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Supporting Information

One step hydrothermal synthesis of rGO-TiO_2 nanocomposite and its application on Schottky diode: improvement in device performance and transport properties

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The XRD spectrum of rGO is given in Fig. S1.

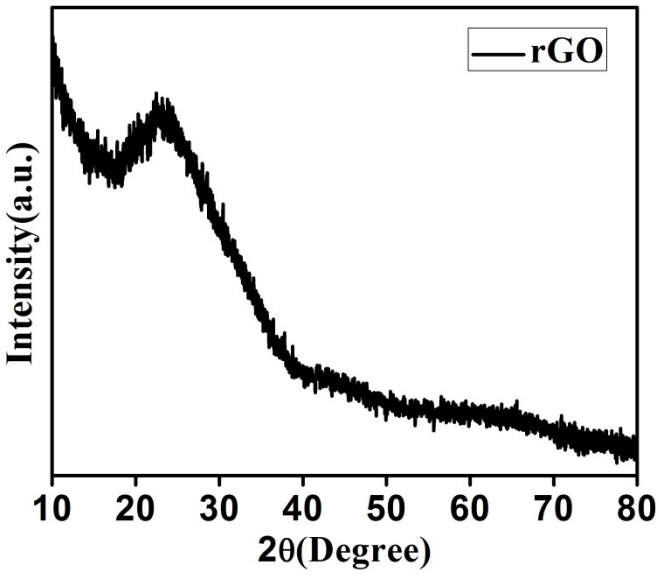

Fig. S1 XRD spectra of rGO

The I-V curves for the two Schottky diodes fabricated with rGO-TiO_2 (1:15) and rGO-TiO_2 (1:50) are shown in Fig. S2. Both devices showed higher rectification ratio and photosensitivity than pure TiO_2, as shown in Table S1.

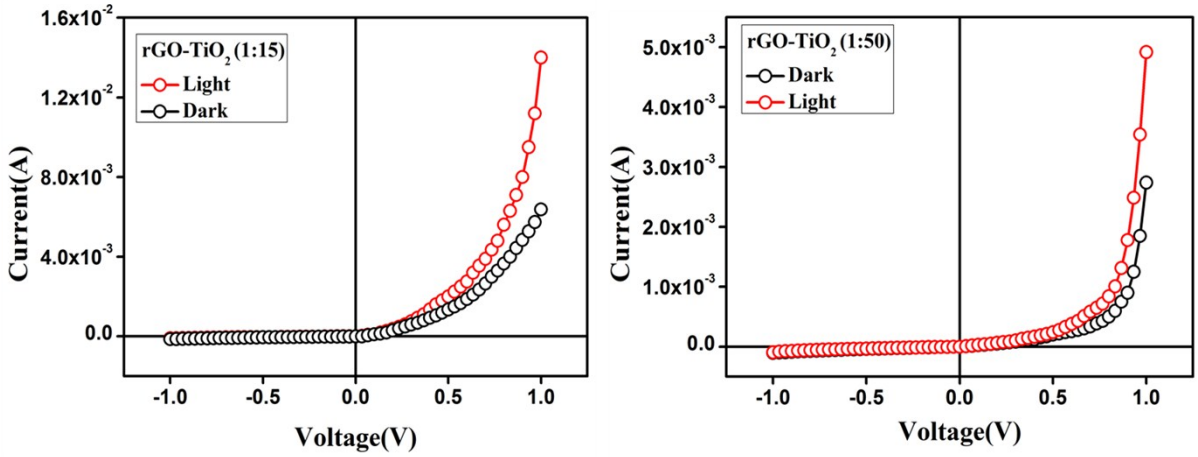

Fig. S2 I-V plot for rGO-TiO_2 (1:15) and rGO-TiO_2 (1:50) under dark and photo condition

The dV/dlnI vs I and H(I) vs I curvse for rGO-TiO_2 composites under dark and photo condition are presented in Fig. S3. The ideality factor, barrier height and series resistance of the diodes were calculated and shown in Table S1. The data shows that the device performance improved for all the cases with rGO-TiO_2, compared to pure TiO_2.

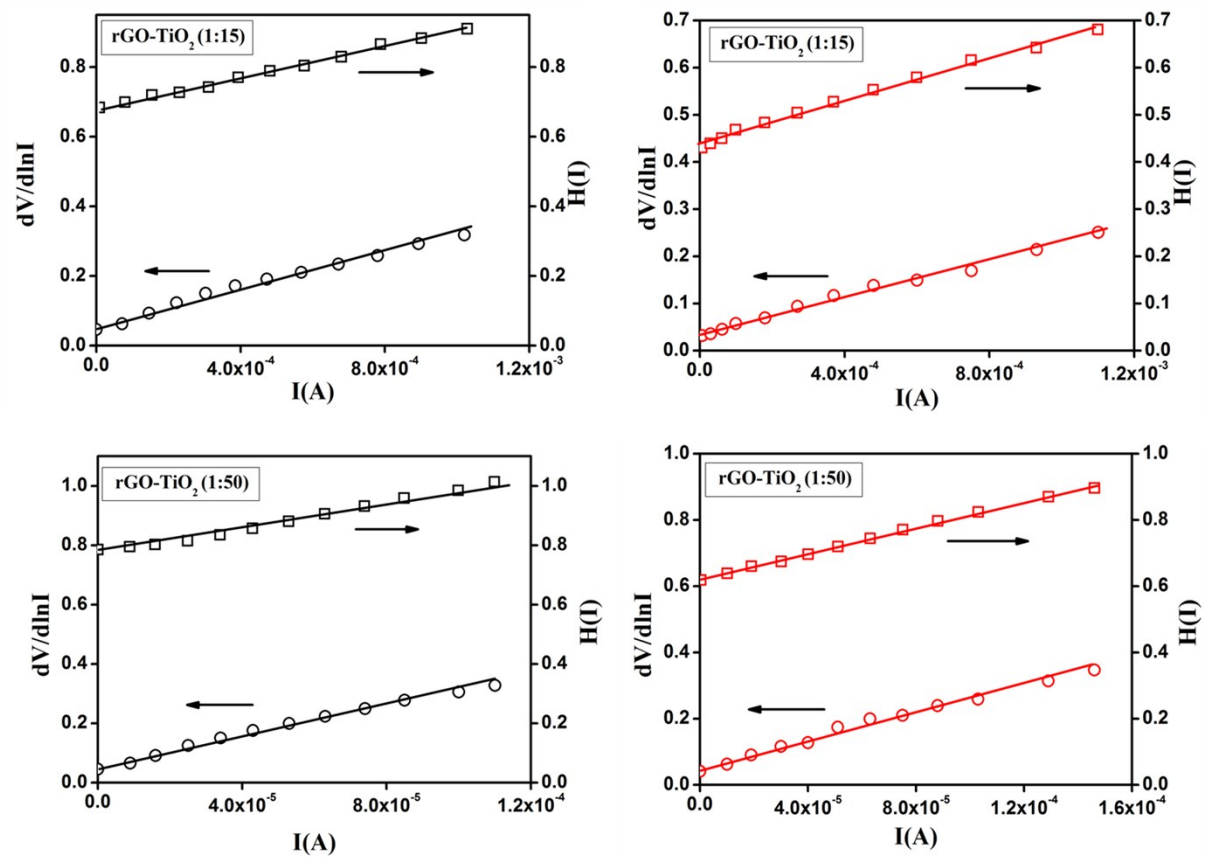

Fig. S3 dV/dlnI vs I and H(I) vs I curve for rGO-TiO_2 (1:15) and rGO-TiO_2 (1:50) under dark (black) and photo (red) condition.

Table S1

Sample	Cond^n.	On/off	Photosensityvity	I.F.	R_S (dv/dlnI) (kΩ)	R_s (H) (kΩ)	φ_b (eV)
rGO-TiO_2 (1:15)	Dark	49	2.19	1.78	0.29	0.28	0.38
	Light	135		1.24	0.23	0.24	0.34
rGO-TiO_2 (1:50)	Dark	31	1.55	1.76	2.8	2.4	0.44
	Light	51		1.58	2.2	1.9	0.39

Table S1 | Schottky Diode parameters