Electronic Supplementary Material (ESI) for Nanoscale.

SUPPORTING INFORMATION

Hollow Hybrid Polymer-Graphene Oxide Nanoparticles via Pickering Miniemulsion Polymerization

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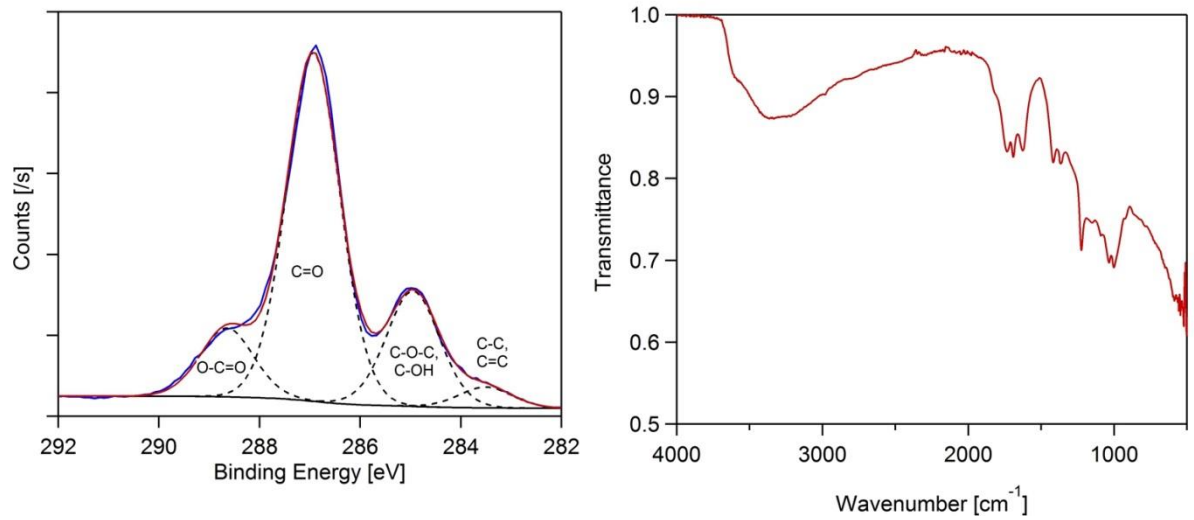

Figure S1. Characterization of GO Nanosheets; (left) high resolution C1s XPS spectrum of GO, (right) ATR-FTIR spectrum of GO. The C:O atomic ratio of GO as measured by XPS was 1.43.

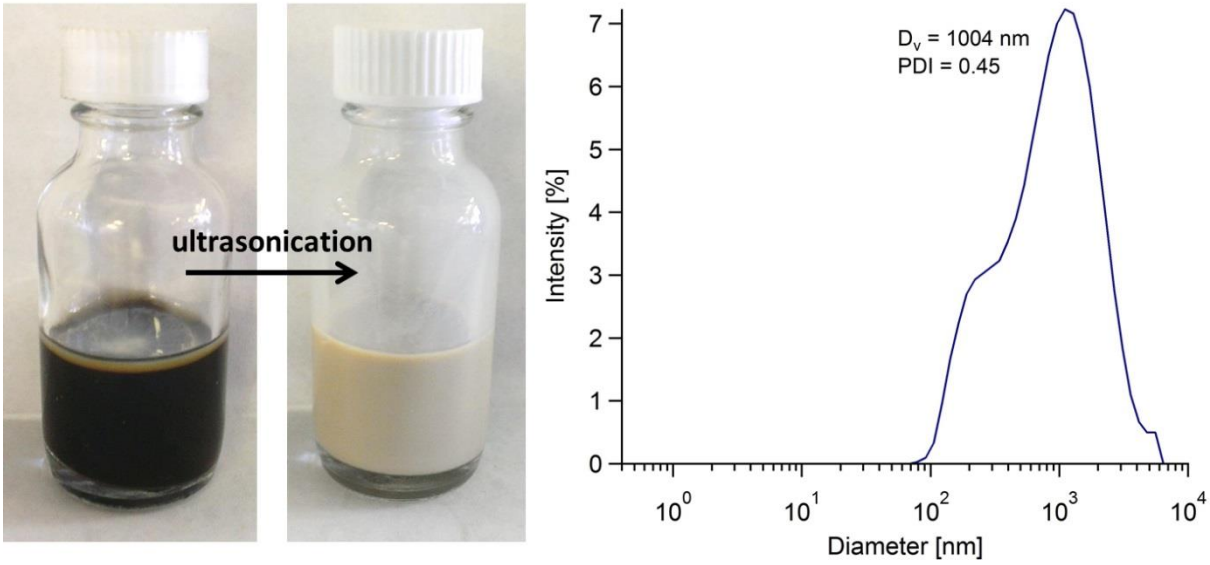

Figure S2. (left): digital photographs of the oil/GO/water mixture before and after ultrasonication; (right) DLS intensity distribution of the emulsion immediately after ultrasonication.

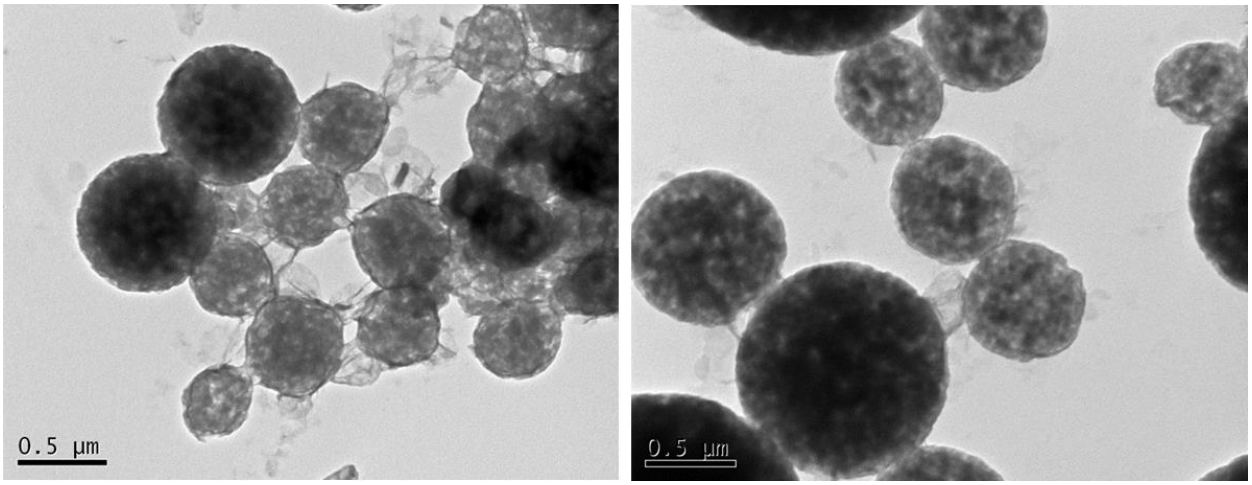

Figure S3. TEM images of porous poly(styrene-co-DVB) particles prepared by Pickering miniemulsion polymerization stabilized by GO. (left) Sample 1; (right) Sample 3, based on entries in Table 1 of manuscript.

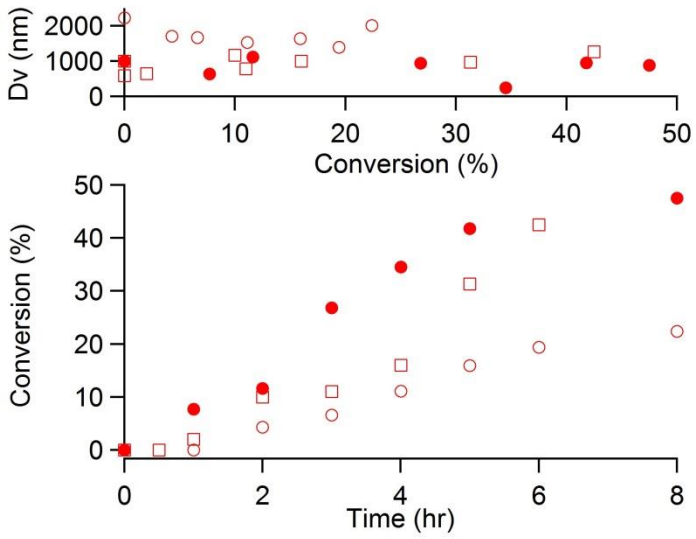

Figure S4. Conversion of monomer to polymer vs. time (bottom panel) and volume average diameter (D_v) vs. conversion (top panel) for hollow and porous polymer-GO particles of varying composition. Legend: filled circles – Sample 2 in Table 1 (porous solid particles with 10 % DVB

loading); open circles – Sample 7 (hollow capsules with 10 % DVB loading); open squares – Sample 10 (hollow capsules with 20 % DVB loading).

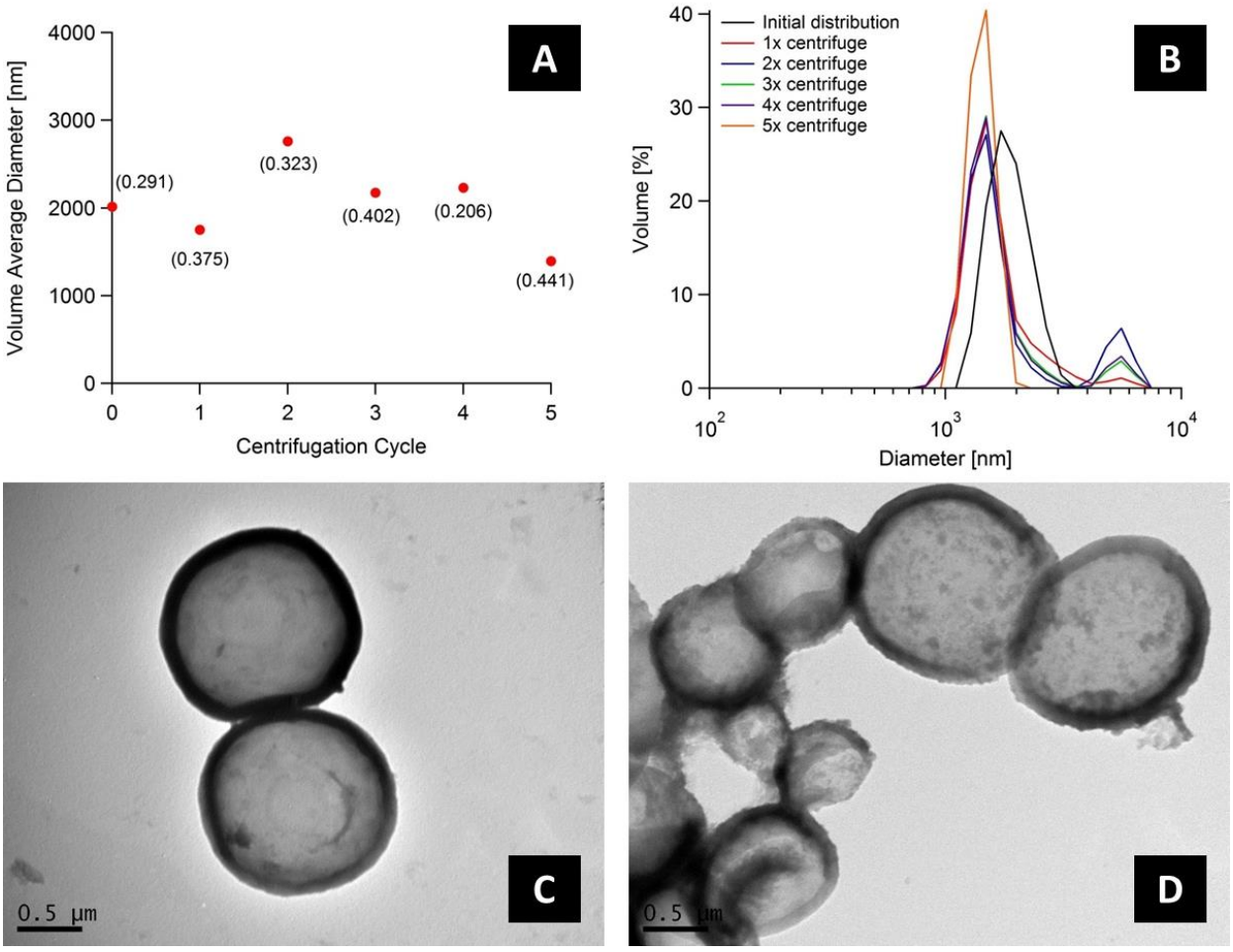

Figure S5. Effect of centrifugation on the size and morphology of hollow polymer-GO capsules. (A) Volume average diameter (measured by DLS) of capsules as a function of centrifuge cycle (numbers in brackets refer to polydispersity index for each sample); (B) volume particle size distributions as a function of centrifuge cycle; (C and D) TEM images of capsules before (image C) and after (image D) five centrifugation/redispersion cycles. Sample in question corresponds to Sample 7 in Table 1 of the manuscript.

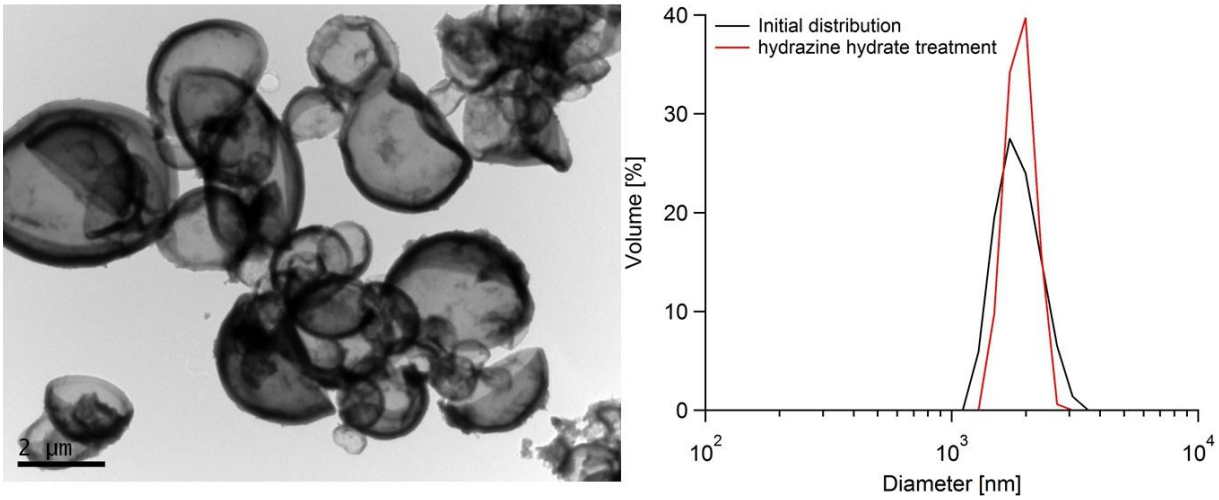

Figure S6. TEM image (left) and DLS distribution (right) of hollow capsules (Sample 7 from Table 1 in manuscript) after treatment with hydrazine hydrate.

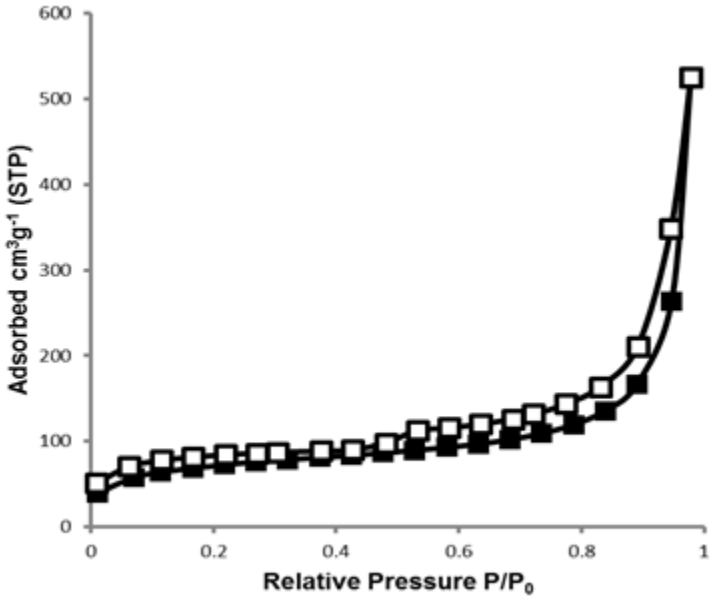

Figure S7. Nitrogen adsorption-desorption isotherm of hollow capsules (Sample 4 in Table 1 in manuscript). Filled squares = adsorption isotherm; Open squares = desorption isotherm.

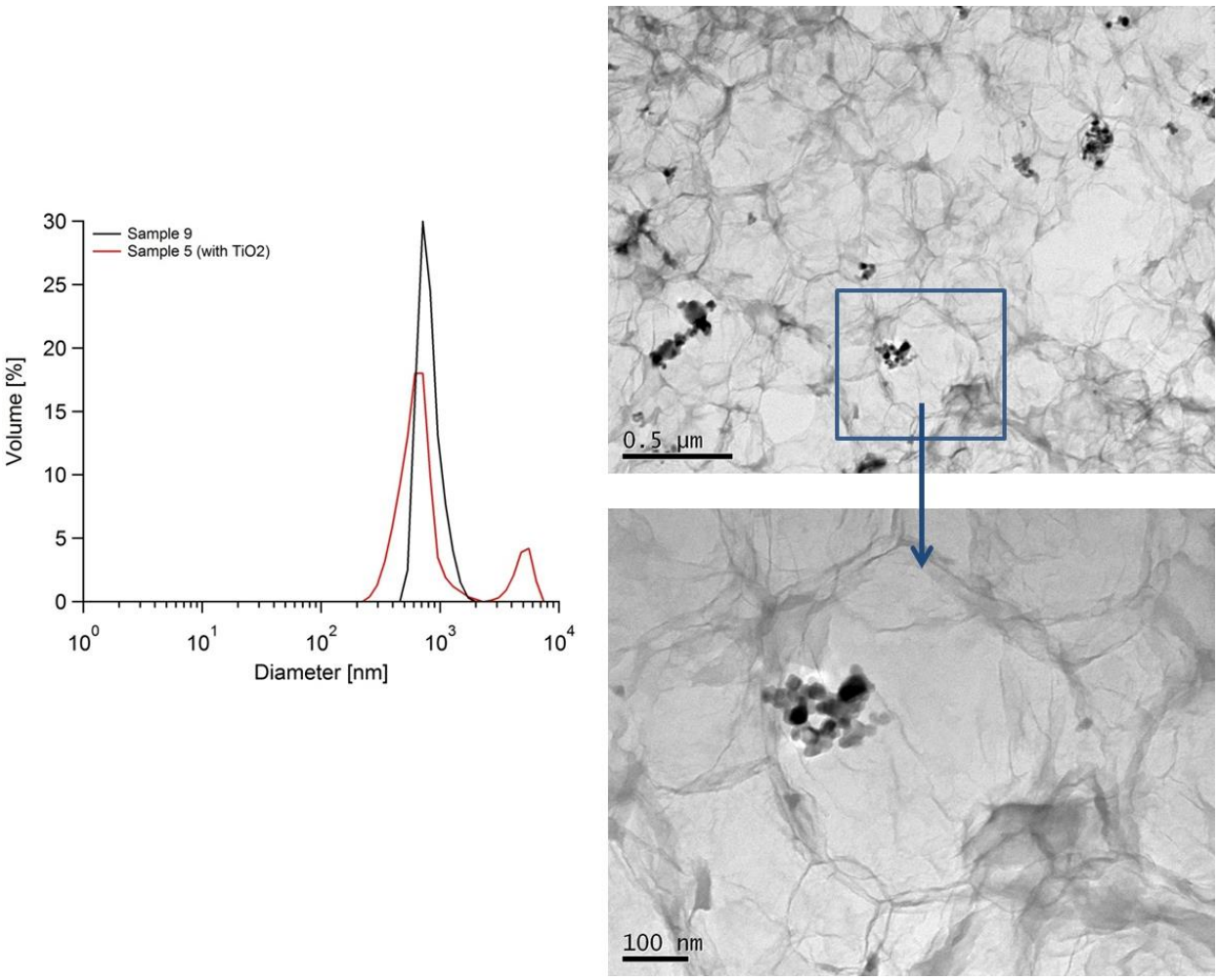

Figure S8. (left) DLS distribution of hollow capsules prepared in the absence (black line, Sample 9, Table 1) and presence (red line, Sample 5, Table 1) of 0.5 % w/w hydrophobically modified TiO_2 in the oil phase prior to polymerization; (right) TEM images of Sample 5, showing clusters of TiO_2 nanoparticles within hollow capsules, while other capsules remain empty.