

All Graphene based Thin Film Transistors on Flexible Plastic Substrates

Seoung-Ki Lee, Ho Young Jang, SukJae Jang, Euiyoung Choi, Byung Hee Hong, Jaichan Lee, Sungho Park, Jong-Hyun Ahn

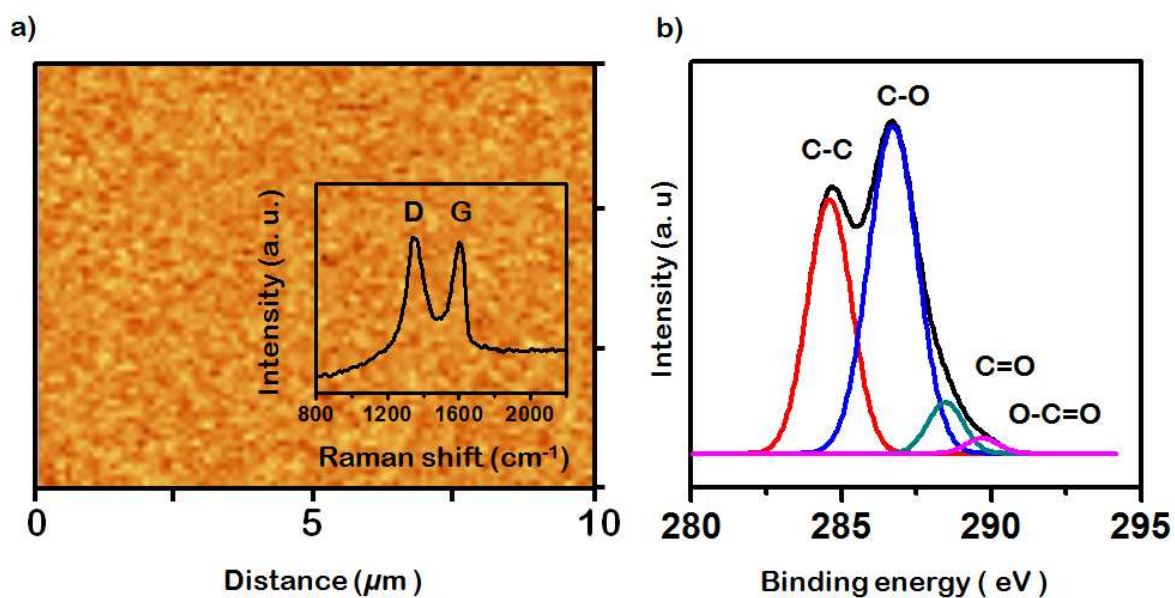
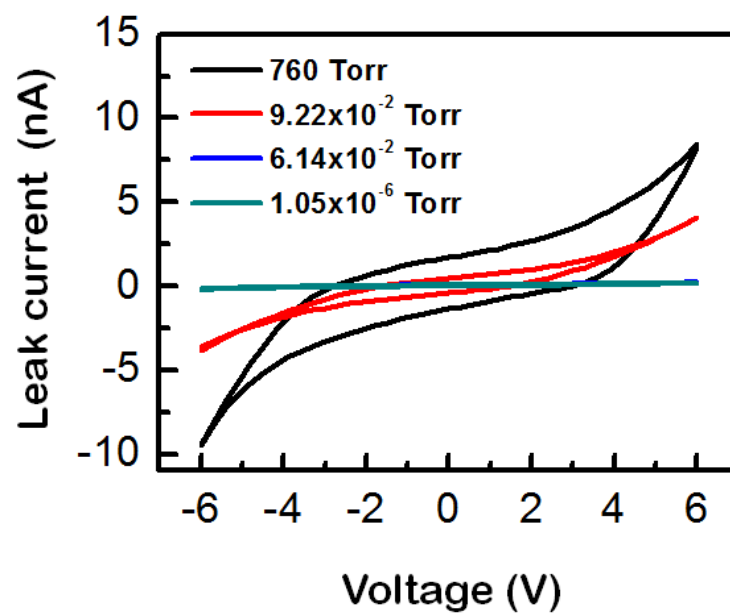


Figure S1. Confocal Raman spectroscopy and X-ray photoelectron spectroscopy (XPS) of GO film formed by Langmuir-Blodgett (LB) method.

a)



b)

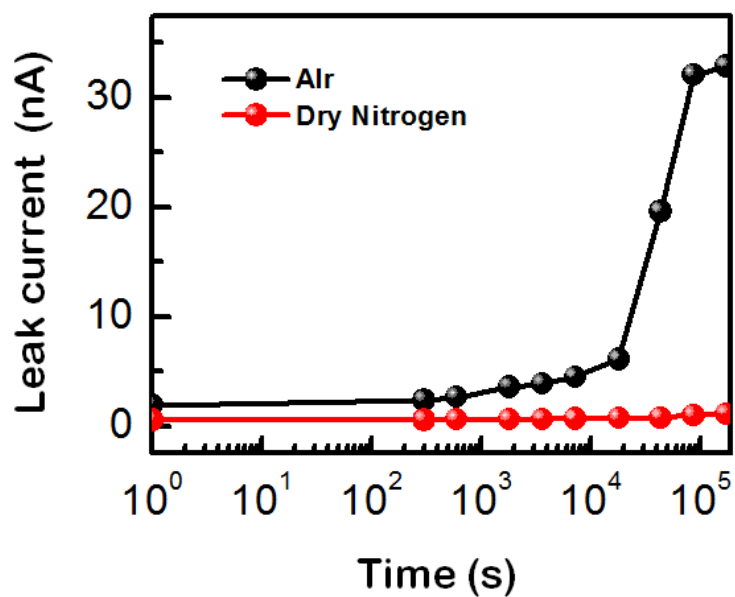


Figure S2. The insulating property of GO film ($t_{GO} = 100\text{nm}$). (a) Leakage current and hysteresis tendency of GO at different chamber pressures. (b) Stability of GO film under air and nitrogen condition. The leakage current was measured under 3V bias voltage.

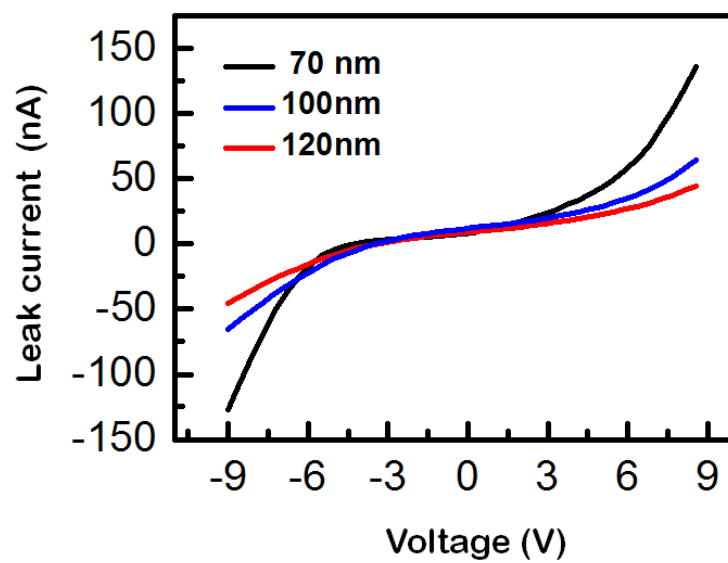


Figure S3. Typical current-voltage curve of GO capacitor with different thickness.

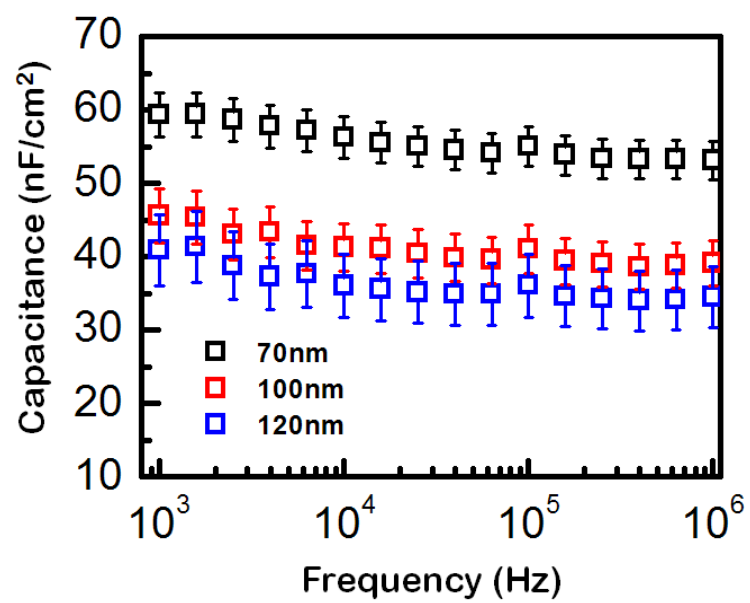


Figure S4. The frequency dependence of the capacitance under room temperature ($T = 298\text{K}$) of GO film.

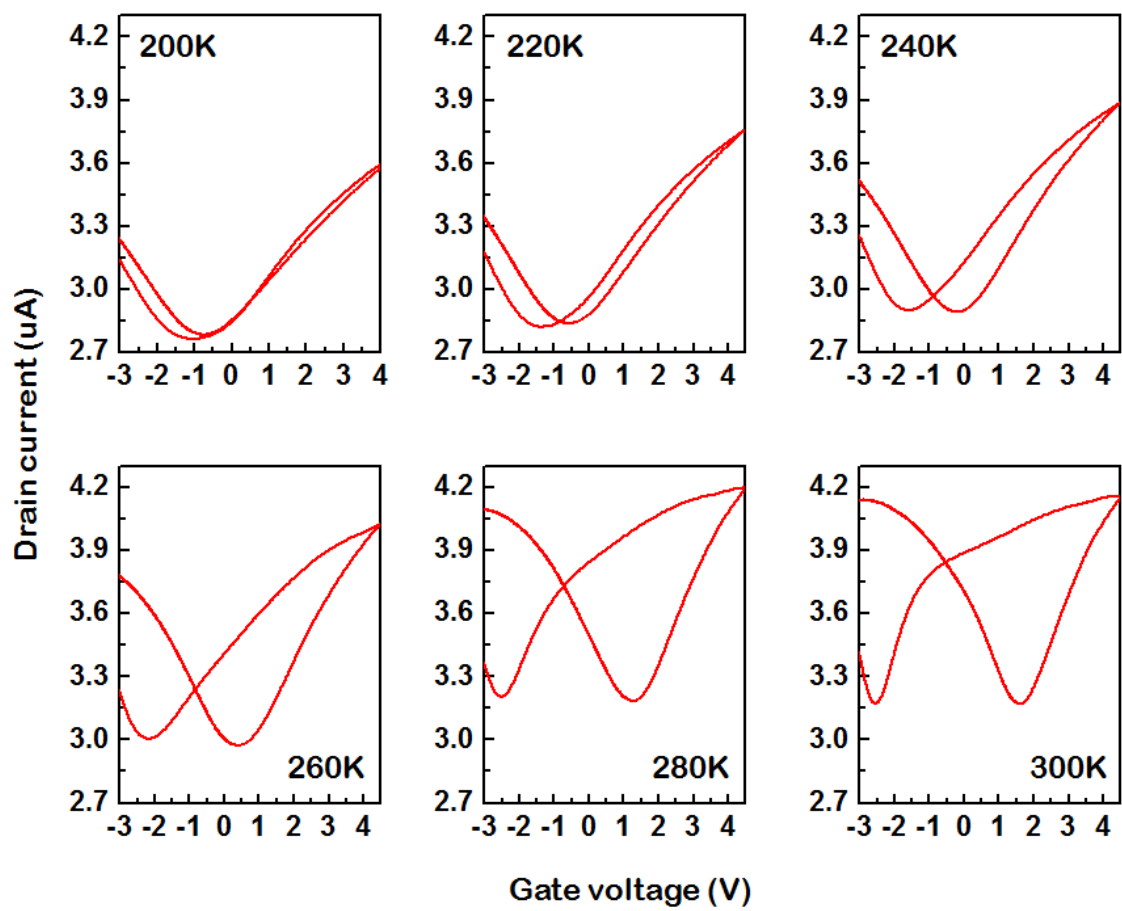


Figure S5. Hysteresis loop of G/GO transistor under different temperatures

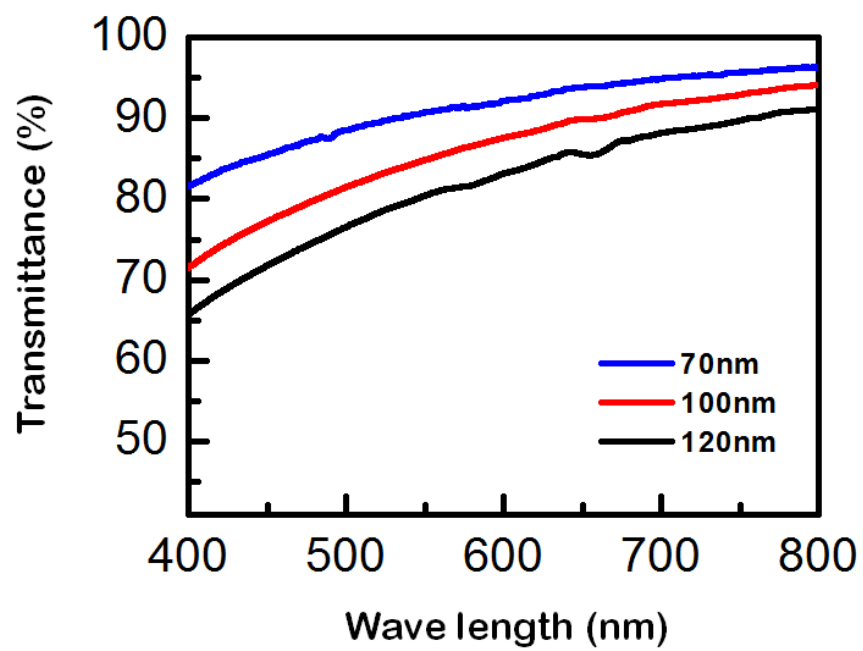


Figure S6. Transmittances of GO film with different thickness in the visible wavelength range.

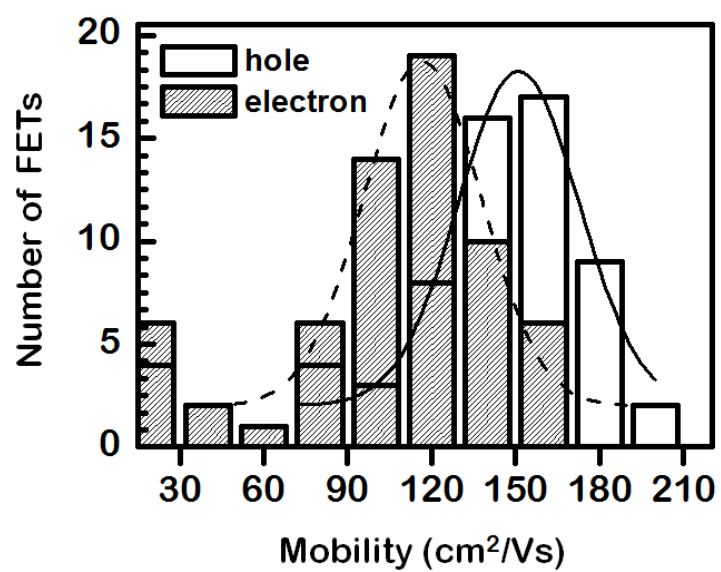


Figure S7. Histogram for the statistical distribution of the GO insulated G-FETs.

Ref	Type	Technique	Gate dielectric	Mobility (hole/electron)	On/Off ratio	Scale	substrate
[S1]	r-GO	Spin coating	SiO ₂	8/ -	2.1	mm×mm	SiO ₂ /Si
[S2]	r-GO	Spin coating	SiO ₂	4/1.5	-	mm×mm	SiO ₂ /Si
[S3]	G-ink	Printing	SiO ₂	95/ -	10	cm×cm	SiO ₂ /Si
[S4]	Exfoliated G	Mechanical cleavage	GO flake	700/ -	-	μm x μm	SiO ₂ /Si
[S5]	Exfoliated G	Mechanical cleavage	PMMA	1.0×10^4 / 4×10^3	6	μm x μm	PET
[S6]	CVD G	Wet transfer	Ion gel	203/91	16	cm ×cm	PET
[S7]	r-GO	Spin coating	PBS buffer solution	-	3.8	cm×cm	PET
[S8]	CVD G	Wet transfer	AlO _x	300/230	4	cm×cm	PET
[S9]	r-GO	Dielectrophoresis method	Y ₂ O ₃	102/ -	1.3	cm×cm	PI
	CVD G (our work)	Wet transfer	GO film	150/116	1.5	cm×cm	PET

Table S1. Characteristic of graphene based TFTs with different technique.

Reference

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