

THURSDAY COLLOQUIUM

Department of Physics, Tsinghua University

http://www.phys.tsinghua.edu.cn/Colloquium/

Title Graphene for Nanoelectronics and Energy Applications

Speaker Yuegang Zhang

The Molecular Foundry, Lawrence Berkeley National Laboratory Venue ZhengYu-Tong Lecture Hall &Date 16:00, April 21, 2011

Abstract:

Grpahene has unique structure and superior properties that make it an excellent material for nanoelectronics and energy conversion/storage applications. In this talk, I will give a brief review of some recent graphene-related studies in my lab. Firstly, the substrate and edge related transport phenomena in graphene and graphene nanoribbons will be discussed. Simple physics models will be used to explain the observed 1/f noise behaviors in graphene and nanoribbon devices. Next, I will introduce a chemical vapor deposition (CVD) method for monolayer graphene film growth directly on dielectric substrates. The effect of metal catalyst dewetting and its implication for grapheme pattern formation will be discussed. Lastly, I will show that chemically-derived graphene materials can be used to form nanocomposite with other active materials for lithium ion batteries.Such strategy can be generalized for synthesis of other functional materials that can increase the efficiencies and lower the costs of various energy conversion/storage devices.

Introduction to the Speaker

Dr. Yuegang Zhang is a career staff scientist at the Molecular Foundry of Lawrence Berkeley National Laboratory. He received his BS and MS degrees of Physics from Tsinghua University, and PhD degree of Materials Science from the University of Tokyo. He conducted research on nanotubes and nanowires at NEC Fundamental Research Labs and Stanford University before he joined Intel Corporation where he led the Intel Carbon Nanotube Research Project and chaired Intel Memory Strategic Research Sector. He is now a committee member of Emerging Research Device/Materials Working Group of International Technology Roadmap for Semiconductors (ITRS). He has published more than 60 peerreviewed papers in journals including Science and authored several book chapters on nanotechnology. His current research interests are synthesis of carbon-based nanomaterials (graphene, carbon nanotubes, and their composites with other materials), and exploring their applications in nanoelectronics and energy conversion/storage applications.