

An Effective Non-Covalent Grafting Approach to Functionalizing Individually Dispersed Graphene Sheets with High Grafting Density, Solubility and Electrical Conductivity

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Supplementary Information

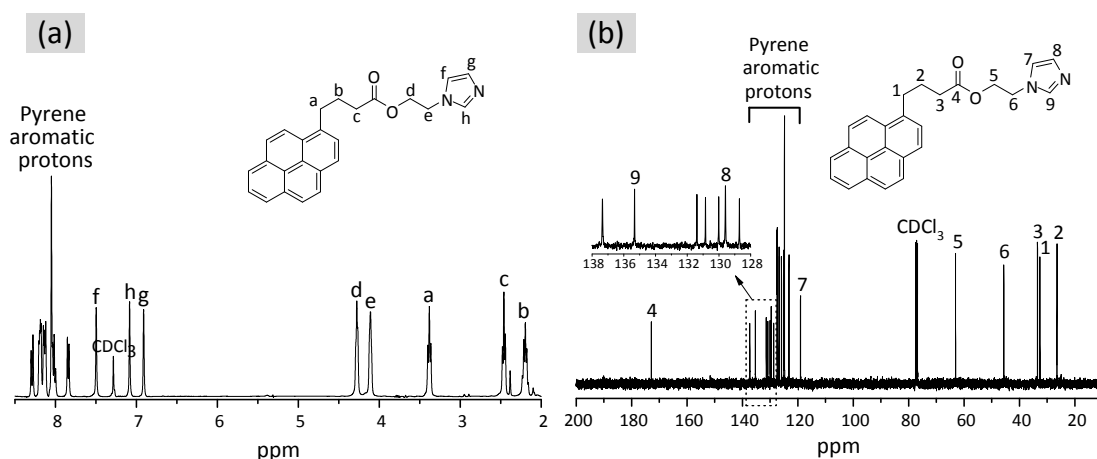


Figure S1. (a) ¹H-NMR and (b) ¹³C-NMR spectra of imidazole pyrene (Im-Py)

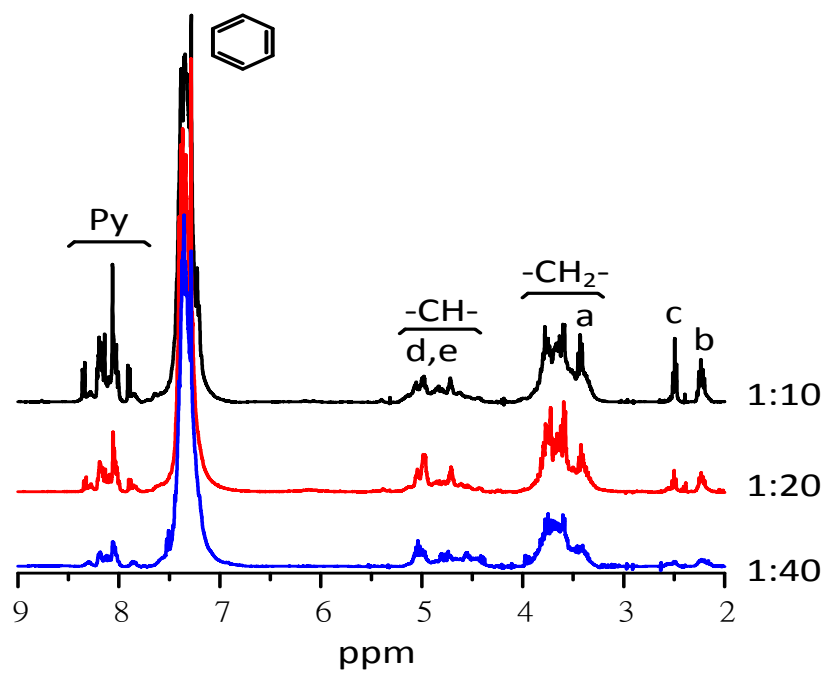


Figure S2. $^1\text{H-NMR}$ spectrum of PSO-Py.

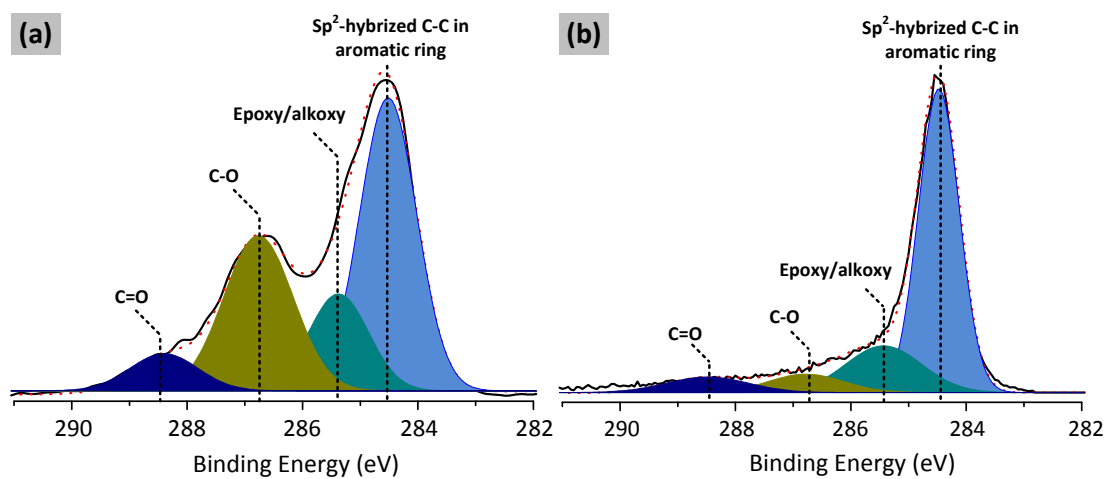


Figure S3. $\text{C}1\text{s}$ XPS profile of (a) GO and (b) RGO(BnOH).

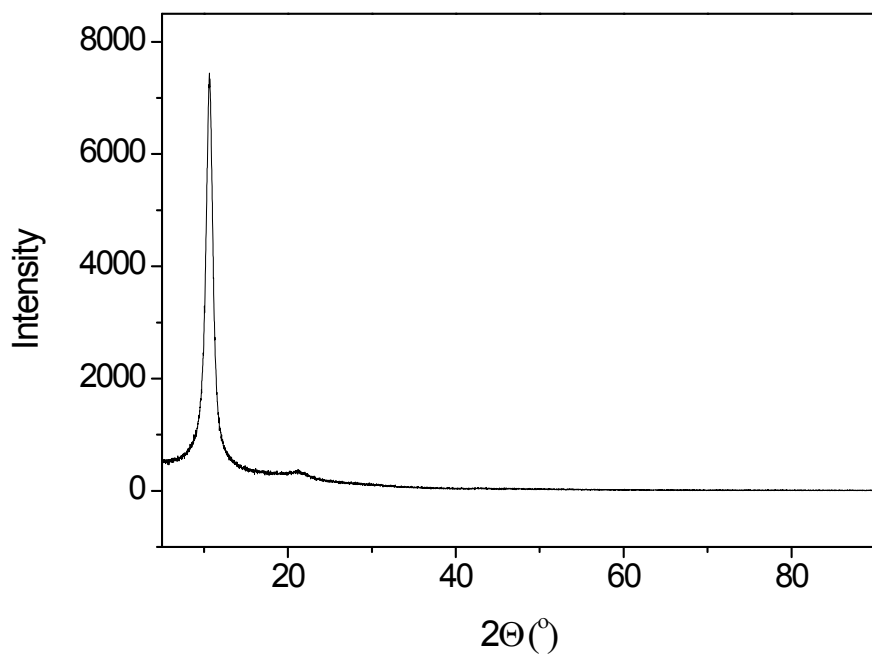


Figure S4. XRD pattern of GO.

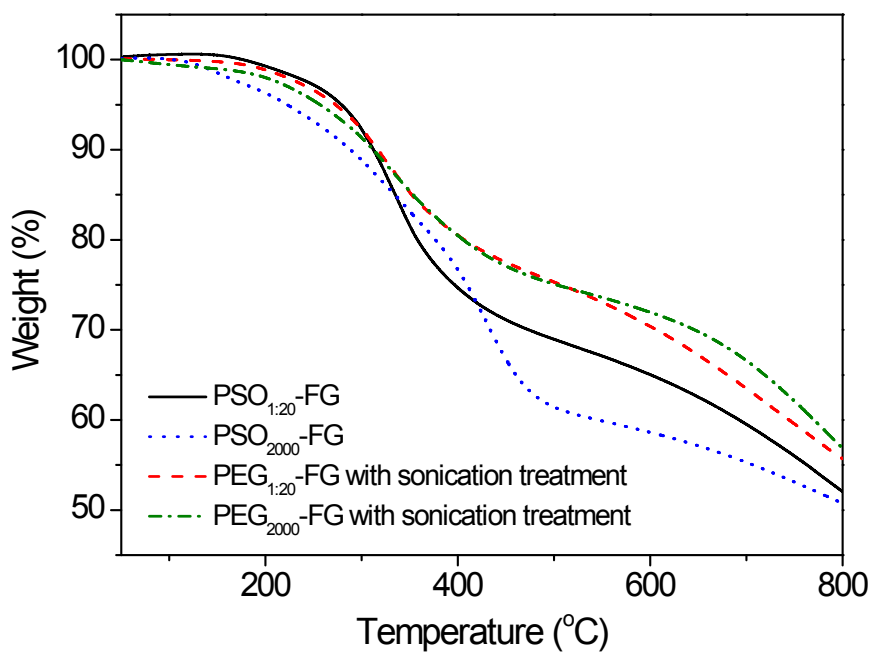


Figure S5. TGA curves of polymer-FG and polymer-FG with sonication treatment.

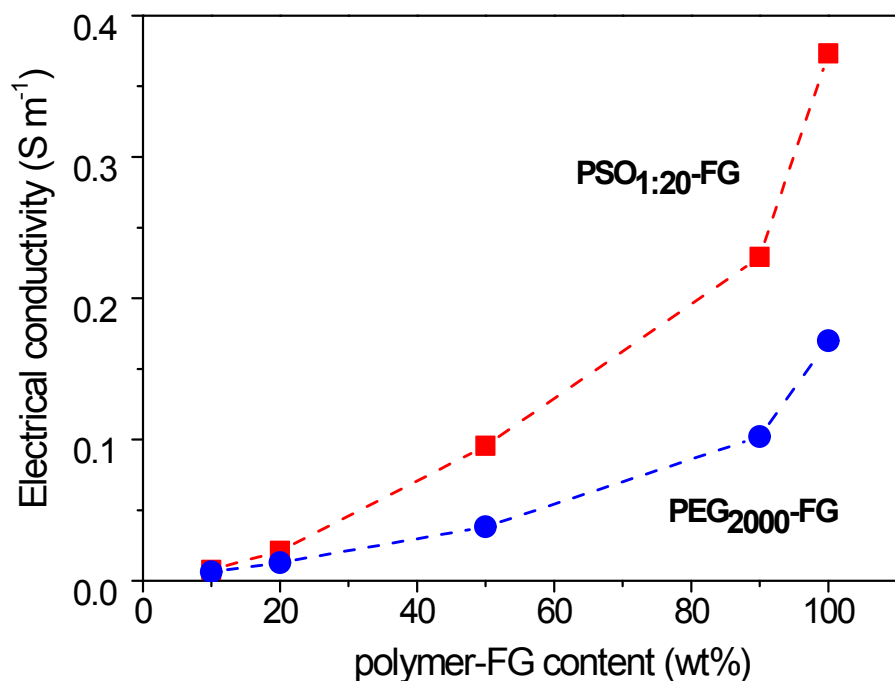


Figure S6. Electrical conductive curves of polymer-FG and polymer-FG/PVDF films (measured by AC impedance).

$$\bar{A}_{pg} = \frac{M_C W_P}{M_P W_C} \text{ (chains per carbon)} \quad \text{Eq.S1}$$

Where: M_C is the relative molar mass of carbon ($M_C = 12 \text{ g mol}^{-1}$), M_P the average molecular weight (M_n) of grafted polymer (calculated from NMR), and W_C the weight fractions of the polymer functionalized reduced graphene oxide backbone (polymer-FG) (not including grafted polymer). W_C and W_P can be readily obtained from the TGA curves of polymer functionalized graphene composite because the polymer functionalized graphene has a weight loss stage below $600 \text{ }^\circ\text{C}$, and the decomposed weight fraction above $800 \text{ }^\circ\text{C}$ is assigned to W_P .