

Fluorescence of Single-Walled Carbon Nanotubes Synthesized by Alcohol CCVD Technique

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Visible and near infrared fluorescence and absorption of single-walled carbon nanotubes (SWNTs) catalytically synthesized from alcohol [1, 2] was studied. In addition to Raman scattering spectroscopy, the fluorescence spectroscopy would be a convenient and powerful method for the determination of the chirality distribution of SWNT sample [3]. The SWNT sample dispersed in aqueous SDS solution was sonicated in a cup-horn sonicator and centrifuged at 20,000 g for 24 hours so that each SWNT was isolated. The fluorescence spectra with variable excitation wavelengths were recorded to compose a 3-D map of emission intensity as functions of both excitation and emission wavelengths [3]. From 3-D maps, diameter and chiral angle distributions of SWNT samples with various generation conditions were compared.

References: [1] S. Maruyama et al., Chem. Phys. Lett., 360 (2002), 229. [2] Y. Murakami et al., Chem. Phys. Lett. in press. [3] S. M. Bachilo et al., Science, 298 (2002), 2361.