

# Thursday Evening Poster Sessions

**Surface Modification of Materials by Plasmas for  
Medical Purposes Focus Topic  
Room: Hall 3 - Session SM-ThP**

**Surface Modification of Materials by Plasmas for  
Medical Purposes Poster Session**

**SM-ThP1 Replacing Self-Assembled Monolayers by Functional Plasma Polymers in Fabrication of Immunosensors, *Lenka Zajickova, A. Manakhov, E. Makhneva, D. Kovar***, Masaryk University, Czech Republic, *G. Dorozinsky, O. Shynkarenko, G. Beketov*, Lashkaryov Institute of Semiconductor Physics, Ukraine, *P. Skladal*, Masaryk University, Czech Republic

Plasma polymerization is an efficient way to the modifications of various surfaces by desired functional groups. It finds potential applications in tissue engineering or fabrication of biosensors. This work reports on the plasma polymerization of two functional coatings that were used as a replacement of self-assembled monolayers (SAMs) in the fabrication of immunosensors. Amine-based coatings were deposited from cyclopropylamine mixed with argon in low pressure capacitively coupled discharge whereas carboxyl-based coatings were prepared by copolymerization of maleic anhydride and acetylene in atmospheric pressure dielectric barrier discharge. The coatings were prepared on gold surfaces of either quartz crystal microbalance or surface plasmon resonance sensors. Their performance was tested on a model system, monoclonal antibody (Ab AL-01) against human serum albumin (HSA) interacting with the corresponding HSA antigen. The immobilization of antibodies and inactivation of free non-reacted groups was realized in buffers with various pH. A crucial point was the stability of the prepared plasma polymers in liquids that was studied by time-varying sensor response and also by physical characterization methods (X-ray photoelectron spectroscopy, infrared spectroscopy, atomic force microscopy, ellipsometry) in the dry state. The performance of the immunosensors with the plasma polymer layers were compared to the sensors prepared using the standard procedure using SAM.

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