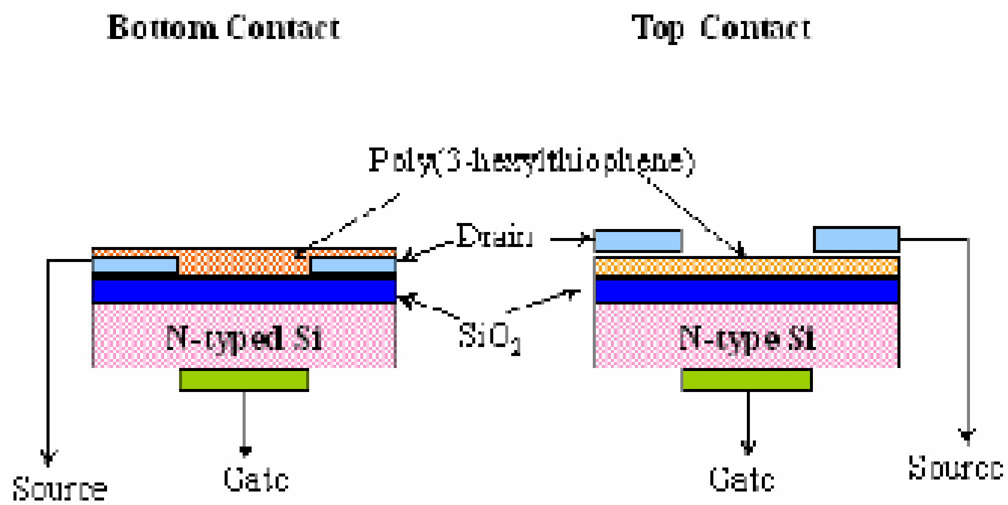
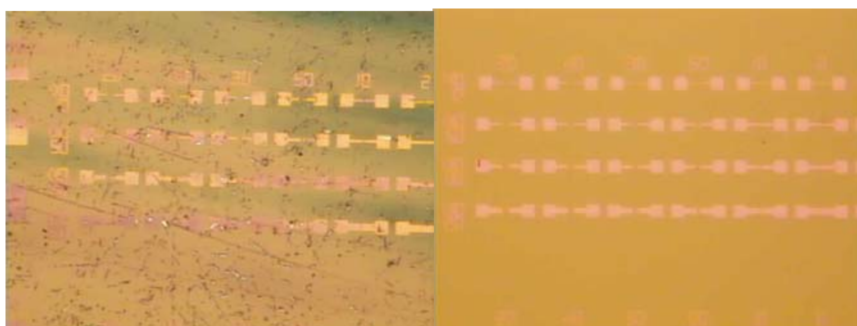


Figure 4-1 Cross section of different structure

No treatment the simple cleaning oxygen plasma

Figure 4-2 The performance of the P3HT film under different kinds of treatment

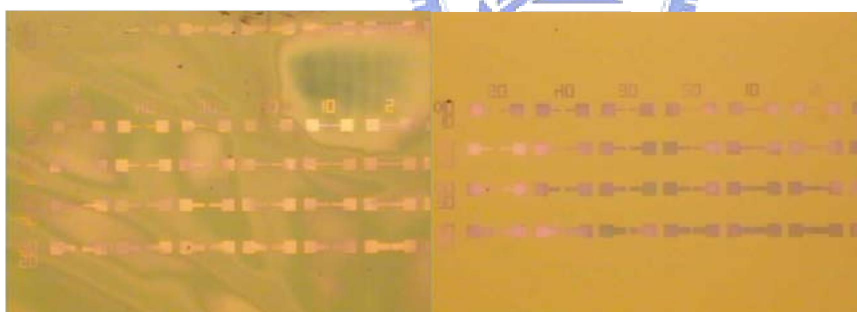


HMDS treatment
P3HT casting

HMDS treatment
P3HT spin

OTS treatment
P3HT casting

OTS treatment
P3HT spin



TMS treatment
P3HT casting

TMS treatment
P3HT spin

Figure 4-3 The performance of the P3HT film under different kinds of treatment (HMDS, OTS and TMS)

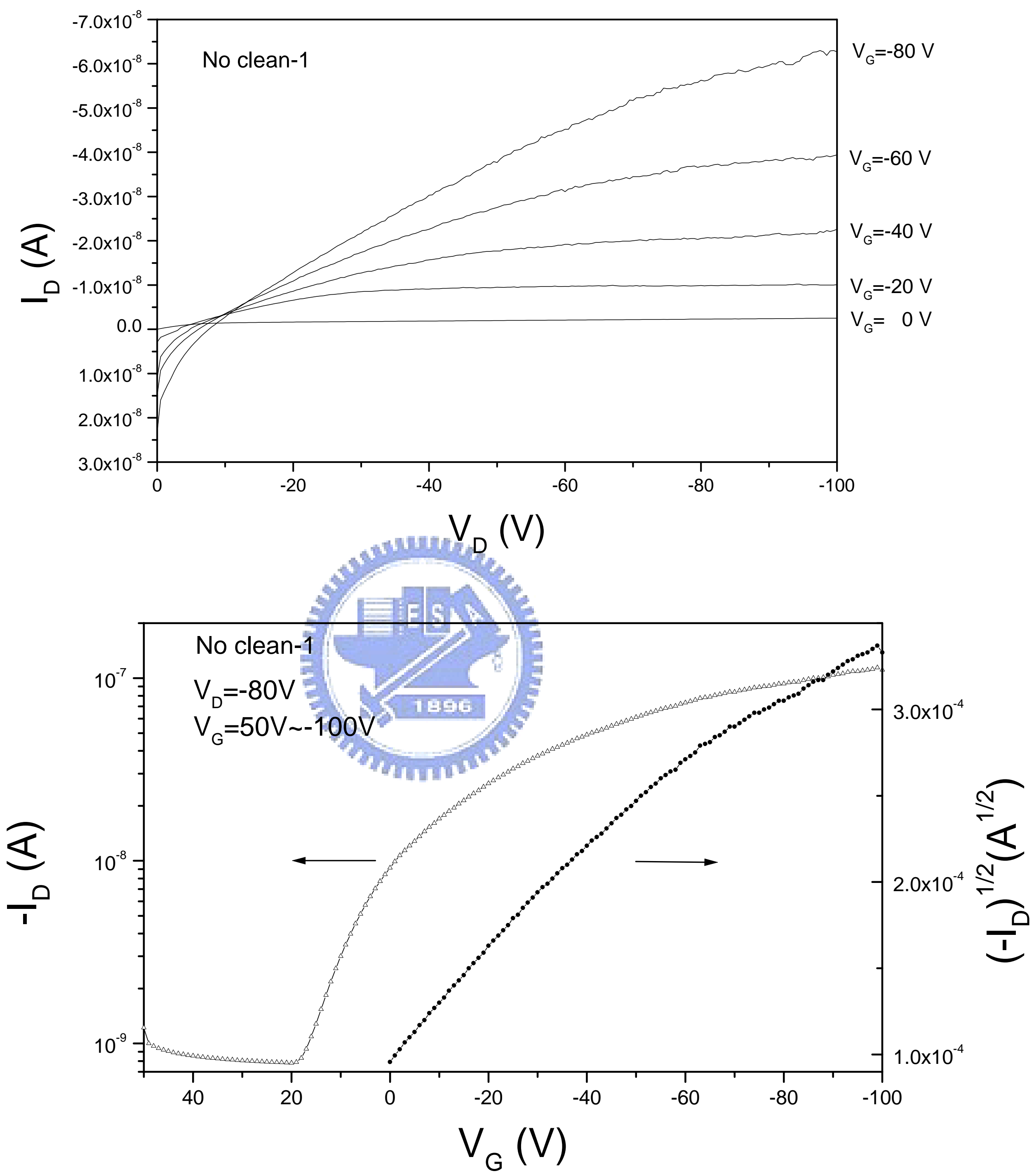
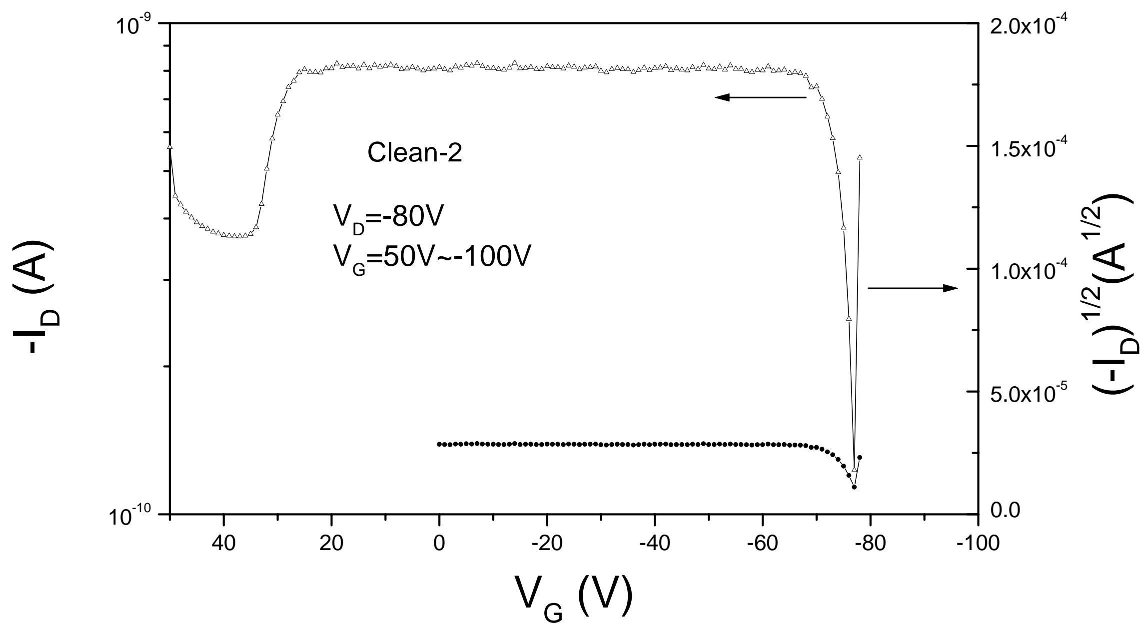


Figure 4-4 I-V characteristics of OTFT devices with bottom contact structure (no treatment)



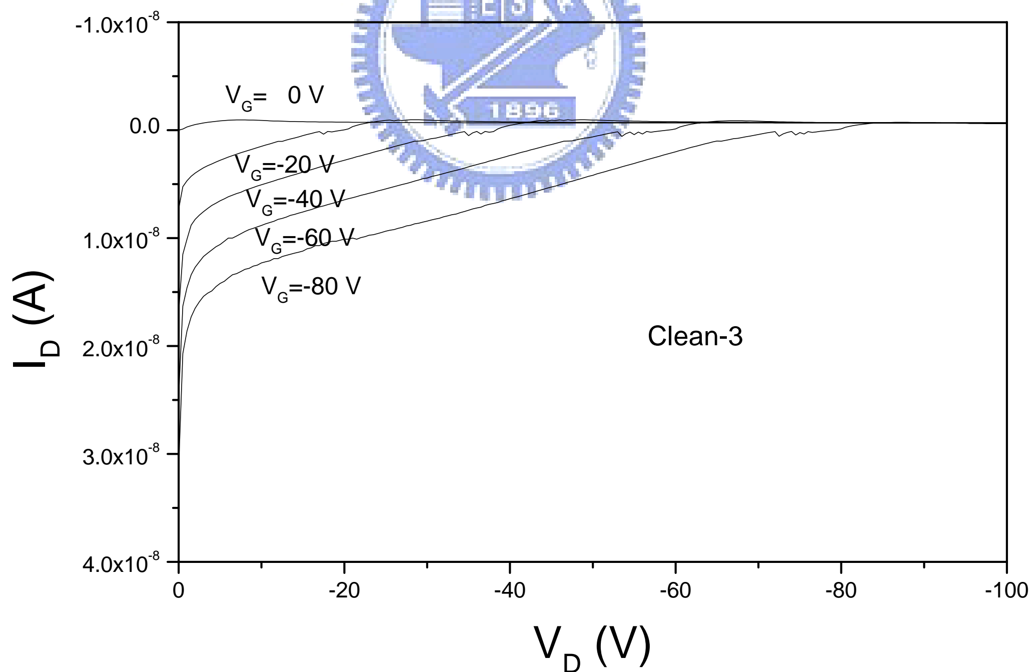
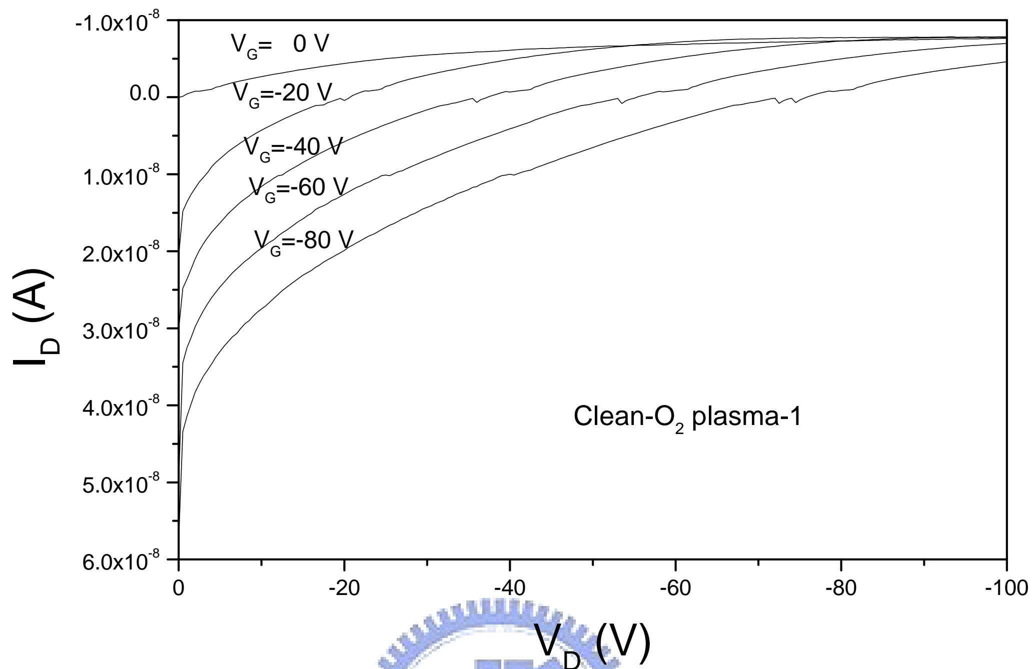


Figure 4-5 I-V characteristics of OTFT devices with bottom contact structure (the simple cleaning treatment)



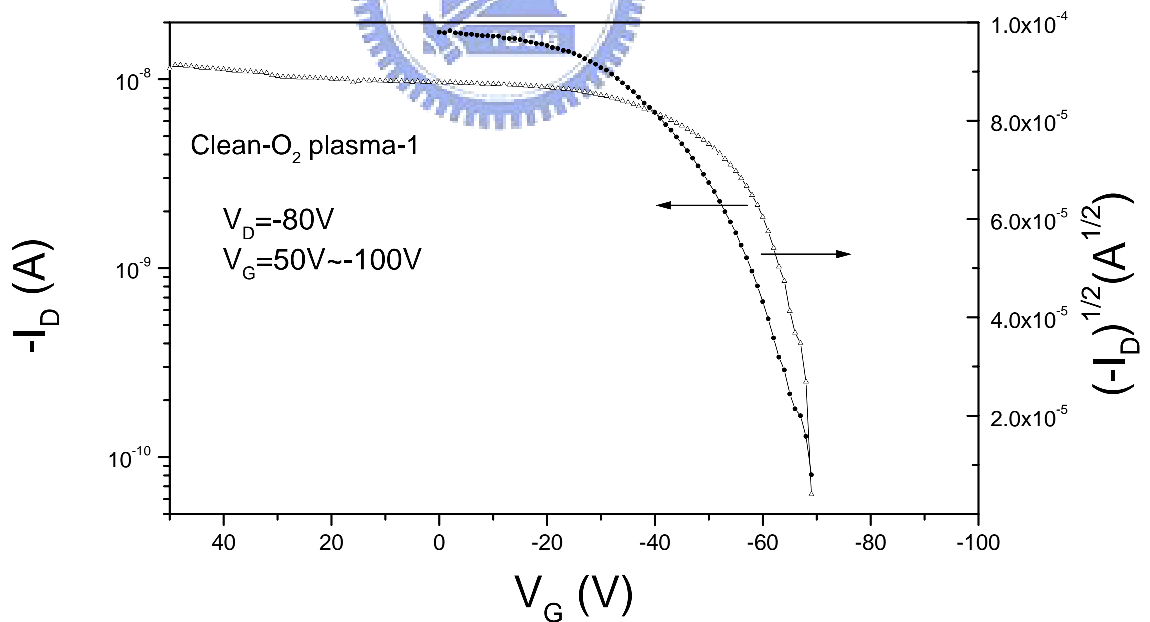
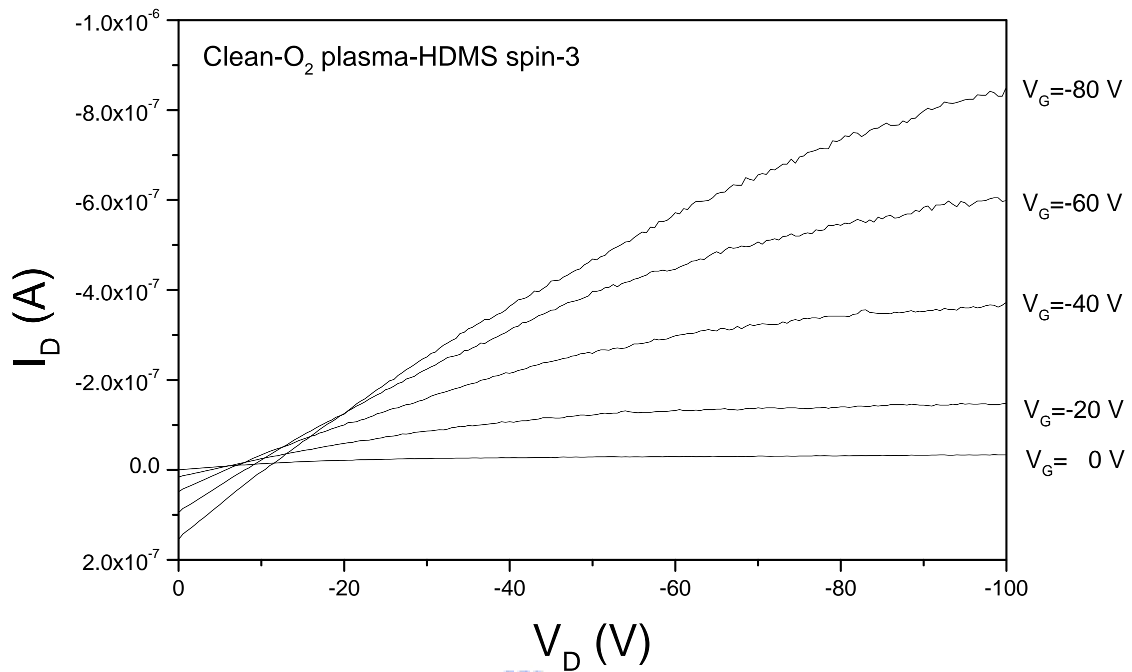


Figure 4-6 I-V characteristics of OTFT devices with bottom contact structure (the oxygen plasma treatment)



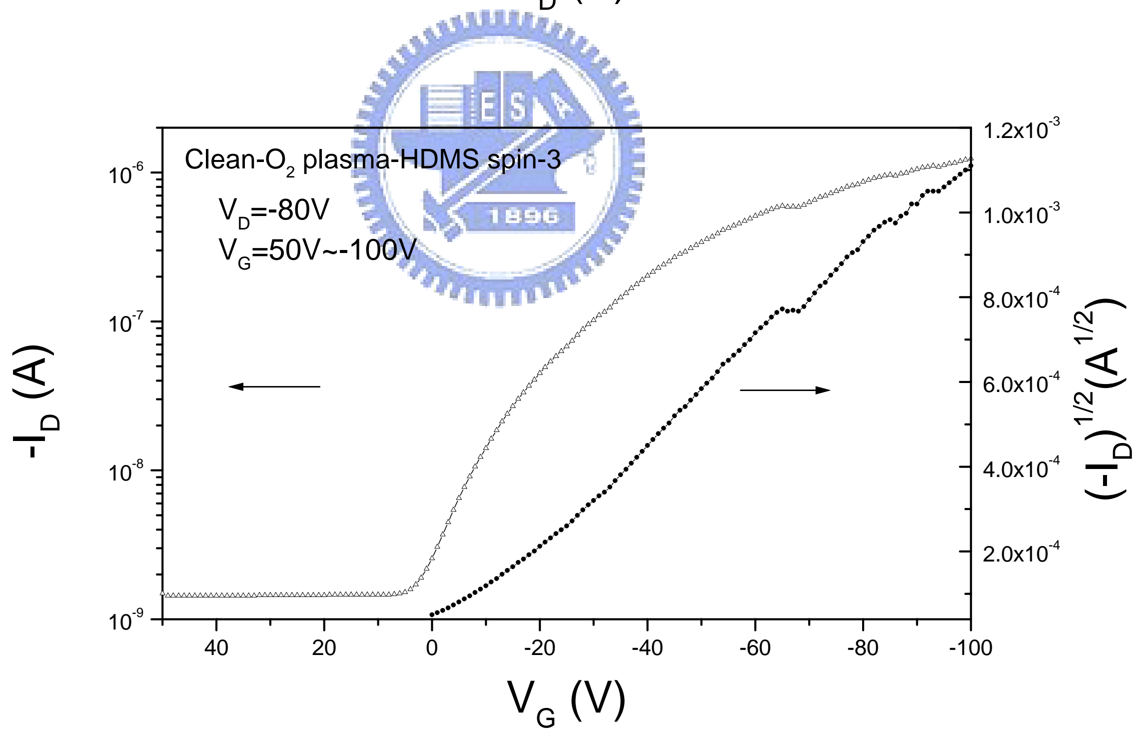
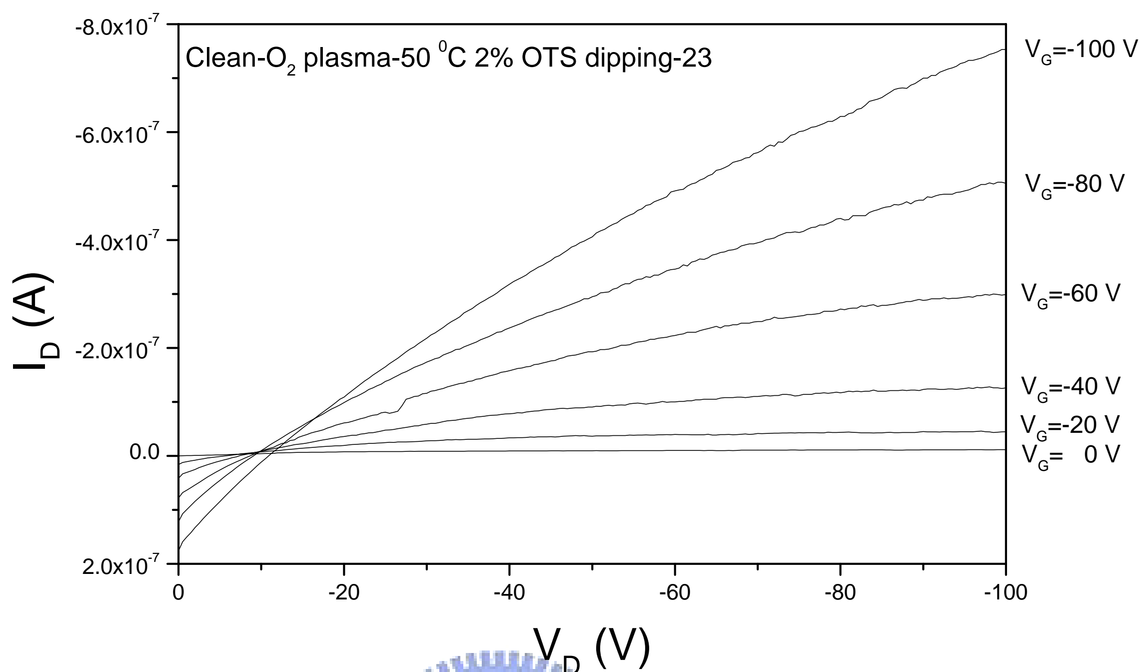


Figure 4-7 I-V characteristics of OTFT devices with bottom contact structure (the HMDS plasma treatment and P3HT spin)



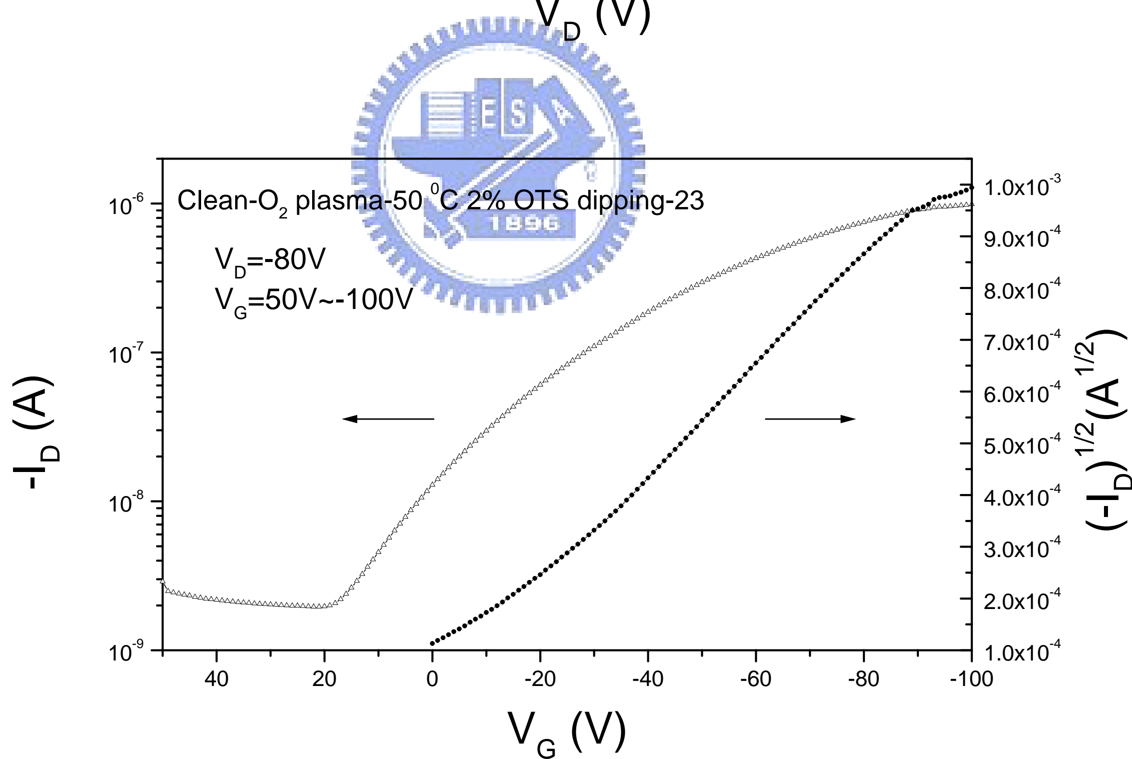
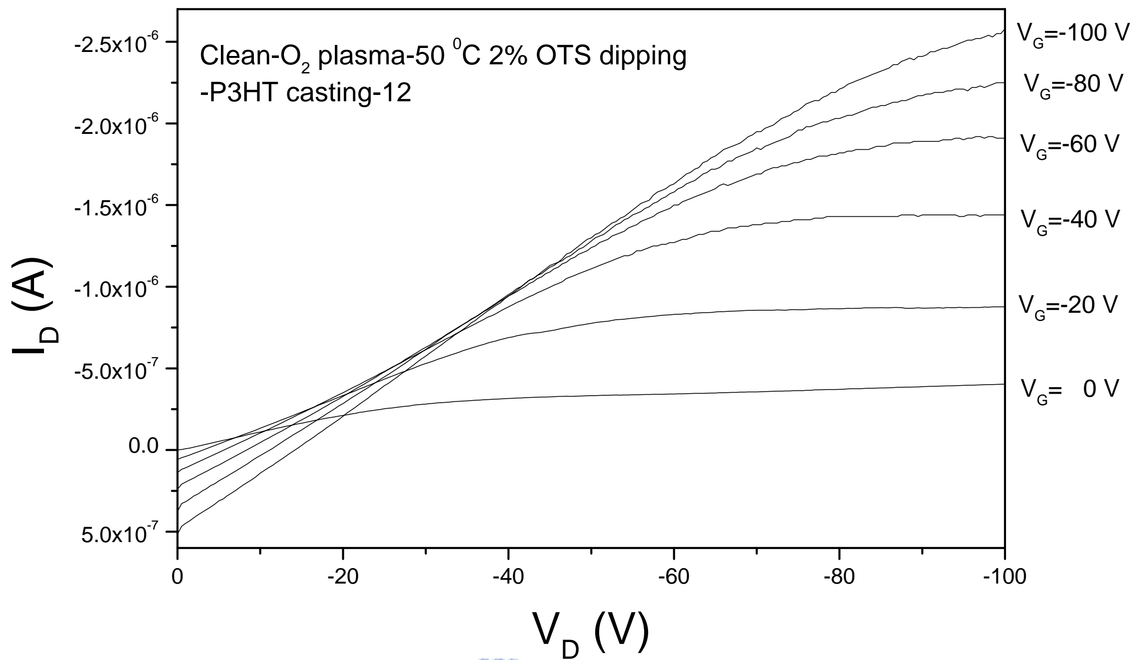


Figure 4-8 I-V characteristics of OTFT devices with bottom contact structure (the OTS plasma treatment and P3HT spin)



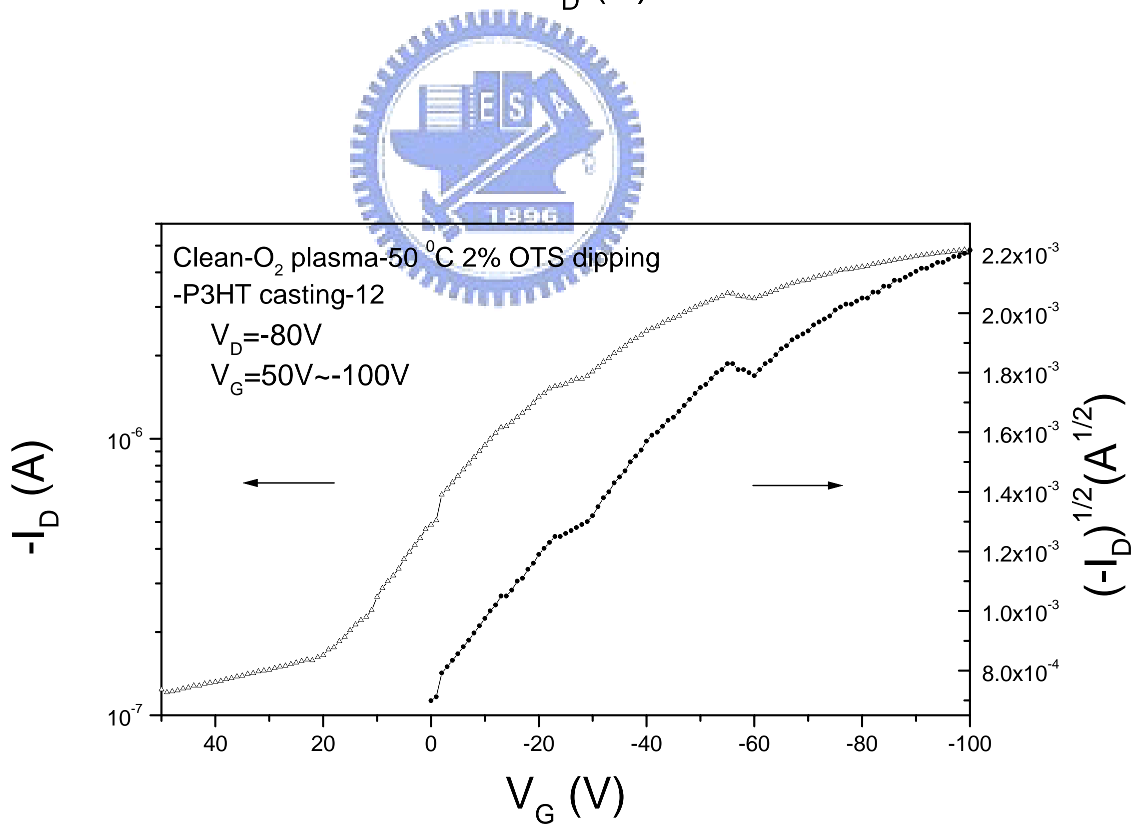


Figure 4-9 I-V characteristics of OTFT devices with bottom contact structure (the OTS plasma treatment and P3HT casting)

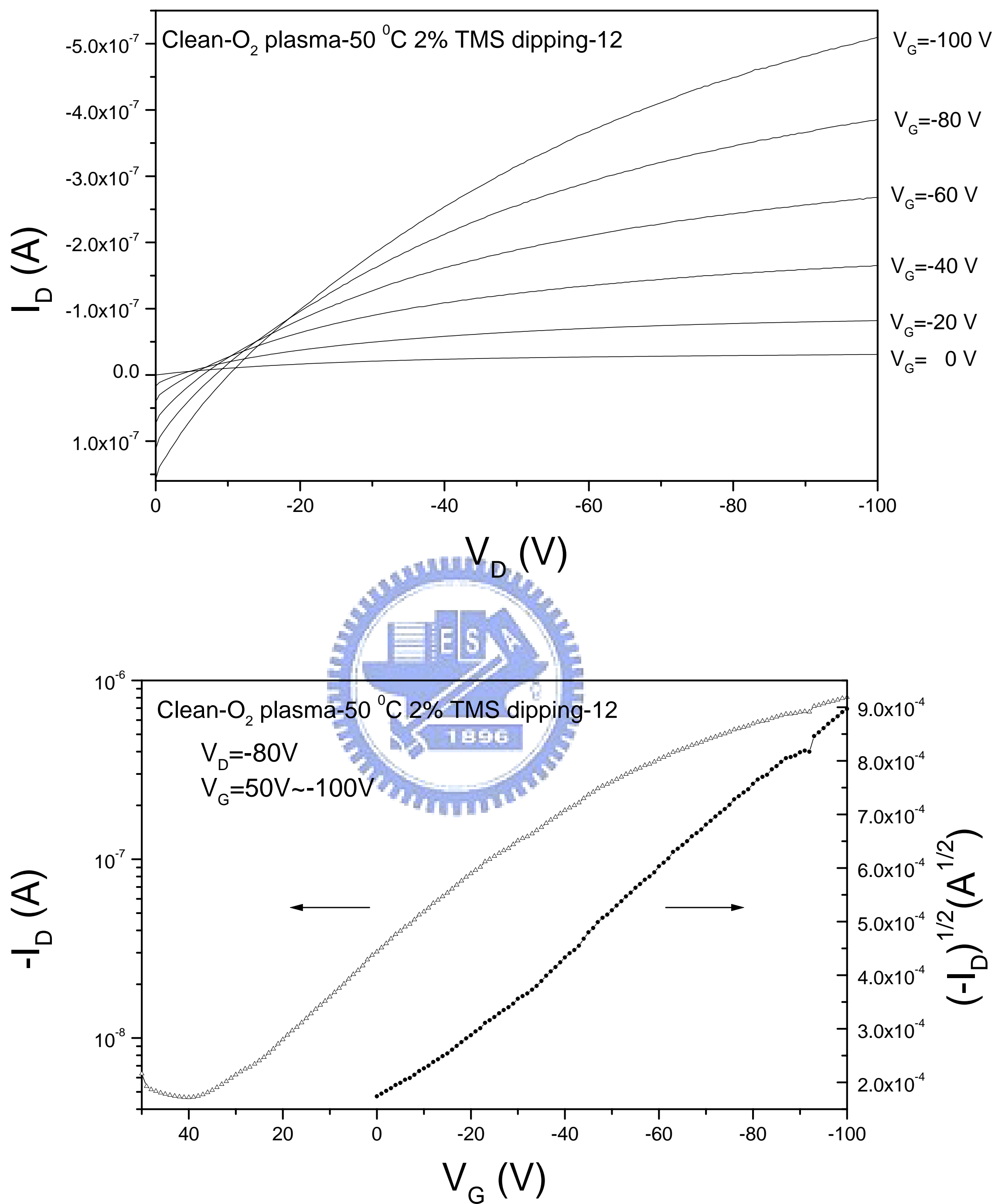
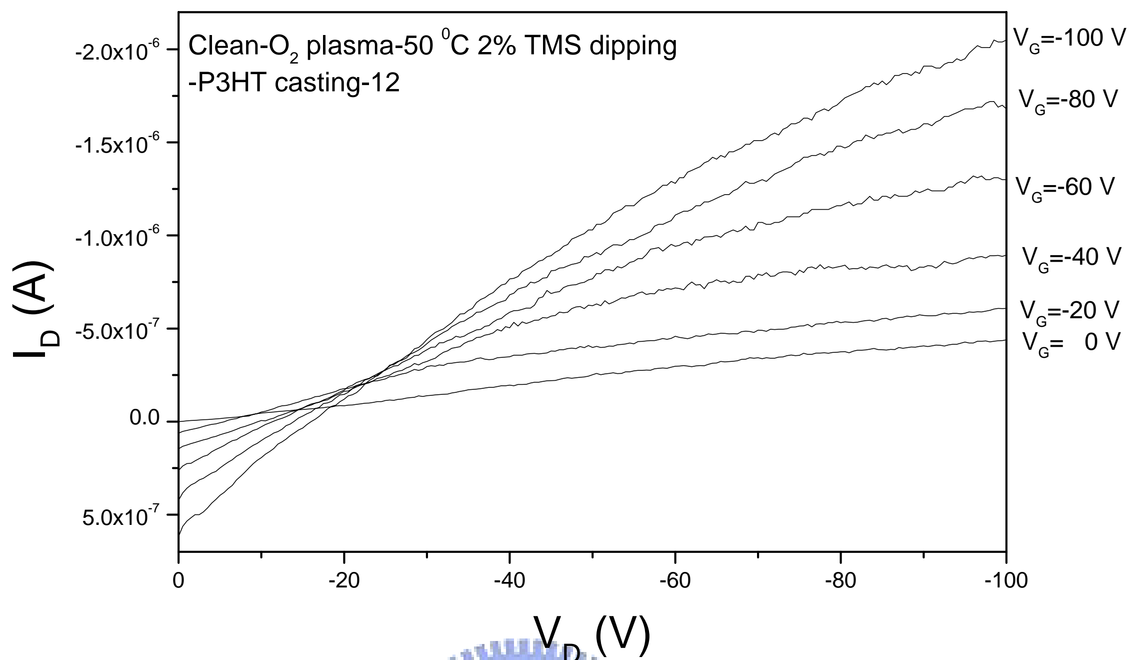


Figure 4-10 I-V characteristics of OTFT devices with bottom contact structure (the TMS plasma treatment and P3HT spin)



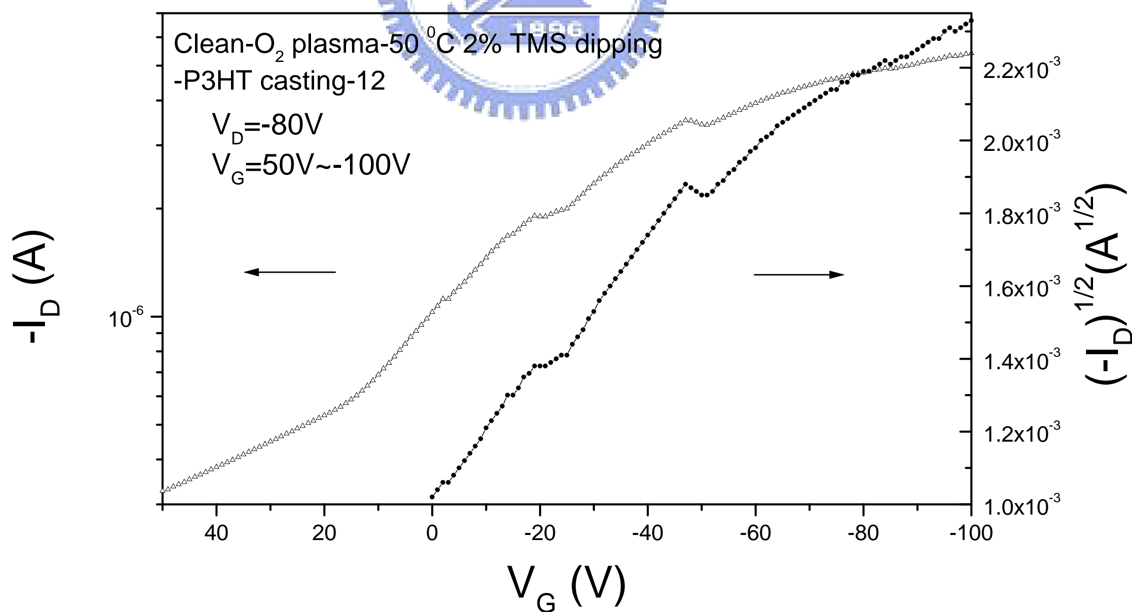


Figure 4-11 I-V characteristics of OTFT devices with bottom contact structure (the TMS plasma treatment and P3HT casting)

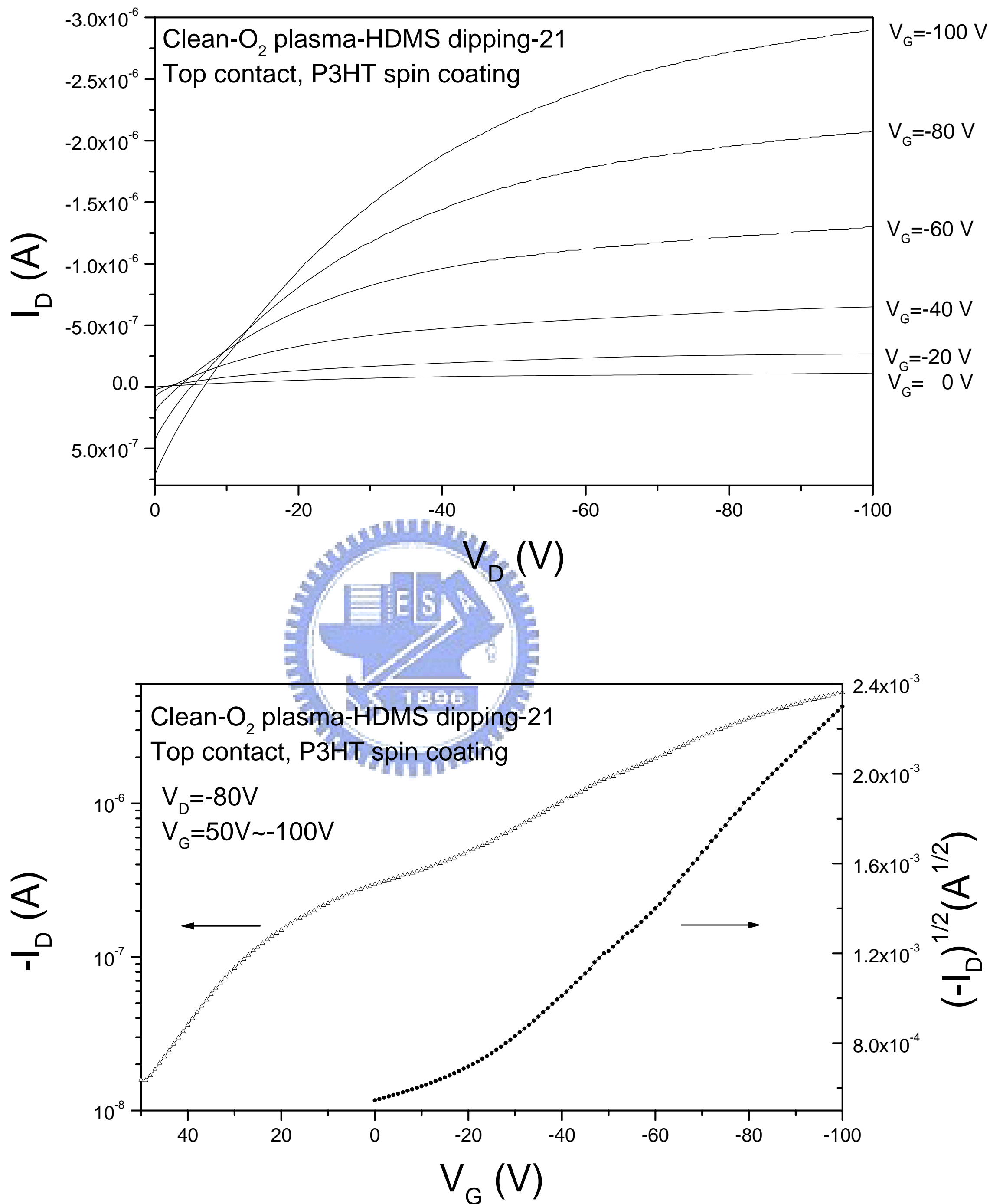
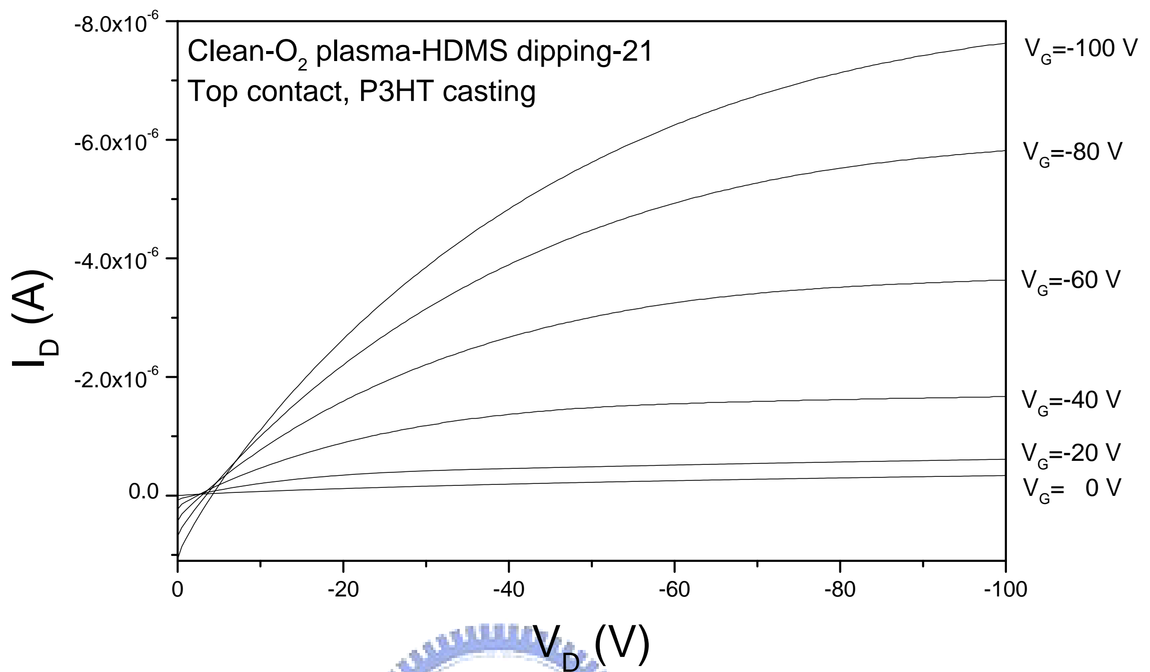


Figure 4-12 I-V characteristics of OTFT devices with Top contact structure (the HMDS plasma treatment and P3HT spin)



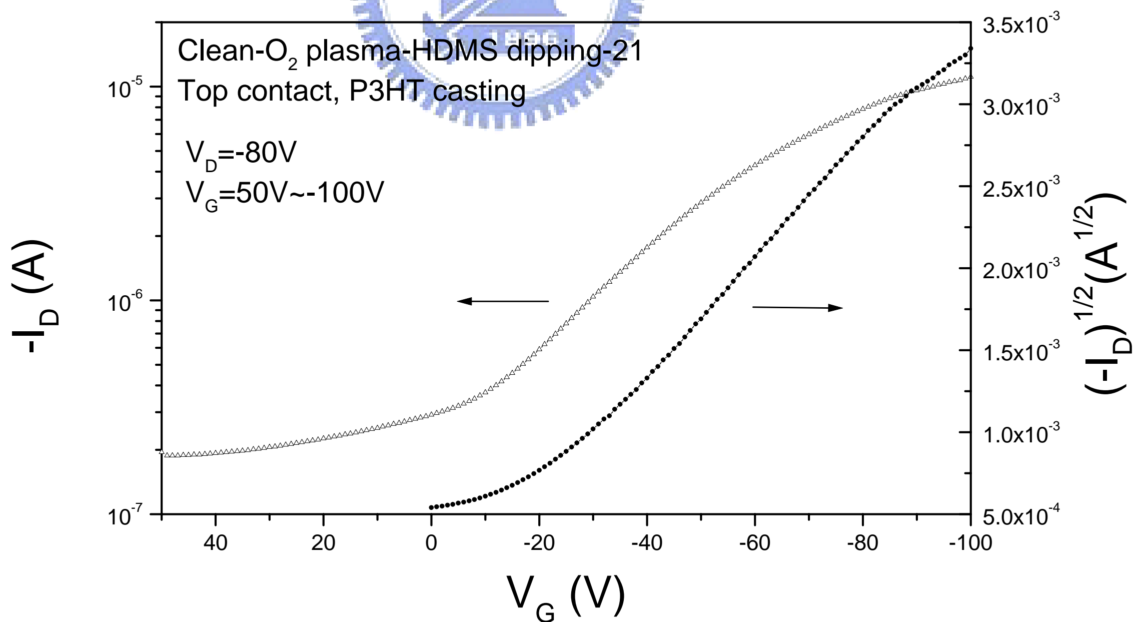
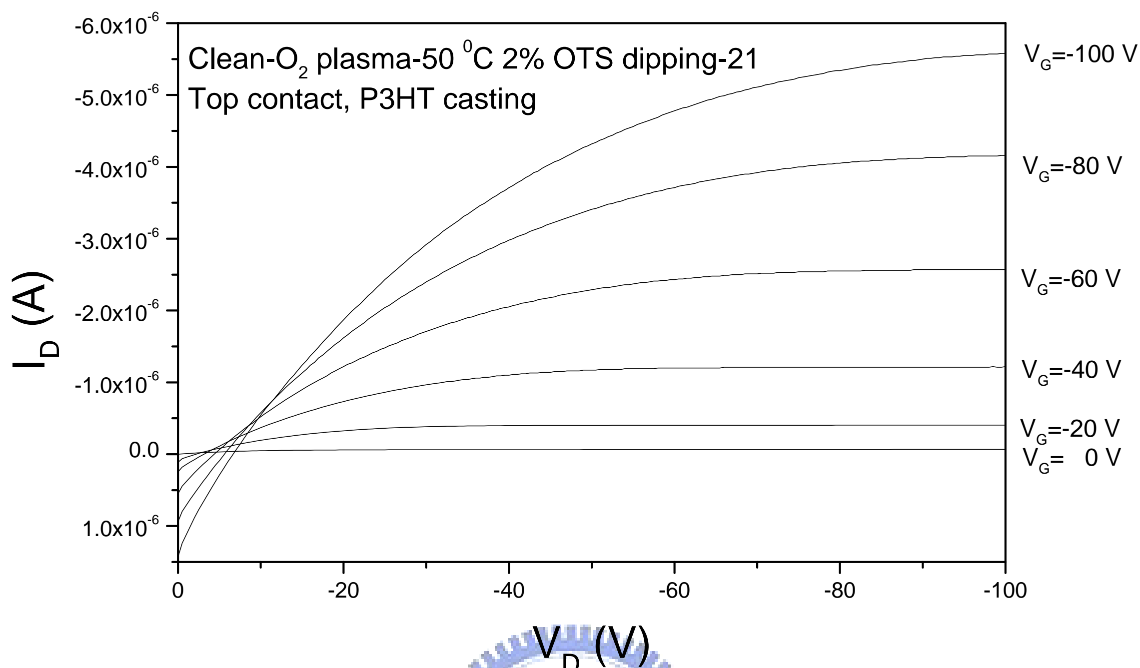


Figure 4-13 I-V characteristics of OTFT devices with Top contact structure (the HMDS plasma treatment and P3HT casting)



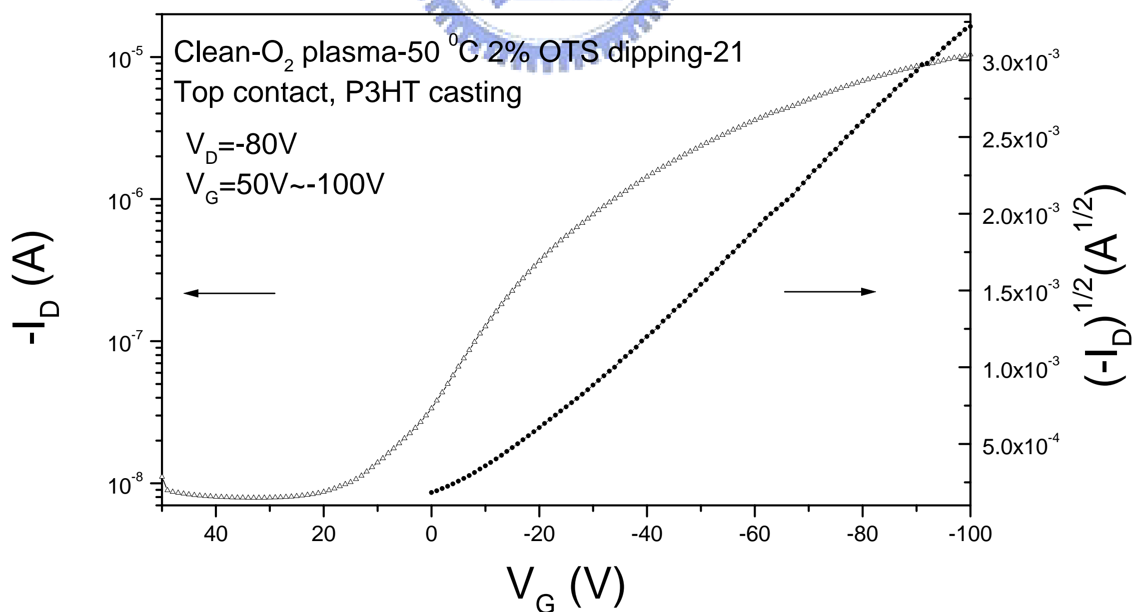


Figure 4-14 I-V characteristics of OTFT devices with Top contact structure (the OTS plasma treatment and P3HT casting)

method	No treatment	The simple cleaning	Oxygen treatment
DI-water	52.6±1.6	48.4±0.4	wetting

Table 4-1 The contact angle with different kind of treatment

Sample	Saturation region (at V_D=-80V)		
	μ (cm^2/V.s)	I_{ON}/I_{OFF}	Threshold voltage (V)
Origin	2.12×10^{-4}	145.6	33.2
The cleaning	無電晶體特性		
The cleaning＋oxygen plasma treatment	無電晶體特性		

Table 4-2 The characteristic of the parameter with different kind of treatment

Sample	飽和區 (at V_D=-80V)		
	μ (cm^2/V.s)	I_{ON}/I_{OFF}	Threshold voltage (V)
The cleaning＋oxygen plasma＋HMDS dipping+P3HT spin	4.06×10^{-3}	169.7	-3.6
The cleaning＋oxygen plasma＋OTS dipping+P3HT spin	2.63×10^{-3}	504.1	11.5
The cleaning＋oxygen plasma＋OTS dipping+P3HT casting	**1.01×10^{-2}**	**40.2**	**34.3**
The cleaning＋oxygen plasma＋TMS dipping+P3HT spin	1.51×10^{-3}	172.9	14.2
The cleaning＋oxygen plasma＋TMS dipping＋P3HT casting	9.48×10^{-3}	50.8	46.0

Table4-3 The characteristic of the parameter with different kind of treatment

Sample	飽和區 (at V_D=-80V)		
	μ (cm^2/V.s)	I_{ON}/I_{OFF}	Threshold voltage (V)
The cleaning＋HMDS+ oxygen plasma+P3HT casting	$2.67x10^{-2}$	59.0	-4.1
The cleaning＋HMDS+ oxygen plasma+P3HT spin	$9.88x10^{-3}$	335.7	2.8
The cleaning＋OTS+ oxygen plasma+P3HT casting	$2.29x10^{-2}$	1316.5	-5.1

Table4-4 The characteristic of the parameter with different kind of treatment