Physics
AT QUEENS COLLEGE

Colloquium Notice

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Catalyst engineering and plasma-enhanced chemical vapor deposition of ordered arrays of carbon nanotubes for photonic and electronic applications

Due to its unique one-dimensional tubular structure, carbon nanotubes (CNTs) have proven to possess extraordinary physical properties and have emerged as one of the most promising candidates to advance core technologies such as IC miniaturization and others. The current focus of global CNT research is, as it has been since the first CNT discovery, to produce CNTs at desired locations with controlled atomic structures, so that further integration into various nanodevices is enabled. Intensely studied for this purpose is catalytic chemical vapor deposition (CVD) which uses transition metal nanoparticles as catalyst and low-temperature dissociation of hydrocarbon gases as carbon source. I will first introduce various techniques we devised, including electrochemical deposition, thin film dewetting, microsphere self-assembly, interference lithography and nanoporous membrane mask, to fabricate catalyst nanoparticles with desired morphology, areal density, periodicity and texture on large scales, and then discuss a plasma-enhanced chemical vapor deposition (PECVD) process to grow vertically aligned carbon nanotubes as centerpieces for applications in optical antennas, photonic crystals, field emission displays and more.

Monday
February 4, 2008
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326