

Weihua Hu

Permanent Address: 5562 Hobart Street, APT 604, Pittsburgh, PA 15217

Campus Address: 5000 Forbes Ave, Roberts Engineering Hall 336, Pittsburgh, PA 15217

Email: weihuah@andrew.cmu.edu

Phone: (412) 897-1636

Education

Ph.D.	Carnegie Mellon University , Pittsburgh, Applied Physics	12/2012
	• GPA: 3.78/4.0	
M.S.	Carnegie Mellon University , Pittsburgh, Physics	05/2009
	• GPA: 3.66/4.0	
B.S.	University of Science and Technology of China , China, Material Science and Engineering	07/2007
	• GPA: 3.7/4.3	

Research Experience

Carnegie Mellon University, Electrical Computer Engineering Dept., Pittsburgh, PA 05/08 - present
Research Assistant, Tip-directed Field-emission Assisted Nanofabrication (TFAN) Project

- **STM/AFM based nanofabrication of Ti/TiO_x nanodevices**
 - Oxidized Ti using both contact AFM and STM mode with the same AFM cantilever
 - Thin Ti film deposition and characterization
- **Fabricated lateral Ti-TiO₂-Ti Junctions for Low Capacitance MIM Rectenna Diodes**
- **Built model to determine the physical mechanism underlying collected data**
- **STM Tip-directed Chemical Vapor Deposition (CVD) of Si Nanostructures**

Carnegie Mellon University, Physics Department, Pittsburgh, PA Spring 2008
Research Assistant, Prof. Randy Feenstra's research group

- **Hydrogen etching and graphitization of SiC**

University of Science and Technology of China, Hefei, China Summer 2005 – July 2007
Undergraduate Research Program, Functional Nanomaterial Lab

- **Preparation and characterization of branched coaxial nanorods formed in supercritical carbon dioxide**

Skills

Applications: COMSOL, Signal Processing, AutoCAD, Mathematics, LabVIEW

Computer: MATLAB, C, Visual Basic, Microsoft Office (Word, Excel, PowerPoint)

Language: Fluent in Chinese, English

Instruments: **Scanning Probe Microscopy**

- More than four years experience in Scanning Tunneling Microscopy (STM) and Atomic Force Microscopy (AFM)

Thin Film Deposition

- E-beam Evaporator, Sputtering System

Surface Analysis

- Auger Electron Spectroscopy (AES), X-ray Photoelectron Spectroscopy (XPS), Low-energy Electron Diffraction (LEED), Scanning Electron Microscopy (SEM)

Electrical Measurement

- Oscilloscope, Keithley source meter, Cryostage

Other Facilities

- Photolithography, Ion Mill, Optical Microscopes, Wire bonding
- Over five years experience with UHV

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Teaching Experience

Carnegie Mellon University, Physics Dept., Pittsburgh, PA

Spring 2011

Teaching Assistant, Experimental Physics Class

- Helped teachers set up experiment equipment
- Educated students on experiment skills and data analysis

Leadership Experience

Tip-directed Field-emission Assisted Nanofabrication (TFAN) Project

05/08 - present

- Collaborated with other researchers in TFAN project
- Played in a core role in finishing the experimental plan for every DARPA review

Math Representative of the Department

2003 - 2007

- Assisted teachers and coordinated with TAs on math class issues

Volunteer Experience

Volunteer, Pittsburgh G-20 conference (2009)

2009

Presentations and Publications

- Weihua Hu, Shingo. Tamaru, James. A. Bain and David. S. Ricketts, "High Current Pulse Generation for Thermal Surface Modification using Standard STM", Poster session, The 55th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication (EIPBN 2011), Las Vegas 2011
- Weihua Hu, Yingying Tang, Yang Zhang, Jason Gu, Shingo Tamaru, James A. Bain, L. Richard Carley, Robert F. Davis, Gary K. Fedder and David S. Ricketts, "Ti/TiO₂ Nanodevices Fabrication Using Compliant Probes and CMOS Probe-arrays", Poster session, The Manufacturing Technologies 2011 Workshop (MFG 2011), Napa 2011
- Weihua Hu, Jason Gu, Zacharias George and David S. Ricketts, "Directed Scanning Probe Nanomanufacturing of Lateral Ti-TiO₂-Ti Junctions for Low Capacitance MIM Rectenna Diodes", Accepted for oral presentation. The 37th International Conference on Micro and Nano Engineering (MNE 2011), Berlin 2011
- Fangyu Cao, Qianwang Chen, and Weihua Hu, "Preparation and Characterization of Branched Coaxial Nanorods Formed in Supercritical Carbon Dioxide", American Chemical Society (ACS 2007). 2007

Awards

University of Science and Technology of China (USTC), Hefei, China

- Outstanding freshmen award 2003
- Outstanding student award 2004-2006
- Award for Outstanding Undergraduate Research Program of USTC 2007