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Synthesis of amine functionalized graphite nanosheets and its water-soluble derivative for drug loading and controlled release

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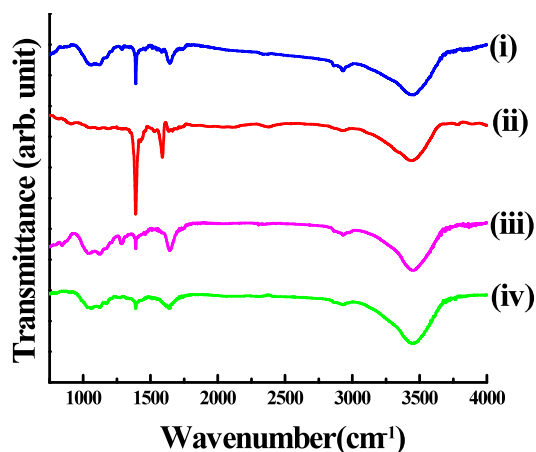
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15 Electronic Supplementary information (ESI)

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Fig. S1 FTIR spectra after treatment of microcrystalline graphite with (i) 2:1, (ii) 1:1, (iii) 1:2 and (iv) 1:3 v/v ratio of HNO₃ and H₂SO₄ at room temperature for 24 hrs.

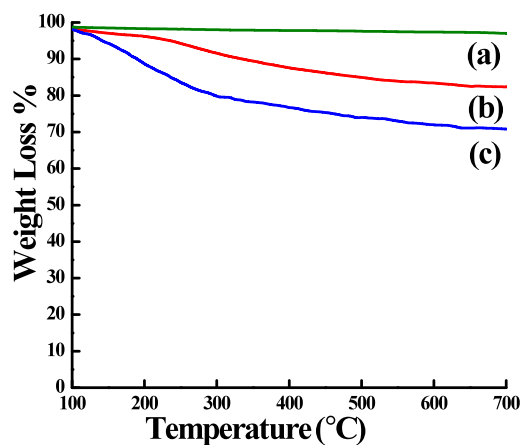


Fig. S2 TGA spectra of (a) microcrystalline graphite (b) AFGNS and (c) NFGNS.

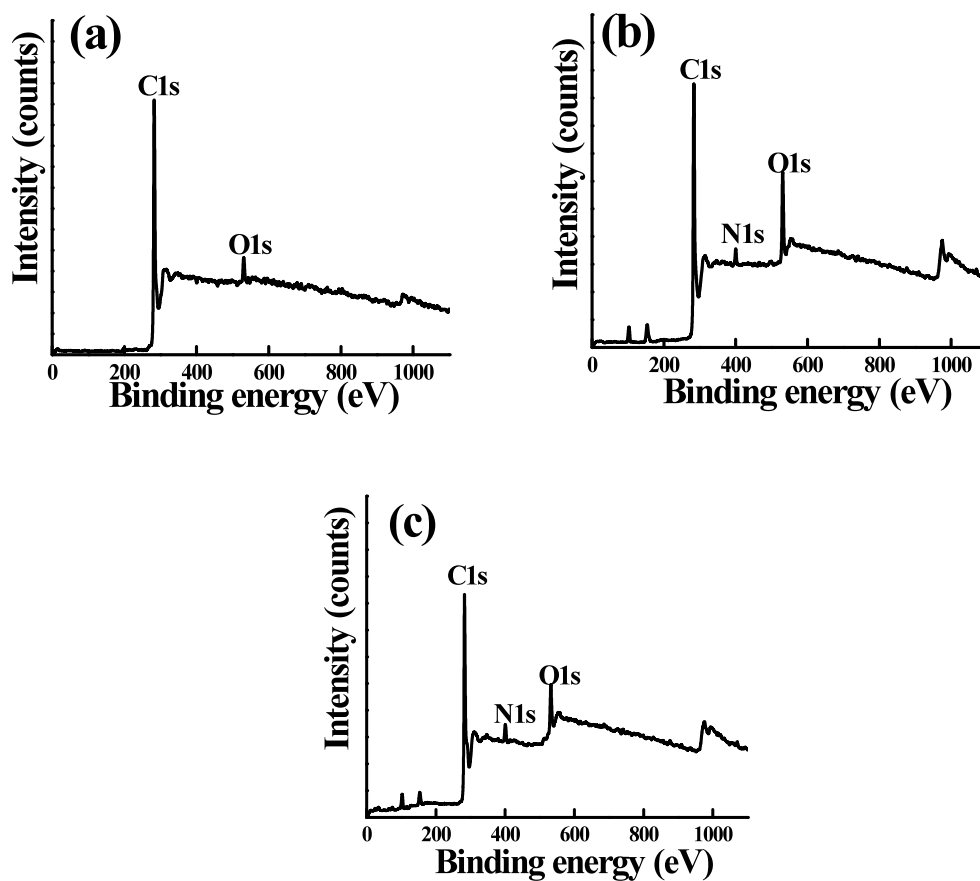


Fig. S3 XPS survey scan of (a) microcrystalline graphite, (b) NFGNS and (c) AFGNS.

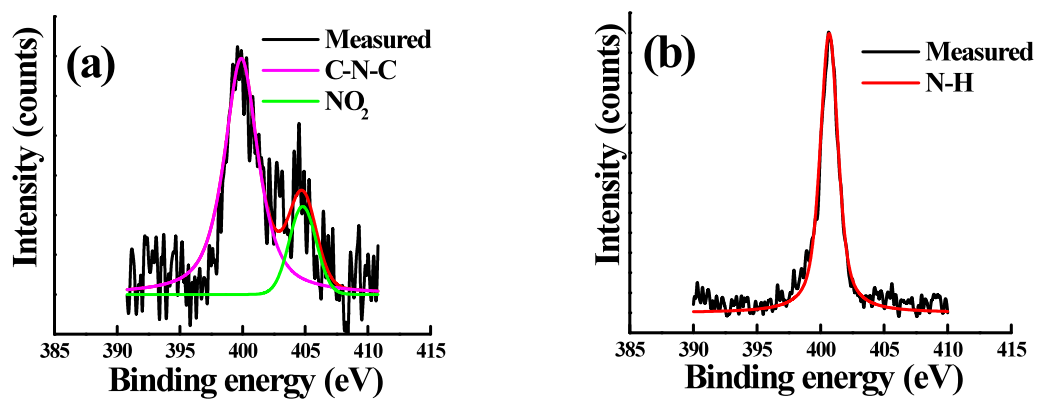


Fig. S4 High resolution N 1s XPS of (a) NFGNS and (b) AFGNS

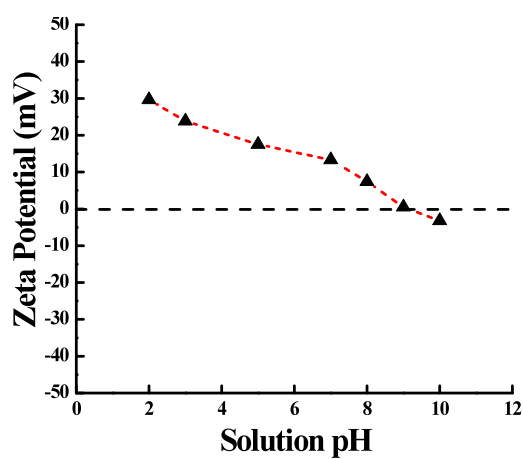


Fig. S5 Zeta Potential of AFGNS dispersion as the function of pH.



Fig. S6 Digital photograph of the aqueous dispersion of AFGNS (2 mg AFGNS powder in 10 ml water, 30 min ultrasonication).

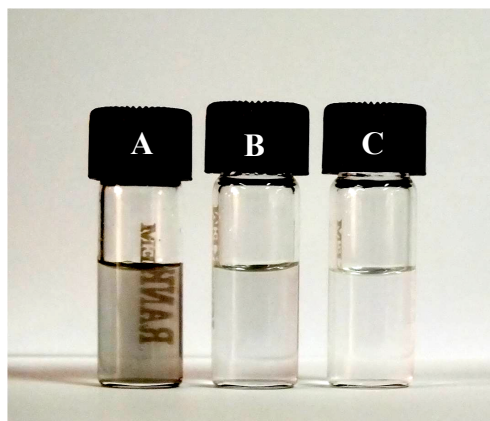


Fig. S7 Digital photograph of the centrifugates: A) P-AFGNS, B) AFGNS and C) microcrystalline graphite. In all the cases, an aqueous dispersion of 2 mg powder in 10 ml water was centrifuged at 3000 rpm for 15 min.

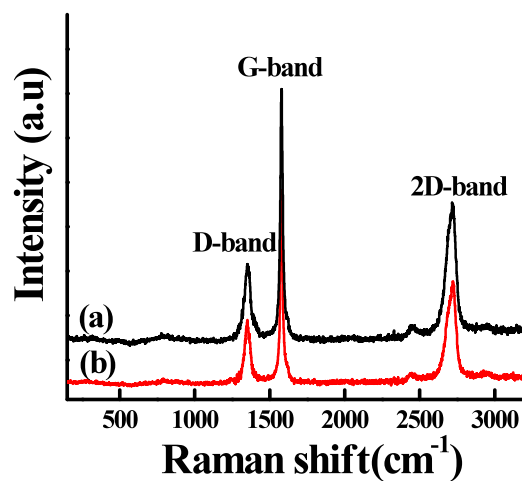


Fig. S8 Raman spectra of (a) P-AFGNS and (b) AFGNS.

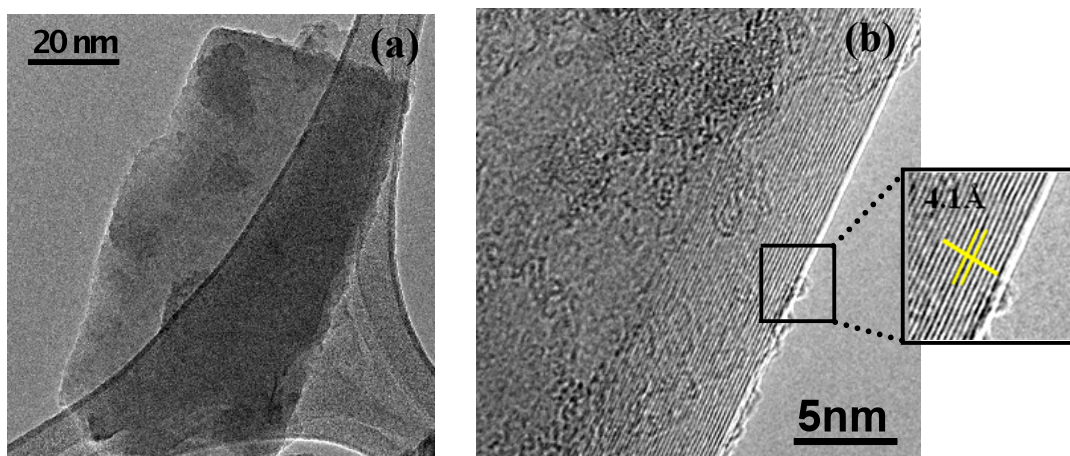


Fig. S9 (a) TEM image and (b) HRTEM image of P-AFGNS with visible rough surface due to the attachment of the polymer PEG on AFGNS surface. Magnified image shows interlayer spacing.

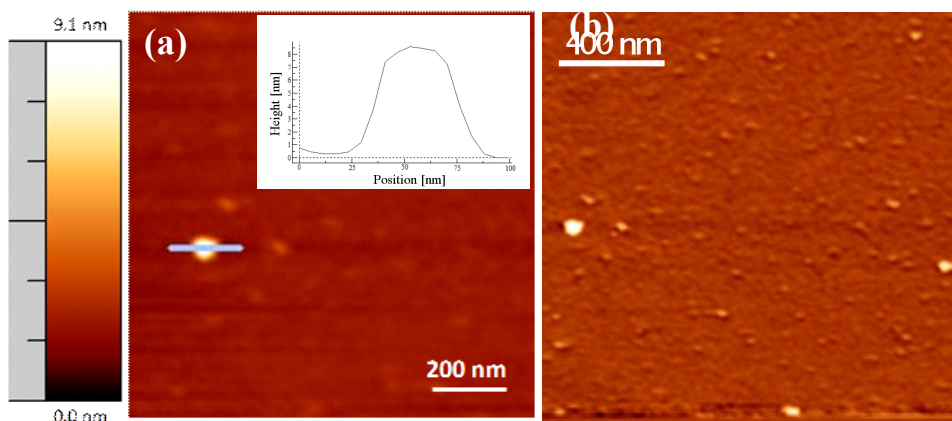


Fig. S10 AFM (a) height image of P-AFGNS with the height profile of the marked region in inset, (b) phase image of AFGNS.

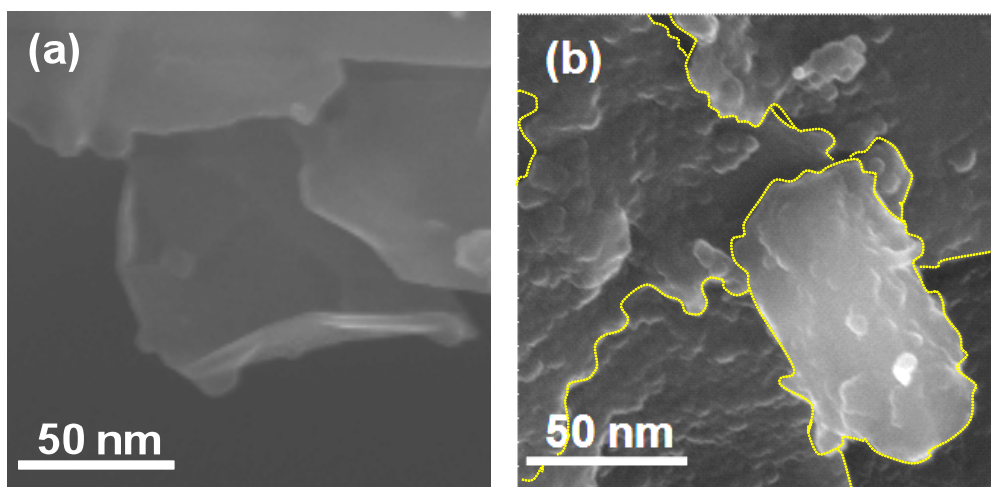


Fig. S11 FESEM micrographs of (a) AFGNS and (b) P-AFGNS composite.

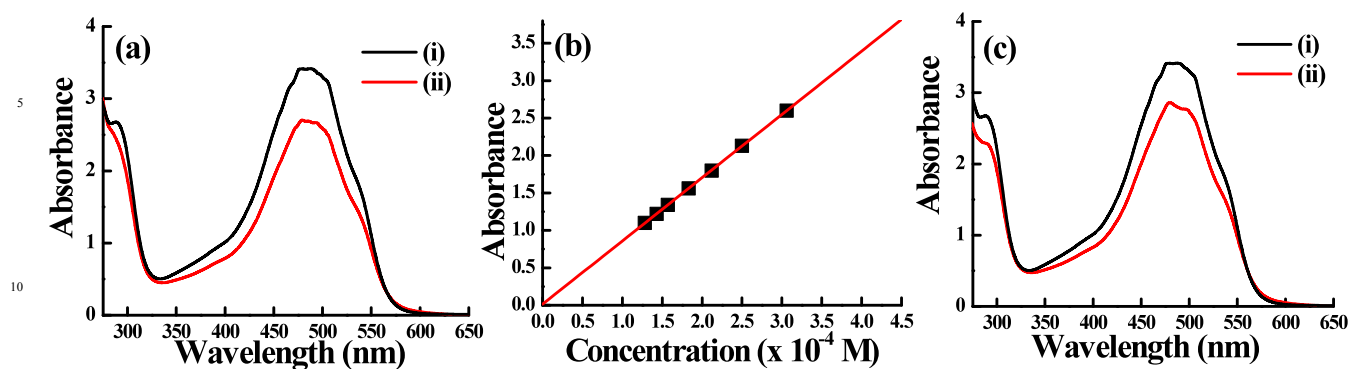


Fig. S12 (a) UV-Vis spectra of AFGNS-DOX where (i) initial DOX dosage and (ii) unbound DOX dosage found in the centrifugate (b) calibration graph of DOX at different concentrations and (c) UV-Vis spectra of P-AFGNS-DOX where (i) initial DOX dosage and (ii) unbound DOX dosage found in the centrifugate. The loading capacity was calculated to be 34.9% in AFGNS and 29.6% in P-AFGNS.