UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

Physikalisches Kolloquium

Mittwoch, 10.02.2021
13:00 Uhr
ZOOM Online

Molecular interfaces under the (photoemission) microscope

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Meeting ID: 921 7218 0326, Passcode: 261483

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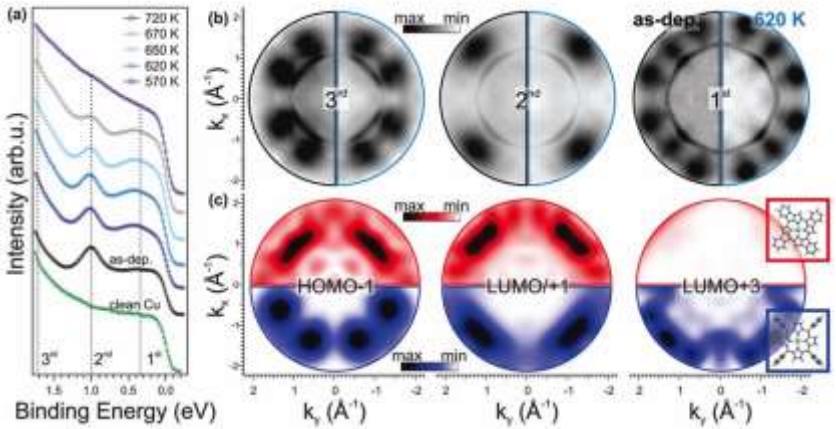

An example of photoemission tomography

The miniaturization trend in the semiconductor industry has led to the understanding that interfacial properties are crucial for device behavior. Spintronics has not been alien to this trend, and phenomena such as preferential spin tunneling, the spin-to-charge conversion due to the Rashba–Edelstein effect and the spin–momentum locking at the surface of topological insulators have arisen mainly from emergent interfacial properties, rather than the bulk of the constituent materials.

In this talk I will discuss how molecular materials have arisen as an ideal platform for creating interfacial spin effects [1]. In particular, I will give a basic description of the electronic properties of molecular/inorganic interfaces based on the results of photoemission tomography - a powerful experimental and theoretical approach that provides an interpretation of the photoelectron angular distribution in terms of the molecular orbital structure of the initial state [2, 3].

Finally, I will discuss the key role that molecular interfaces may play in the development of a new generation of spin-based technologies, thanks to their unique capability of being actively tuned to reach as-yet unexplored functionalities.

[1] M. Cinchetti, A. Dediu, L. Hueso. Nature Materials 16, 507-515 (2017)
[2] H. M. Sturmeit, et al, Journal of Materials Chemistry C 8, 8876 (2020)
[3] N. Haag, et al., Physical Review B **101**, 165422 (2020).