

# Methods for (bio)materials' surface characterization - an overview

Anne Holtsch, Johannes Mischo, Thomas Faidt, Christian Spengler, Karin Jacobs and Frank Müller

*Experimental Physics, Saarland University, 66041 Saarbrücken*

The selection of substrates and their interaction with deposited layers or (bio)adsorbates is of particular importance in biophysics. Through intermolecular interactions, the substrate can significantly influence the properties of the system, e.g., wettability or adhesion. A precise control of surface properties is therefore essential for understanding the effects that occur. Prominent examples are graphene, a monolayer of graphite or the nm-sized fluorapatite layer on our teeth if using fluoride containing toothpaste. In both systems, the physical properties change dramatically due to only nm-sized layers. Another example is a nanostructured Cu surface, which exhibits an improved antibacterial effect compared to an unstructured Cu surface. Our poster gives an overview of experiments which can characterize the physical and chemical properties of substrate surfaces and how these techniques are applied in our research. We will introduce X-ray photoemission spectroscopy, low energy electron diffraction, scanning tunneling microscopy and atomic force microscopy. These techniques allow us to obtain the elementary composition, the orientation of the crystal lattice, atomically resolved images of the surface, electrical and mechanical properties of the surfaces. These methods don't destroy the surfaces during the measurement and allow to investigate living microorganisms.