Electronic Supplementary Information

Synthesis of partially hydrogenated graphene and brominated graphene

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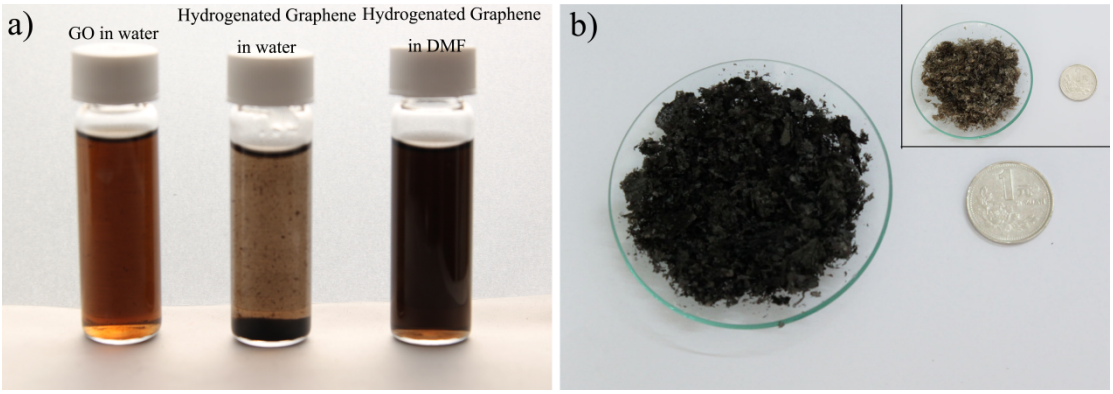


Fig. S1 The colour of GO changes from brown to black (a and b). After reaction, the product is insoluble in water but can be dispersed in DMF.

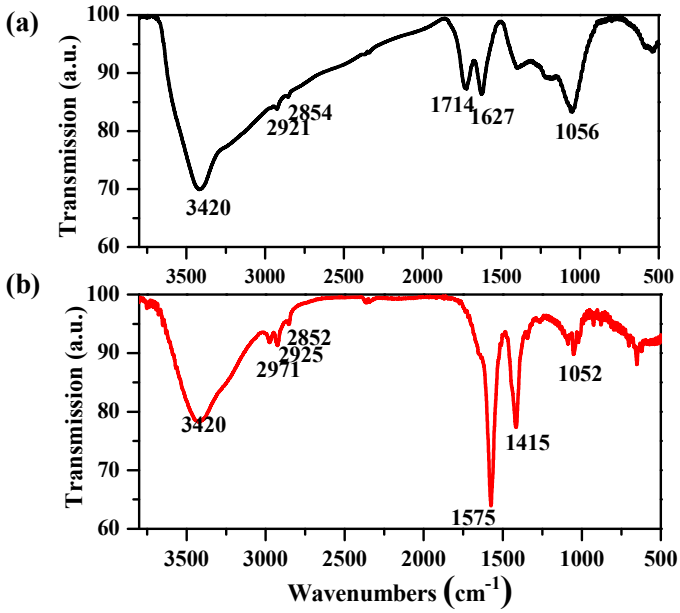


Fig. S2 FTIR spectrum of (a) GO and (b) partially hydrogenated graphene. Note that the stretches of epoxy (1056 cm^{-1}) and hydroxyl groups (1220 cm^{-1}) is significantly reduced in the partially hydrogenated graphene, with the emergence of the region of C–H stretches (2852, 2925 and 2971 cm^{-1}). The two new strong bands of partially hydrogenated graphene at 1575 and 1415 cm^{-1} falls in the region of C=C and C–C stretch, as well as the C–H bending region.

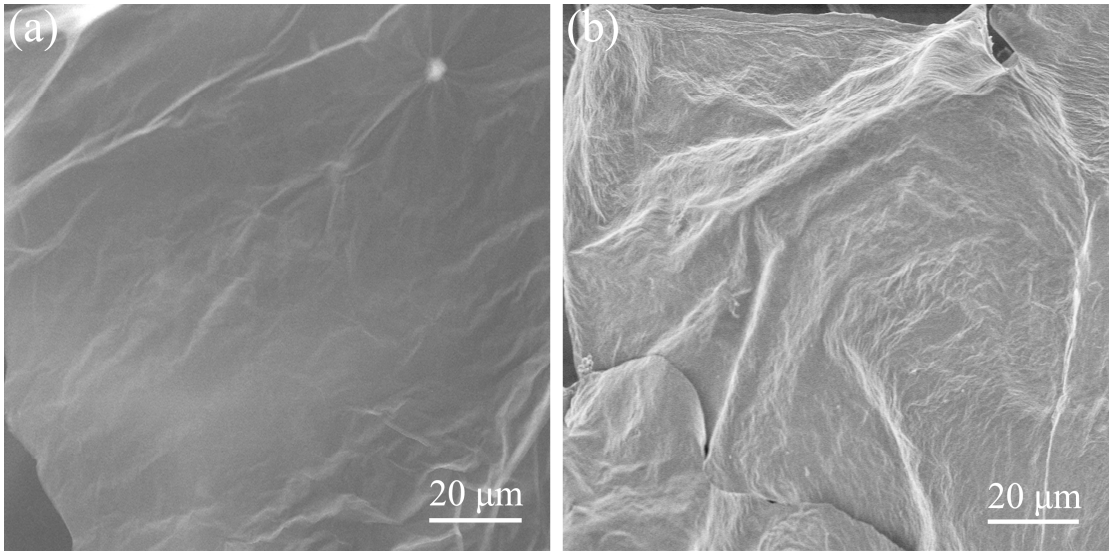


Fig. S3 Typical SEM images of (a) GO and (b) partially hydrogenated graphene. The surface of partially hydrogenated graphene remains two-dimensional structures with rich ripples on its surfaces, which is different from that of GO.

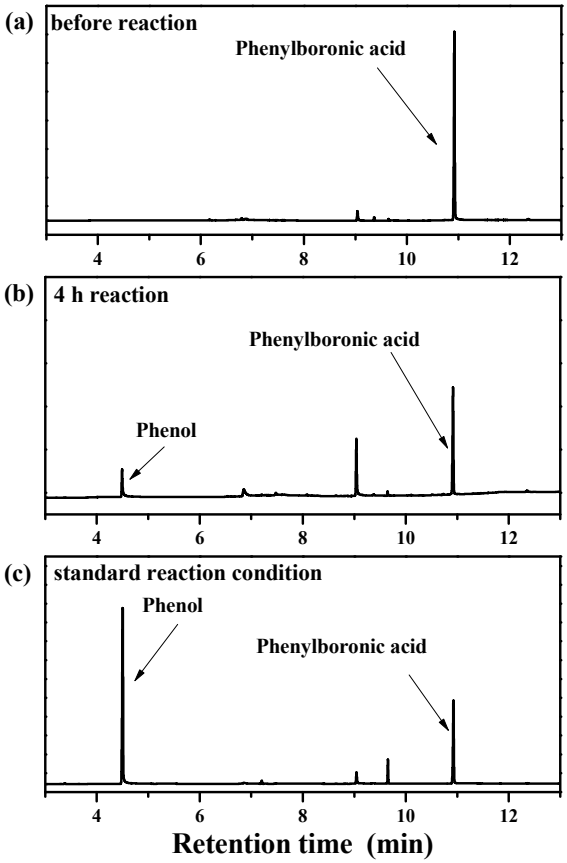
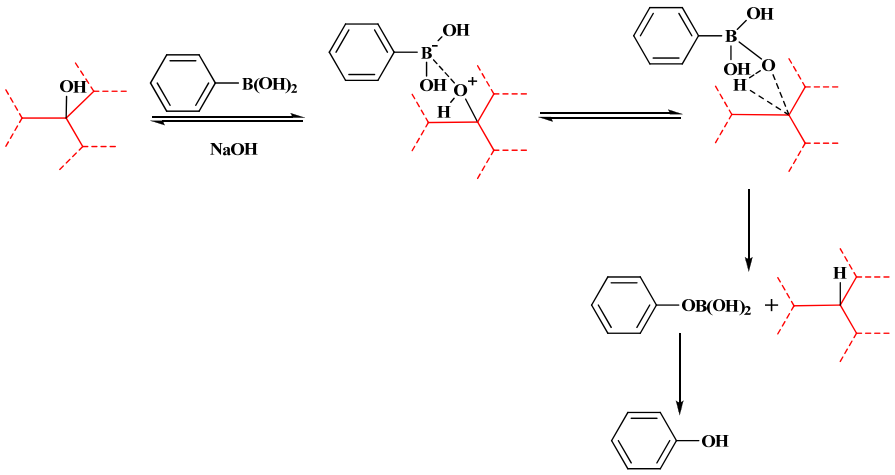


Fig. S4 GC results of (a) before GO reacting with phenylboronic acid, (b) 4 h reaction, and (c) standard reaction condition (6 h).



Scheme S1 Possible mechanism for the reactions between GO and phenylboronic acid, referring to the mechanism of similar reaction of phenylboronic acid. [1]

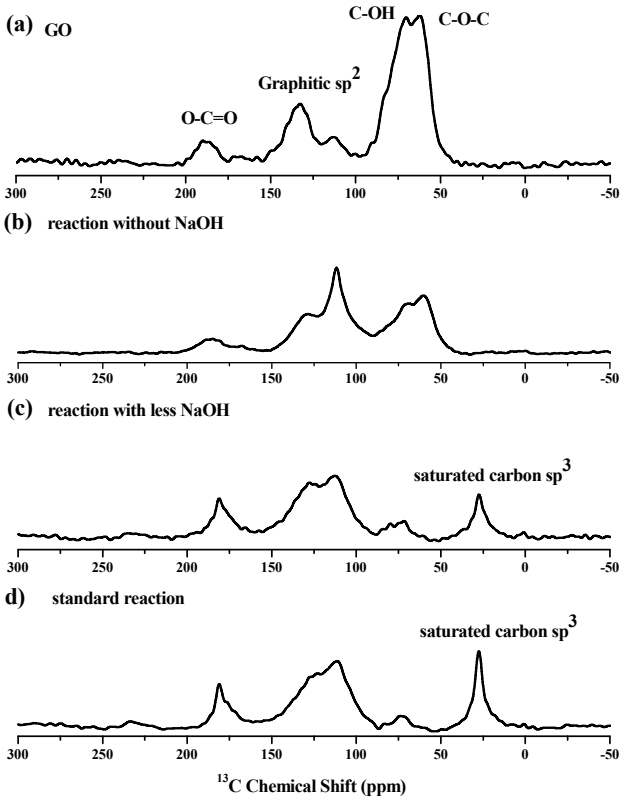


Fig. S5 Solid-state ^{13}C NMR spectra of GO (a), the products without NaOH (b), with less NaOH (the stoichiometric ratio of NaOH to phenylboronic acid is about 2) (c) and under standard reaction (the stoichiometric ratio of NaOH to phenylboronic acid is about 3) (d).

References

1. E. Kianmehr, M. Yahyaee and K. Tabatabai, *Tetrahedron Lett.*, 2007, **48**, 2713-2715.