

Super-“Amphiphobic” Aligned Carbon Nanotube Films

Huanjun Li, Xianbao Wang, Yanlin Song, Yunqi Liu, Qianshu Li, Lei Jiang, Daoben Zhu

1 XPS survey spectra of ACNT film was shown in Figure 1 before treatment. XPS results show that the ACNT film mainly consists of carbon accompanied by traces of nitrogen, oxygen and iron. Nitrogen and iron are generated during metal phthalocyanines decomposition (S. M. Huang, L. M. Dai, A. W. H. Mau, *J. Phys. Chem. B* **1999**, *103*, 4223.), while oxygen is considered to probably originate from the top-end of CNTs oxidized by air. (H. Ago, T. Kugler, F. Cacialli, W. R. Salaneck, M. S. P. Shaffer, A. H. Windle, R. H. Friend, *J. Phys. Chem. B* **1999**, *103*, 8116.)

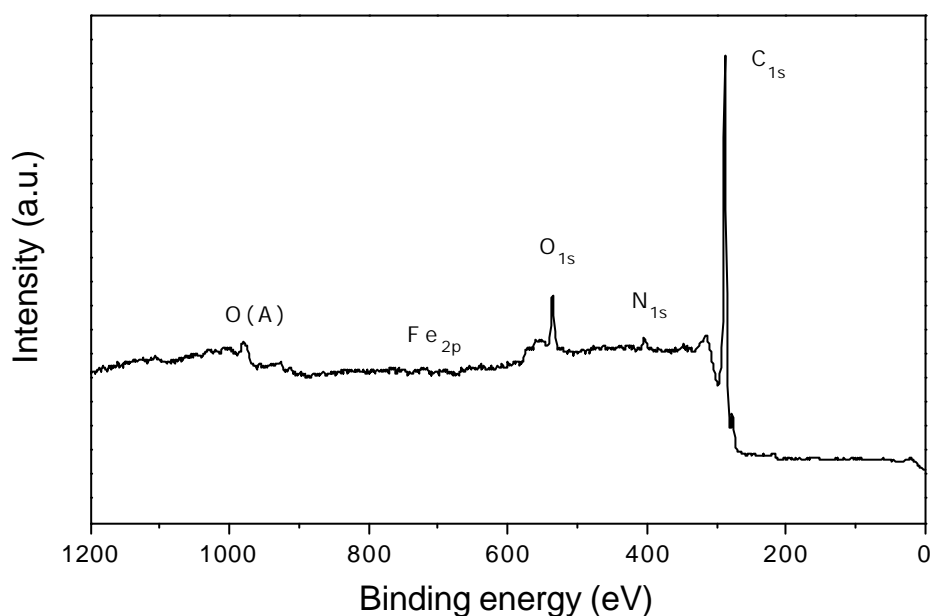


Figure 1

2 SEM image in Figure 2a shows aligned carbon nanotubes were dispersed and lain flat on the substrate surface. An average contact angle for water of this film is $136.5 \pm 7^\circ$. The shape of water droplet was shown in Figure 2b.

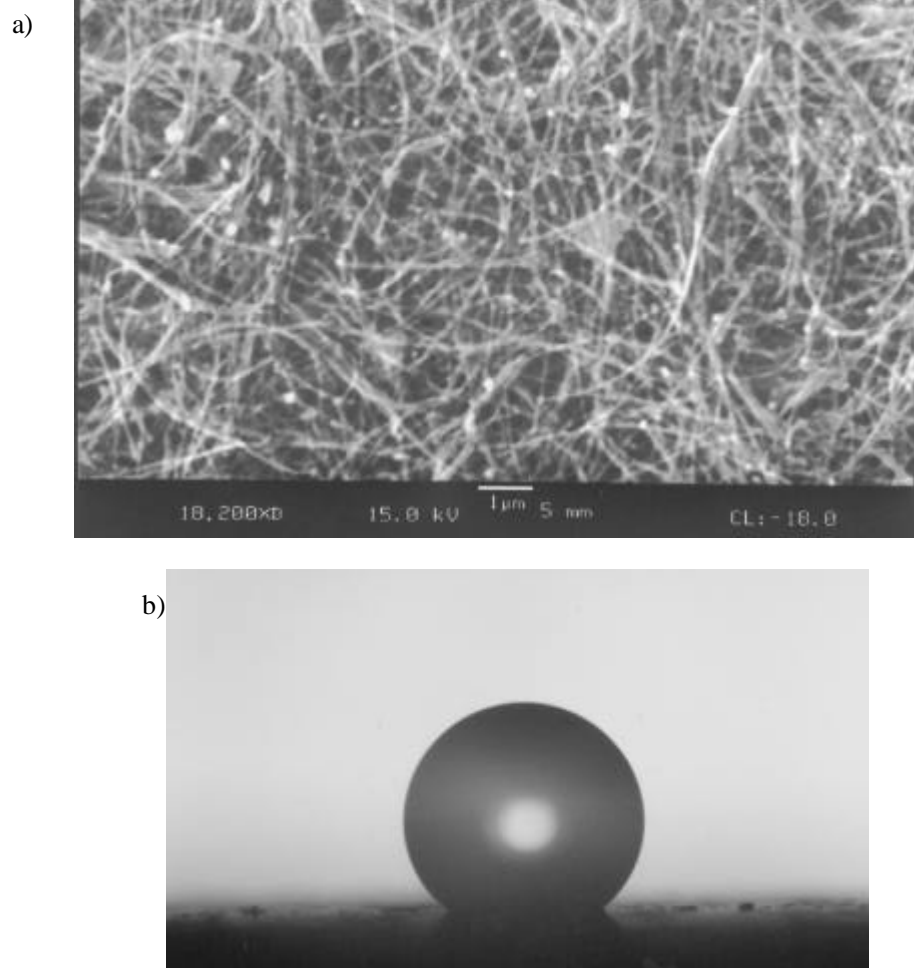


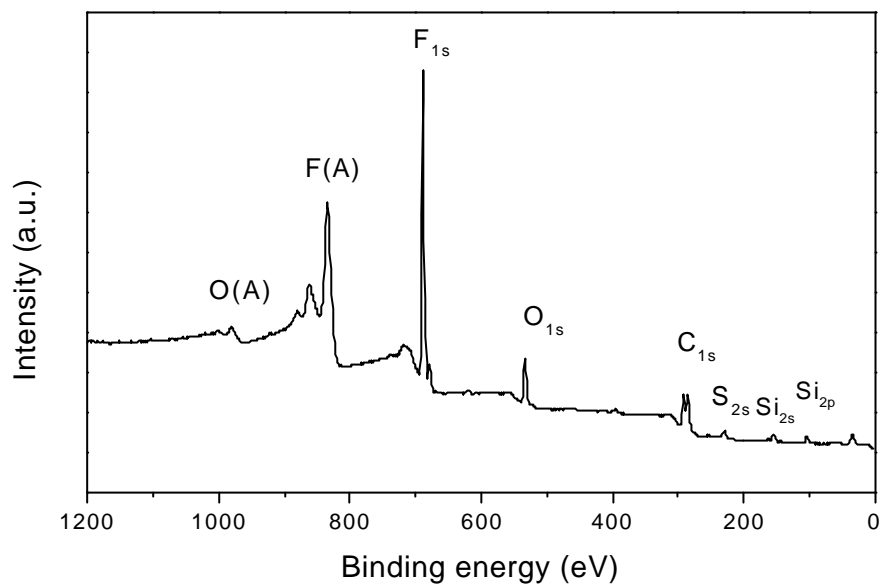
Figure 2

3 After oxidation, the contact angle for water of the ACNT film is $128 \pm 3^\circ$. The shape of water droplet was shown in Figure 3.



Figure 3

4 XPS survey spectra of the ACNT film was shown in Figure 4 after oxidation treatment and fluorinated modification.



Figure