presented in the evening poster session in short oral presentations. This format was very well received as it allowed everyone to get familiar with the motivation and topics discussed as well as the people and faces behind the work. Thereby the poster session following dinner was very productive and witnessed intense discussions on all aspects of '*Advanced Macromolecular Systems Across the Length Scales*'.

Day 2 was kicked off by Dr. Andrea Decker (IBM Research Laboratory, Rüschlikon, Switzerland) who took the audience on a breathtaking journey into the possibilities of self-assembly and soft lithography for micro and nanoscale patterning. In particular, she focused on the assembly, patterning and controlled organization of colloidal particles. The role of nanostructured surfaces in biointerfaces was highlighted by Prof. Dr. Doris Wedlich (Universität Karlsruhe, Germany). The relevance of a broad range of peptides and proteins related to cell - surface and cell - cell interactions was introduced and put into context based on the fabrication of nanostructured surfaces with corresponding specific biological properties. The last plenary talk by Dr. Holger Schönherr (MESA<sup>+</sup> Institute for Nanotechnology, University of Twente) discussed new micro- and nanopatterned macromolecular materials and soft lithographic approaches for the development of advanced thin film biointerface platforms.

The keynote lectures covered a broad range of state-of-the-art topics and led to intensive and lively discussions with a broad participation. In fact the discussions were continued over dinner and in the poster session. Interaction among the young scientists took place during the entire workshop, most notably during the very intensive poster session. From the very positive feedback it is certain that many participants have gathered fresh ideas for their respective research projects and a number of mutual interactions among the FRONTIERS, Nano2Life and MESA<sup>+</sup> partners, as well as external scientists, have been established. In summary, *AMSALS II* was a great success and the foundation for *AMSALS III* (to be announced for 2008) has been laid.



*The conference chairs and invited speakers (from left to right): Prof. Dr. G. Julius Vancso, Dr. Andrea Decker, Prof. Dr. Harm-Anton Klok, Prof. Dr. János Vörös, Prof. Dr. Peter Hinterdorfer, Prof. Dr. Doris Wedlich and Dr. Holger Schönherr.*



*Discussions during the poster session.*



*Snapshots taken during dinner.*