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NANOSCIENCE and TECHNOLOGY BROWN BAG

Friday, 7 November 2008

Noon - 1 pm

Columbia River Room (public access available)

PNNL, ETB Building (Q Avenue, Richland, WA)

speaker

Dr. Meyya Meyyappan

Chief Scientist for Exploration Technology, NASA Ames Research Center
& IEEE Electron Devices Society Distinguished Lecturer

presenting

Nanotechnology in Chemical and Bio Sensor Systems

Abstract: There are strong research programs in nanotechnology related to chemical sensors, electromechanical devices, actuators, biosensors, and other nanodevices in leading laboratories across the world which use nanomaterials and other molecularly-engineered approaches. In many cases, practical systems demand seamless integration of the nanodevice with higher order structures, for example, MEMS. Examples of this using carbon nanotube based chemical and biosensors will be presented. The chemical sensor is a simple interdigitated chemiresistor with a single-walled carbon nanotube film as conducting channel. This system has been tested for various industrial gases and vapors. The biosensor uses vertically aligned, individual, free-standing multiwalled carbon nanostructures to fabricate nanoelectrodes. Functionalization of the nanotube ends with probe molecules, sensing and electrochemical amplification of the signal have been demonstrated. The author acknowledges contributions from Jing Li, Y. Lu, Prabhu Arumugam, Hua Chen, and Jun Li.

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