

## Synthesis of Peapods Directly on Substrates

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C<sub>60</sub> and Gd@C<sub>82</sub> peapods have been synthesized directly on substrates. First, high-quality and high-density SWNTs were synthesized on a quartz substrate by dip-coating of catalysts and alcohol CCVD. The cap of SWNTs was opened by annealing in dry air at 430~500 degree C for 30 min. Here, Raman scattering spectroscopy was performed to investigate damages introduced by the cap-opening process. Finally, fullerenes were doped into the SWNTs by annealing the substrate in fullerene vapor at 450~500 degree C for 2 days. By TEM observation, we have confirmed the encapsulation of fullerenes in the samples cap-opened above 450 degree C. We have also successfully fabricated FETs with Gd@C<sub>82</sub>-peapod channel synthesized directly on a SiO<sub>2</sub>/Si substrate by using the present method.

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