

DS 17: Invited – Grunze

Time: Tuesday 10:15–11:00

Location: GER 37

Invited Talk

DS 17.1 Tue 10:15 GER 37

Chemical Nanolithography — •MICHAEL GRUNZE and MICHAEL ZHARNIKOV — Applied Physical Chemistry, Universität Heidelberg, Im Neuenheimer Feld 253, 69120 Heidelberg, Germany

In this talk the advances in the fabrication of chemical and morphological nano-patterns and gradients by electron beam chemical lithography (EBCL) - or "Chemical Nanolithography" - with monomolecular films as primary resists are discussed. We will show that "Chemical Nanolithography" is an easy and convenient method to create multi-phase organic, polymeric or biological surface nanostructures and gradients using stencil masks or electron beam writing, combined with

subsequent chemical surface modifications. EBCL can be performed with both aromatic and aliphatic resists. Whereas aromatic monolayers are more robust, aliphatic films are more radiation sensitive and hence require a smaller irradiation dose for patterning. Specific examples given in this talk refer to irradiation-promoting exchange reaction (IPER) lithography, electron beam activation lithography (EBAL), and direct writing chemical lithography (DWCL). In addition, we will demonstrate that chemical patterns that can subsequently be developed into 3D polymer brush architectures can also be made by carbon templating from the gas phase without a pre-adsorbed organic monolayer.