

Growth and control of vertically aligned SWNTs

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Previous investigations [1,2] into the growth of vertically aligned single-walled carbon nanotube (VA-SWNT) films from alcohol have shown that the maximum achievable film thickness is largely determined by the initial catalyst activity, which is sensitive to the conditions at which VA-SWNT synthesis occurs. In this study, we have investigated the role of the ambient growth pressure, and report a significant enhancement of VA-SWNT growth by a slight increase in growth pressure. Using an *in situ* optical absorbance technique [1] to monitor the film growth, high-quality VA-SWNT films from 1 to 30 μm thick can be produced with accurate control over the final film thickness. Combining this thickness control with the hot-water assisted film-removal and re-attachment technique developed by our group [3] represents an important step in the controlled production of VA-SWNTs for various applications.

References:

- [1] S. Maruyama, E. Einarsson, Y. Murakami, T. Edamura, Chem. Phys. Lett. 403 (2005) 320.
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