

Electronic Supplementary Material

Solvothermal-Assisted Exfoliation Process to Produce Graphene with High Yield and High Quality

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1. XPS spectrum of graphene

X-ray photoelectron spectroscopy (XPS) was carried out with PHI Quantera X-ray photoelectron spectrometer, using a focused monochromatic Al X-ray beam. For the XPS measurements, the graphene sheets were dropped onto a clean Si wafer. Figure S-1 shows the XPS spectrum of graphene samples prepared by the solvothermal-assisted exfoliation process. The graphene sheets were washed several times with ethanol and acetone to remove the residual acetonitrile. No apparent N1s signal was observed in the spectrum, which shows that the solvothermal-assisted exfoliation process does not introduce any chemical functionalization.

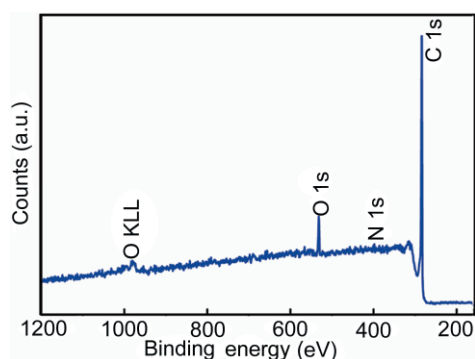


Figure S-1 XPS spectrum of graphene samples prepared by the solvothermal-assisted exfoliation process

2. AFM image of HOPG substrate

In order to eliminate the possibility of any effects

caused by the HOPG substrate, we obtained an AFM image (Fig. S-2) of fresh exfoliated HOPG itself which is clean and flat.

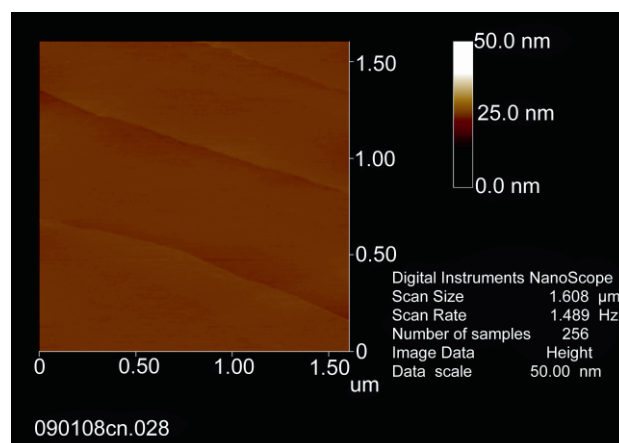


Figure S-2 AFM image of fresh exfoliated HOPG substrate

3. Measurement of the resistance of graphene film

In order to measure the sheet resistance of graphene, we collected the supernatant of the reaction products which was centrifuged at 2000 rpm for 90 min; this was filtered through a 0.2 μm polytetrafluorethylene (PTFE) membrane and washed several times with ethanol and acetone to remove the residual acetonitrile. Finally, the graphene sheets were transferred from the PTFE membrane to a Si substrate with a 300 nm-thick SiO₂ layer. We measured the sheet resistance of the graphene film by a four-probe instrument; the value was about 1000 Ω/sq.



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