



Seminarankündigung

Dienstag, 1. Juli 2014

15:00 Uhr

ZNN, Seminarraum EG 0.001

“Atomically thin optoelectronics: 2D semiconductors beyond graphene”

In this talk I will introduce and motivate the study of the electrical and optical properties of atomically thin crystals different than graphene. I will focus on Molybdenum Disulphide which is considered a case of special interest. Single-layer MoS_2 is an attractive two-dimensional material that combines the mechanical flexibility of graphene with a large direct bandgap. While graphene is very interesting as a transparent electrode, its lack of a bandgap limits its usefulness in semiconducting and optoelectronic devices. Atomically thin MoS_2 , on the other hand, has a large intrinsic bandgap. This attractive feature has been employed to fabricate many devices not possible in graphene, such as field-effect transistors with high mobility and current on/off ratio, logic gates and efficient phototransistors. Our work on MoS_2 has been focused on developing new methods to fabricate single layer MoS_2 and to characterize the intrinsic mechanical, optical and electrical properties of this atomically thin material.

Here, I will show an overview of our last results paying special attention to our studies on the strain engineering in atomically thin MoS_2 . New results on the optoelectronic properties of novel 2D semiconducting materials beyond MoS_2 (black-phosphorus, TiS_3 , etc...) will be also discussed.

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