

SWNTs的包裹观察I

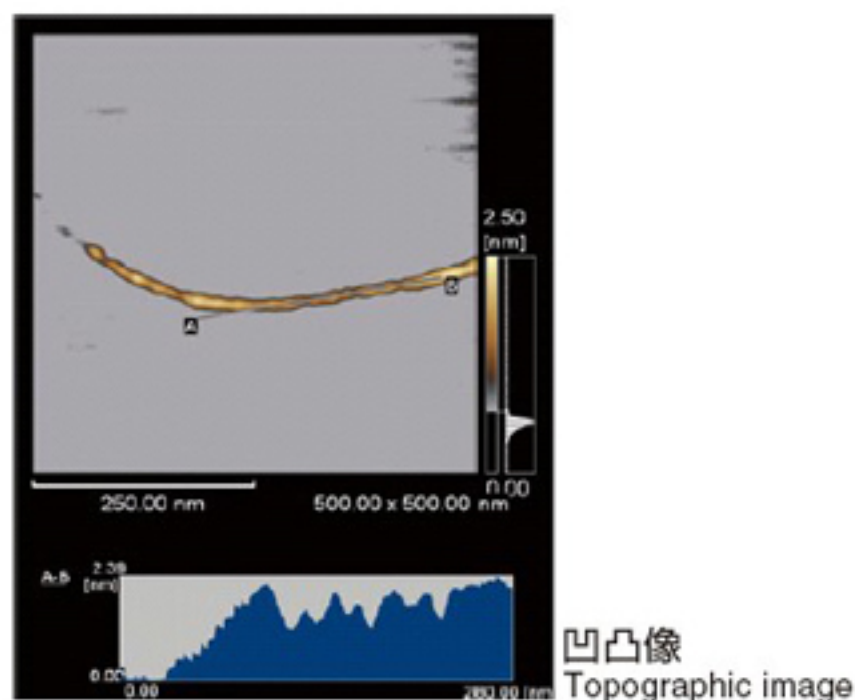
Observation of SWNTs Composite

dsDNA包裹

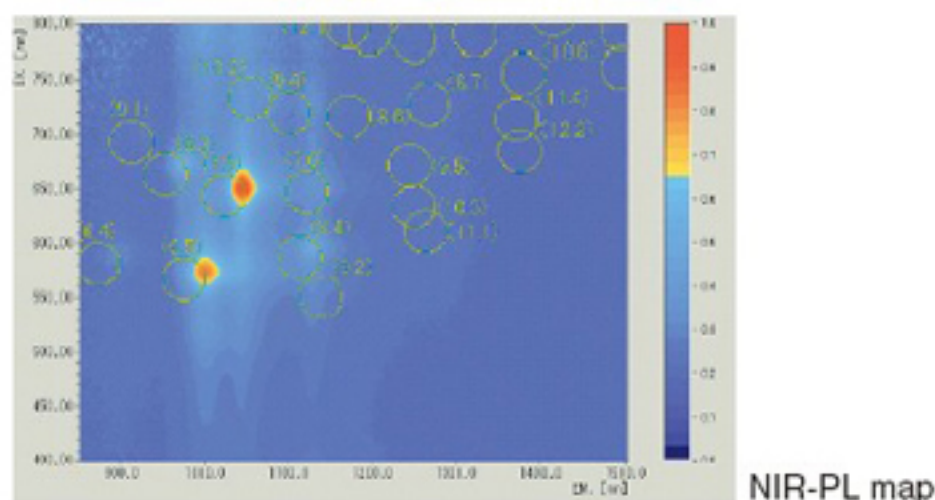
将SWNTs /dsDNA 溶解后的样品滴在云母上进行观察，可以得到如下AFM图像。

由图像可知，DNA缠绕在SWNTs上。解析结果显示管的高度为1.4~2.4nm，而使用的SWNTs的直径为0.7~1nm，已知dsDNA的大小约为1.5nm，因此可推知有孤立分散存在的SWNTs。

综上，认为DNA与碳纳米管的沟间弱相互作用有利于解离。在CoMoCAT和TE(Tris-EDTA)缓冲液中(6,5)及(7,5)的手性指标非常多，在TE缓冲液中的PL成图中可以同时观察到(6,5)及(7,5)的手性指标。



凹凸像
Topographic image



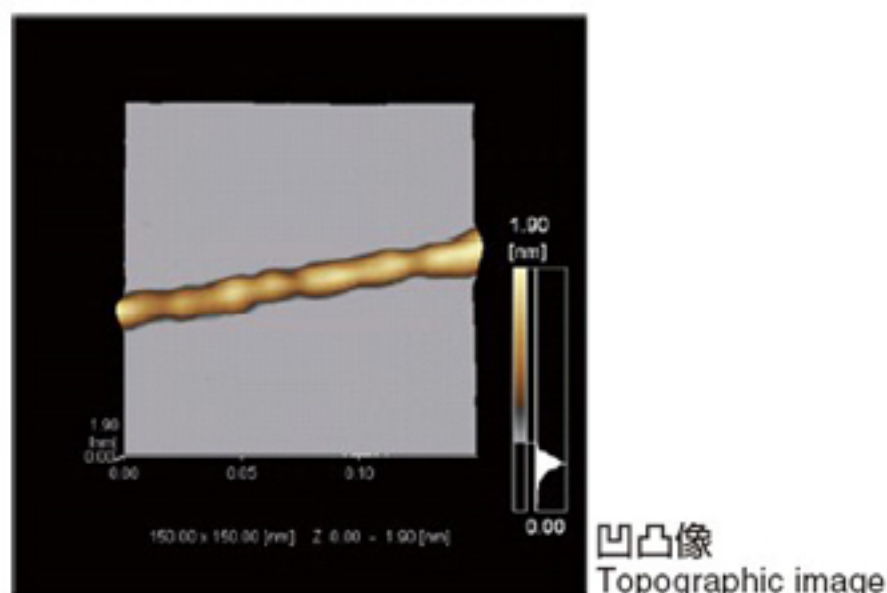
NIR-PL map

Ref.
Regulation of the Near-IR Spectral Properties of Individually Dissolved Single-Walled Carbon Nanotubes in Aqueous Solutions of dsDNA

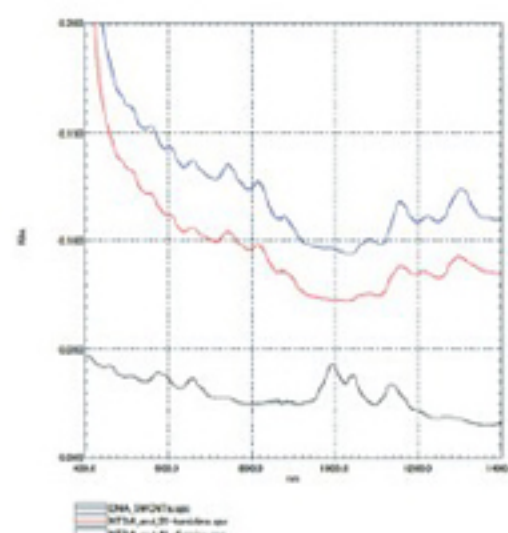
Chemistry - A European Journal Volume 14, Issue 19, Date: June 27, 2008, Pages: 5966-5973
Yuichi Noguchi, Tsuyohiko Fujigaya, Yasuro Niidome, Naotoshi Nakashima

dsDNA-wrapped SWNTs

These figures show fine structures of an aqueous solution of SWNTs/dsDNA using an atomic force microscope (AFM). The magnification images shown in figures strongly suggest that the SWNTs are wrapped by the DNA. As shown in the figure, the height of the tubes was found to range 1.4-2.4 nm, indicating the existence of individually dissolved SWNTs in the solution since the diameter of the used SWNTs is ~0.7-1 nm and the thickness of the dsDNA is ~1.5 nm. The weak interaction of the major (and/or minor) grooves of the DNA and the nanotubes might contribute to the dissolution. It is known that (6,5) and (7,5) chirality indices are rich in CoMoCAT and in a Tris-EDTA (TE) buffer, and we see both (6,5) and (7,5) chirality indices in the PL-mapping in the TE buffer.



凹凸像
Topographic image



VIS-NIR absorption

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