北京大学量子材料科学中心
International Center for Quantum Materials, PKU

Seminar

Conventional and *in-situ* quantum transport measurement of two-dimensional materials

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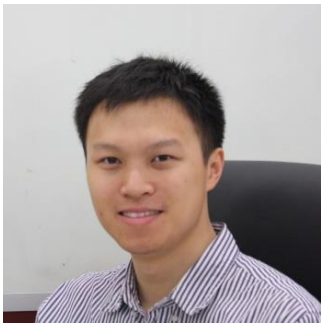

Time: 16:00pm, May 21, 2018 (Monday)
时间: 2018年05月21日 （周一）下午16:00
Venue: Room W563, Physics Building, Peking University
地点：北京大学物理楼 西563

Abstract

Due to the very large surface to bulk ratio, two-dimensional (2D) materials has a greatly enhanced response to stimulus from the environment. This presentation will focus on our recent progress in quantum transport measurement of 2D mesoscopic devices in controlled environment. By encapsulation of the 2D materials, we ensure high quality and stability of our devices for conventional transport measurements, which revealed rich physics and a variety of potential applications for 2D materials. By *in-situ* manipulation of sample surface during a single experimental run, we can continuously tune the interactions of the 2D electronic systems and observe the resultant changes in their electronic states. As an example, magneto-transport experiment with *in-situ* cobalt adsorption and hydrogenation of graphene will be discussed, and the stark contrast of the electronics states between metal decorated graphene and covalently modified graphene is demonstrated.

About the Speaker

Dr. Jian-Hao Chen obtained his undergraduate degree in Zhejiang University. He obtained his PhD in Physics under the supervision of Prof. Ellen Williams at University of Maryland at College Park in 2009. Thereafter, he worked as a Research Fellow in the nanoelectronics group of Prof. Michael Fuhrer at University of Maryland and in Prof. Alex Zettl's group at University of California at Berkeley. Since March 2013, he joined Peking University as an Associate Professor and Principle Investigator of the Laboratory for Nanoelectronics and In-Situ Quantum Transport. His present research is focused on studying the physics and applications of low-dimensional electronic materials and its nanostructures, manipulation of material properties at the atomic scale, and *in-situ* quantum electrical transport in ultra-high vacuum environment. His peer-reviewed publications include articles in Nature Physics, Nature Nanotechnology, Physical Review Letters and Advanced Materials, with a total SCI citation of more than 5000.