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.

**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$_2$Cl$_2$]. The 2 obtained as a white solid (75%). $^1$H-NMR (270MHz, CDCl$_3$): $\delta$= 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$_3$): $\delta$= 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).