Seminarankündigung

Mittwoch, 24. Mai 2017
16:00 Uhr

ZNN, Seminarraum EG 0.001

“2D materials under the microscope(s)”

Interest in transition metal dichalcogenides (TMDs) has been renewed by the discovery of emergent properties when reduced to single, two-dimensional (2D) layers. In the few-layer limit, the optical and electronic properties of TMDs are modified by a strongly reduced dielectric screening. As a consequence of the weak screening, these 2D materials are intrinsically susceptible to spatial disorder, which can arise due to defects from the growth or interaction with the substrate.

Here, we use a set of complementary imaging techniques - Raman, photoluminescence, Kelvin probe, and photoelectron spectroscopy – to correlate locally the chemical state, electronic structure, and optical properties of 2D transition metal dichalcogenides.

In particular, we employ spatially resolved angle resolved photoemission spectroscopy (nano-ARPES) to map the variations in band alignment, effective mass and chemical composition of CVD-grown WS2. A detailed analysis of hyperspectral photoluminescence images reveals the interplay between these variations and the formation of charged trions and neutral excitons.

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