DEPARTMENT OF MATERIALS SCIENCE & ENGINEERING

NUS National University of Singapore

Synthesis and Characterization of Multi-walled Carbon Nanotubes on Carbon Paper

by Mr. Wang Hongyu

Date: 01st October 2009 (Thursday)
Time: 12:00pm to 12:30pm
Venue: EA-02-11 (Executive Seminar Room)

Abstract

Carbon nanotubes(CNTs) have attracted a disproportionate share of research effort due to their intriguing chemical and mechanical properties. In 1995 field emission property of CNTs were firstly studied. Afterwards, much work has been done to investigate the principles of CNTs' growth mechanisms and to develop effective techniques to apply them into industry. Multi-walled carbon nanotubes(MWNTs) grown on various nanostructures showed low threshold voltage and large values of enhancement factor. However, few researches were done about double-layer structure of MWNTs on carbon paper. Carbon paper has high conductivity but it cannot be used as field emitter by itself. Here, we synthesized single-layer and double-layer MWNTs on carbon paper by thermal chemical vapor deposition under different flow-rate ratios of ethylene and hydrogen. We investigated the morphological changes and field emission property of single-layer and double-layer MWNTs samples. It was found that field emission property of MWNTs on carbon paper was affected significantly by the ratio of ethylene and hydrogen. Multi-stage structure was proved to influence field emission property as well. Furthermore, the first layer and second layer of MWNTs played different roles in the performance of field emission test.

Mr. Wang Hongyu — Speaker

Mr. Wang Hongyu obtained his bachelor's degree in Materials Science and Engineering from Dalian University of Technology in 2007. He is currently a Year 2 PhD student under the guidance of Assistant Professor Daniel Chua, in Dept. of Materials Science and Engineering, NUS. His recent research interests focus on synthesis of carbon nanotubes by chemical vapor deposition and investigation of their field emission property.

Dr Xue Jun Min — Host

All are Welcome!