

Carnegie Mellon University

Materials Science & Engineering

presents

Semiconductor Nanoelectronic and Nanophotonic Devices: performance and scalability

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This talk will focus on several platform nanotechnologies developed at Illinois. First, I will introduce a method to realize scalable 3D III-V transistors using MOCVD grown planar nanowire arrays. Planar nanowires represent a new nanowire paradigm that is self-aligned, transfer-printable, and compatible with planar processing technologies. Monolithically grown HEMTs using GaAs planar nanowire array as the channel material, will be shown with record f_T/f_{max} . I will then discuss strain-induced self-rolled-up microtube technology for dramatic miniaturization and performance enhancement of passive electronic devices by self-assembly into 3D architectures using 2D processing. Finally, vertical nanowire based solar cells and LEDs grown on heterogeneous substrates by MOCVD or fabricated using the anisotropic metal-assisted chemical etching (MacEtch) method will be demonstrated.

Xiuling Li received her B.S. degree from Peking University and Ph.D. degree from the University of California at Los Angeles. She joined the faculty of the University of Illinois in 2007, after working at a startup company for six years. She is currently an associate professor in the Department of Electrical and Computer Engineering. Her research interests are in the area of nanostructured semiconductor materials and devices. She has won the NSF CAREER award (2008), DARPA Young Faculty Award (2009), ONR Young Investigator Award (2011), the Dean's Award for Excellence in Research (2012), and Andrew T. Yang Research Award (2013). She is a Distinguished Lecturer of the IEEE Nanotechnology Council and serves on the Board of Governors of the IEEE Photonics Society.

Doherty Hall 2210, 11:30AM
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