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Supplementary Information

Photoelectric properties of reduced-graphene-oxide film and its photovoltaic application

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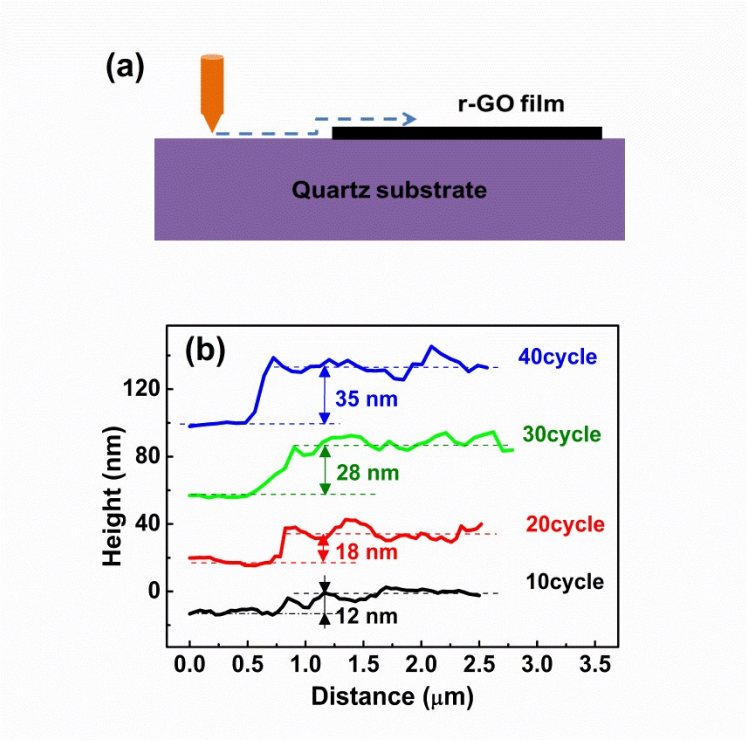

Figure S1 (a) Schematic diagram for r-GO film thickness measurement. (b) r-GO film thickness measured by step profiler for 10, 20, 30, 40 cycles.

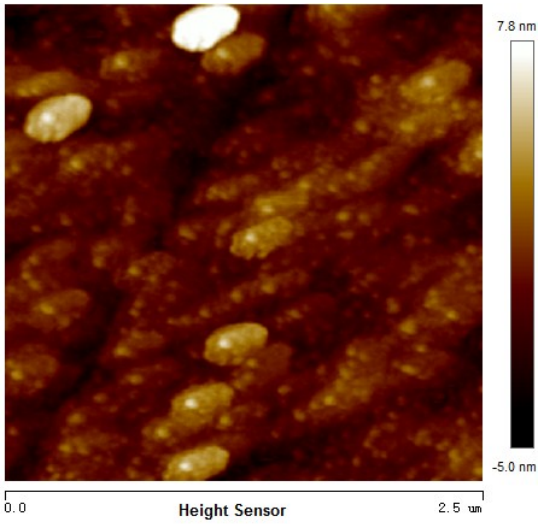

Figure S2 Two dimensional AFM image in the scale of 2.5 μm × 2.5 μm for 18 nm r-GO film after 950 °C annealing.

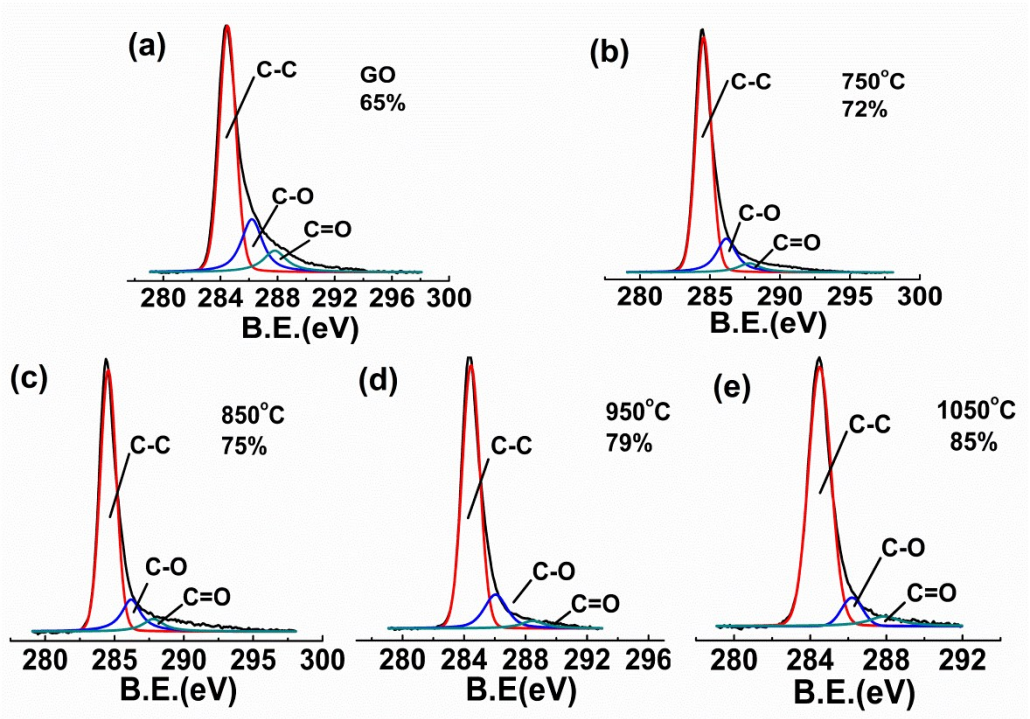

Figure S3 High-resolution XPS analysis of the original GO film and 18 nm r-GO films after 750-1050 °C annealing. Deconvolution reveals the presence of C-C (284.8 eV), C-O (286.2 eV), C=O (287.8 eV) species in r-GO film. The percentage of deoxidized carbon (C-C, 284.5 eV) in each film is indicated in the figure. (a) GO film. (b) 750 °C. (c) 850 °C. (d) 950 °C. (e) 1050 °C.

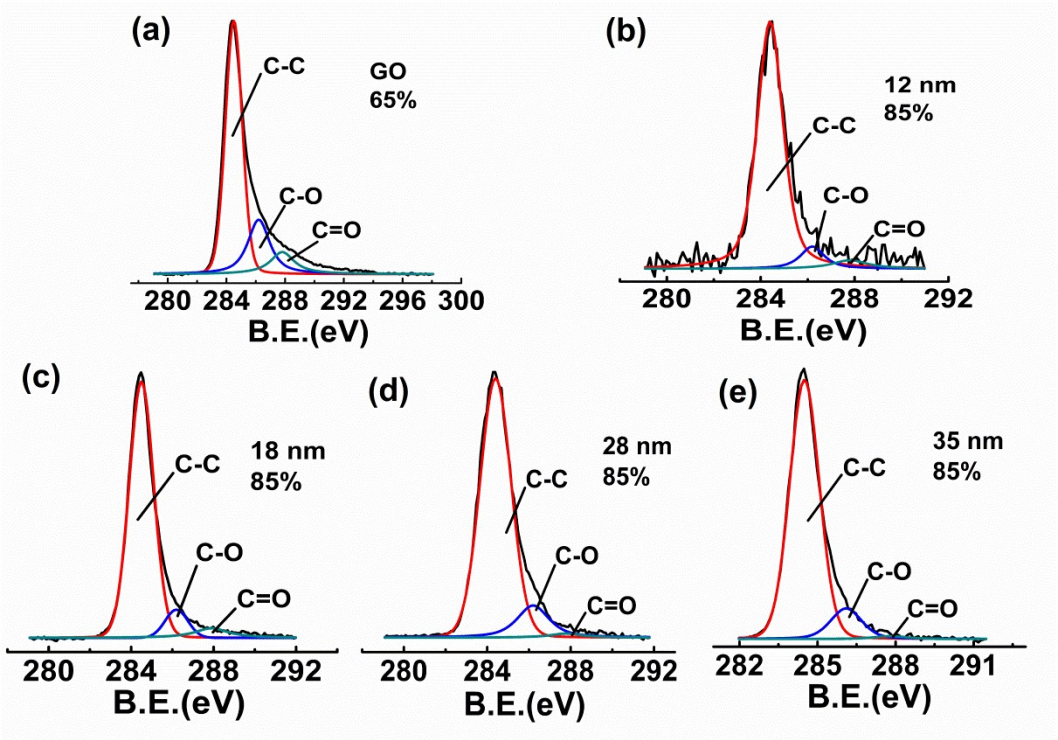

Figure S4 High-resolution XPS analysis of the original GO film and 12-35nm r-GO films after 1050 °C annealing. Deconvolution reveals the presence of C-C (284.8 eV), C-O (286.2 eV), C=O (287.8 eV) species in the film. The percentage of deoxidized carbon (C-C, 284.5 eV) in each film is indicated in the figure. (a) GO film. (b) 12 nm. (c) 18 nm. (d) 28 nm. (e) 35 nm.

Table S1 The detailed parameters of the GO/Si, CVD-Gr/Si, r-GO/Si devices.

Devices	J_{sc} (mA/cm^2)	V_{oc} (mV)	FF (%)	PCE (%)
GO/Si	0.0088	330	19.01	5.52×10^{-4}
CVD-Gr/Si	10.86	370	49.52	1.99
r-GO/Si	20.48	450	36.45	3.36