

Name: Fubo Rao

Research fields of interest and experience:

- Thin film deposition and process development for micro/nano-device applications
- Thin film characterization

My research experience and interests focused on the micro- and nano- fabrication, process development, and characterization. In the past 10 years, I have been heavily involved in the fabrication and characterization of various MEMS (Micro-Electrical-Mechanical-System) devices, and carbon nanomaterial (Carbon Nanotubes, Graphene) based nanodevices. I have considerable hands-on experience on all micro- and nano- fabrication techniques, with a focus on thin film deposition and process development, applied to systems such as ALD, Sputtering, PECVD, LPCVD, E-beam/Thermal Evaporation, etc. I have also been involved in the device characterization methods including Semiconductor Analyzer, Cryogenic Probe Station, 3D Optical Profiler, Reflectometer, Profilometer, etc. I am particularly interested in the process development for novel micro/nanodevices.

Instrumentation/core of responsibility within the MRL:

-Atomic Layer Deposition, Magnetron Sputtering Deposition, CVD graphene/carbon nanotube growth, Rapid Thermal Processing, Ion Milling & Evaporation, Wire Bonding, Electrical Testing, Cryogenic Probe Station, etc.

Other instruments qualified to operate:

-E-beam deposition, Reactive Ion Etching, Micro/Nano-fabrication processes.

Education:

Ph.D. (2009), Microelectronics

Chinese academy of sciences, Shanghai Institute of Microsystem and Information Technology.

Appointments (Professional experience):

2015 - present	Research Engineer, Central Research Facilities, Frederick Seitz Materials Research Laboratory, University of Illinois, Urbana, IL
2013 - 2014	Research Associate, Northwestern University, Evanston, IL
2010 - 2012	Postdoctoral Research Engineer, Michigan State University, IL
2012 – 2013	Program Committee member, IEEE International Conference on Nanotechnology
2012	Program Committee member, International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale
2011	Program Committee member, IEEE Nanotechnology Materials and Devices Conference

Awards (if applicable):

Selected publications (if applicable):

- Fubo Rao, Haider, Almumen, Zheng Fan, Wen Li, Lixin Dong, Inter-sheet-effect-inspired graphene sensors: design, fabrication and characterization, Nanotechnology, 23, 105501, 2012.
- Fubo Rao, Haider Almumen, Lixin Dong and Wen Li, Highly sensitive bilayer structured graphene sensor, 16th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 11), Beijing, China, 2011.
- Fubo Rao, Tie Li, Yuelin Wang, Growth of all-carbon single-walled carbon nanotubes from diamonds and fullerenes, Carbon, 47, 3580-3584, 2009.
- Fubo Rao, Xiang Liu, Tie Li, Yuxiu Zhou, and Yuelin Wang, The synthesis and fabrication of horizontally aligned single-walled carbon nanotubes suspended across wide trenches for infrared detecting application, Nanotechnology, 20, 055501, 2009.

- Fubo Rao, Tie Li, Yu Xiu Zhou, Xiang Liu, and Yue Lin Wang, Direct formation of parallel single-walled carbon nanotube bridges on micromachined wide trenches for high-performance infrared sensors. 15th International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 09), Oral presentation, Denver, USA, 2009.
- Fubo Rao, Dayong Qiao, Weizheng Yuan, Chenyu Jiang, A New Method to Increase the Valid Displacement of Plate Condenser Actuator of MEMS, *Aeronautical Manufacturing Technology*, 6, 80-82, 2007.
- Yi-ting Yu, Fubo Rao, Dayong Qiao, Weizheng Yuan, A New Method to Design CCD Driving Circuit, *Chinese Journal of Sensors and Actuators*, 2, 388-390, 2005.