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Effects of N_2 gas on the structure of carbon nanotubes

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Vertically aligned carbon nanotubes(CNTs) on the Ni coated Si(100) were synthesized by hot filament plasma enhanced chemical vapor deposition at 600~650℃ with gas mixture of C2H2 and NH3 of ratio 3:8, respectively. The size of grown multiwall carbon nanotubes is 70~100㎚ in diameter and 2㎛ in length using scanning electron microscopy (SEM) and transmission electron microscopy(TEM). According to report by Han, et al., when N2 was used instead of NH3, CNTs were not formed.(1) But, we obtained long and well-aligned CNTs for the synthesis with the mixture of N2 gas. For more detailed discussion, we investigated the structural and chemical properties using Raman spectroscopy and X-ray photoelectron spectroscopy(XPS).

[References]
1. Jae-Hee Han, et al., Thin Solid Film 409, 120 (2002)

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