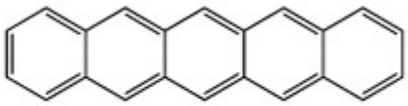
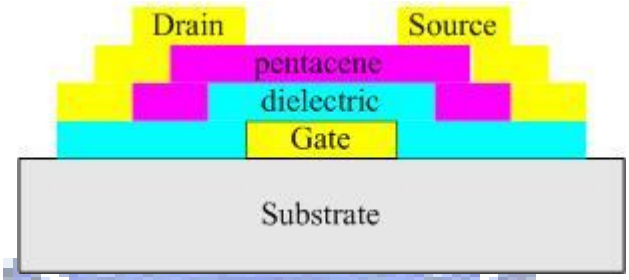


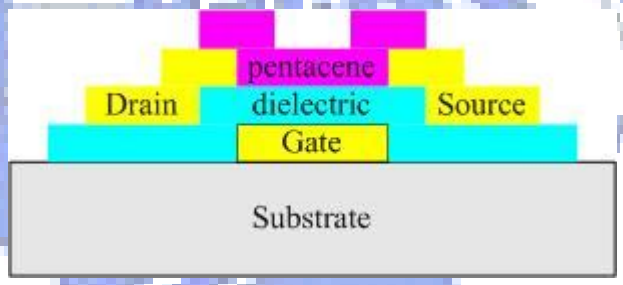
(a)

(b)

Figure 1.1.3 The schematic plots of (a) pentacene molecular and (b) single crystal pentacene.



(a)



(b)

Figure 1.1.4-1 The schematic configurations of (a) top contact and (b) bottom contact pentacene TFTs structure with bottom gate.

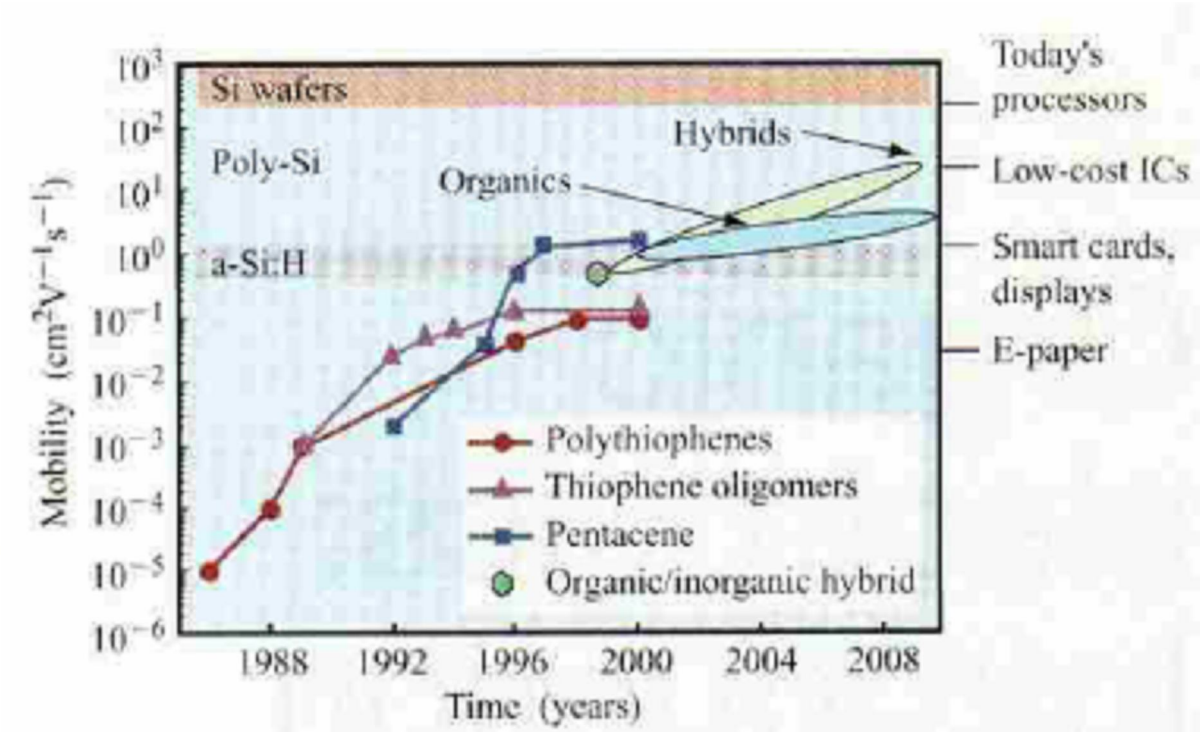
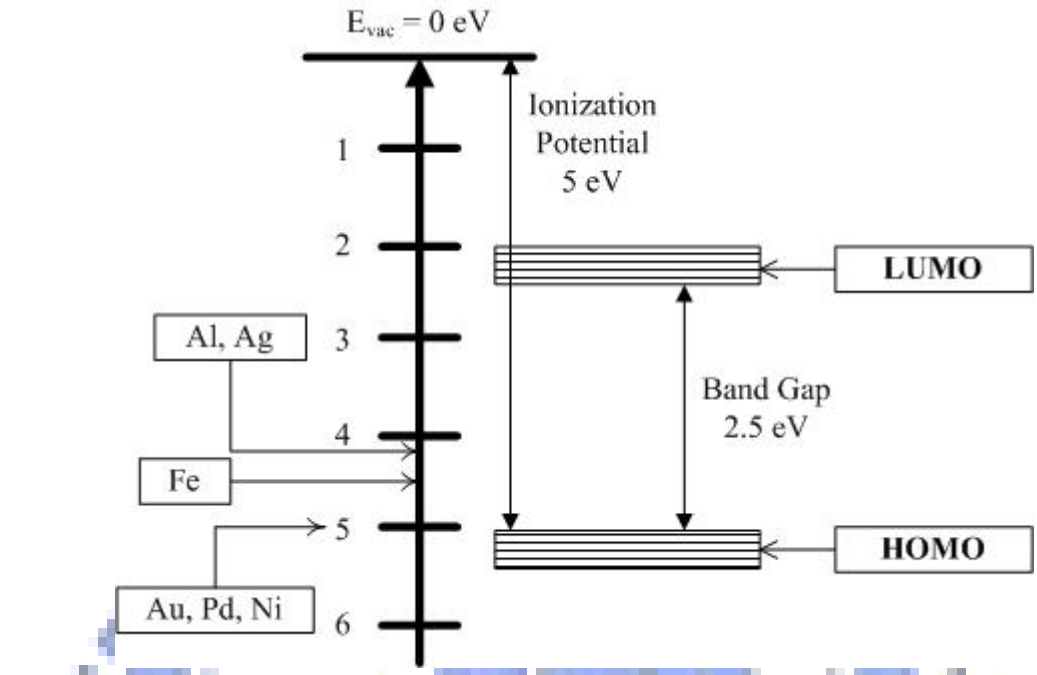
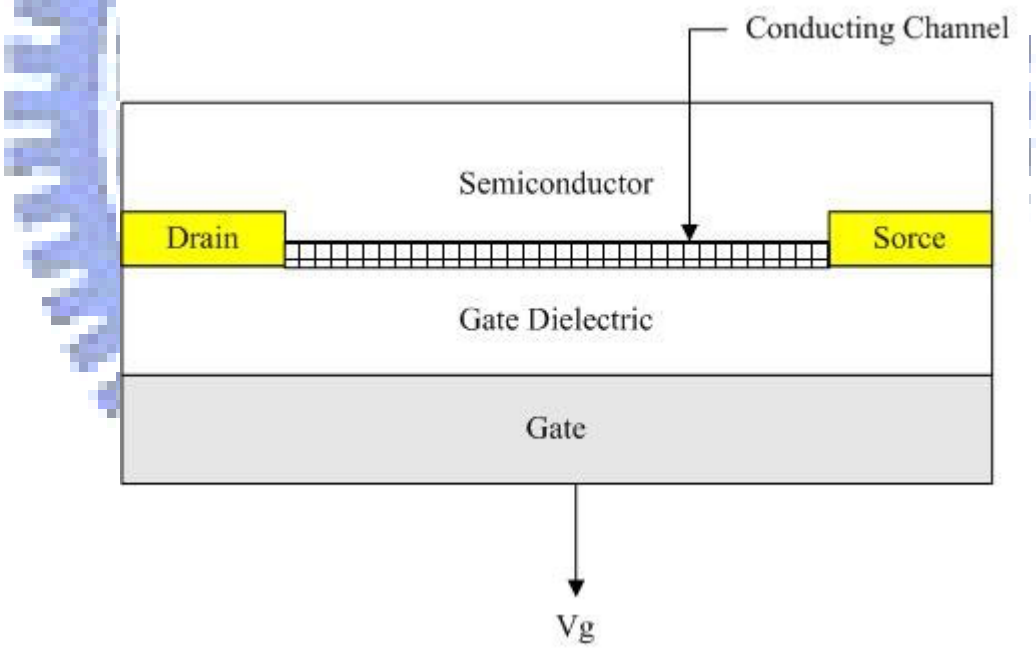


Figure 1.1.4-2 Performance of organic and hybrid semiconductor.**[1.22]**



(a)



(b)

Figure 1.2.1-1 The schematic plots of (a) the Fermi level of electrodes and HOMO-LUMO levels of pentacene and (b) conducting channel form proportional to the gate voltage.

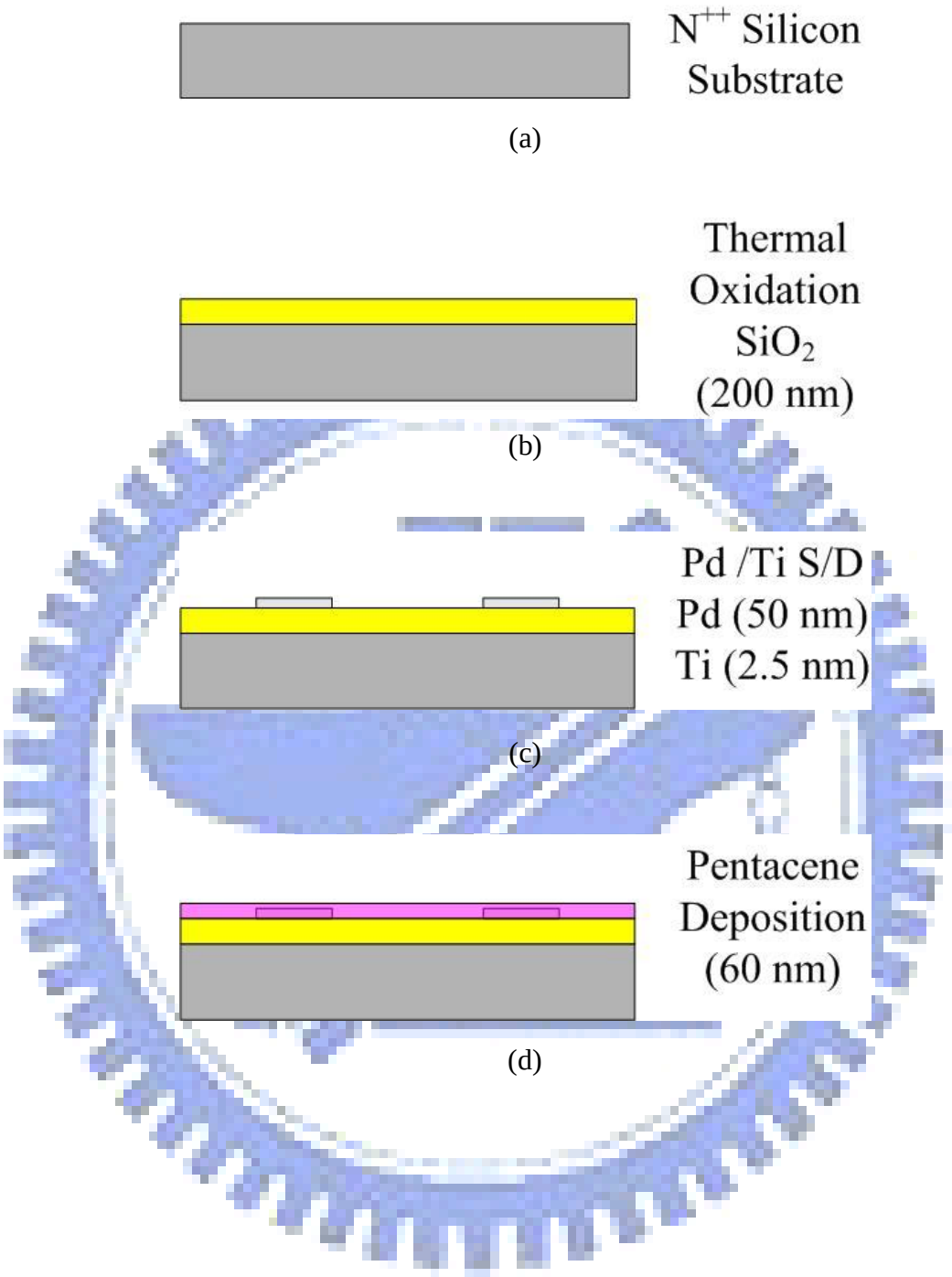


Figure 2.3-1 The Fabrication Procedures of Pentacene TFTs.

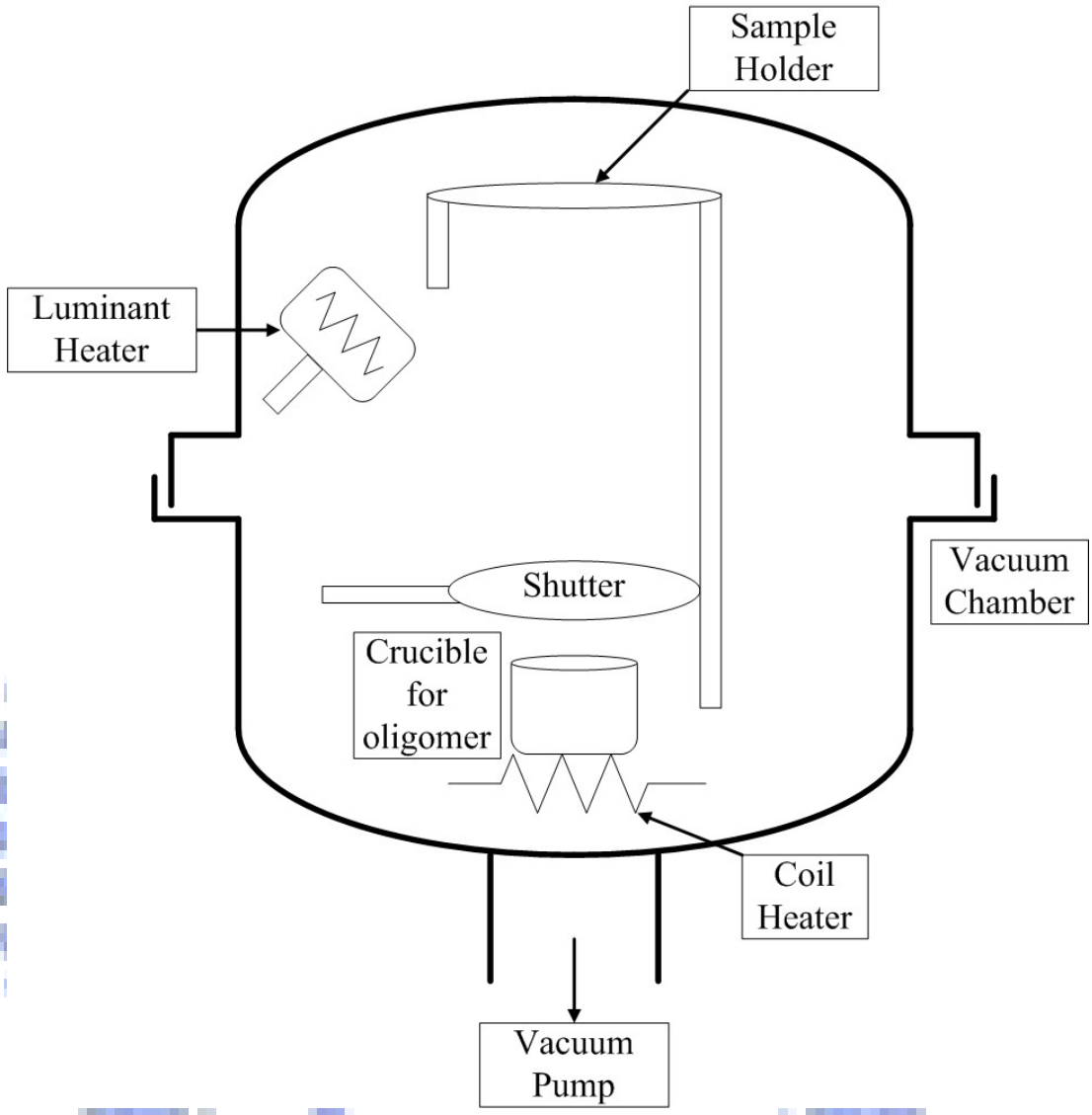


Figure 2.3-2 A schema of chamber of thermal evaporator

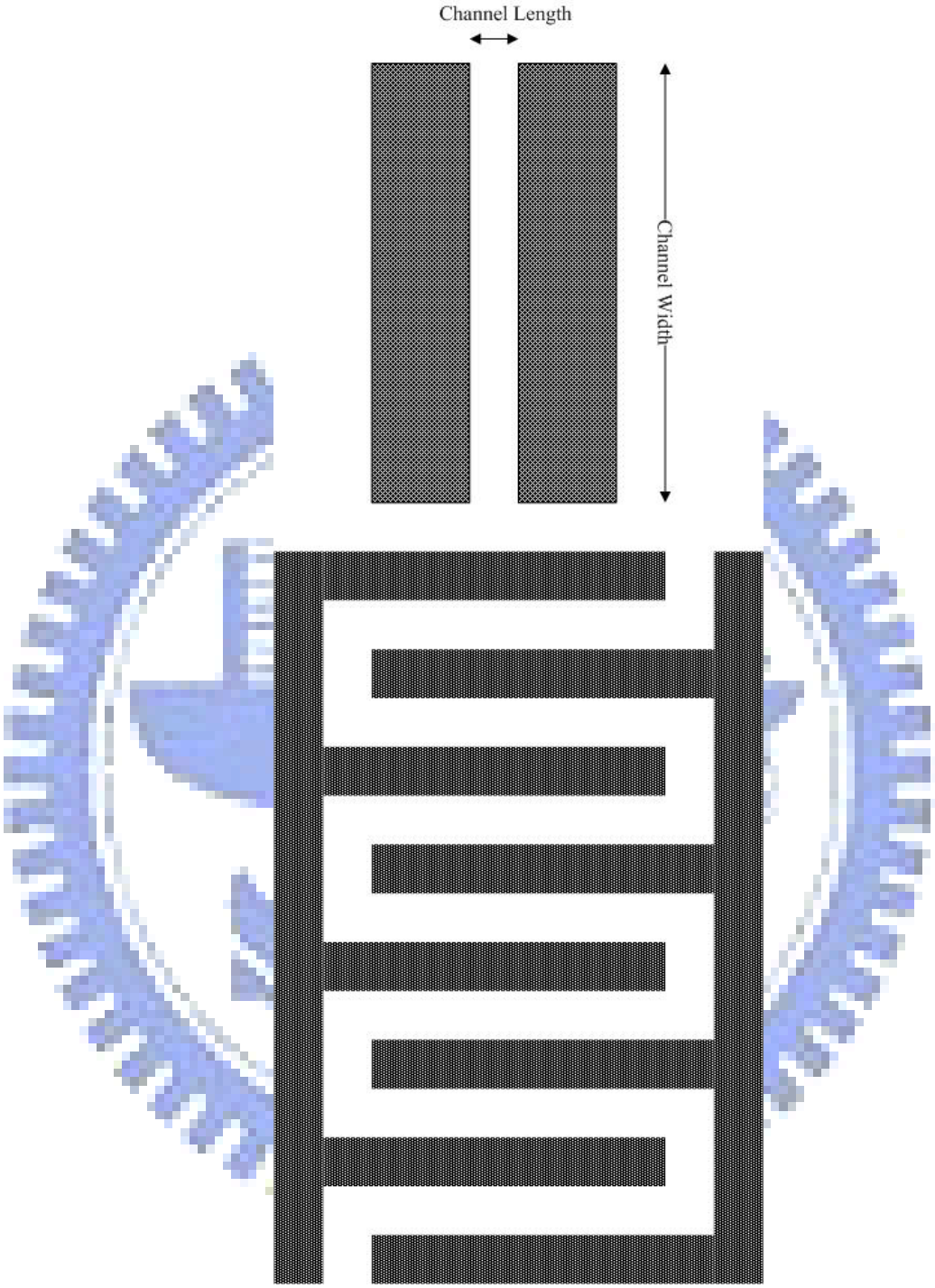
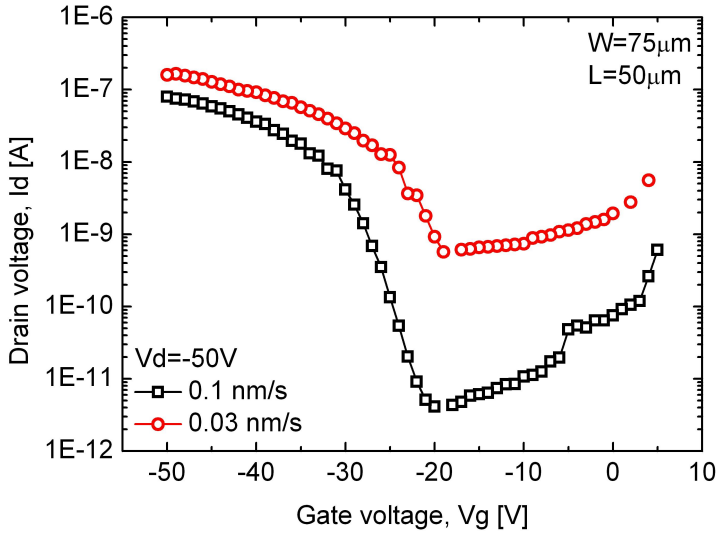
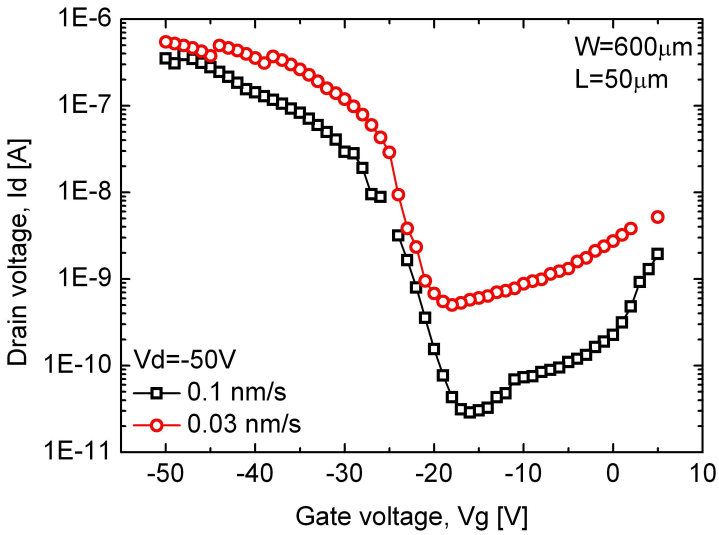


Figure 2.3-3 The schematic plots of linear like and finger type layout for bottom contact OTFTs.

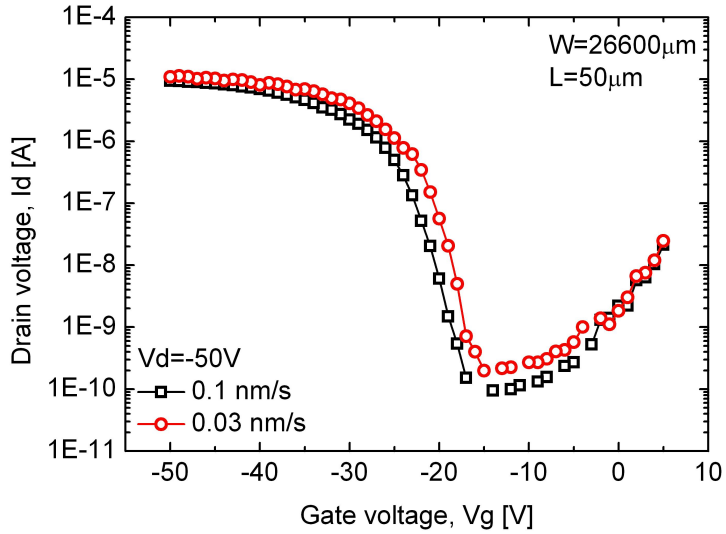


(a)

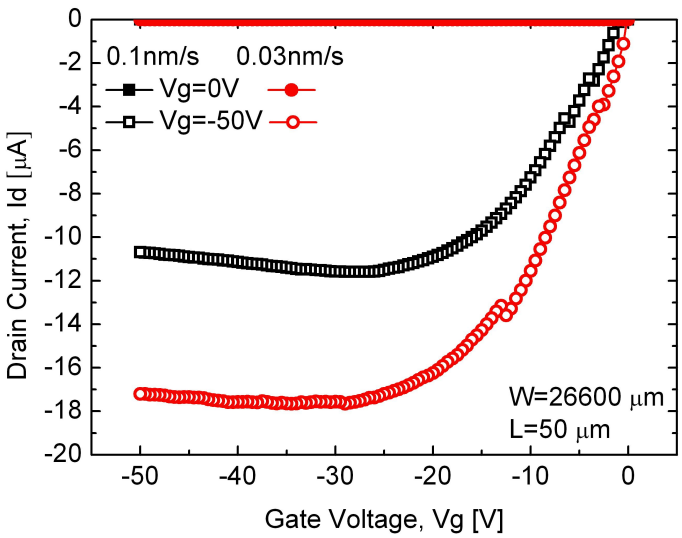


(b)

Figure 2.3.1-1 The Id-Vg electrical characteristics of pentacene TFTs with different deposition rates. The channel width/length of devices are (a) 75/50 μm/μm and (b) 600/50 μm/μm.

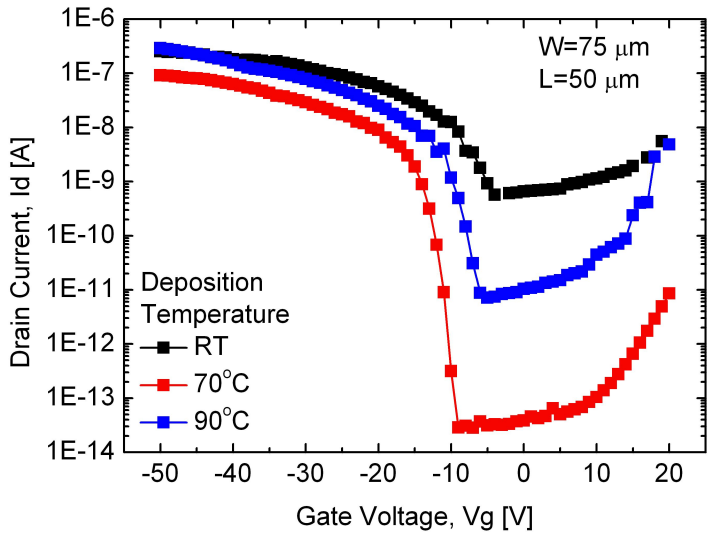


(a)

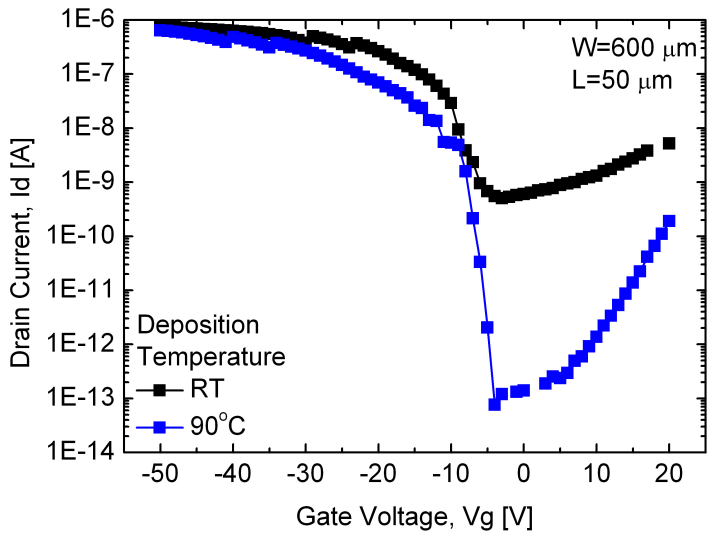


(b)

Figure 2.3.1-2 The (a) Id-Vg and (b) Id-Vd electrical characteristics of pentacene TFTs with different deposition rates. The channel width/length of devices are 26600/50 μm/μm.



(a)



(b)

Figure 2.3.1-3 The Id-Vg electrical characteristics of pentacene TFTs with different deposition temperatures. The channel width/length of devices are (a) 75/50 μm/μm and (b) 600/50 μm/μm.

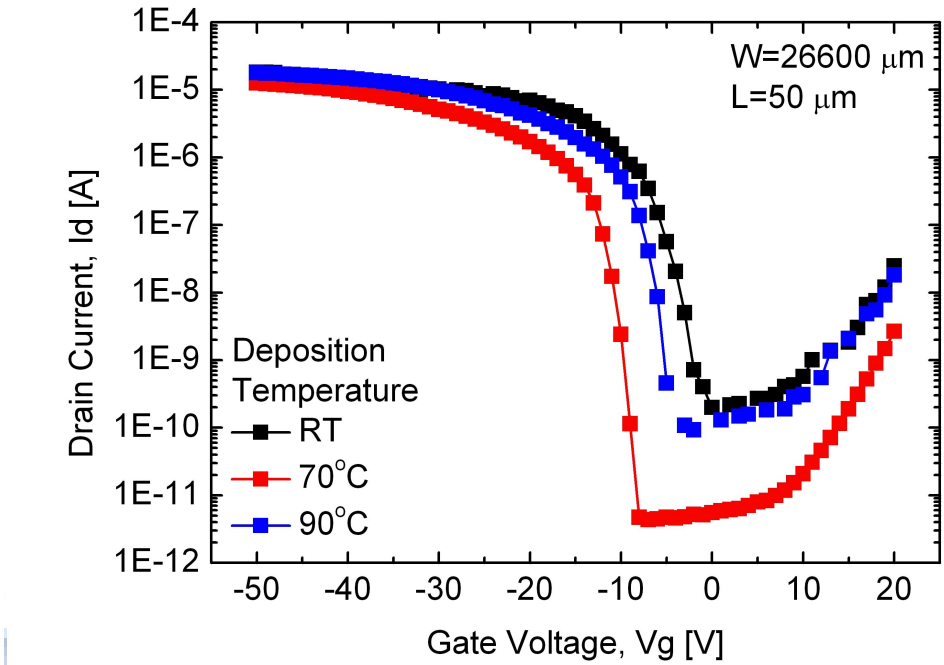


Figure 2.3.1-4 The Id-Vg electrical characteristics of pentacene TFTs with different deposition temperatures. The channel width/length of devices are 26600/50 μm/μm.

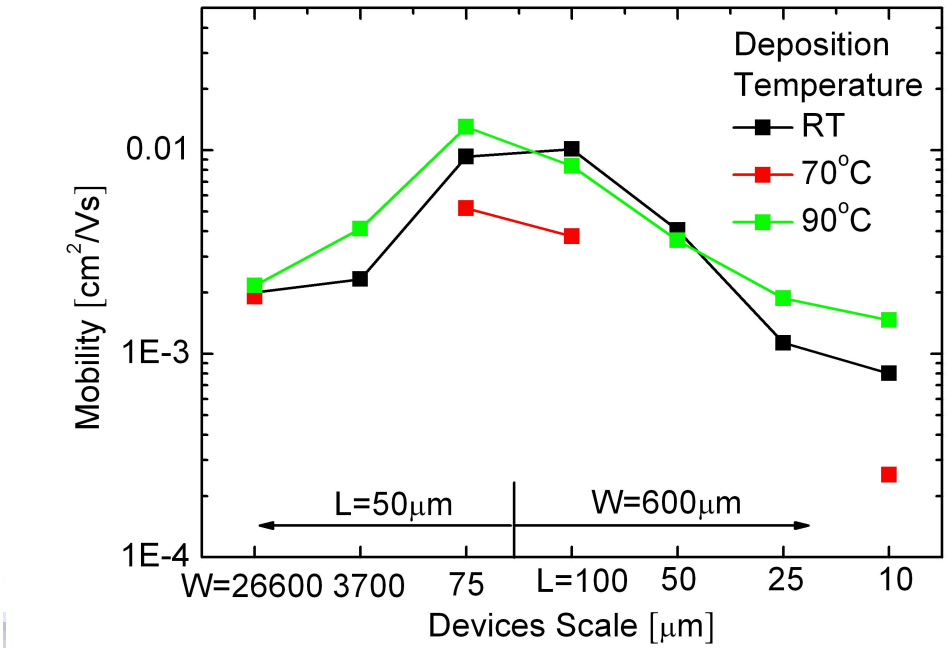
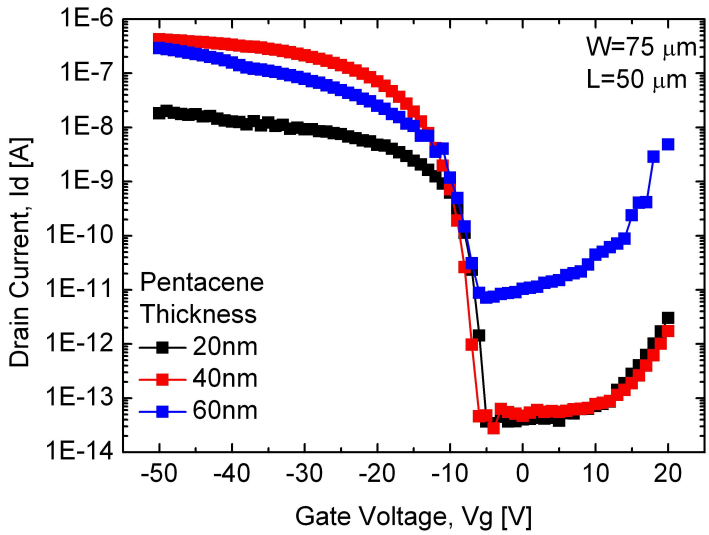
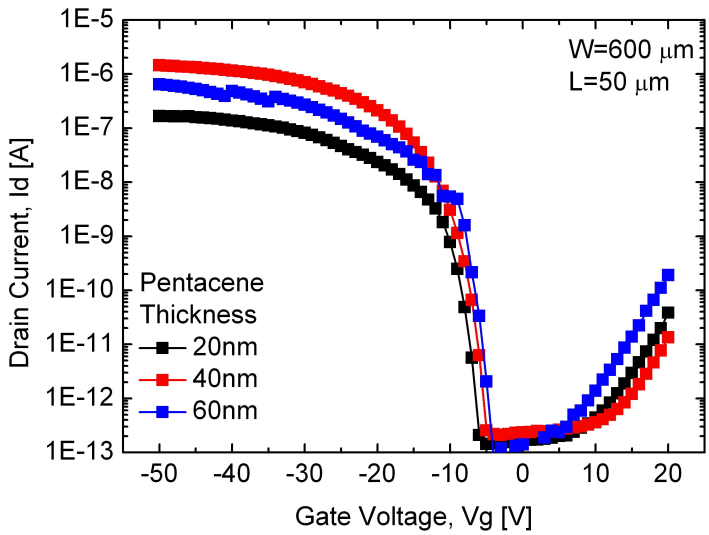


Figure 2.3.1-5 The extractions of saturation mobility of pentacene TFTs with different deposition temperatures and different device scales

Figure 2.3.1-6 The SEM images of surface morphologies of pentacene active layer deposited on gate dielectric and contact metal.**[1.1]**



(a)



(b)

Figure 2.3.2-1 The Id-Vg electrical characteristics of pentacene TFTs with different pentacene thicknesses. The channel width/length of devices are (a) 75/50 μm/μm and (b) 600/50 μm/μm.

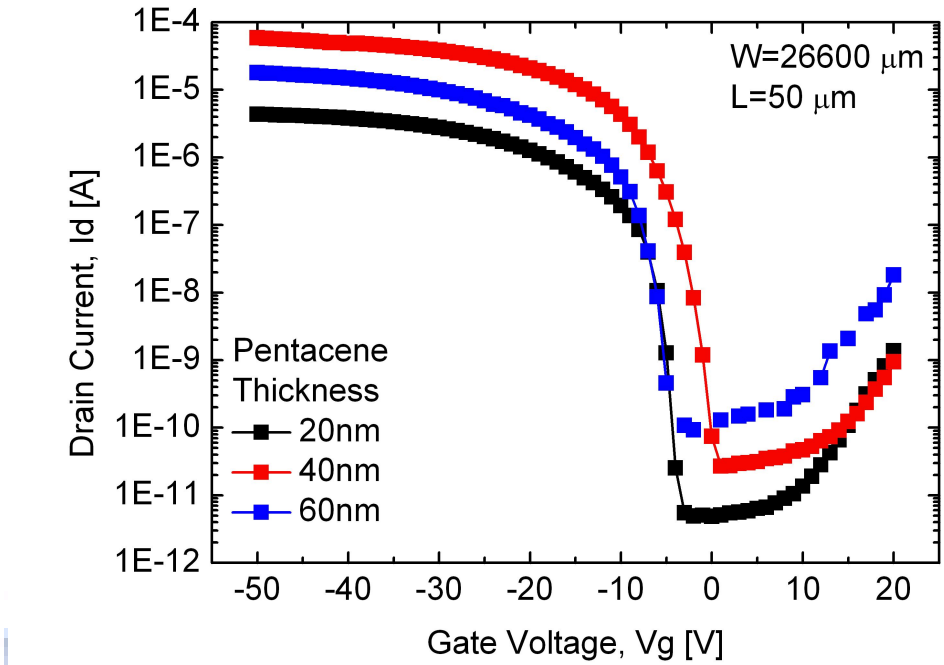


Figure 2.3.1-2 The Id-Vg electrical characteristics of pentacene TFTs with different pentacene thicknesses. The channel width/length of devices are 26600/50 μm/μm.

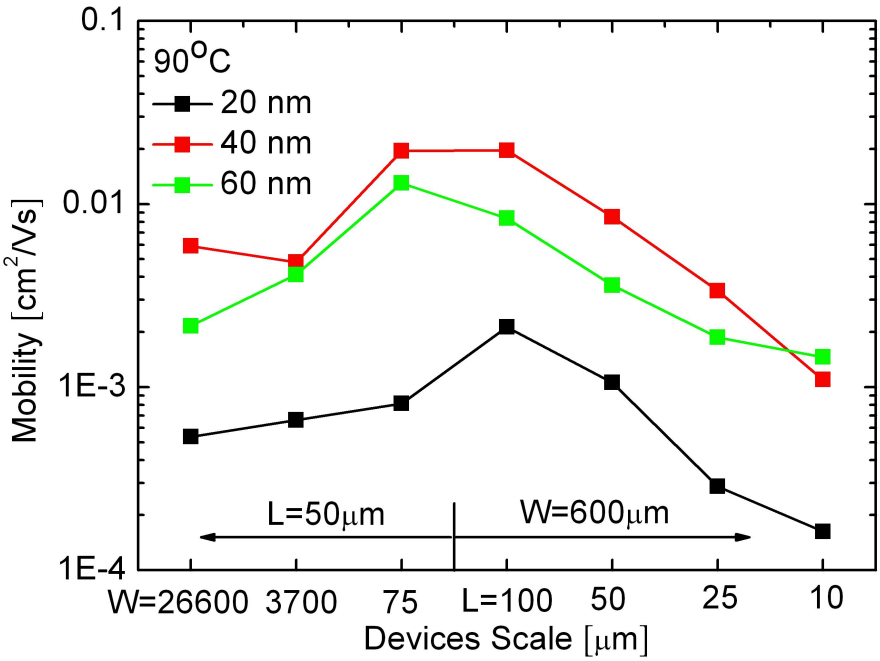
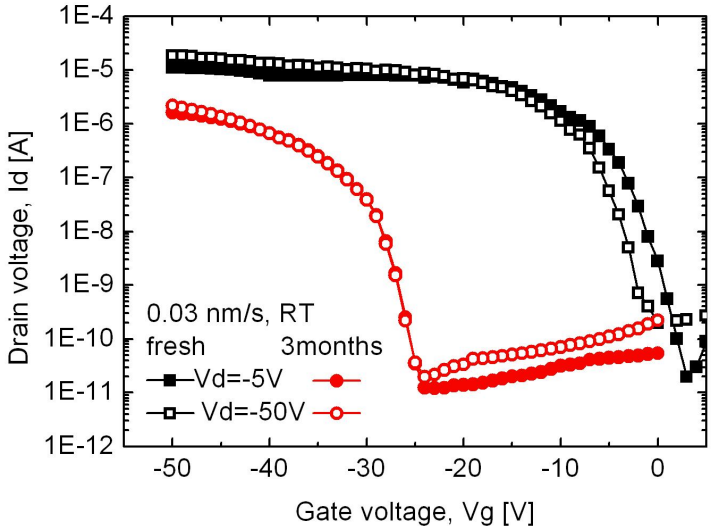
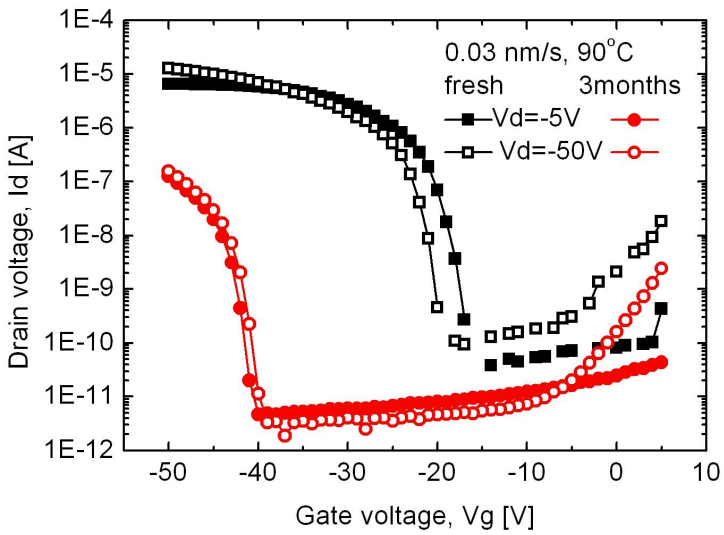


Figure 2.3.2-3 The mobility extractions of pentacene TFTs with different device scales and varied thickness of pentacene film.

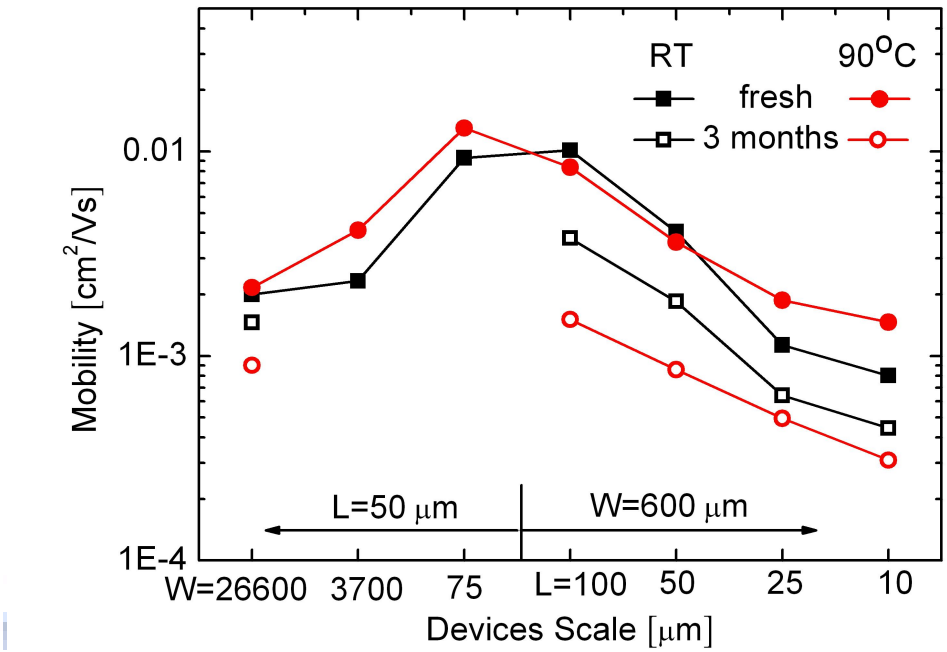


(a)



(b)

Figure 2.3.3-1 The degradation on electrical characteristics of pentacene TFTs with different deposition temperatures which are (a) RT and (b) 90 °C. The channel width/length of devices are 26600/50 μm/μm.



Figures 2.3.3-2 The degradation on mobility of pentacene TFTs with different pentacene deposition temperatures and device scales.