TECHNISCHE UNIVERSITÄT CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

Mittwoch, 28.06.2017, um **16:00 Uhr**

Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

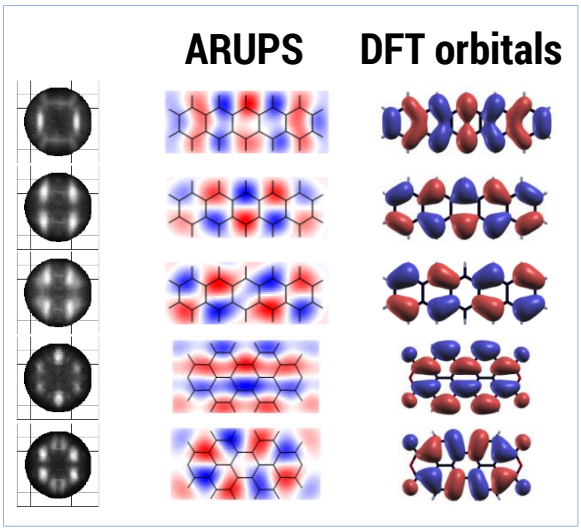
Prof. Dr. Michael Ramsey

Institute of Physics
Karl-Franzens-University Graz, Austria

Photoemission Tomography: A renaissance in valence band photoemission of adsorbed molecules

Here it will be shown that the apparently complex angular distribution of valence band photoemission from molecular films can be simply and quantitatively predicted from a Fourier transform of initial state wavefunctions. This suggests, contrary to popular belief, that overall dependence of the photocurrent can be well accounted for by assuming a plane wave for the final state. The imaging of the photoemission angular distribution together with an analysis based on the plane wave final state approximation is becoming known as orbital or photoemission tomography.

While reconstruction of real space orbitals is the most spectacular demonstration of photoemission tomography it´s power lies in the ability it gives to identify photoemission features to particular states and molecular geometries. This will be demonstrated for a variety of orbitals of the proto-typical pi conjugated molecules pentacene, sexiphenyl and PTCDA on a number of substrate surfaces. For adsorbate monolayers it will be shown how photoemission tomography can be used to determine molecular geometries, unambiguously determine the orbital energy ordering, gain insight into the nature of the surface chemical bond and image the orbitals in real space.



1.Science 317,351(2007)
2.Science 326,702(2009)
3.Proc.Nat.Acad.Sci.(PNAS) 111, 605(2014)
4.New Journal of Physics 16, 023011(2014)
5.Nat. Comm. 5, 3685 (2014)
6.Phys. Rev. B 90, 155430 (2014)
7J. Phys. Chem. Lett., 8,208(2017)

Alle Zuhörer sind ab 15:45 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Thomas Seyller, Tel.: 0371 531-32898

www.tu-chemnitz.de/physik