

High Purity and Low-Temperature Generation of Single-Walled Carbon Nanotubes by a Catalytic CVD Method

Shigeo Maruyama, Yuhei Miyauchi and Shohei Chiashi
Dept. of Mech. Eng., The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo
113-8656, Japan

By using a new carbon source molecule, a simple catalytic chemical vapor deposition technique to generate high-purity single walled carbon nanotubes (SWNTs) is demonstrated. Pure SWNTs without amorphous carbon coating, multi-walled carbon nanotubes, carbon nanoparticles or metal particles were generated at relatively low temperature as 700-900 ^oC with Fe/Co catalyst supported with zeolite. With decrease in temperature, thinner nanotubes were generated. The generation of SWNTs even at 550 ^oC is demonstrated. The high-purity generation at low temperature promises the direct growth of SWNTs on conventional semiconductor devices already patterned with aluminum.