

P 6 Hauptvortrag 1: Plasmatechnologie

Zeit: Dienstag 09:20–10:00

Raum: 1002

Hauptvortrag

P 6.1 Di 09:20 1002

In-situ Spectroscopic and Kelvin Probe Studies of the Modification of Passive Films on Metals in Vacuum and Atmospheric Pressure Plasmas — •GUIDO GRUNDMEIER, MIROSLAW GIZA, and TOBIAS TITZ — MPI für Eisenforschung, Max-Planck-Str. 1, 40237 Düsseldorf

Low temperature plasma processes are of increasing interest for the surface modification of engineering metals. Many studies have been devoted to the deposition of thin protective, adhesion promoting or biocompatible films on oxide covered metals. Since the adhesive properties as well as the corrosion behaviour of metals strongly depend on the chemical composition, morphology and electronic structure of their oxides, it is of interest to study processes of oxide modification on metals in reducing and oxidising plasmas and, moreover, the stability of these modified oxides in contact with the underlying metal and with the environment. Two in-situ analytical set-ups have been designed that allow studies of the plasma modification as well as ageing processes of modified oxides in defined environments. The in-situ set-up for low and atmospheric pressure plasma studies combines a quartz crystal microbalance, grazing incidence FTIR spectroscopy and a Kelvin Probe. For UHV studies the in-situ cell consists of Auger Spectroscopy in combination with a Kelvin Probe and is connected to an UHV system with ToF-SIMS, XPS and STM. The presentation will cover passive film structures, the design of in-situ analytical set-ups, oxide modifications in low and atmospheric pressure plasmas, the stability of these modified oxides and finally the relevance of the oxide modification for polymer/metal adhesion.