Fluorescence Spectroscopy and Structure Control of SWNTs

Yuhei Miyauchi, Yasunori Hayashida, Yoichi Murakami, Shohei Chiashi, Erik Einarsson, Shigeo Maruyama
Department of Mechanical Engineering, The University of Tokyo

Near-infrared fluorescence measurements were performed on single-walled carbon nanotubes (SWNTs), which were catalytically synthesized from alcohol under various experimental conditions. The chirality distribution was determined by measuring the fluorescence emitted from dispersed SWNTs as a function of excitation wavelength. Compared with HiPco SWNTs, the alcohol CCVD samples had higher chiral angles, indicating a more armchair-like structure. The chiral angle distribution of small diameter tubes was distributed predominantly in the higher chiral angle region. Centrifuge-based separation of small diameter SWNTs was performed to prepare samples rich in near-armchair type.

/Acknowledgement/
One of the authors (Y. Miyauchi) was supported through the 21st Century COE Program, “Mechanical Systems Innovation,” by the Ministry of Education, Culture, Sports, Science and Technology.