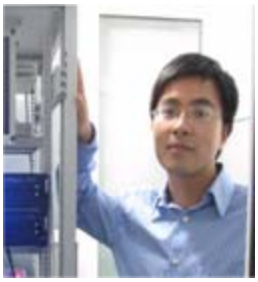
中心系列讲座 ICQM Weekly Seminar Series

"Controllable self-assembly and electron transfer: molecular and interface engineering for organic photovoltaics"



Prof. Sheng Meng 孟胜
Institute of Physics
Chinese Academy of Sciences

Time: 4:00pm, Mar. 16, 2011 (Wednesday)
时间：2011年3月16日 （周三）下午4:00
Venue: Room 607, Conference Room A, Science Building 5
地点：理科五号楼607会议室

Abstract

The use of organic materials represents an inexpensive and environmentally friendly solution for solving today's renewable energy challenge via efficient sunlight-to-electricity conversion. However, the interface between organic molecules and more traditional inorganic semiconductors need to be understood and well controlled. Examples include building high-efficiency artificial photosynthetic systems mimicking natural ones, and developing new generation of materials for electronics and photovoltaics.

In this talk, I will present two such examples of recent progresses towards this direction: i) We identified a selective self-assembly of phthalocyanine (Pc) molecules on thinner epitaxial graphene, in collaboration with experimental efforts. Competing molecule-surface and intermolecular van der Waals interactions result in two well-ordered incommensurate phases. We also show that the amount of charge transfer from graphene to Pc can be gradually tuned. ii) We employ a new computational algorithm based on time-dependent density functional theory to study real-time quantum dynamics of electrons at organic-inorganic interface. We show that the electronic structure at the interface can be designed by desire, and electron-hole separation dynamics is controllable by modifying interface binding and molecular details.

About the Speaker

孟胜,2000年毕业于中国科学技术大学,2004年获中科院物理所和瑞典Chalmers技术大学理学博士学位，2005-2009年任哈佛大学Research Associate, 2009年起入选"百人计划"任中科院物理研究员。研究领域包括（有机、生物）分子和材料表面的相互作用，可再生能源材料，和电子激分子动力学。自2002年起在相关领域发表SCI文章约40余篇，其中包含Phys. Rev. Lett. 6篇，Nano Letters 7篇，J. Am. Chem. Soc. 1篇。著有综述性学术著作/篇章3种。截至2010月累计被他人引用800余次。