

Electronic Supplementary Information

TiO₂-Decorated Graphenes as Efficient Photoswitches with High Oxygen Sensitivity†

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This PDF file includes:
Figs. S1 to S5

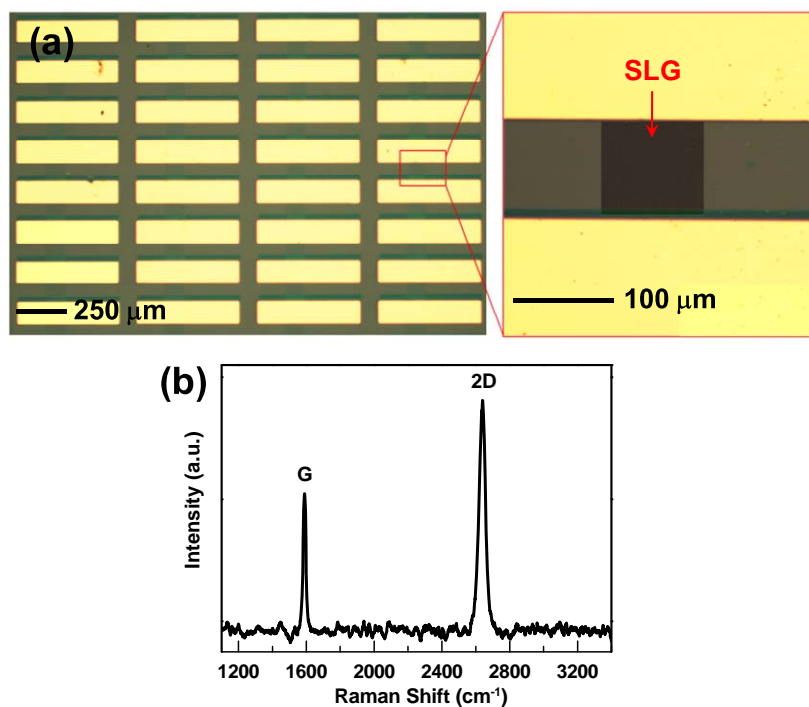


Fig. S1 (a) Schematic representation of a SLG device array and an enlarged optical image of a representative device. (b) A representative Raman spectrum of a single-layer graphene with high quality.

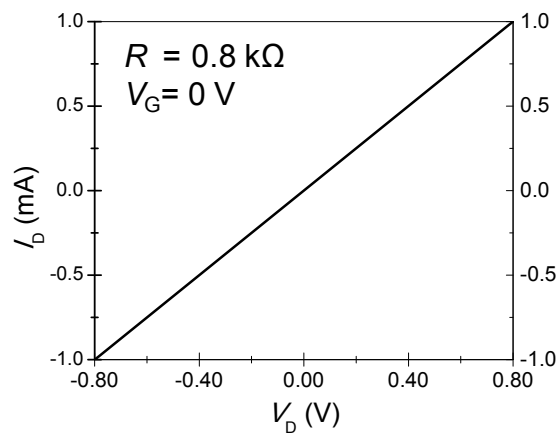


Fig. S2 A representative electronic property of a SLG transistor. The device resistance is $\sim 0.8 \text{ k}\Omega$.

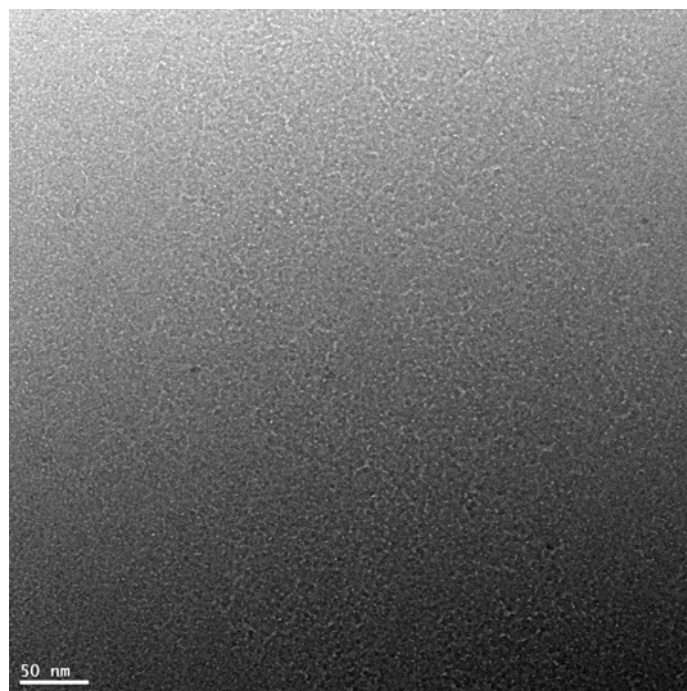


Fig. S3 A low-resolution TEM image of a 5 nm-thick TiO₂ thin film formed through e-beam thermal evaporation.

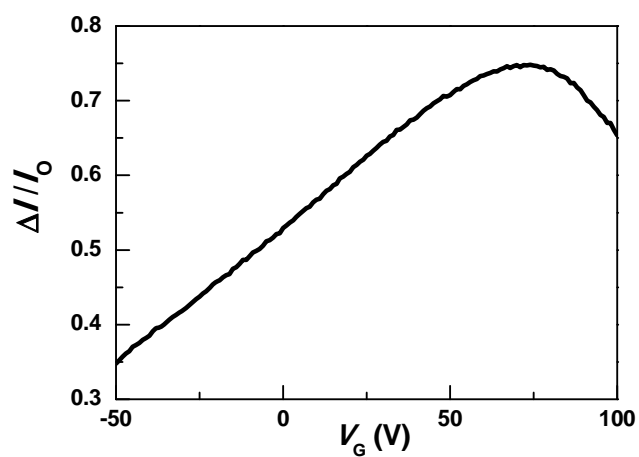


Fig. S4 The gate-dependent spectrum of $\Delta I/I_0$ for the device used in Figure 4a before and after exposure to oxygen under UV irradiation. $V_D = 400 \mu\text{V}$.

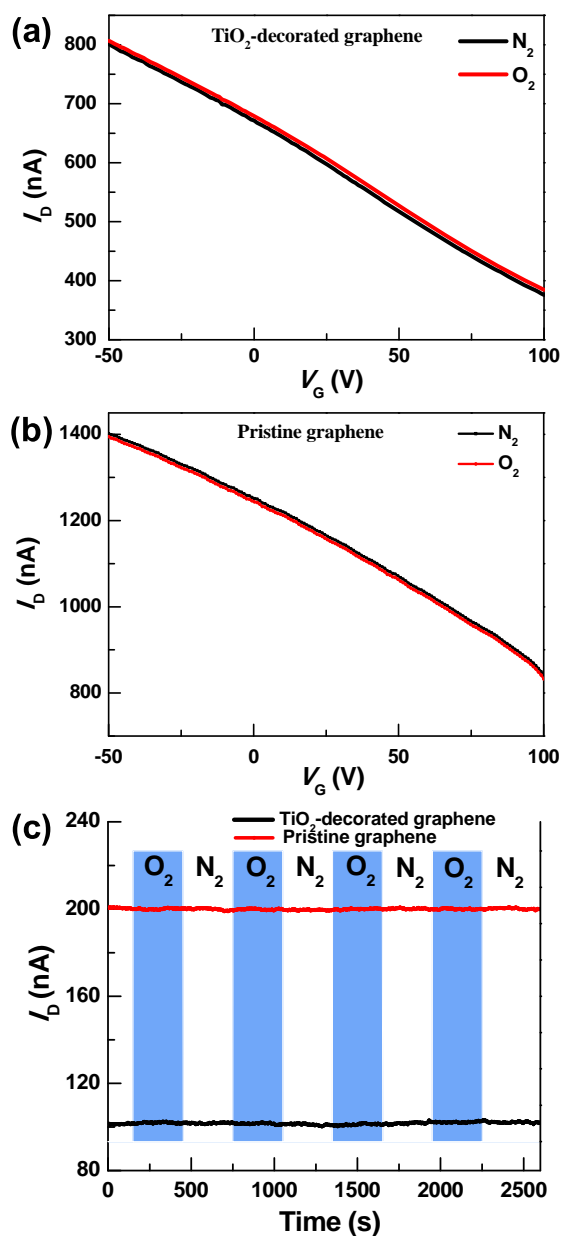


Fig. S5 Device characteristics of a TiO₂-decorated graphene device (a) and a pristine graphene device (b) before and after oxygen exposure without UV irradiation. $V_D = 1$ mV. (c) Simultaneously recorded I_D for the same devices when sequentially exposed to oxygen and nitrogen (black for the TiO₂-decorated graphene; red for the pristine graphene) without UV irradiation. $V_D = 100$ μ V. $V_G = 50$ V.