

Supplementary Information

High Yield Synthesis Of Amine Functionalized Graphene Oxide And Its Surface Properties

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S1 - NMR Analysis

Fig. S1 shows the ¹H NMR spectra obtained from GO-ButA recorded on a Bruker Ultrashield™ (400 MHz) NMR spectrometer calibrated to residual solvent peaks: proton (DMSO-D₆ 2.50 ppm). The appearance of a signal at 0.84 ppm indicates for CH₃, while CH₂ protons are located at 1.22 ppm indicating the presence of the alkyl chains in the GO-ButA. The broad H signal of the secondary amide (–NH–R) appearing at 3.31 ppm ^{S1} further supports the formation of GO-ButA.

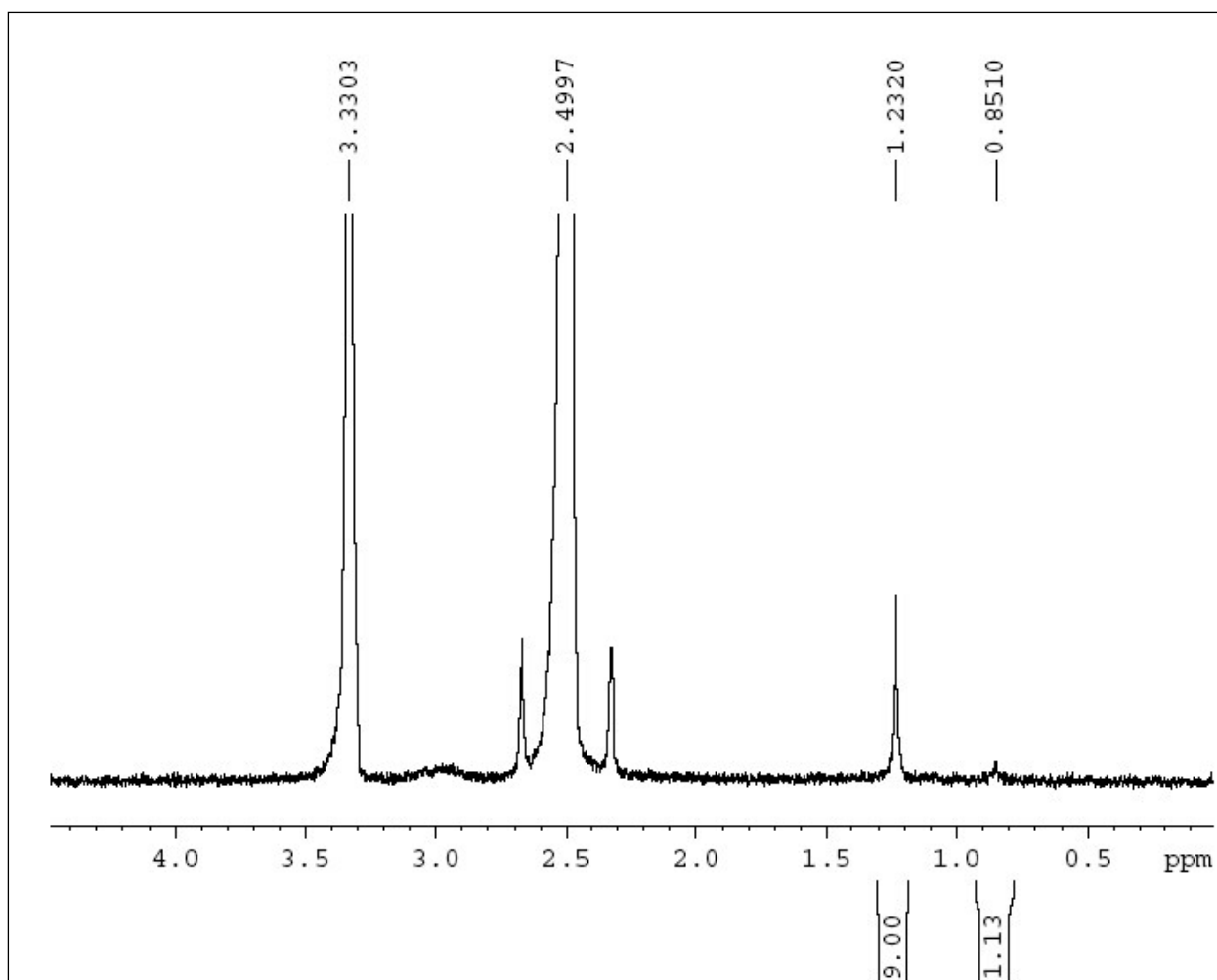


Fig. S1: NMR spectra of GO-ButA.

S2 – Thermo Gravimetric Analysis (TGA) Analysis

TGA of GO and GO-ButA were carried out in a Perkin Elmer Simultaneous Thermal Analyzer, STA 6000 in an uncapped alumina crucible operated at a heating rate of 10°C/min in nitrogen atmosphere. **Fig. S2** shows that there is a significant weight loss below 100°C for GO (~11.4%) as compared to GO-ButA (~2.3%). This points to the presence of large amount of absorbed water in GO which disappear upon functionalization possibly due to increased hydrophobicity of the surfaces ^{S2,S3}. A sharp degradation in the weight of GO is witnessed around 200°C (~ 13.7 %) within the temperature range of 190 - 220°C which may be attributed to the removal of oxygen containing functionalities via pyrolysis ^{S3,S4}. A steady

decrease in the weight of GO-ButA is also observed from 200°C onwards which possibly indicate the removal of covalently bonded n-Butylamine. This finding is consistent with information present elsewhere in the literature which points towards a similar loss within 200 – 500°C ^{S4}.

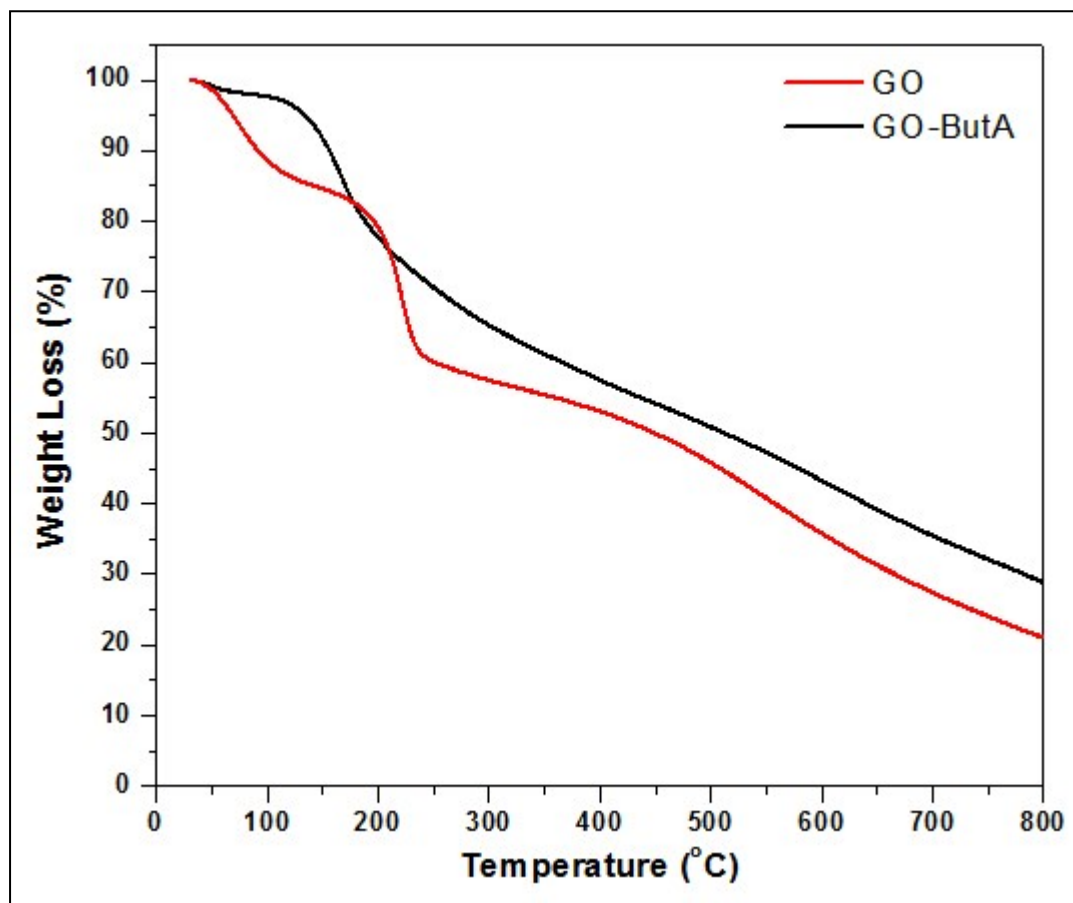


Fig. S2: TGA curves of GO and GO-ButA

Reference:

- [S1] W. Li, X.-Z. Tang, H.-B. Zhang, Z.-G. Jiang, Z.-Z. Yu, X.-S. Du, Y.-W. Mai, *Carbon*, 2011, **49**, 4724.
- [S2] J. Lin, Y. Liu and C-P. Wong, *Langmuir*, 2010, **26**, 16110.
- [S3] S. Stankovich, D.A. Dikin, R.D. Piner, K.A. Kohlhaas, A. Kleinhammes, Y. Jia, Y. Wu, S.T. Nguyen and R.S. Rouff, *Carbon*, 2007, **45**, 1558.

[S4] O.C. Compton, D.A. Dikin, K.W. Putz, L.C. Brinson and S.T. Nguyen, *Adv. Mater.*, 2010, **22**, 892.