Supplementary Material (ESI) for Journal of Materials Chemistry

Electronic Supplementary Information

Synthesis of colloidal magnetite nanocrystals using high molecular weight solvent

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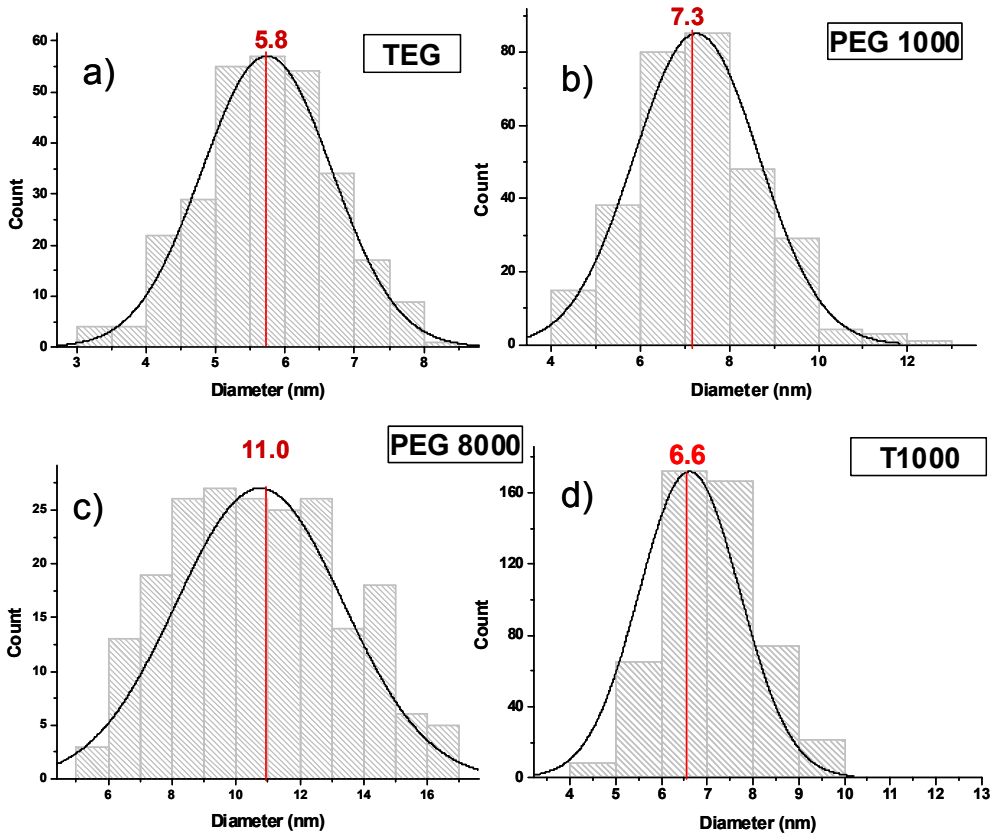

Figure S1 – Particle size distribution (obtained by BF-STEM image) of the MN synthesized in different solvents: a) synthesized in TEG; b) synthesized in PEG 1000; c) synthesized in PEG 8000; d) synthesized in T1000.

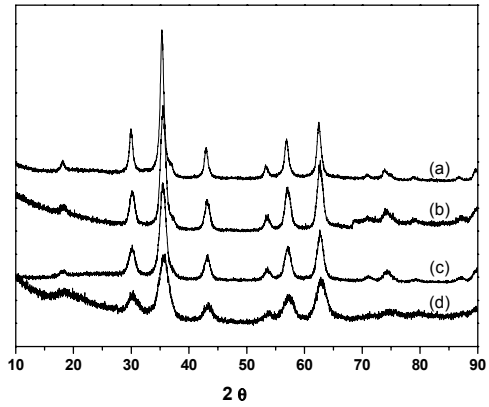

Figure S2 - XRD analysis of the materials synthesized in different solvents. (a) PEG 8000, (b) PEG 1000, (c) TEG, (d) T1000.

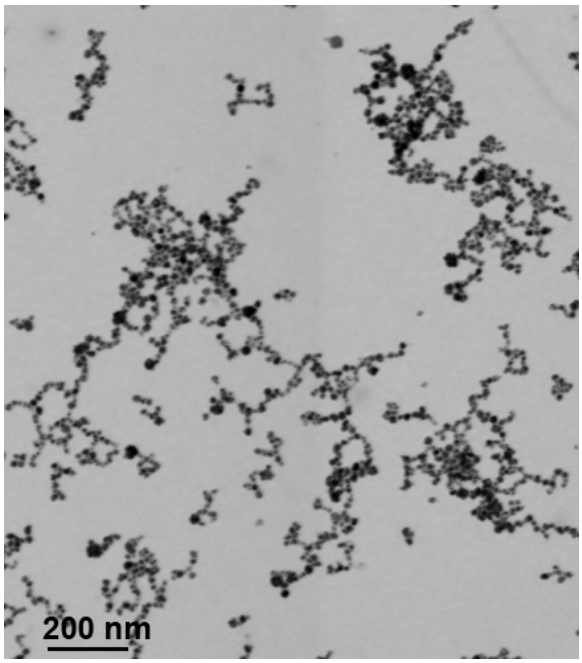

Figure S3 - Low magnification BF-STEM image of the MN synthesized in PEG 8000.

Figure S4 - Photograph of a vial containing solution (in water) of the MN synthesized in PEG 8000 after magnetic separation by an external magnetic field.

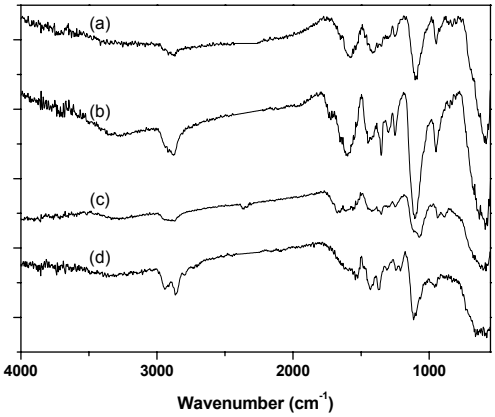

Figure S5. DRIFT spectra of the magnetite nanocrystals synthesized in different polyols. (a) PEG 8000, (b) PEG 1000, (c) TEG, (d) T1000

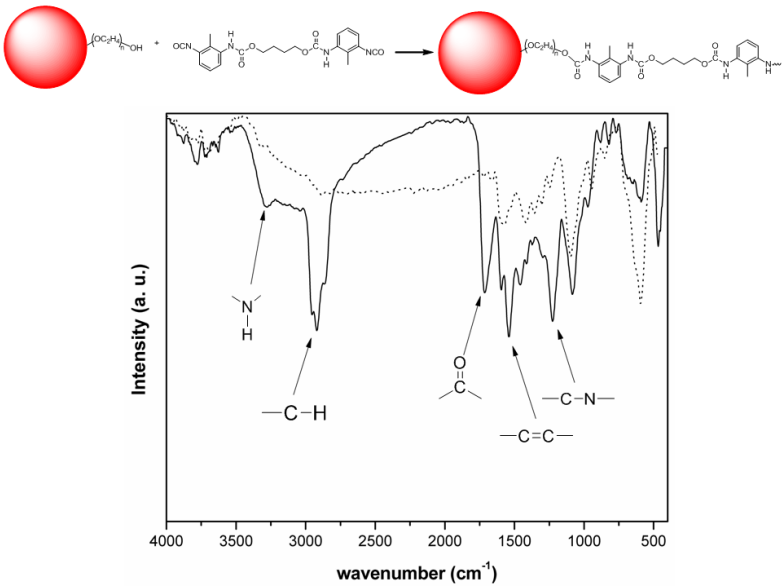

Figure S6 - DRIFT spectra of the MN synthesized in PEG 8000 (dashed line) and of the compound formed by the reaction of the MN with a prepolymer containing free N=C=O group (solid line). We can observe the presence of N-H, -C=O, -C=C- (aromatic ring) and –C-N- vibrations bonds typical of a polyurethane compound. In the top of the DRIFT spectra we can observe the schematic representation of the reaction between the functionalized NM and the compound containing free N=C=O.

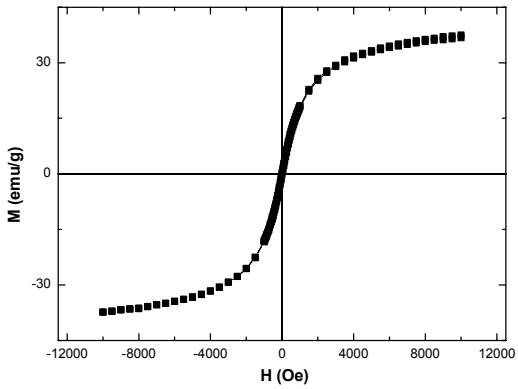

Figure S7 – Magnetization curve at 300K of the MN synthesized in T1000. The total mass of the sample (MN+polyol) was considered in these curves.