Supplementary Information

Graphene tailored by Fe$_3$O$_4$ 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 Fe$_3$O$_4$, and (b) different Fe$_3$O$_4$ (0.1, 0.5, 0.7, 1.0 g) coatings, without FLG, with 1 g PDMS as glue. (c) 1.0 g Fe$_3$O$_4$ 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$_3$O$_4$ nanoparticles.

**Figure S3.** SEM images of bare Fe$_3$O$_4$, FLG, and Fe$_3$O$_4$/FLG hybrid coatings at low resolution, showing the presence of graphene sheets. Arrows show some graphene sheets. Scale bars are 25 μm.
Fe₂O₃ • 0.1

Fe₂O₃ • 0.5

Fe₂O₃ • 0.7

Fe₂O₃ • 1.0
Figure S4. (a) XPS survey spectra of Fe$_3$O$_4$/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 (∼5 μL) during an approach/separation cycle on the Fe₃O₄/FLG hybrid coating surfaces: (a) Fe₃O₄-1.5, (b) Fe₃O₄-1.8, and (c) Fe₃O₄-2.1.

Figure S6. The self-cleaning performance of bare Fe₃O₄, FLG, and Fe₃O₄/FLG hybrid coating surfaces tested by sand dust.