

Supporting Information

Hydrogen flame synthesis of few-layer graphene from solid carbon source on hexagonal boron nitride

Tianquan Lin,^a Yaoming Wang,^a Hui Bi,^a Dongyun Wan,^a Fuqiang Huang,^{*a} Xiaoming Xie,^b and Mianheng Jiang^b

^aState Key Laboratory of High Performance Ceramics and Superfine Microstructure and CAS Key Laboratory of Materials for Energy Conversion, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050, P.R. China. Fax: +86 21 52416360; E-mail: huangfq@mail.sic.ac.cn

^bState Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Shanghai 200050, P.R. China

Measurement and characterization

TEM images were obtained with a JEOL JEM 2010 instrument, operated at 200 kV. SEM measurements were performed using a JEOL JSM-6700F instrument. Raman spectroscopy was performed on an inVia Renishaw Raman microscope using green ($\lambda = 532$ nm) laser excitation. XPS experiments were carried out on a RBD upgraded PHI-5000C ESCA system (Perkin Elmer) with Mg K α radiation ($h\nu = 1253.6$ eV). The curve fitting was done using XPSpeak 4.0 software. The sheet resistances of graphene films were measured by the four-probe Van Der Pauw method with an Accent HL5500.

Fabrication of graphene/h-BN film

For the electrical conductivity measurement, the graphene/h-BN powders were fabricated as the film by the method reported.^{S1} Poly (vinyl difluoride) (PVDF) was dissolved into N-methyl-2-pyrrolidone (NMP) to form a 0.01 g mL⁻¹ homogeneous solution. The graphene and solution were mixed homogeneously (20 mg mL⁻¹), and

the obtained paste was then spread on the glass substrate with a glass rod, using adhesive tapes as spacers. The films with a *ca.* 20 μm thickness and $1 \times 1 \text{ cm}^2$ active area were obtained at 80 $^\circ\text{C}$ for 10 h.

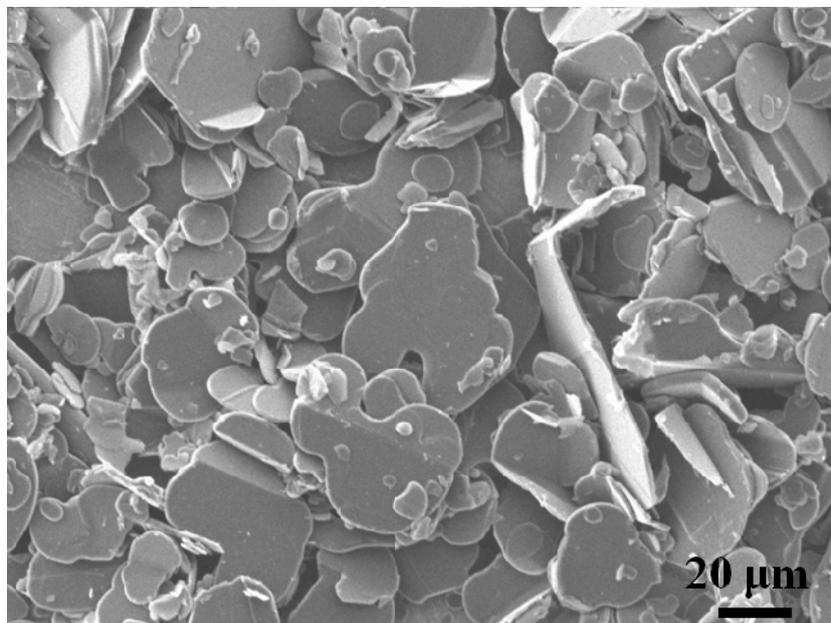


Figure S1. SEM image of *h*-BN

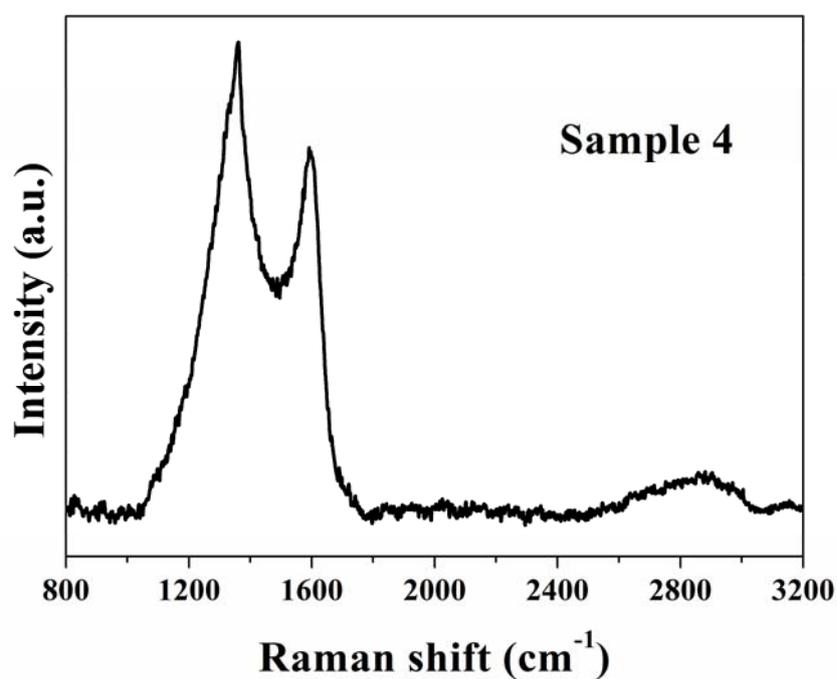


Figure S2. Raman spectrum of Sample 4.

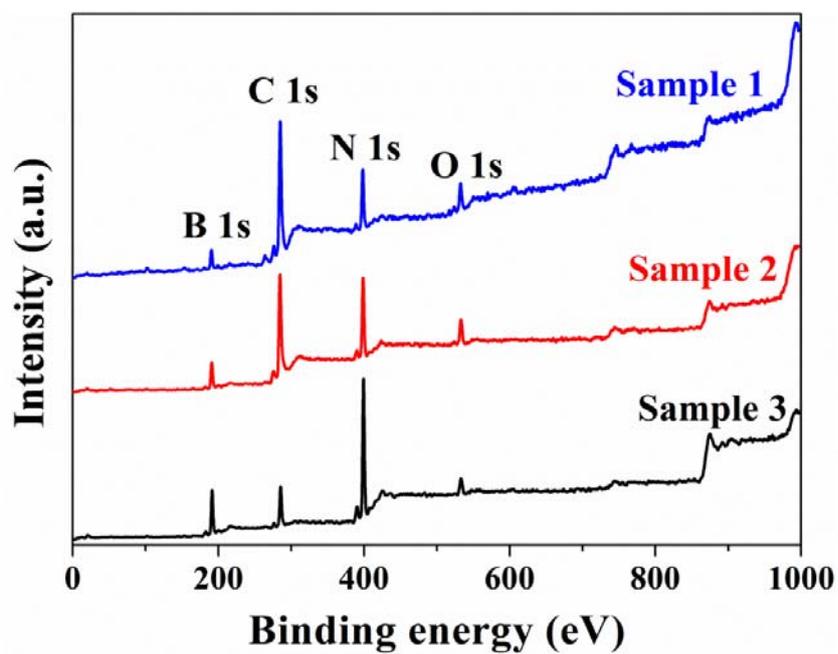


Figure S3. The whole XPS spectra of *h*-BN/graphene samples.

References:

- S1 H. Zhang, X. Lv, Y. Li, Y. Wang, J. Li, *ACS Nano*, 2010, **4**, 380.