Contribution ID: **44** Type: **poster**

4,4'-biphenyldicarboxylic acid on Ag(111)

Self-assembly of organic and metal-organic species is a thrilling field, which exploits the mechanisms of supramolecular chemistry to build complex molecular entities [1]. Recently, this field has been tried at surfaces [2], where multiple two-dimensional structures with various functional properties can be synthesized. At the time, there is abundant information on resulting thermodynamically stable molecular architectures on diverse substrates, but the knowledge of how intermediate kinetically trapped states form and how, in general, self-assembly processes develop in time is still deficient. The use of a complementary experimental approach may shed some light on those yet unanswered questions. In this work we present an investigation of 4,4'-biphenyldicarboxylic acid (BDA) self-assembly on an Ag(111) single crystal, which, along with our previous studies [3-6], aims at generalizing the knowledge on BDA self-assembly at relevant noble-metal substrates. Utilizing Scanning Tunneling Microscopy, X-ray Photoelectron Spectroscopy and Low Energy Electron Microscopy/Diffraction (LEEM/LEED), we reveal the structures of transitional and final BDA molecular phases forming on Ag(111). Furthermore, we demonstrate real-time observations of the temperature-dependent phase transitions. Such a multicomponent analysis allows us building up a comprehensive picture of the BDA behavior on the Ag(111) surface.

[1] Whitesides, G. M., et al. Science, 1991, 254(5036), 1312-1319;

[2] Kühnle, A. Current Opinion in Colloid & Interface Science, 2009, 14(2), 157-168;

[3] Kormoš, L., et al. J. Phys. Chem. C, 2018, 122(5), 2815-2820;

[4] Procházka, P., et al. ACS Nano, 2020, 14(6), 7269-7279;

[5] Kormoš, L., et al. Nature Communications, 2020, 11, 1856;

[6] Procházka, P., et al. Applied Surface Science, 2021, 547, 149115;

Primary author: MAKOVEEV, Anton

Co-authors: Dr PROCHÁZKA, Pavel; Dr BLATNIK, Matthias; Dr KORMOŠ, Lukáš; Dr ČECHAL, Jan

Presenter: MAKOVEEV, Anton

Session Classification: Posters

Track Classification: Surfaces and nanostructures for electronics