

Supplementary Information

Graphene tailored by Fe₃O₄ nanoparticles: low-adhesive and durable superhydrophobic coatings

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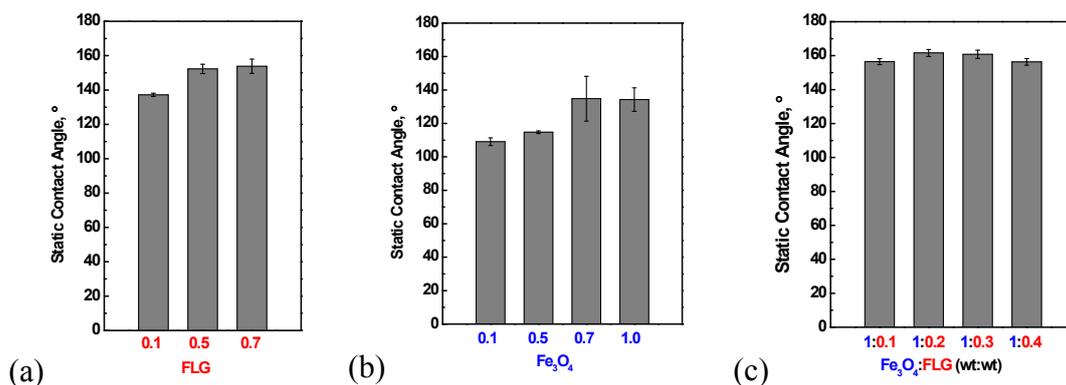


Figure S1. Variation of water static contact angles on (a) different FLG (0.1, 0.5, 0.7 g) coatings, without Fe₃O₄, and (b) different Fe₃O₄ (0.1, 0.5, 0.7, 1.0 g) coatings, without FLG, with 1 g PDMS as glue. (c) 1.0 g Fe₃O₄ with varying amounts of FLG (0.1, 0.2, 0.3, 0.4 g) in 20 mL hexane, with 1 g PDMS as glue.

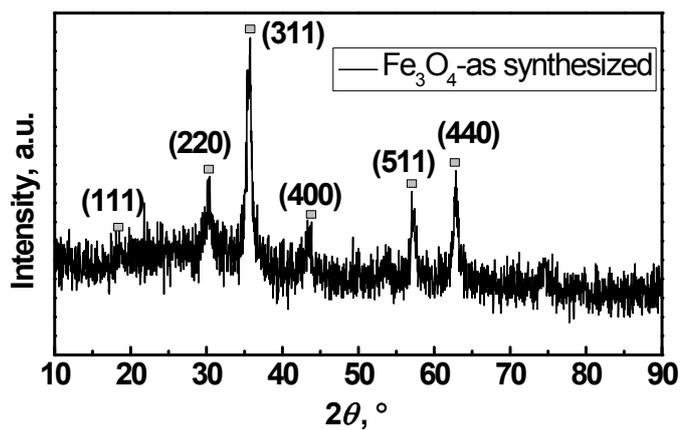


Figure S2. X-ray powder diffraction (XRD) pattern for as-synthesized Fe_3O_4 nanoparticles.

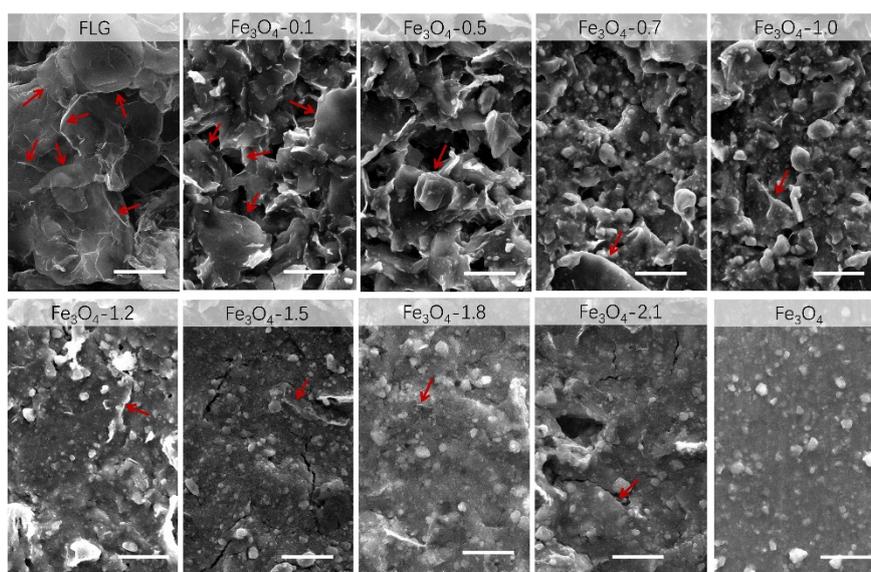
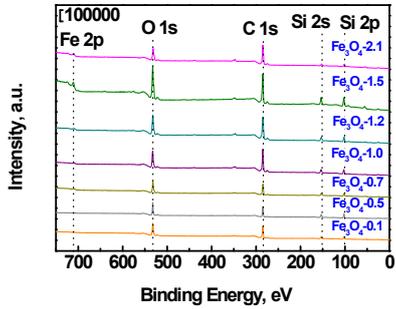
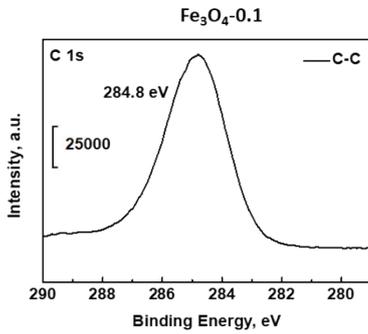


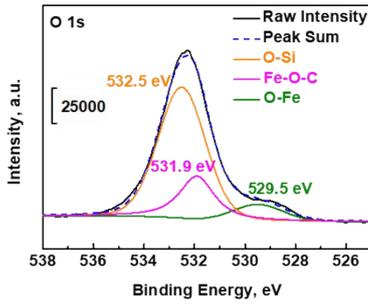
Figure S3. SEM images of bare Fe_3O_4 , FLG, and $\text{Fe}_3\text{O}_4/\text{FLG}$ hybrid coatings at low resolution, showing the presence of graphene sheets. Arrows show some graphene sheets. Scale bars are 25 μm .



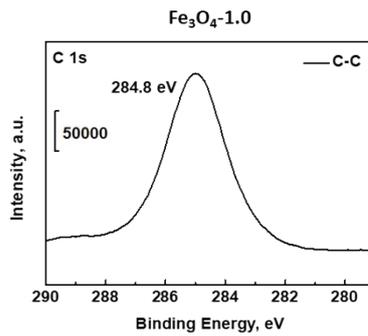
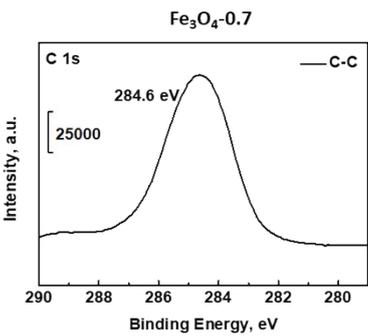
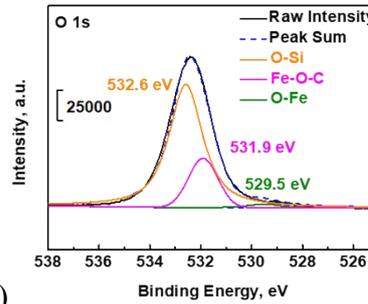
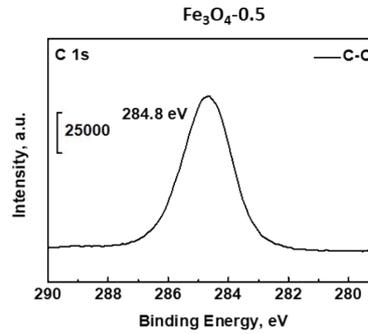
(a)



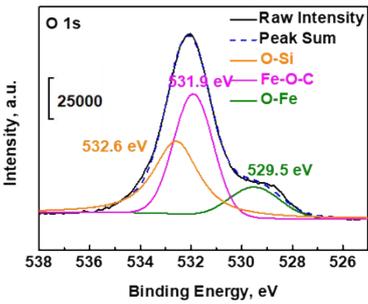
(b)



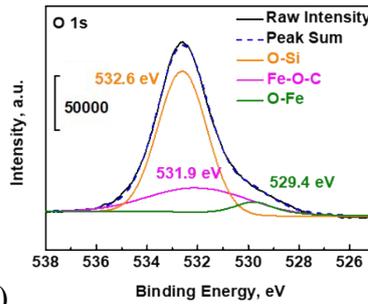
(c)



(d)



(e)



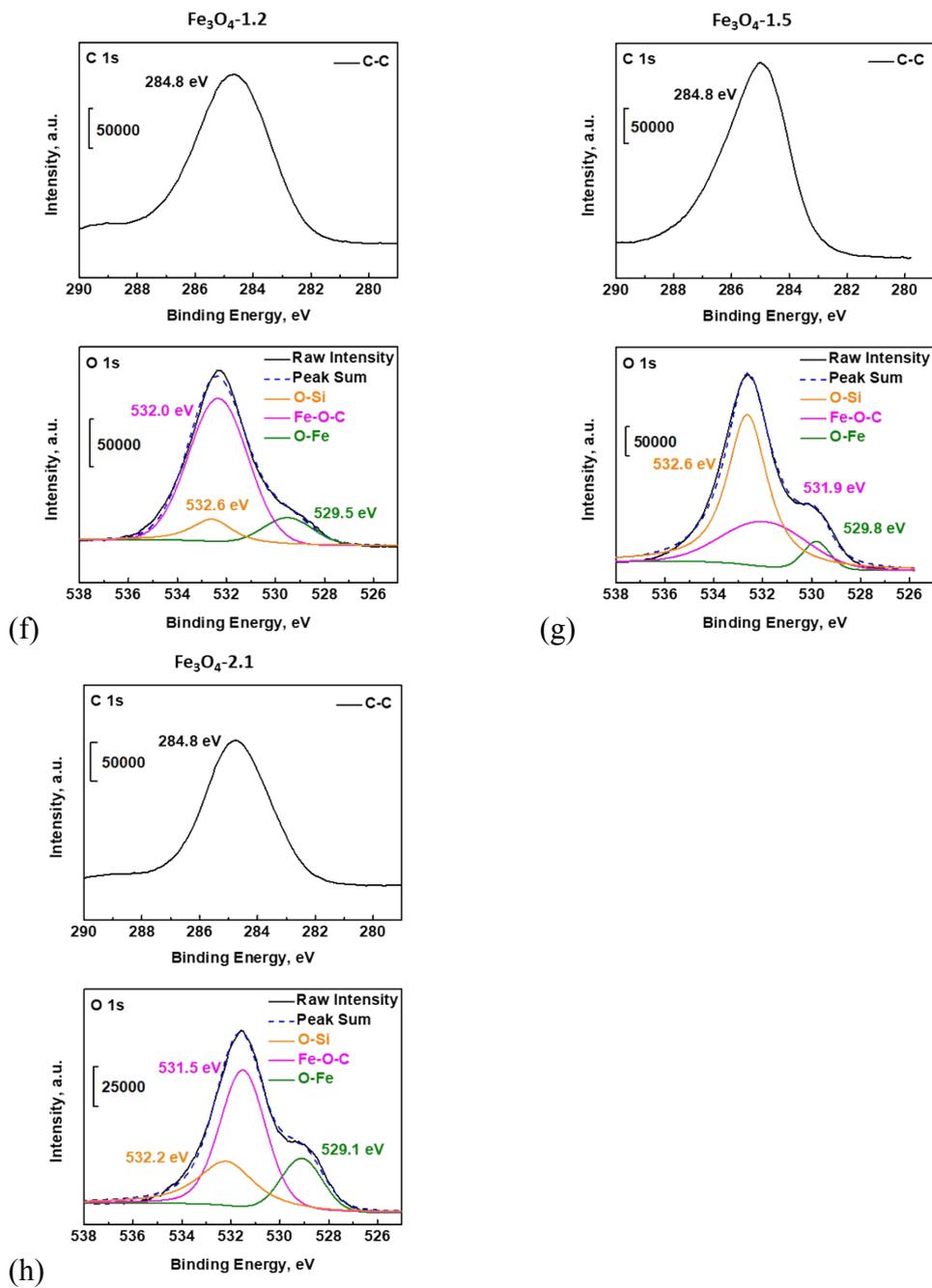


Figure S4. (a) XPS survey spectra of $\text{Fe}_3\text{O}_4/\text{FLG}$ hybrid coatings, and (b)- (h) their high resolution spectra for C 1s and O 1s respectively.

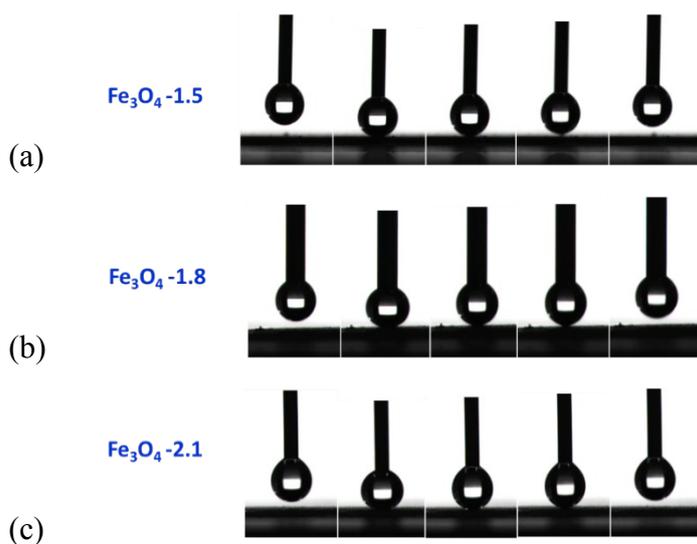


Figure S5. Cross-sectional views of a water droplet ($\sim 5 \mu\text{L}$) during an approach/separation cycle on the $\text{Fe}_3\text{O}_4/\text{FLG}$ hybrid coating surfaces: (a) $\text{Fe}_3\text{O}_4\text{-1.5}$, (b) $\text{Fe}_3\text{O}_4\text{-1.8}$, and (c) $\text{Fe}_3\text{O}_4\text{-2.1}$.

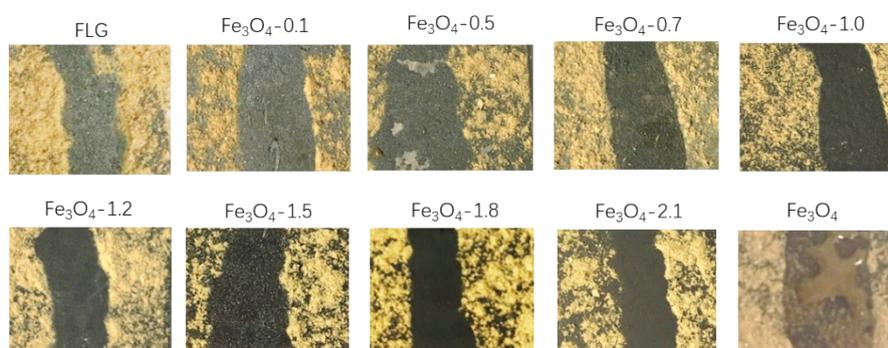


Figure S6. The self-cleaning performance of bare Fe_3O_4 , FLG, and $\text{Fe}_3\text{O}_4/\text{FLG}$ hybrid coating surfaces tested by sand dust.