# High-Precision Selective Deposition of Catalyst for Facile Localized Growth of Single Walled Carbon Nanotubes

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In the liquid-based dip-coating, hydrophilicity of Si/SiO2 substrate is found to be critical for the successful deposition of catalyst and hence the growth of single-walled carbon nanotubes (SWNTs). When the surface is functionalized by self-assembly monolayer (SAM) and becomes hydrophobic, no catalyst remains and no SWNT grows. This concept can be utilized to localize the growth of SWNTs at designed regions where SAM were selectively removed by, e.g. UV or electron beam. The advantage of the proposed technique comparing to conventional M/NEMS technique (e.g. lift-offf) is as followings. Firstly, the resolution can be expected to be very high, and a SWNT pattern with the line-wide of 50 nm can be easily obtained. Secondly, the ability of damaging SAM by electron beam in an SEM makes the localization process visible, which facilitates the fabrication of devices basing on as-grown high-quality SWNTs. Examples will be demonstrated.[1]

**References**
[1] R. Xiang, T. Wu, E. Einarsson, Y. Suzuki, Y. Murakami, J. Shiomi, S. Maruyama, High-Precision Selective Deposition of Catalyst for Facile Localized Growth of Single Walled Carbon Nanotubes, submitted.

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