BP 23: Poster Focus Session Chemical Imaging for the Elucidation of Molecular Structure (joint session O/BP)

Time: Wednesday 18:00–20:00 Location: P2

BP 23.1 Wed 18:00 P2

Imaging of structure, conformation, and assembly of biological molecules by scanning probe microscopy (SPM) — •Joshua Holloway, Márkó Grabarics, Banjamin Mallada, Alejandro Lynch Gonzalez, Lukas Eriksson, and Stephan Rauschenbach — University of Oxford, Oxford, UK

Direct imaging of (bio)molecules by scanning probe microscopy (SPM) is a powerful approach for molecular structure elucidation. Sample preparation presents a challenge: an analyte must be taken into the gas phase, and intactly deposited on the sample surface. Because many biological molecules we wish to study are incompatible with sublimation, we employ electrospray ion beam deposition (ES-IBD). A novel, custom-built deposition stage extending a commercial mass spectrometer (Thermo Fisher Q Exactive UHMR) allows for mass-filtered, soft-landed deposition onto atomically flat metal crystals for high-performance SPM imaging.

Here we present the workflow of mass spectrometry, selection, deposition, and imaging for several examples of biological molecules. In particular we explore the imaging of molecular assemblies of biomolecules with large and small ligands, formed in the gas-phase and/or on the surface.