Supplementary information for

In-situ growth of capping-free magnetic iron oxide nanoparticles on liquid-phase exfoliated graphene

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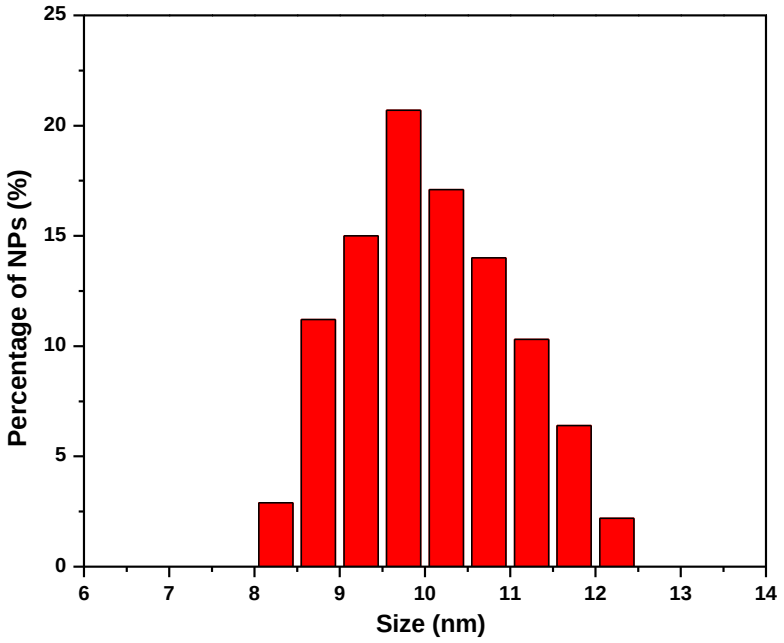

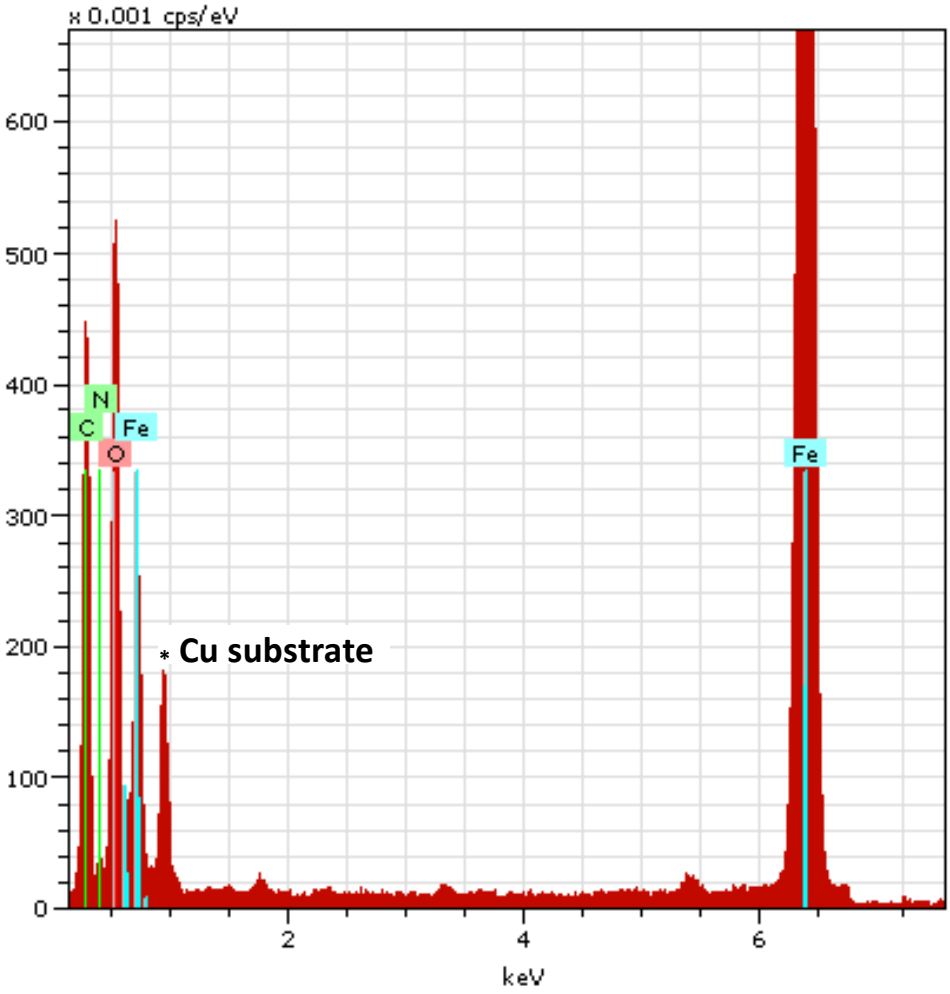

Fig S1: Histogram of the size (top) of the synthesized nanoparticles and corresponding EDX spectrum (bottom).

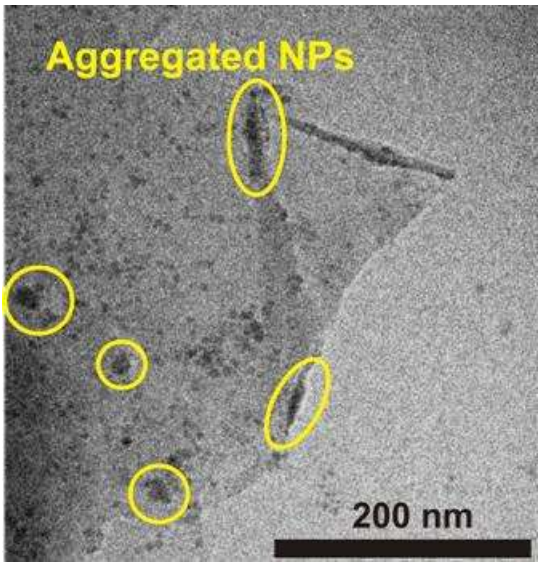

Fig S2: TEM image of *NPs@Graph* hybrids developed using an 1:2 mass ratio of Graphene:NPs precursor.

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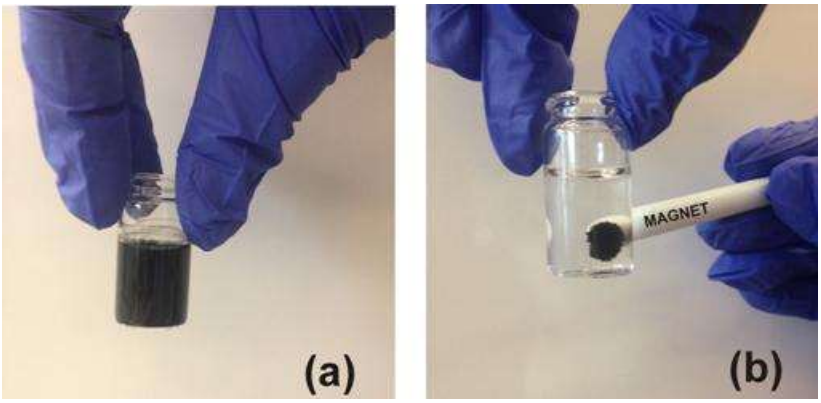

Fig. S3: Photographs of the NPs@Graph hybrids after dispersion in water (a) and after collection with the help of a magnet (b).

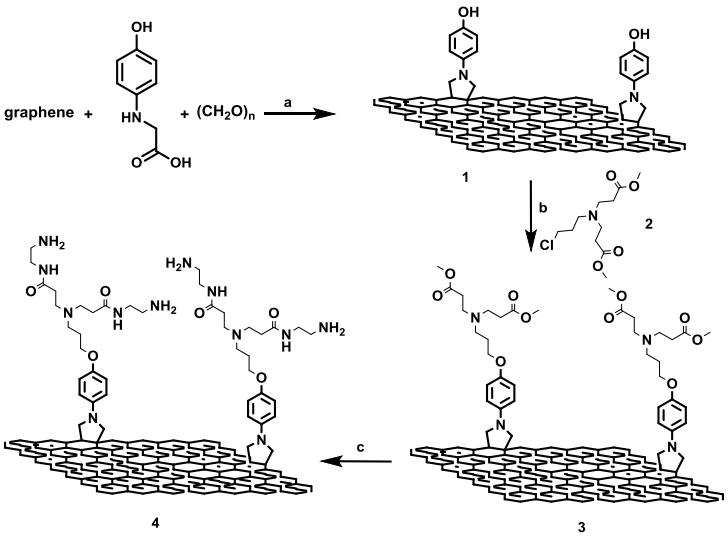

Fig S4: Schematic representation for the functionalization of exfoliated graphene sheets. a) NMP, 125°C, 3d, b) K_2CO_3, DMF, 100°C, 3d, c) ethylene diamine, MeOH, 60°C, 3d.

Part S5 Synthesis of the Dendron structure **2**: 3g of chloropropylamine*HCl were dispersed in 40ml of MeOH. An equimolar amount of triethylamine was added and the solution was stirred for 30min followed by the addition 4 times excess of methyl acrylate; the solution was stirred for 3 days. The solvent and the unreacted methyl acrylate were evaporated and **2** was purified by column chromatography on silica [CH_2Cl_2]. The **2** obtained as a white solid (75%). ^{1}H-NMR (270MHz, $CDCl_3$): δ= 3.68 (s, 2H, Cl-CH_2), 3.63 (s, 6H, -CH_3), 3.54 (dd, 4H, N-CH_2, *J*= 5.4MHz), 2.75 (m, 4H, CH_2-C=O), 2.45 (m, 2H, CH_2-N), 1.87 (m, 2H, -CH_2). ^{13}C-NMR (67.80MHz, $CDCl_3$): δ= 170.1, 52.3, 51.6, 50.5, 49.3, 45.7, 43.4, 42.8, 41.7, 30.4, 28.6. ESI-MS: calculated: 265.0 found: 266.0 [M+].

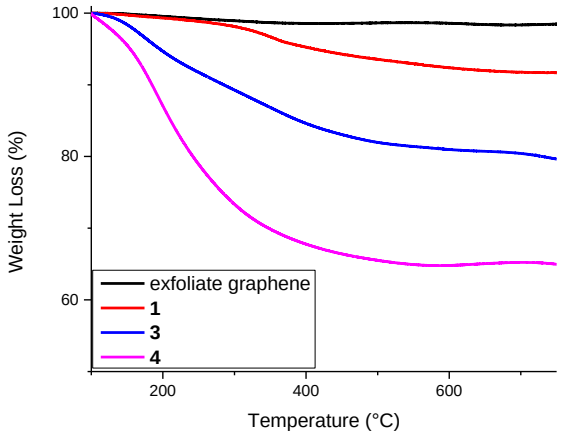

Fig S6: TGA of exfoliated (black line) and functionalized graphene derivatives **1** (red line), **3** (blue line) and **4** (pink line).