

Electronic Supplementary Information

Fluorinated Graphene: Facile Solution Preparation and Tailorable Properties by Fluorine-content Tuning

Fu-Gang Zhao,^{a, ‡} Gang Zhao,^{b, ‡} Xin-Hua Liu,^c Cong-Wu Ge,^a Jin-Tu Wang,^a Bai-Li Li,^a Qi-Gang Wang,^{*c} Wei-Shi Li,^{*a} and Qing-Yun Chen^{*b}

^a *Laboratory of Synthetic and Self-Assembly Chemistry for Organic Functional Molecules, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, China. E-mail: liws@mail.sioc.ac.cn.*

^b *Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, China. E-mail: chenqy@mail.sioc.ac.cn.*

^c *Department of Chemistry, Tongji University, 1239 Siping Road, Shanghai 200092, China. E-mail: wangqg66@tongji.edu.cn.*

[‡] These authors contributed equally to this work.

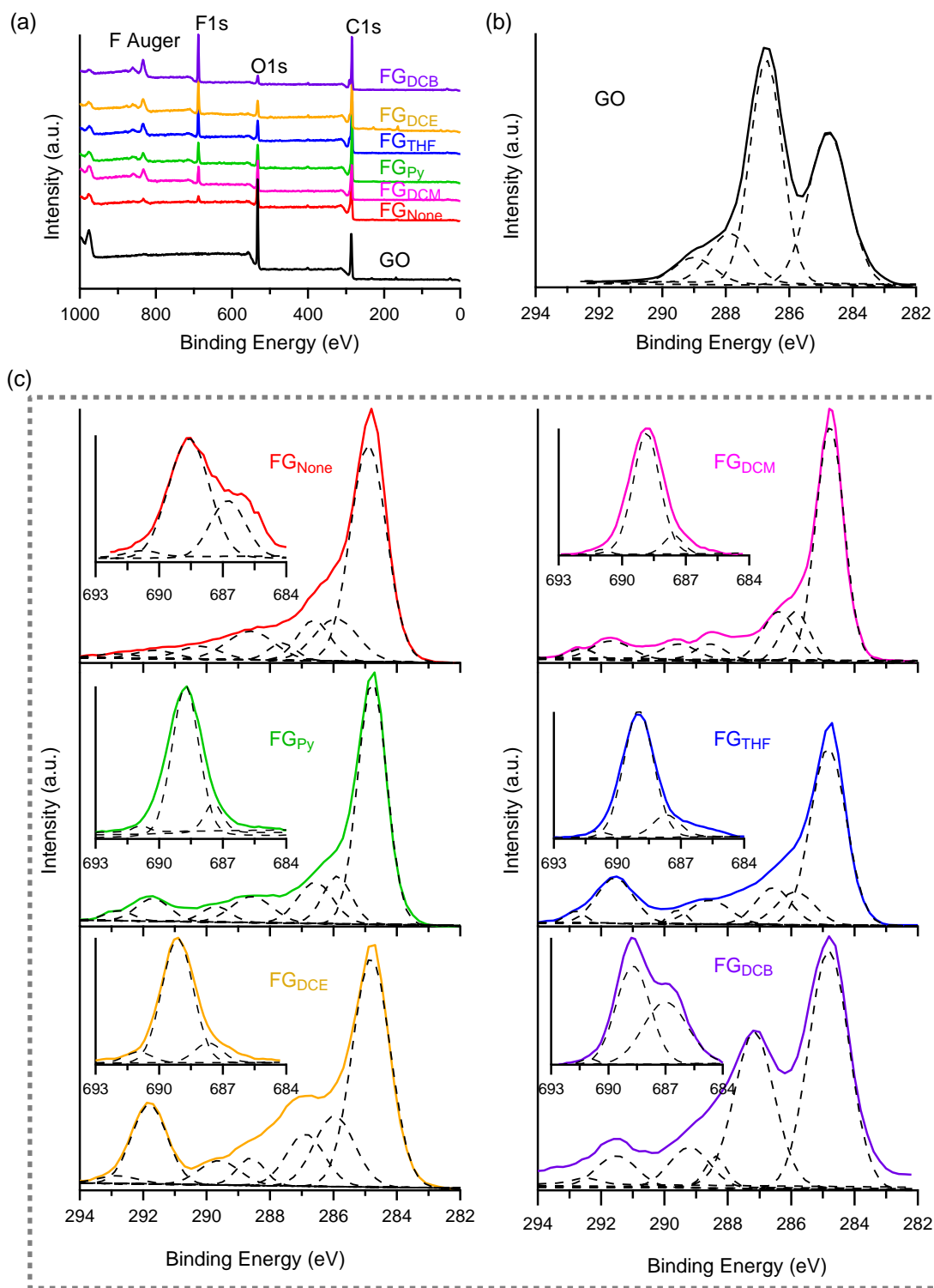


Fig. S1 (a) Survey XPS spectra of as-prepared GO and fluorinated graphene products. C1s XPS spectra of (b) GO and (c) fluorinated graphene products. Insets: F1s XPS spectra of fluorinated graphene products.

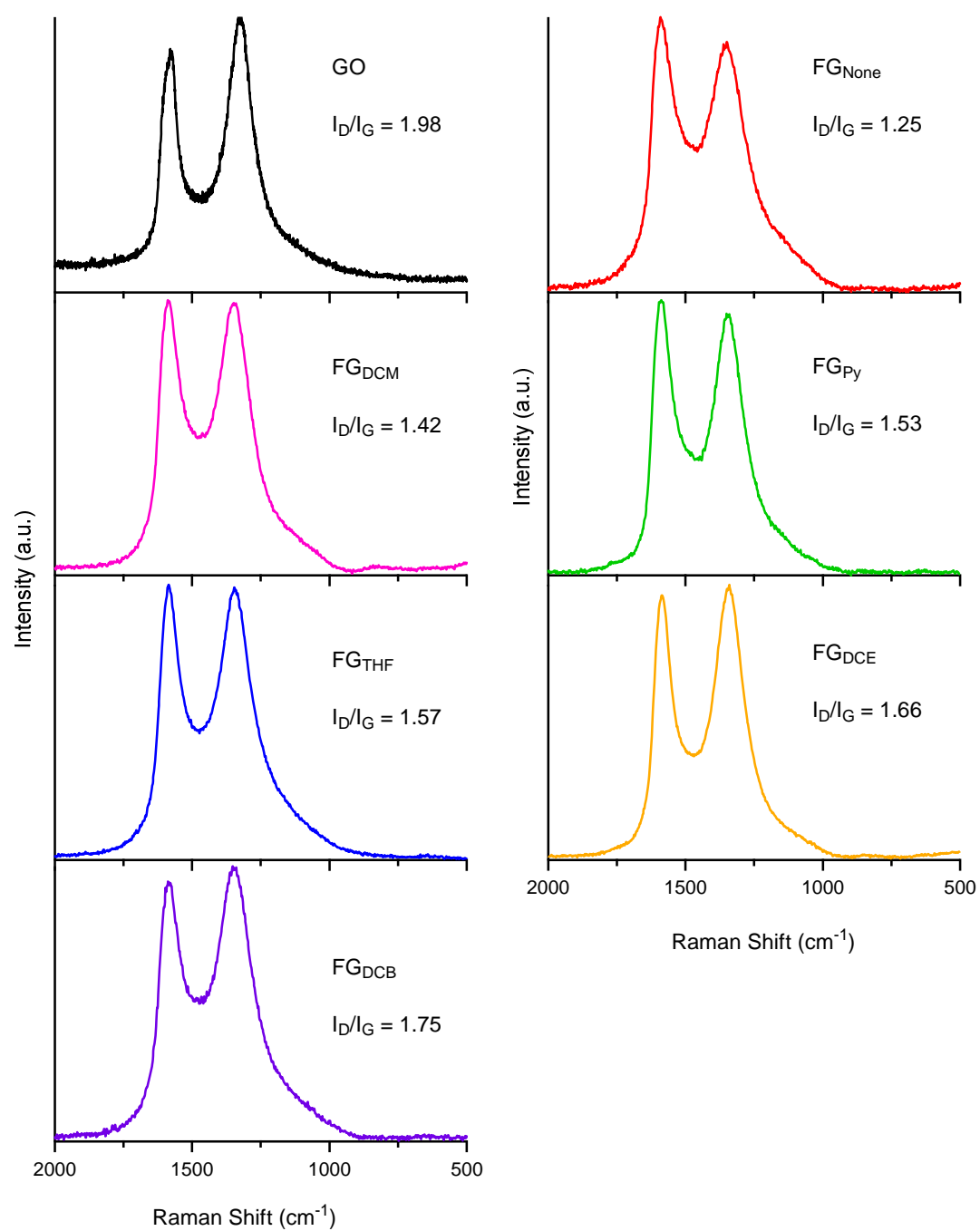


Fig. S2 Raman spectra and corresponding I_D/I_G ratio of GO and fluorinated graphene products.

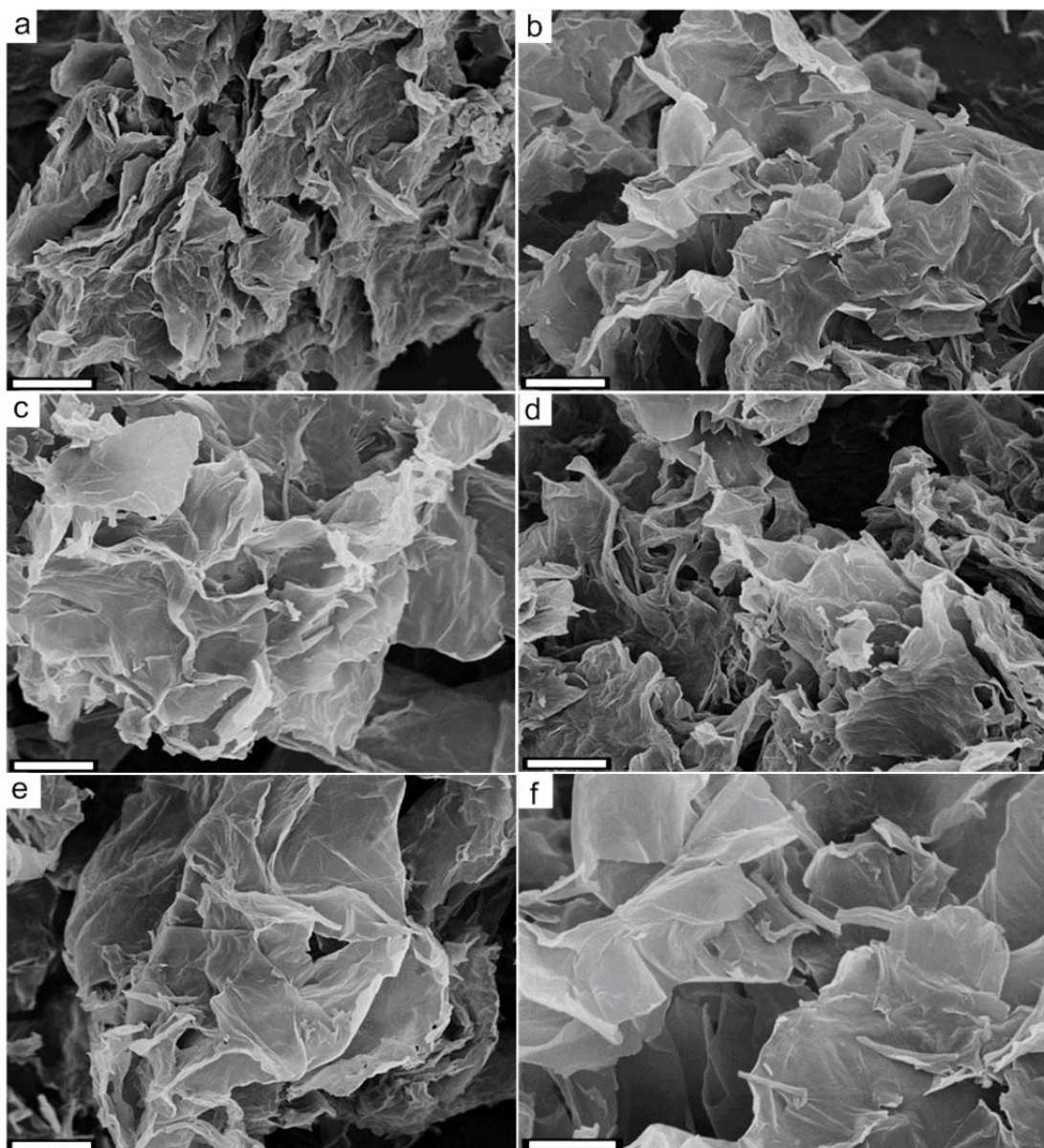


Fig. S3 FE-SEM images of freeze-dried (a) FG_{None} , (b) FG_{DCM} , (c) FG_{Py} , (d) FG_{THF} , (e) FG_{DCE} , and (f) FG_{DCB} powders. Scale bar: $2 \mu m$.

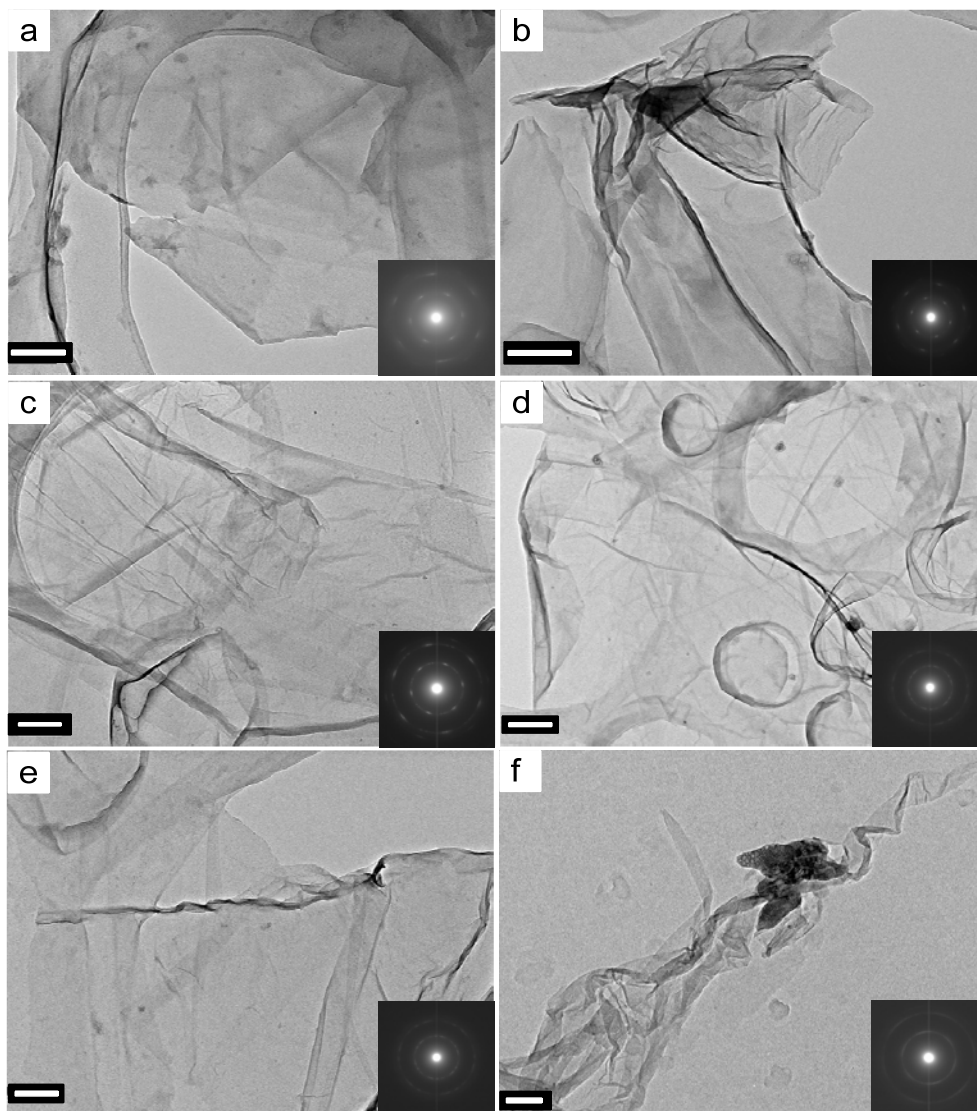


Fig. S4 TEM images and SAED patterns of (a) FG_{None} , (b) FG_{DCM} , (c) FG_{Py} , (d) FG_{THF} , (e) FG_{DCE} , and (f) FG_{DCB} . Scale bar: 200 nm

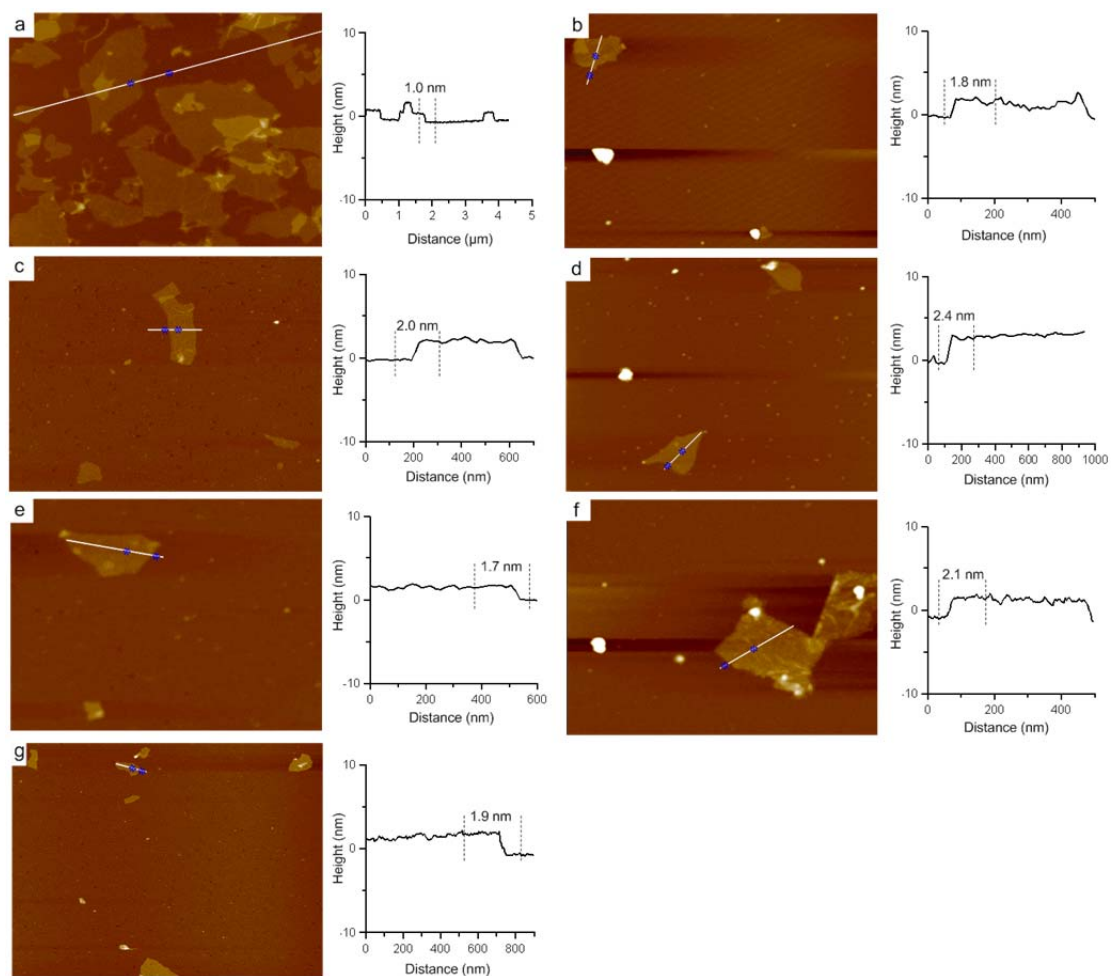


Fig. S5 AFM images and corresponding height profiles of (a) GO, (b) FG_{None} , (c) FG_{DCM} , (d) FG_{Py} , (e) FG_{THF} , (f) FG_{DCE} , and (g) FG_{DCB} .

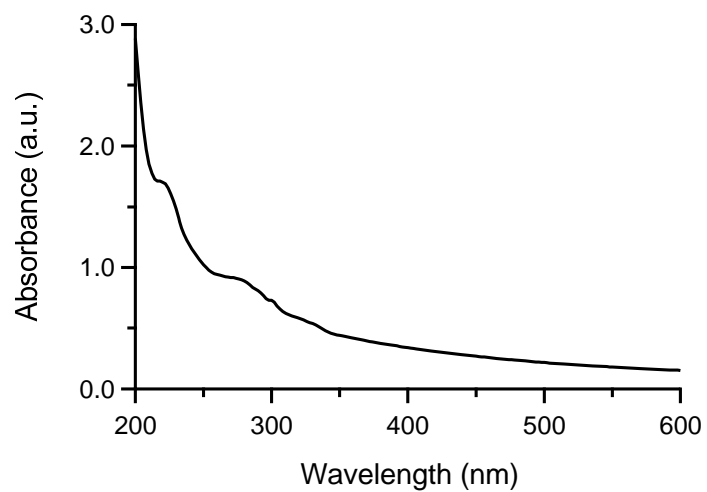


Fig. S6 UV-vis absorption spectra of GO in CH_3CN solution with a concentration of $2.5 \times 10^{-3} \text{ mg mL}^{-1}$. The calculated bandgap of GO is about 3.46 eV, according to empirical formula of $1240/\lambda_{\text{Abs, onset}}$.

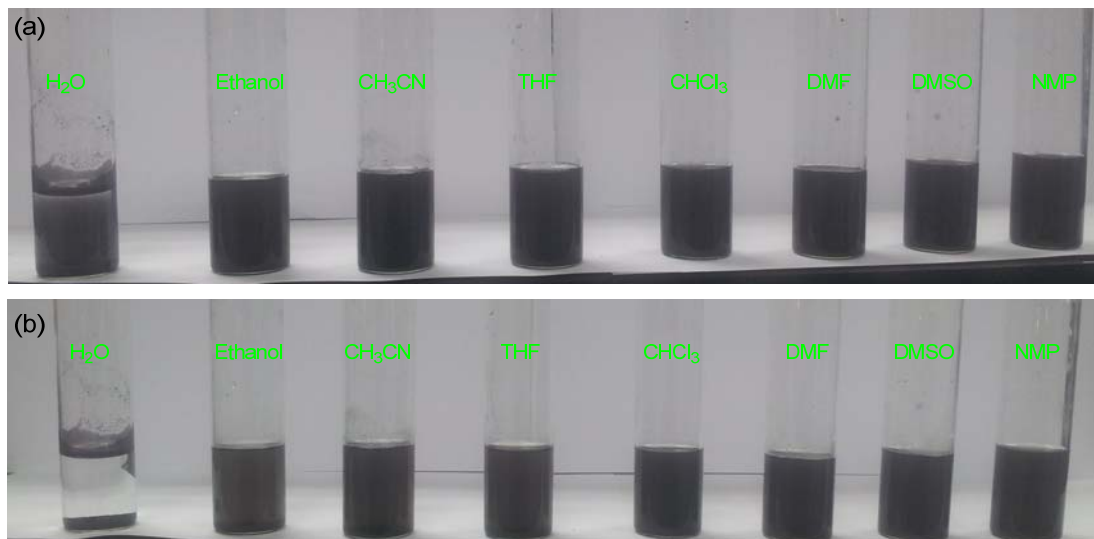


Fig. S7 Dispersibility of FG_{DCB} in a variety of solvents with a concentration of 1 mg mL^{-1} at room temperature. (a) as-ultrasonicated; (b) left undisturbed for 3 days.

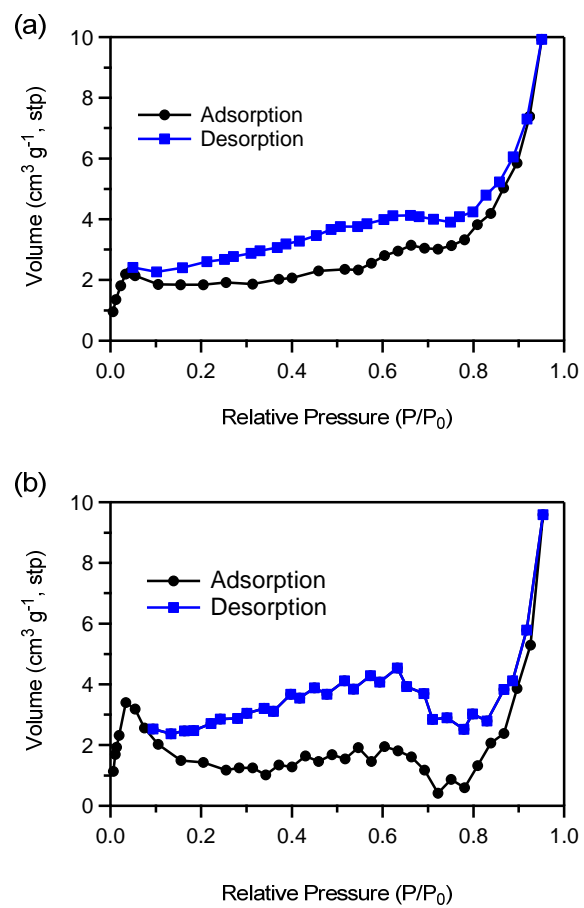


Fig. S8 Nitrogen adsorption and desorption isotherms of (a) FG_{DCM} and (b) FG_{THF}