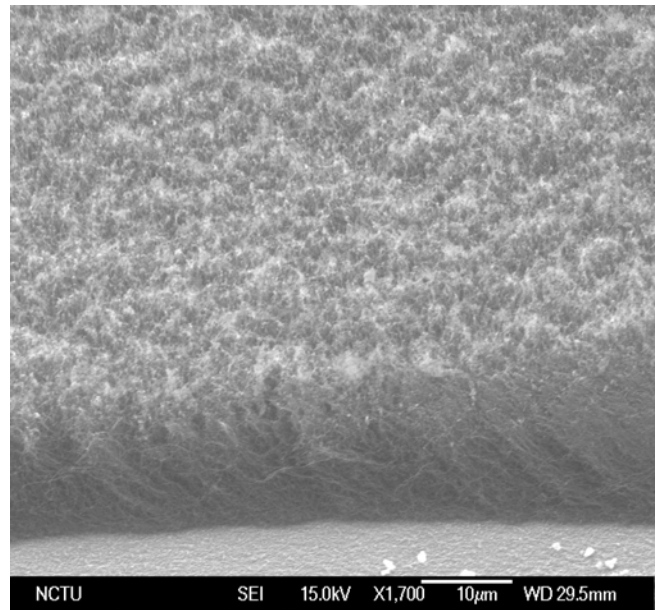
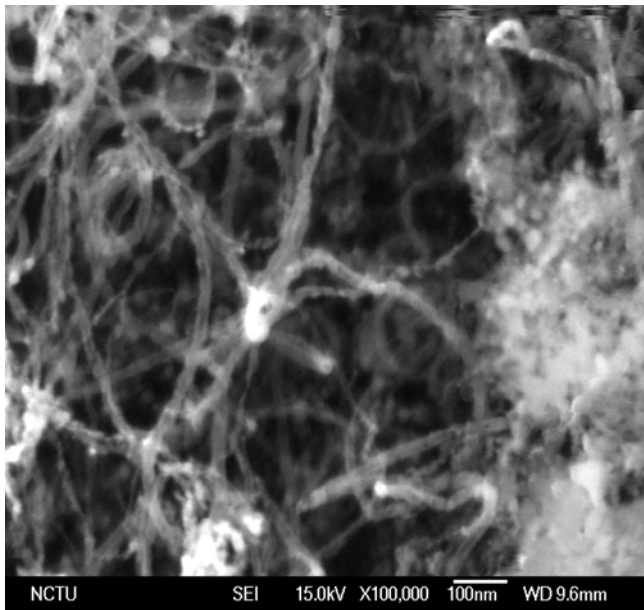


(a)

(b)

Figs. 4-14 Morphologies of as-grown CNTs after H-plasma post treated

(a) top view (b) inclined view

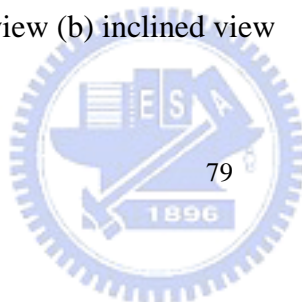


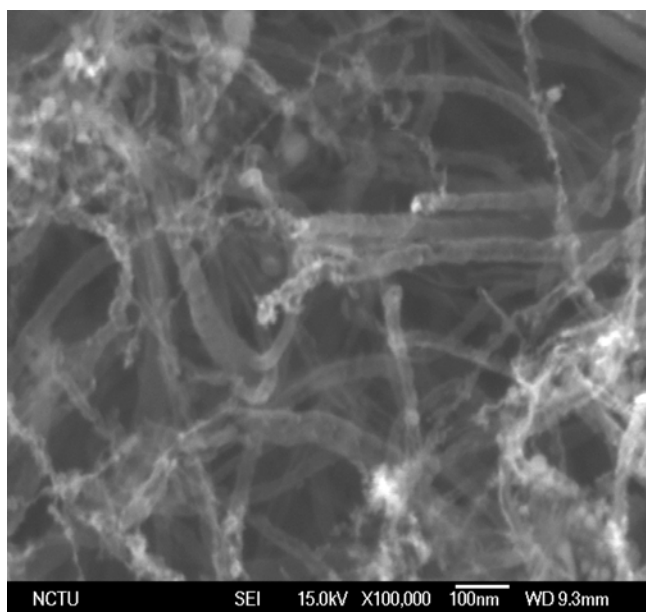
(a)

(b)

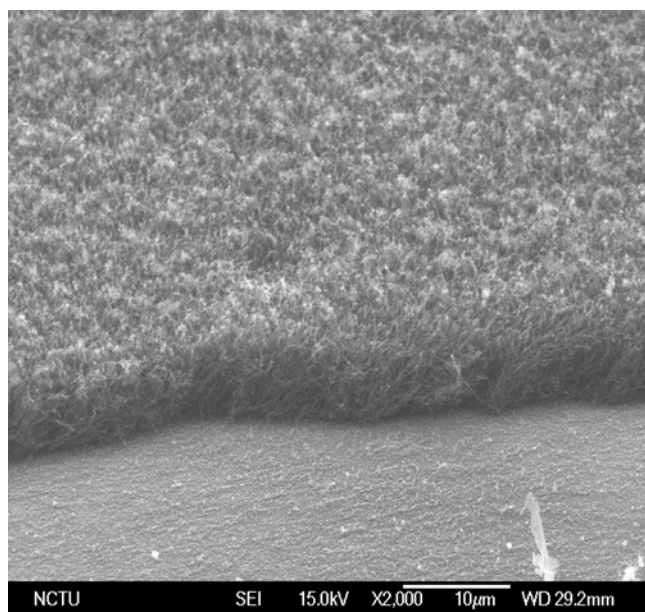
Figs. 4-15 Morphologies of as-grown CNTs after N-plasma post treated

(a) top view (b) inclined view



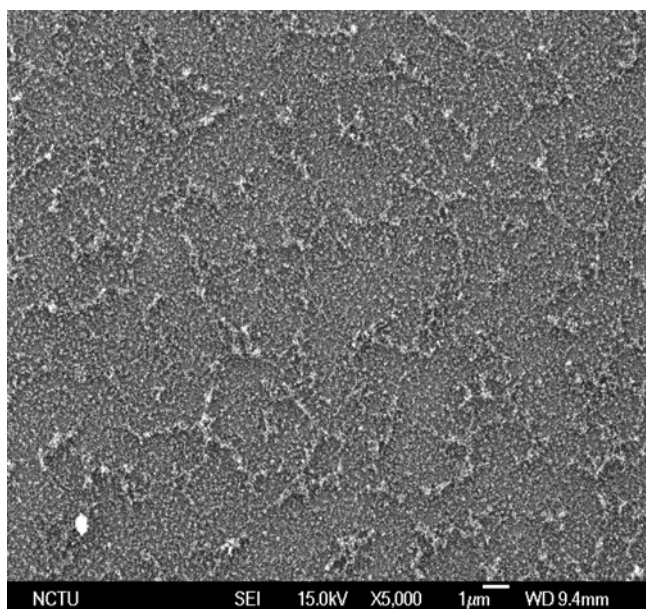


(a)

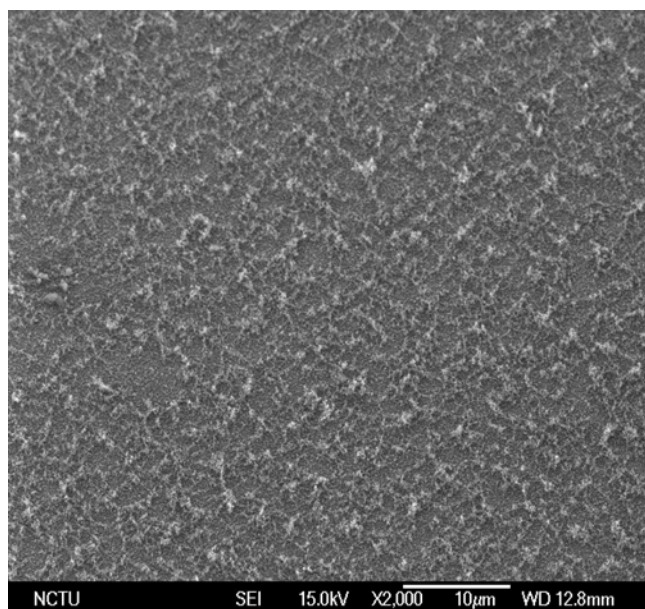


(b)

Figs. 4-16 Morphologies of as-grown CNTs after Ar-plasma post treated
(a) top view (b) inclined view



(a)



(b)

Figs. 4-17 Morphologies of as-grown CNTs after ammonia-plasma post treated
(a) top view (b) inclined view

Table 4-5 I_G/I_D ratios of as-grown and H-plasma and N-plasma post treated CNTs

Conditions	Species of plasma	I_G/I_D ratio
A5	(as-grown)	0.98
OT1	H-plasma	0.82
OT2	N-plasma	0.86

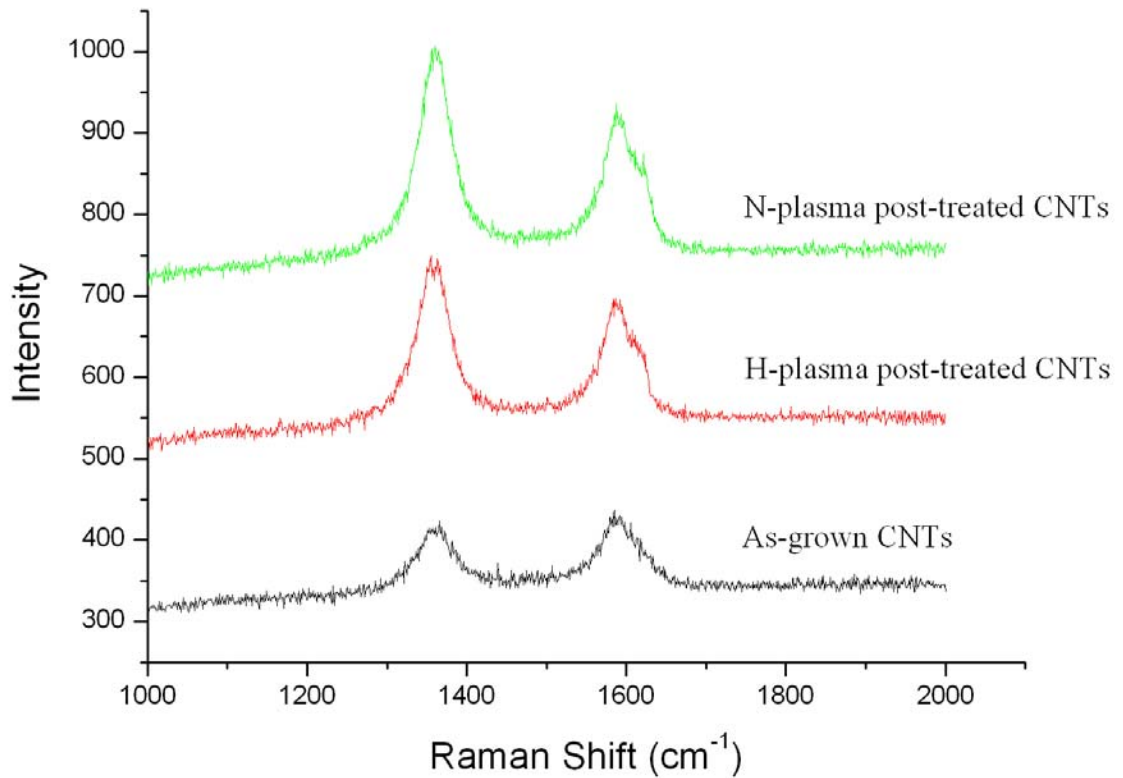


Fig.4-18 Raman spectra of as-grown and H-plasma and N-plasma post treated CNTs



Table 4-6 I_G/I_D ratios of as-grown and Ar-plasma and ammonia-plasma post treated CNTs

Conditions	Species of plasma	I_G/I_D ratio
A5	(as-grown)	0.98
OT3	Ar-plasma	0.76
OT4	NH-plasma	No peak observed

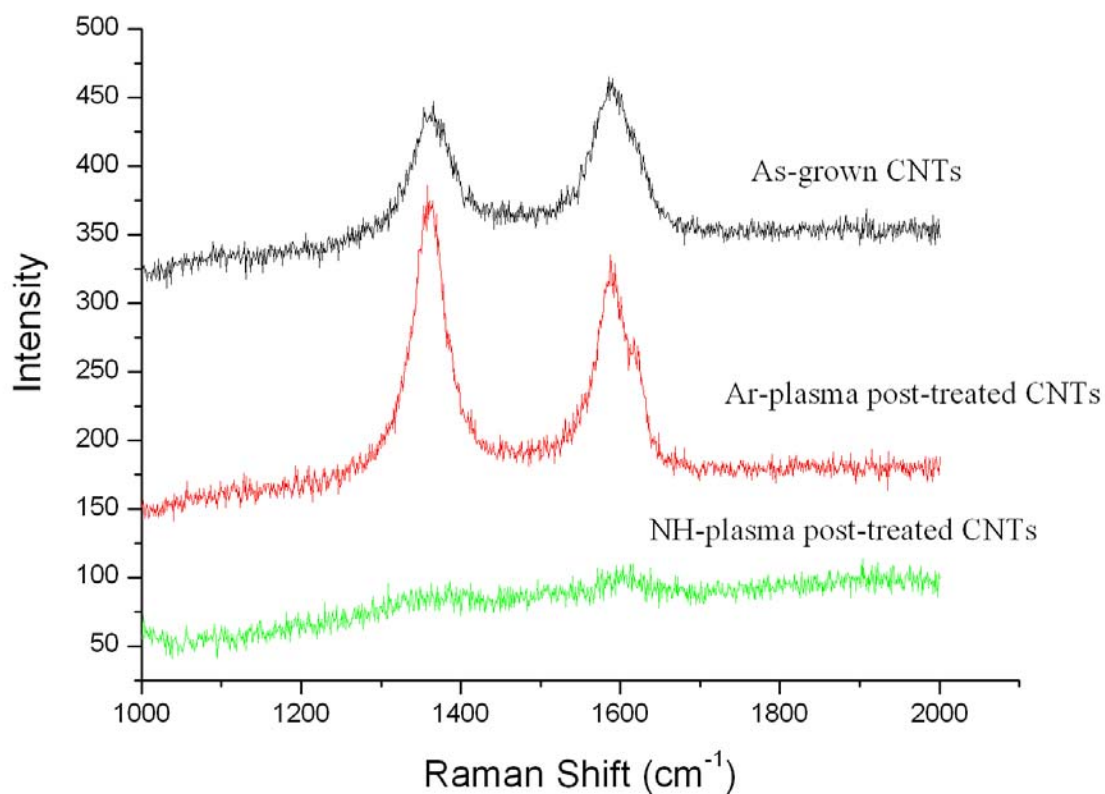
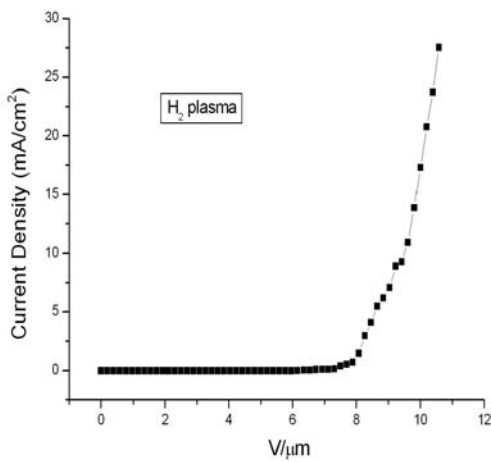


Fig.4-19 Raman spectra of as-grown and Ar-plasma and ammonia-plasma post treated CNTs

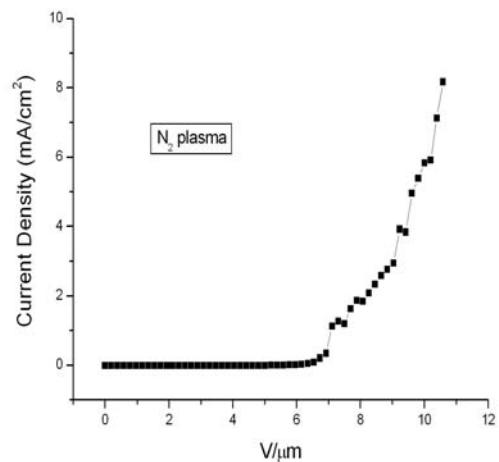


Table 4-7 FE properties of post plasma treated CNTs

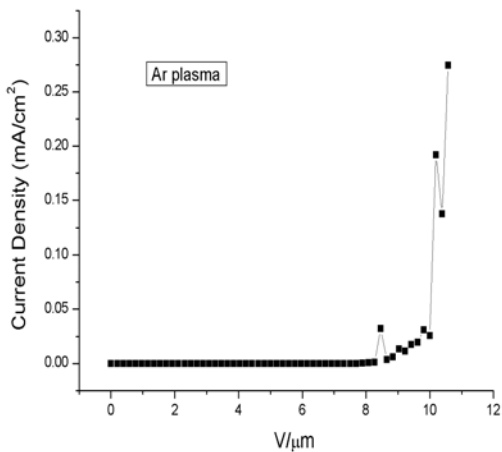
Remark	Conditions	$E_{\text{turn-on}}$ at $10\mu\text{A}/\text{cm}^2$ ($\text{V}/\mu\text{m}$)	$E_{\text{threshold}}$ at $10\text{ mA}/\text{cm}^2$ ($\text{V}/\mu\text{m}$)	Current density at $10\text{ V}/\mu\text{m}$ (mA/cm^2)
(a)	OT1	6.15	9.5	27.5
(b)	OT2	5.76	not reach	8.17
(c)	OT3	9.03	not reach	0.27
(d)	OT4	not reach	not reach	1.2×10^{-5}



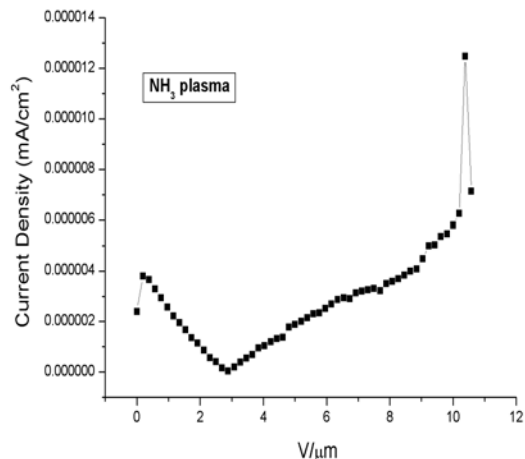
(a)



(b)

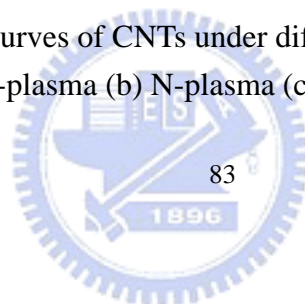


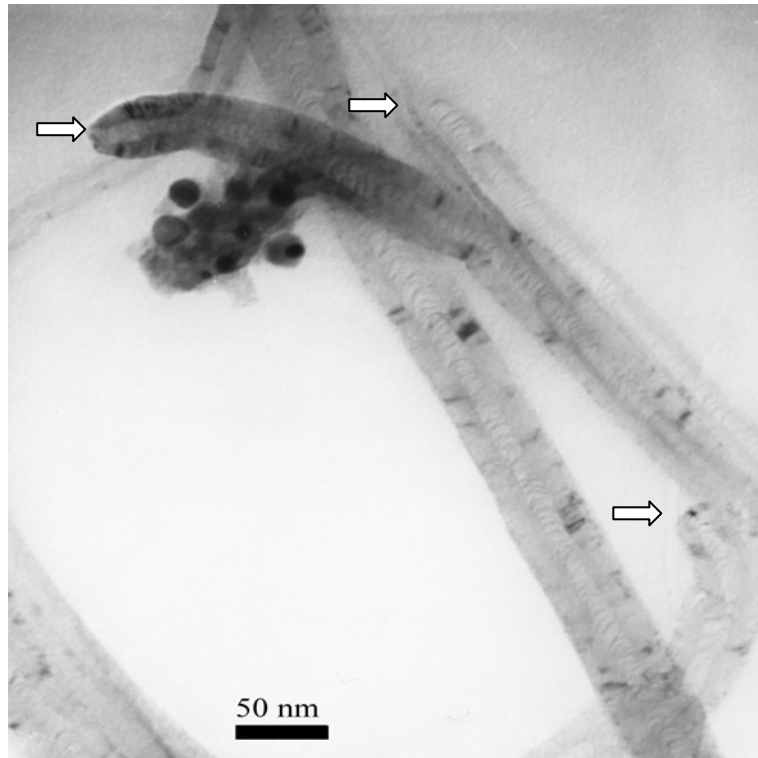
(c)



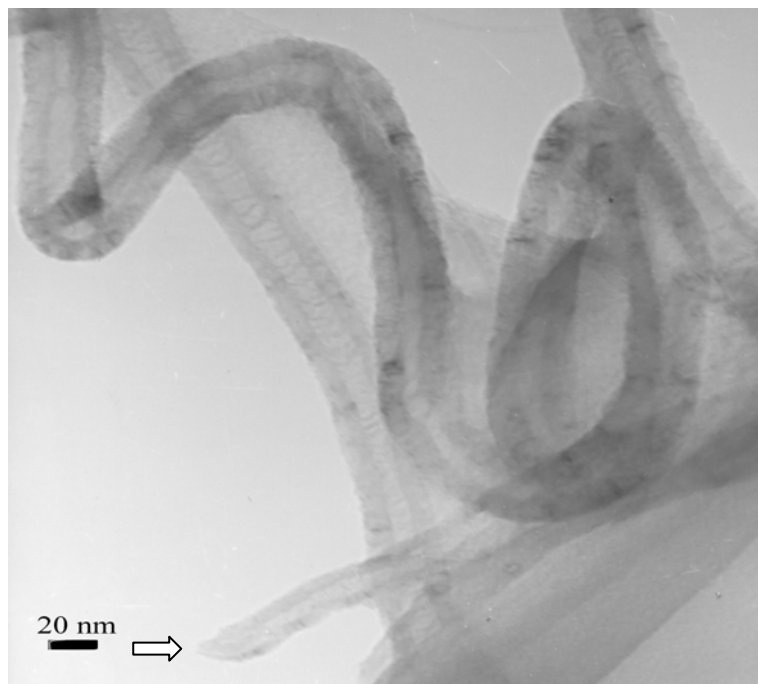
(d)

Figs.4-20 J-E curves of CNTs under different plasma post treated
(a) H-plasma (b) N-plasma (c)Ar-plasma (d) ammonia-plasma



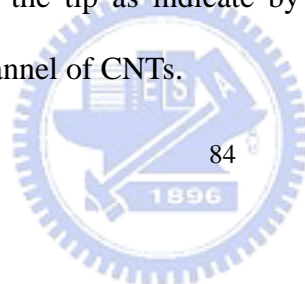


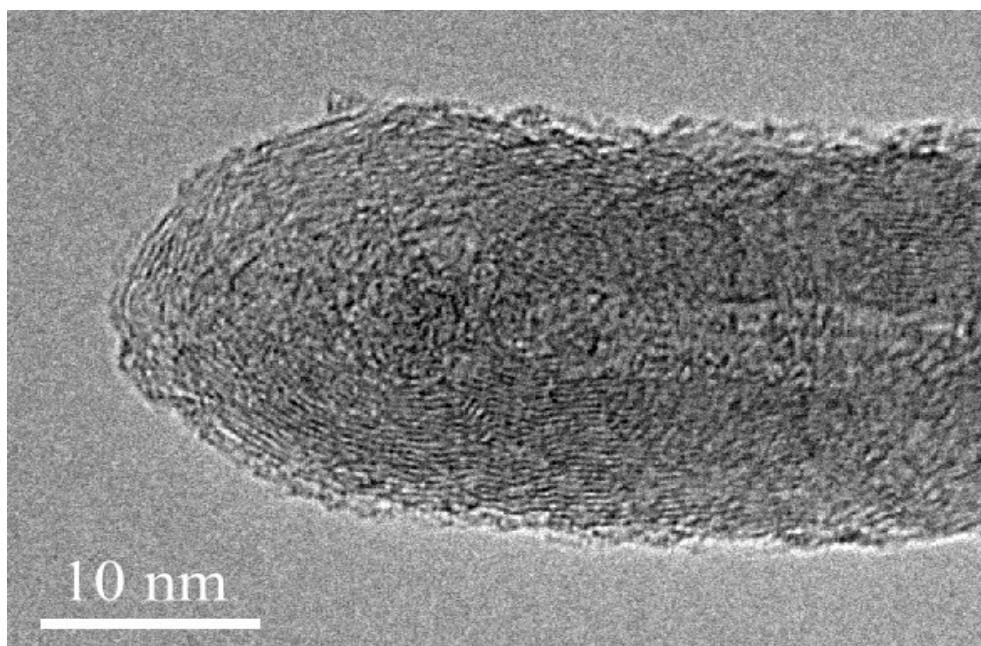
(a)



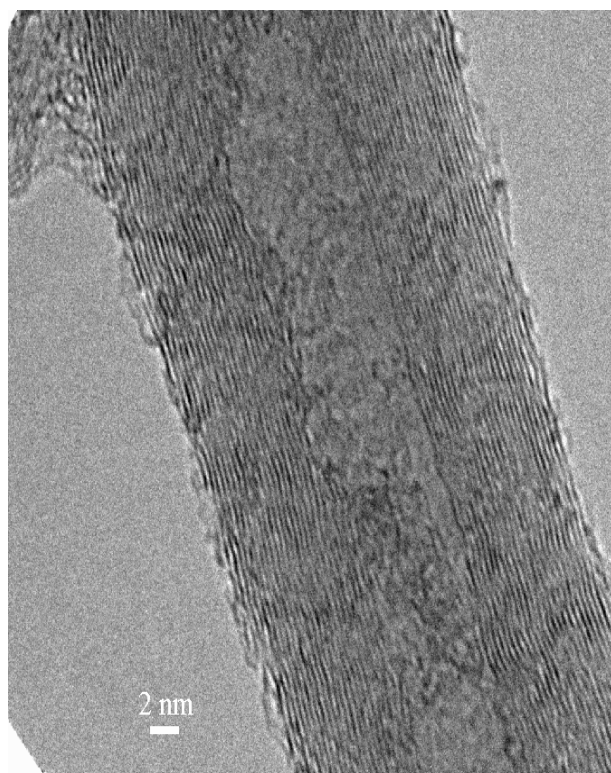
(b)

Figs.4-21(a) and (b) TEM images of as-grown CNTs (Specimen A5). It shows the CNTs have no catalyst encapsulated in the tip as indicate by white arrowhead. The bamboo structure is observed in the inner channel of CNTs.

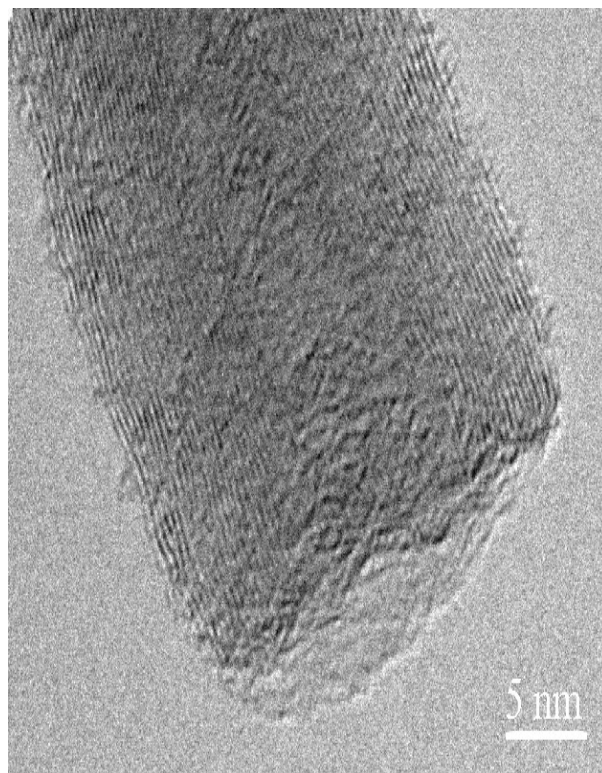




(a)



(b)



(c)

Figs. 4-22 (a), (b), and (c) are the corresponding HRTEM images which show the tip, stem and bottom of individual CNT, respectively.

