Supplementary Information

A Laser-Induced Graphene-Titanium (IV) Oxide Composite for Adsorption Enhanced Photodegradation of Methyl Orange

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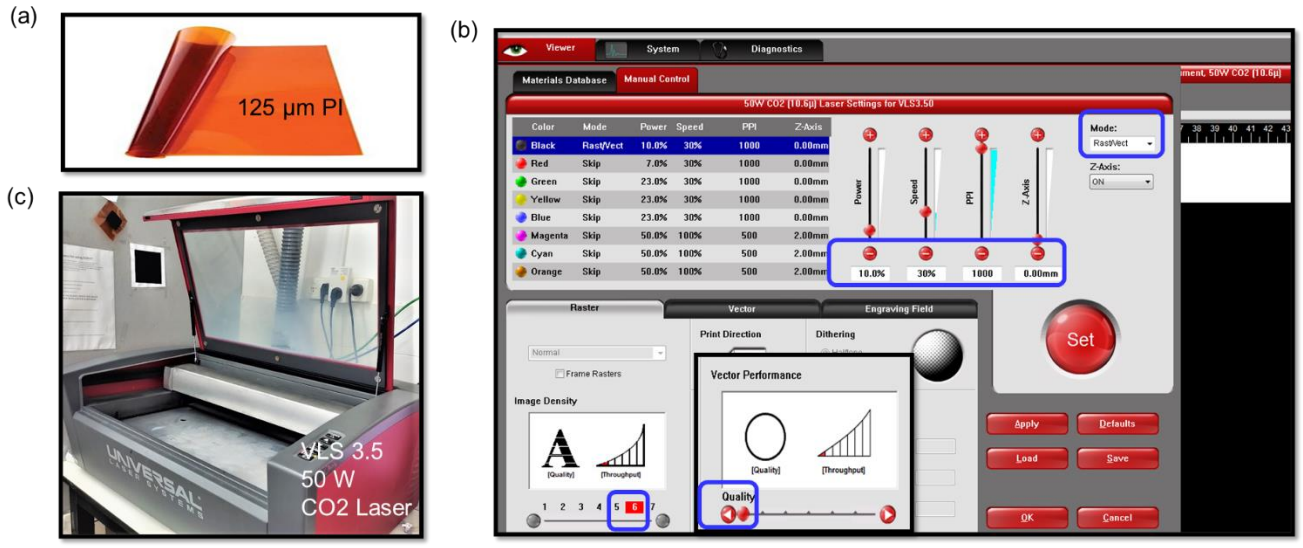

Figure S1. (a) PI substrate; (b) Laser parameters used during LIG/TiO_2 fabrication as viewed in the software of the VLS 3.50 laser from Universal Laser Systems; (c) Photograph of the laser system used.

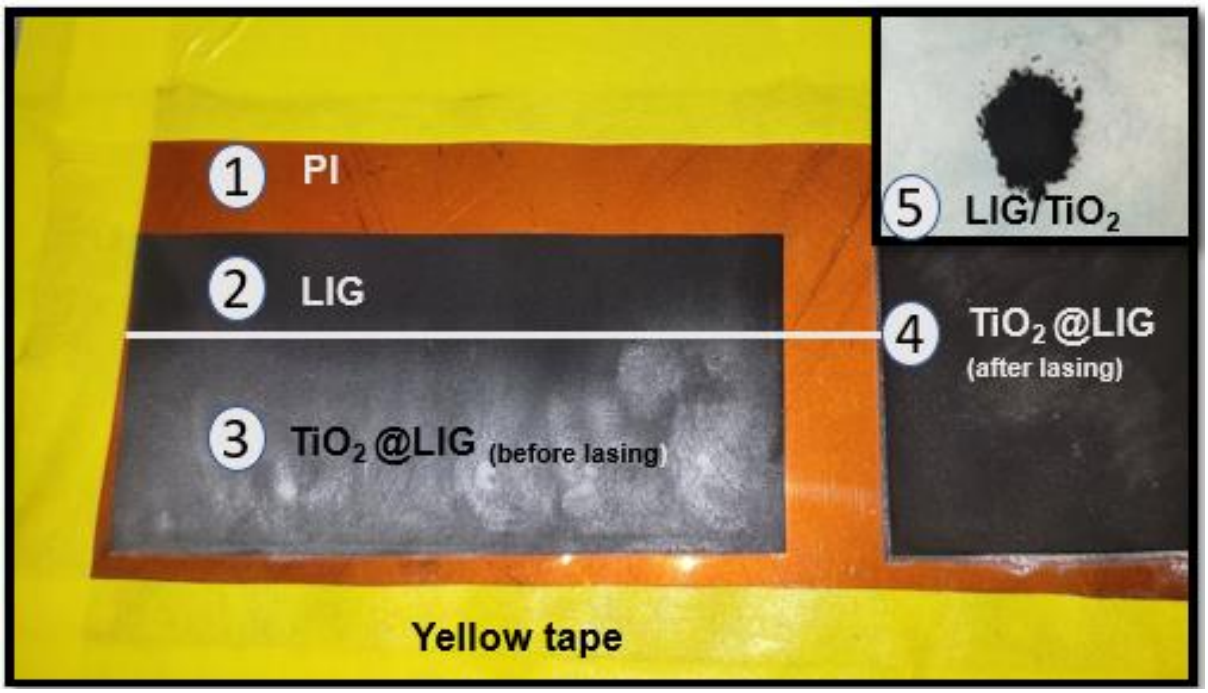

Figure S2. LIG/TiO_2 fabrication process, showing (1) the polyimide (PI) substrate, (2) LIG fabricated on the PI substrate, (3) TiO_2 coated LIG (before second lasing), (4) LIG/TiO_2 composite after second lasing, and (5) the LIG/TiO_2 powder obtained after scraping the composite from the PI surface.

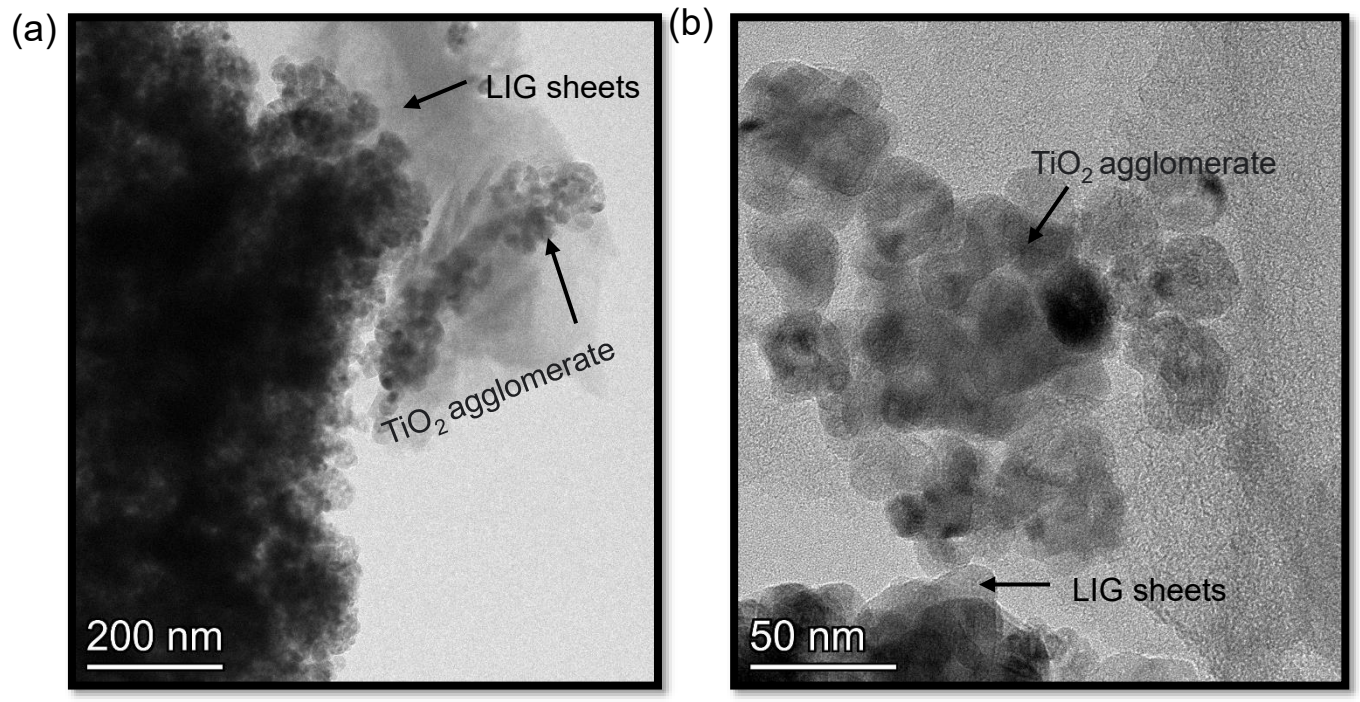

Figure S3. TEM images of LIG/TiO_2 composite. (a) TEM image showing both LIG sheets and TiO_2 nanoparticles and agglomerates, scale bar 200 nm; (b) TEM image at a higher magnification showing both LIG sheets and TiO_2 nanoparticles and agglomerates scale bar 50 nm.

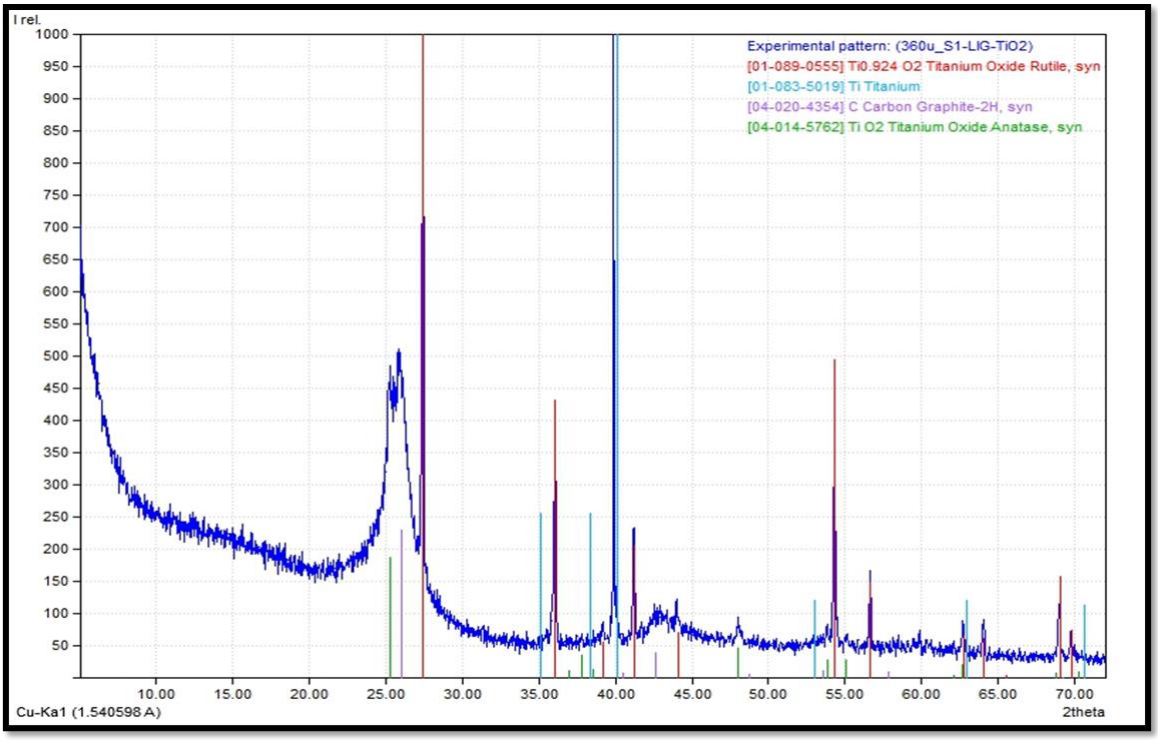

Figure S4. XRD phase/composition identification of LIG/TiO_2 sample.

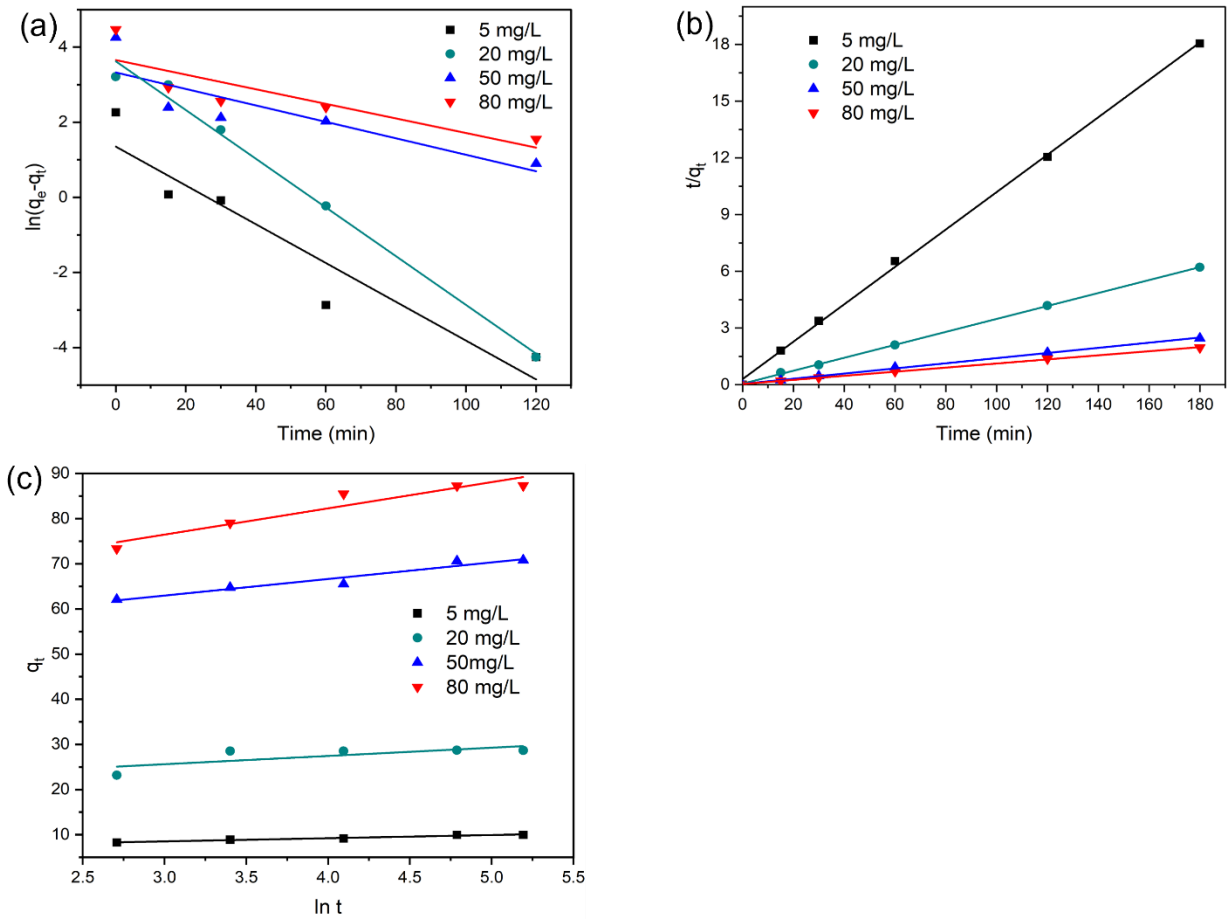

Figure S5. Adsorption kinetic models (a) Pseudo first order; (b) Pseudo second order; (c) Elovich