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Profiling the growth process of vertically aligned SWNTs by in situ optical absorption measurements

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An *in situ* optical absorbance measurement method was developed to study the growth process of vertically aligned single-walled carbon nanotube films produced from alcohol. The thickness of the film during growth was determined using the relationship between the absorbance of the film and its thickness [1]. A model describing the growth is presented, which depends only on the initial growth rate and the catalyst lifetime [2]. The calculated absorbance is compared to absorbance data under various growth conditions. A reduction in film thickness due to burning of the SWNTs is evidenced, but found to be insignificant when the rate at which air leaks into the growth chamber is minimized. The potential to use *in situ* techniques for monitoring growth conditions is also investigated.

References:

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

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