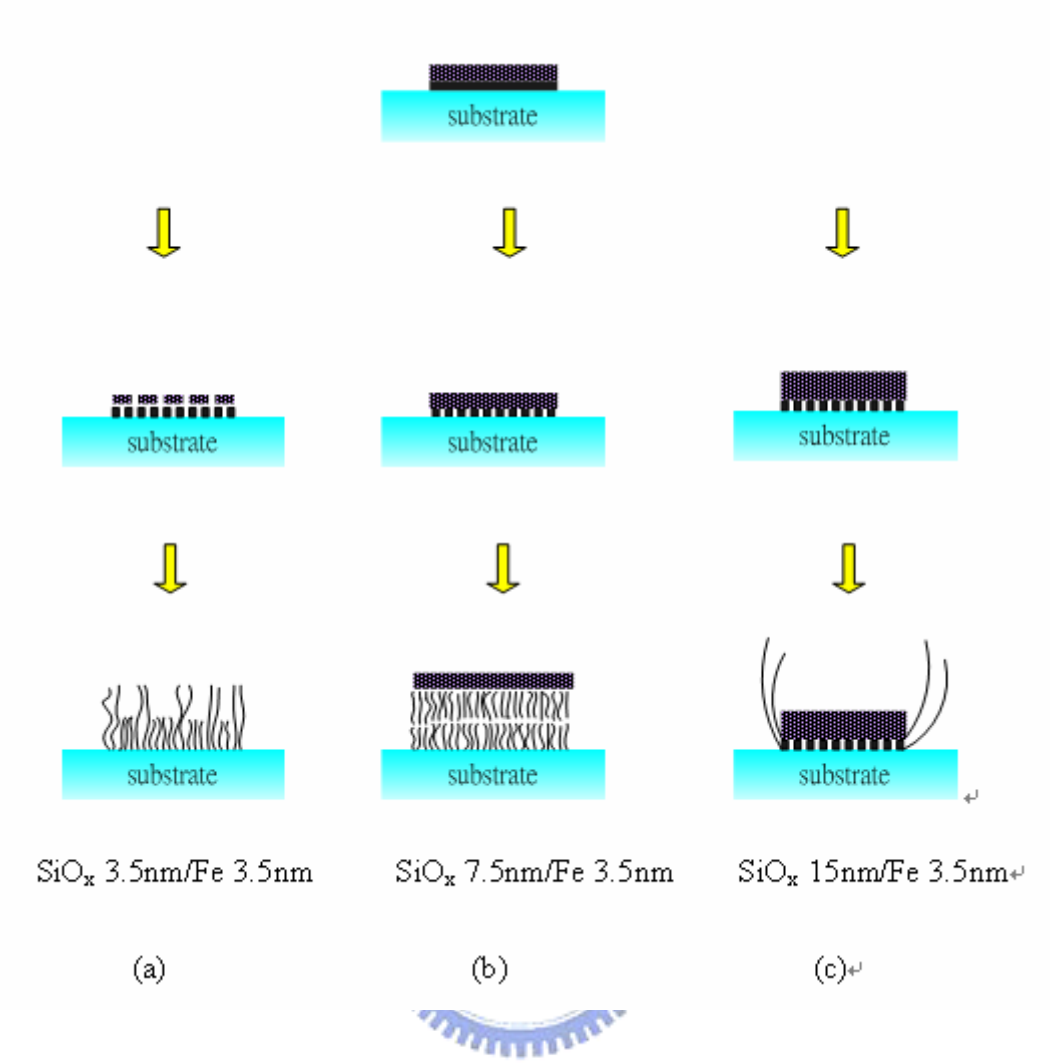
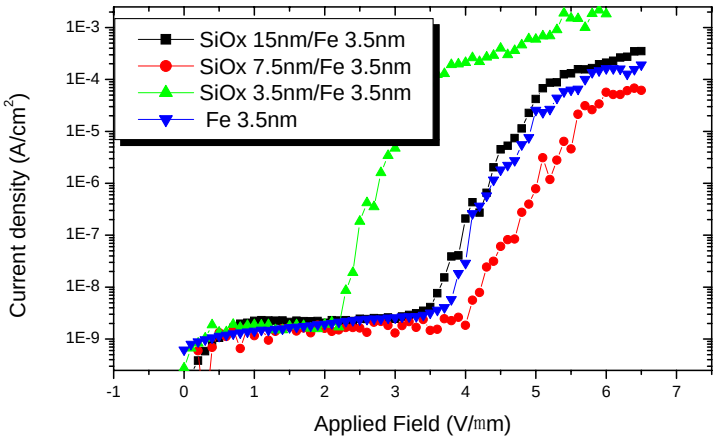
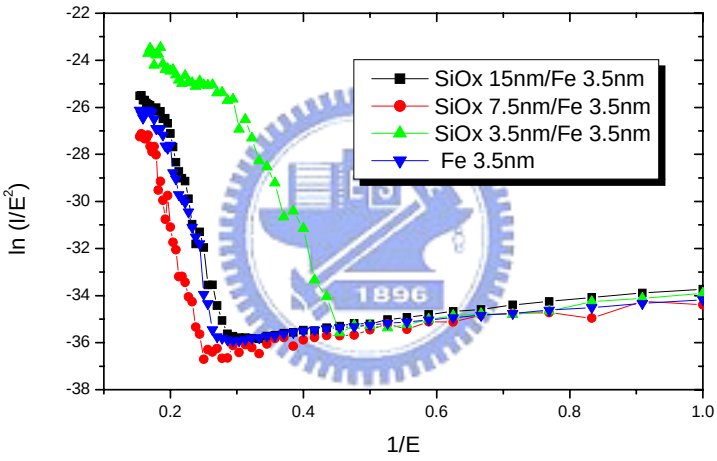


Figure2-8 Growth mechanism of CNTs with SiO_x and Fe as the precursor. (a) SiO_x 3.5nm/Fe 3.5nm, (b) SiO_x 7.5nm/Fe 3.5nm and (c) SiO_x 15nm/Fe 3.5nm



(a)



(b)

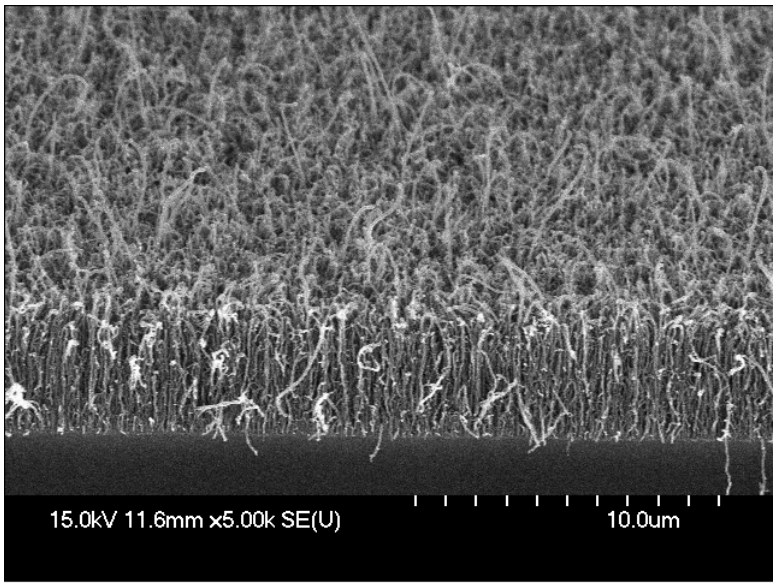
Figure2-9 Field emission properties of CNTs deposited with SiO_x/Fe films as precursors. (a) Field-emission current density vs applied field. (b) Corresponding F-N plot.

Table 2-3 Experimental parameters of CNTs synthesized with SiO on Fe as precursor.

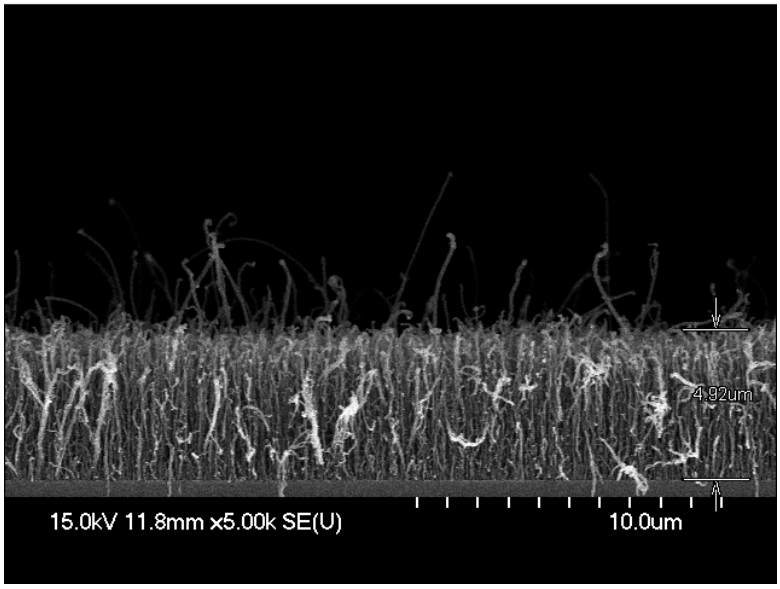
Sample #	A	B	C	D
Fe Thickness (nm)	5	5	5	5
SiO Thickness (nm)	0	1.5	7.0	15
Pretreatment	H_2 100 sccm, N_2 900sccm ,700°C, 10 min			
CNTs growth	H_2 500 sccm, N_2 500sccm ,C_2H_4 20sccm, 700°C, 10 min			

Table 2-4 Summarized field-emission properties of CNTs synthesized with SiO on Fe as precursors.

SiO/Fe (nm)	Turn-on field	Emission current density at 3.5 V/μm	Emission current density at 6 V/μm	Threshold field V_{th}
0/5.0	3.8V/μm	7 x 10^{-8} mA/cm^2	2.85mA/cm^2	----------
1.5/5.0	1.8V/μm	1.77mA/cm^2	6.24mA/cm^2	6.4 V/μm
7.0/5.0	2V/μm	2.1mA/cm^2	14.6mA/cm^2	5.4 V/μm
15/5.0	------	-------	-------	--------

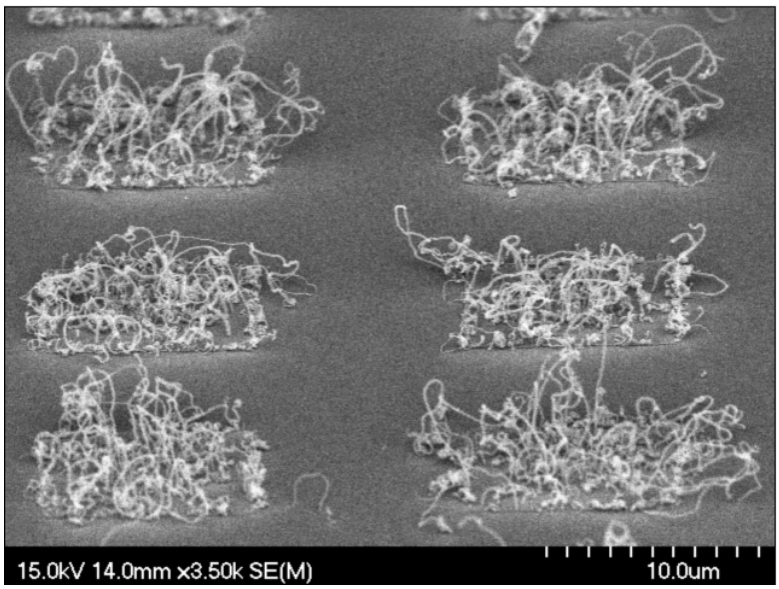


(a)

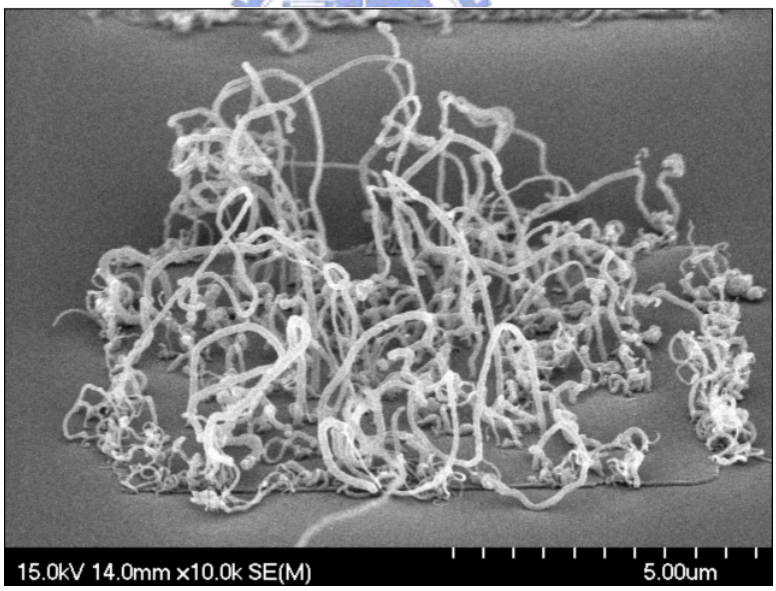


(b)

Figure2-10 SEM images of deposited CNTs with precursor of 5.0nm Fe.(a) 60^{o} top view and (b) cross sectional view.

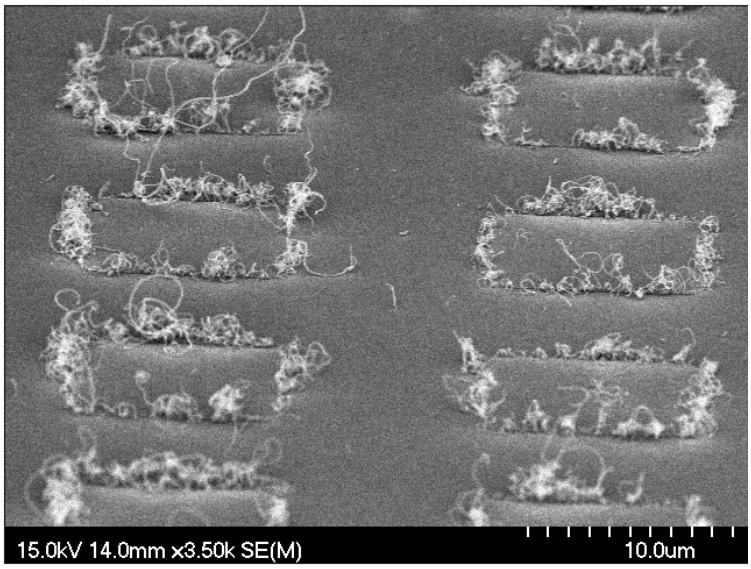


(a)

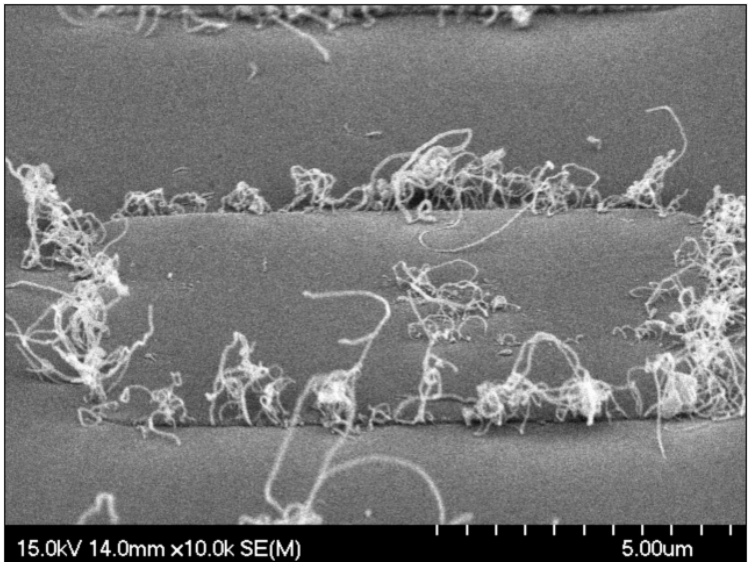


(b)

Figure2-11 (a) and (b) Low magnification view of SEM images of deposited CNTs with precursor of 1.5nm/5.0 nm SiO/Fe.

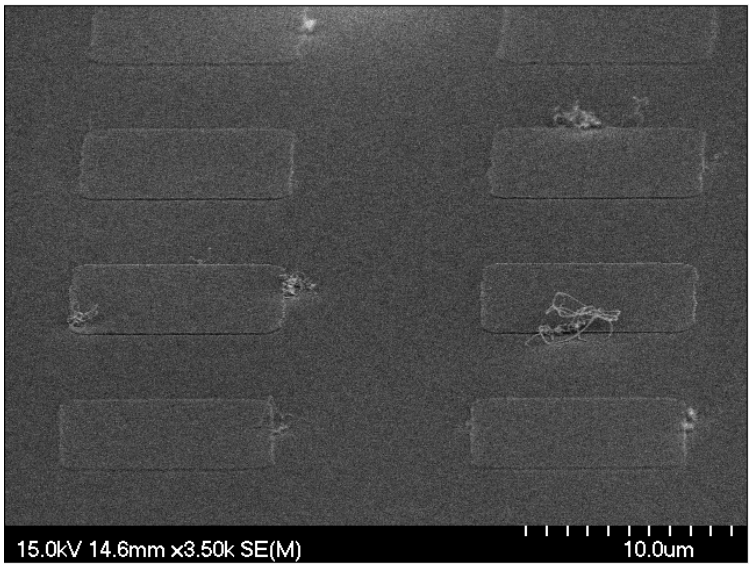


(a)

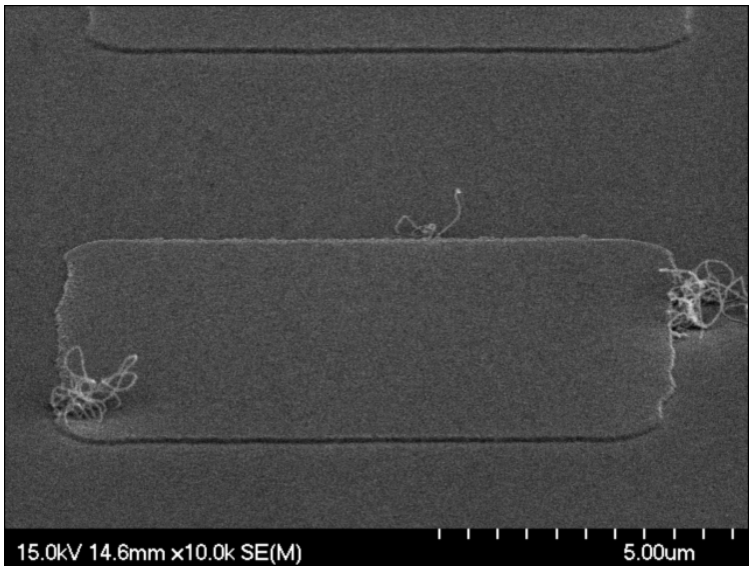


(b)

Figure2-12 (a) and (b) Low magnification view of SEM images of deposited CNTs with precursor of 7.0 nm/3.5 nm SiO/Fe.

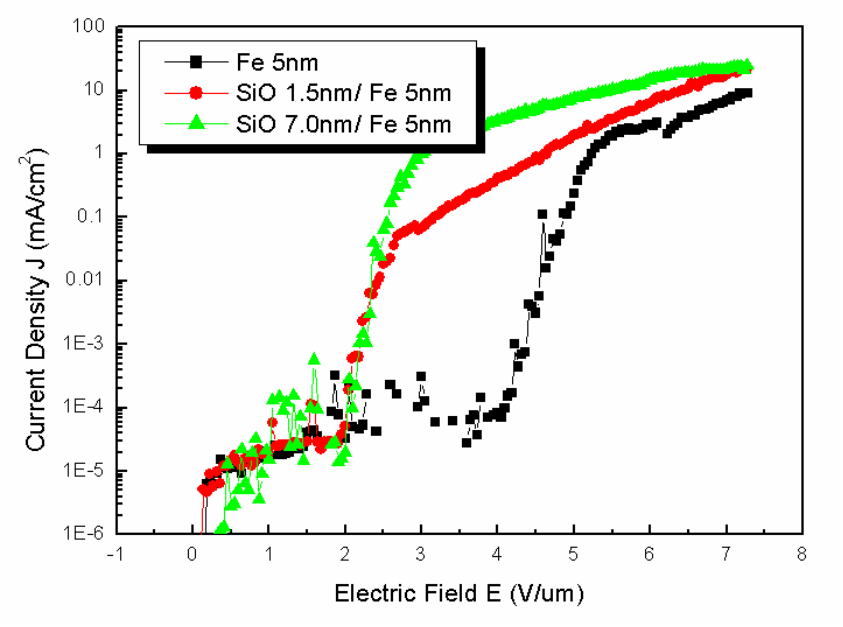


(a)

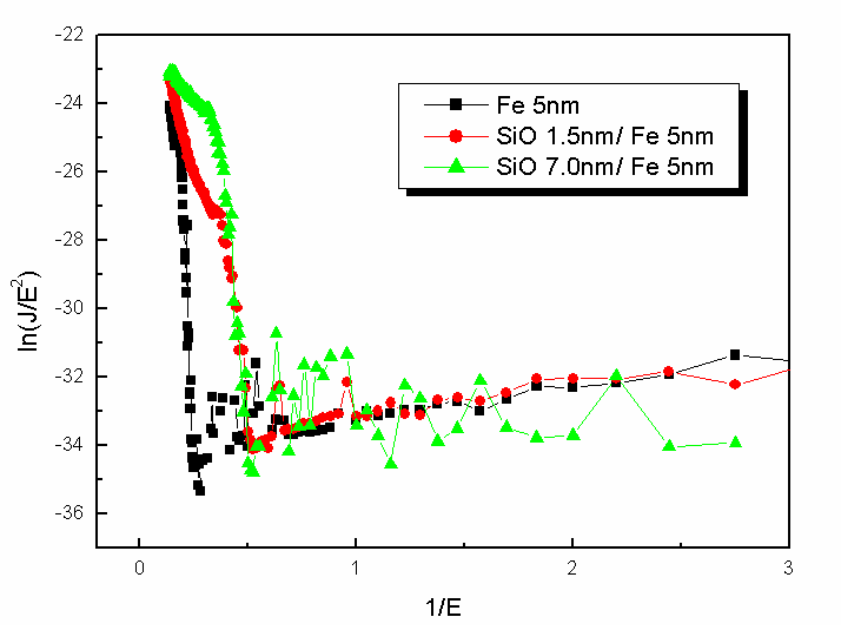


(b)

Figure2-13 (a) and (b) Low magnification view of SEM images of deposited CNTs with precursor of 15 nm/3.5 nm SiO/Fe.



(a)



(b)

Figure2-14 Field emission properties of CNTs deposited with SiO/Fe films as precursors. (a) Field-emission current density vs applied field. (b) Corresponding F-N plot.