

Qihua XIONG

Nanyang Assistant Professor
National Research Foundation Research Fellow

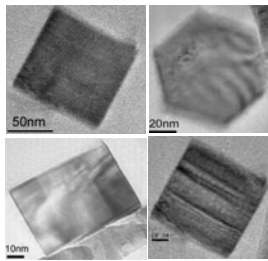
B.Sc. (Wuhan), M.Sc. (CAS)
Ph.D. (Penn State), Postdoctoral (Harvard)

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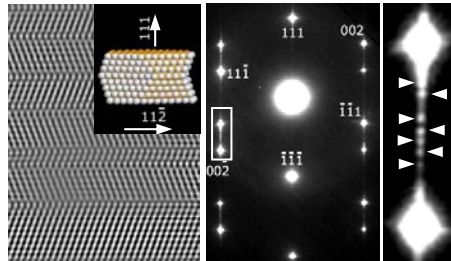


Our group focuses on a range of topics broadly defined in nanoscience and nanotechnology:

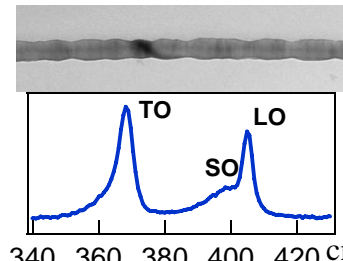
- Develop novel approaches to synthesize and tune 1D nanomaterials and heterostructures
- Investigate their fundamental properties as an outcome of confined geometry and anisotropy
- Explore the applications of nanomaterials in nanoelectronics, nanophotonics, energy harvesting (solar and thermoelectricity)
- Build nanoelectronic-bio interfaces, e.g., nanopore field effect transistor for biosensing



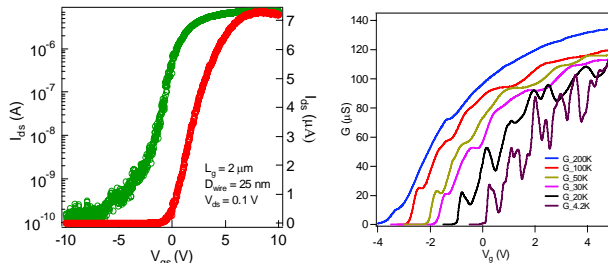
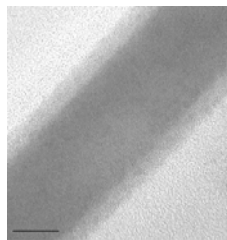
TEM Images of ZnS Nanowire Cross Section



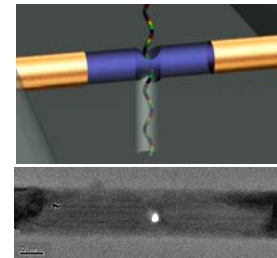
Twinning Superlattices in Nanowires, HRTEM Image and Electron Diffraction Patterns



Nanowire Diameter Modulation Introduces New phonon Modes



InAs/InP core-shell heterostructures: HRTEM, Field effect transistor and ballistic transport



Nanopore FET biosensing

Selected Publications

1. Xiaocheng Jiang, Qihua Xiong, Sungwoo Nam, Fang Qian, Yat Li and Charles M. Lieber, "InAs/InP Radial Nanowire Heterostructures as High Electron Mobility Devices", *Nano Lett.*, 7, 3214-3218 (2007)
2. Qihua Xiong, J. Wang, P.C. Eklund, "Coherent Twinning Phenomena: Towards Twinning Superlattices in III-V Semiconducting Nanowires", *Nano Lett.*, 6, 2736-2742 (2006)
3. Qihua Xiong, N. Duarte, S. Tadigadapa, P.C. Eklund, "Force-deflection Spectroscopy: A New Method to Determine the Young's Modulus of Nanofilaments", *Nano Lett.*, 6, 1904-1909 (2006)
4. Qihua Xiong, Jinguo Wang, O. Reese, L.C. Lew Yan Voon, P. C. Eklund, "Raman Scattering from Surface Phonons in Rectangular Cross-sectional w-ZnS Nanowires", *Nano Lett.*, 4, 1991-1996 (2004)
5. Qihua Xiong, G. Chen, J. D. Accord, X. Liu, J.J. Zengel, H. R. Gutierrez, J. M. Redwing, L. C. Lew Yan Voon, B. Lassen and P. C. Eklund, "Optical Properties of Rectangular Cross-sectional ZnS Nanowires", *Nano Lett.*, 4, 1663-1668 (2004)
6. Rajeev Gupta, Qihua Xiong, G. D. Mahan, and P. C. Eklund, "Surface Optical Phonons in Gallium Phosphide Nanowires", *Nano Lett.*, 3, 1745-1750 (2003)
7. R. Gupta, Qihua Xiong, C. K. Adu and P. C. Eklund, "Laser-Induced Fano Resonance Scattering in Silicon Nanowires", *Nano Lett.* 3, 627-631, (2003)
8. G. D. Mahan, R. Gupta, Qihua Xiong, C. K. Adu, and P. C. Eklund, "Optical Phonons in Polar Semiconductor Nanowires", *Phys. Rev. B*, 68, 073402 (2003)

Postdoctoral Positions and Graduate Fellowships Available!!

Dr. Qihua Xiong won 2nd batch Singapore National Research Foundation Research Fellowship (NRF-RF) and recently joined Nanyang Technological University as a Nanyang Assistant Professor. With a strong support from both NRF and NTU, Dr. Xiong is expecting to establish a vibrant group dedicated into the research in nanoscience and nanotechnology.

Dr. Xiong finished his B.Sc. degree in Physics at Wuhan University in 1997. After obtained his M.Sc. degree in physics from Shanghai Institute of Applied Physics, Chinese Academy of Sciences (CAS) in 2000, he went to United States of America to pursue his Ph.D. research. In 2006, he received his Ph.D. degree in materials science at The Pennsylvania State University under the supervision of Professor Peter Eklund. His Ph.D. research covers from fundamental physical properties especially phonon properties of semiconductor nanowires, to nanomechanical properties and twinning superlattices in nanowires. He joined Professor Charles Lieber laboratory at Harvard as a postdoctoral research fellow in 2006. During his postdoctoral training, he has extended his research to include nanoelectronics and nanoelectronic devices for single molecule biosensing.

Dr. Xiong received several awards and fellowships during his graduate and undergraduate studies, including Pan-American Advanced Studies Institute (PASI) fellowship (DOE and NSF, 2006), Graduate Award for Academic Excellence (The Pennsylvania State University, 2006), Excellent Graduate Fellowship Award (1998 and 1999, CAS), Hui Kai Fellowship Award (Wuhan University, 1996), Gui Zhiting-Xu Hailan Fellowship Award (Wuhan University, 1995) and Outstanding Student Award (Wuhan University, 1994).

Dr. Xiong's group is seeking strongly motivated postdoctoral research fellows to carry out a multi-million dollar project (funded by Singapore National Research Foundation and Nanyang Technological University), which is on the cutting-edge research in nanomaterials, nanoelectronics, energy and nanoelectronic-bio interface for single molecule biosensing. Due to the highly interdisciplinary nature of the project, candidates with a Ph.D. degree in experimental condensed matter physics, electronic engineering, chemistry (physical or polymer), biochemistry and biophysics are all encouraged to apply. Annual salary ranges from S\$ 36,000-60,000, depending on qualification. Starting date is flexible and multiple positions are available.

We also keep hiring Ph.D. students with full scholarships support, undergraduate students who want to expand their horizon. For perspective Ph.D. students, please be advised that TOEFL and GRE scores are recommended but **NOT** required. Applicants can take equivalent English test organized by the school. Interested candidates from Physics, Chemistry, Biological, MatSE or EE should contact Dr. Qihua Xiong with their CVs. We are looking for highly passionate young students who are willing to devote themselves in the world-wide ambition and enterprise of nanotechnology. A master's degree or demonstrated research experience in undergraduate is a plus.

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