

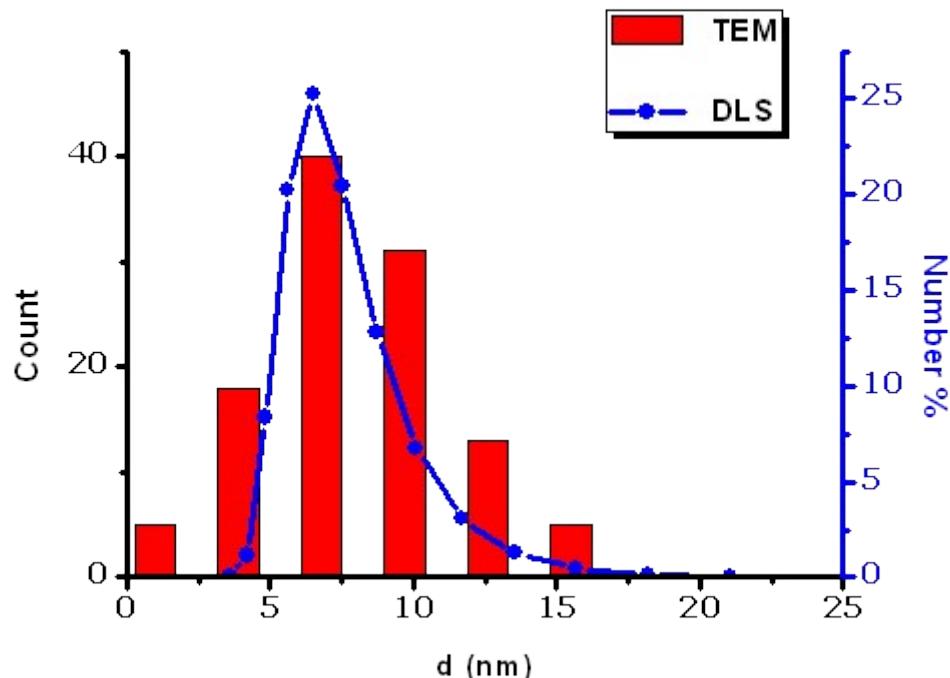
## Supporting Information

### Design of thermoresponsive polymeric gates with opposite controlled release behaviors

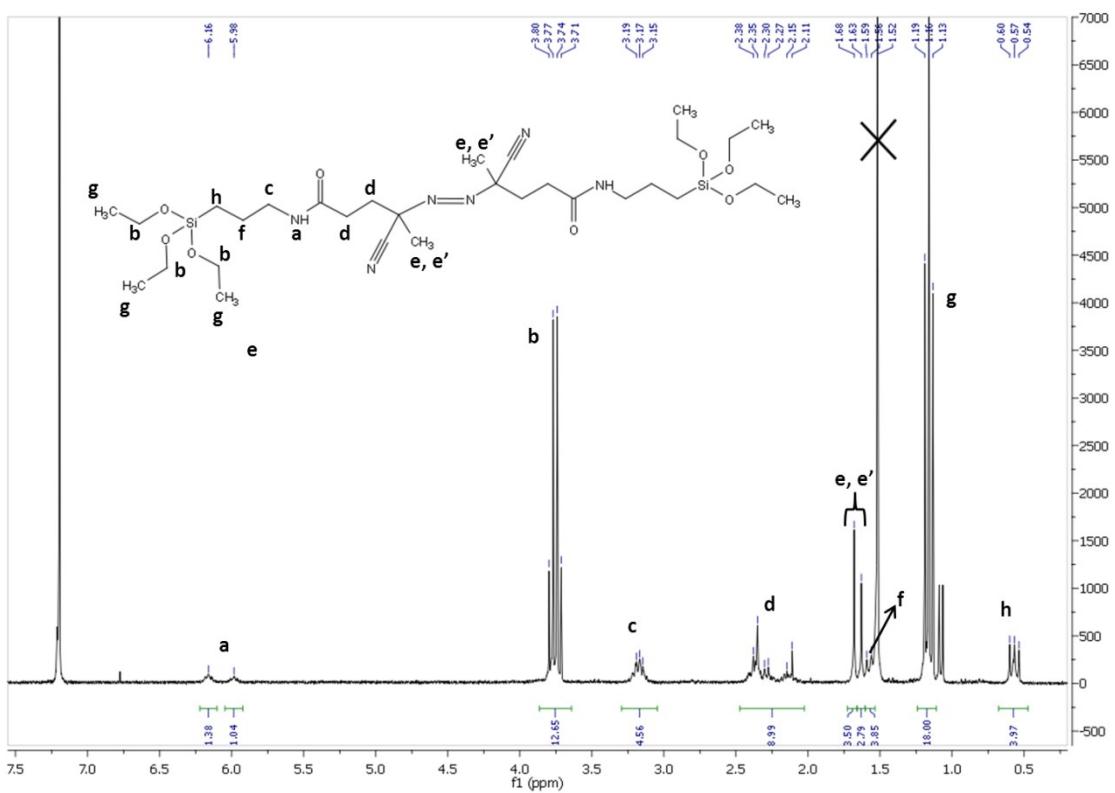
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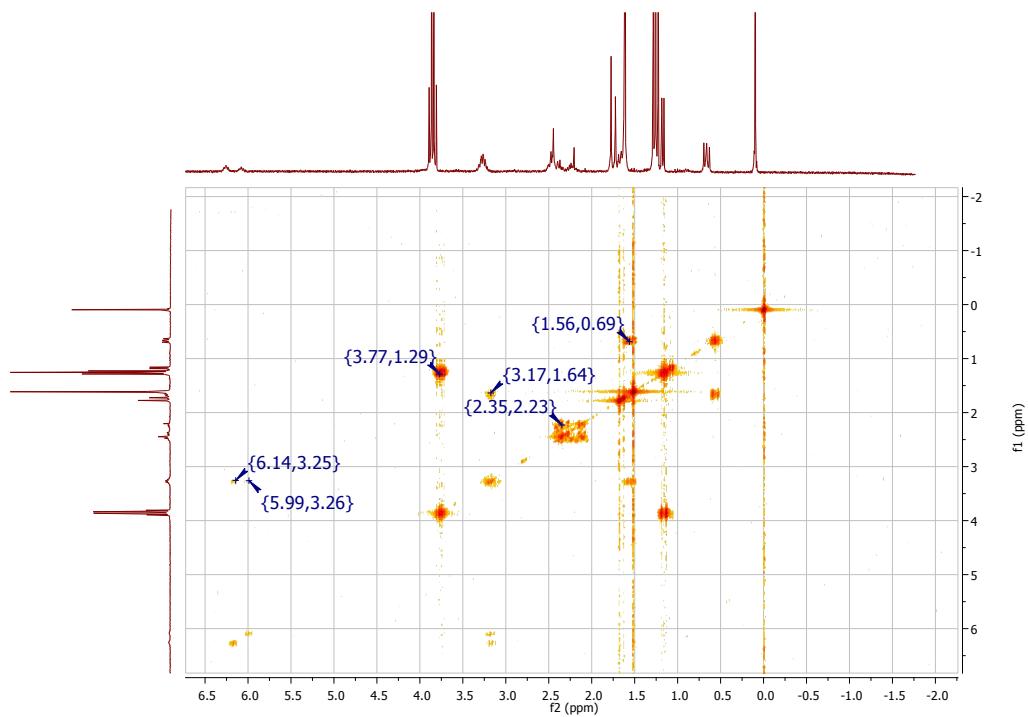
\*Corresponding autor: vallet@ucm.es



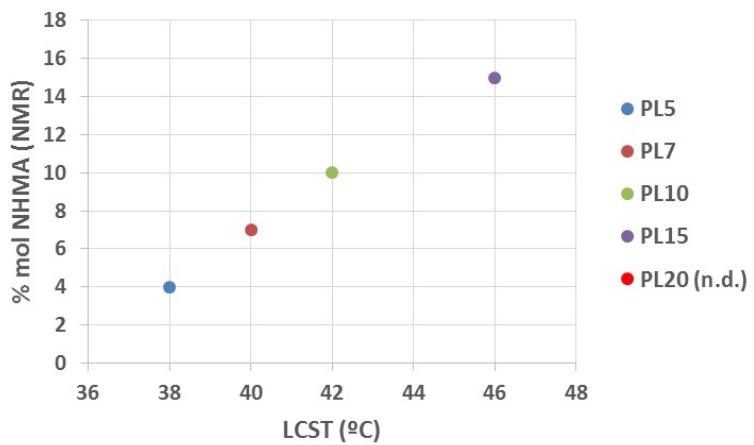
**Figure S1.** Mean size distribution for OA-Fe<sub>3</sub>O<sub>4</sub> nanoparticles by TEM (bars) and DLS (blue line).



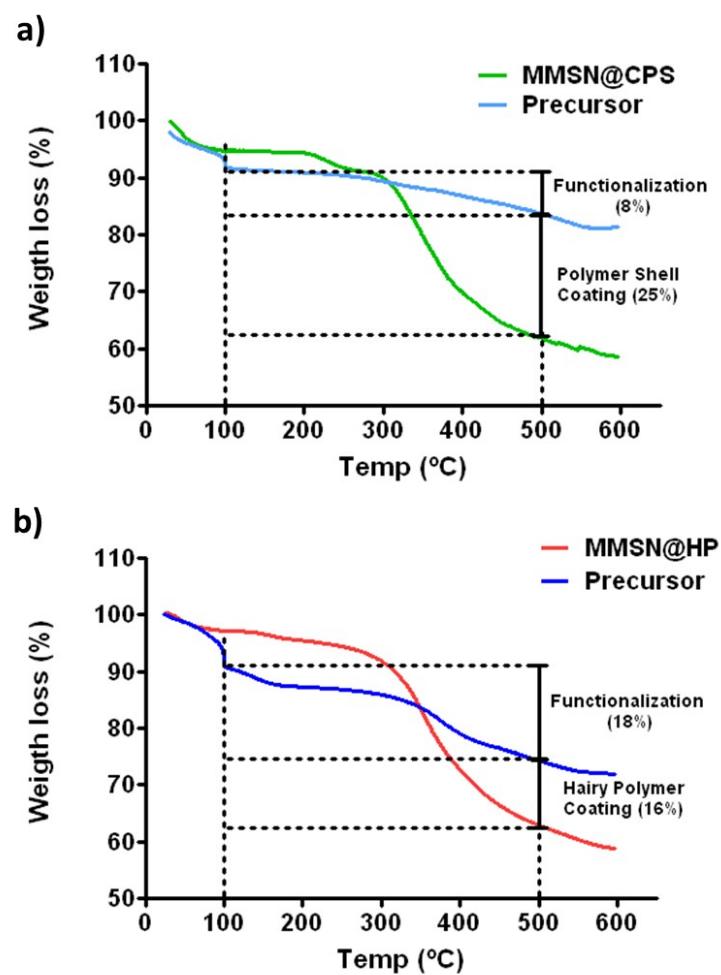
**Figure S2.**  $^1\text{H}$ -NMR assignation of ABCVA-APTES radical initiator.



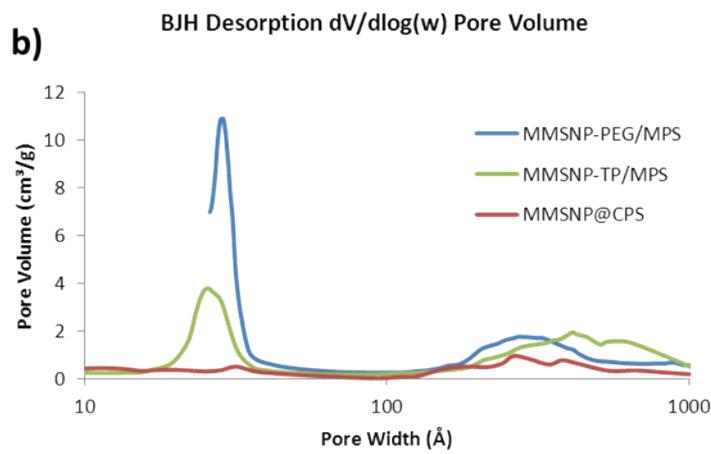
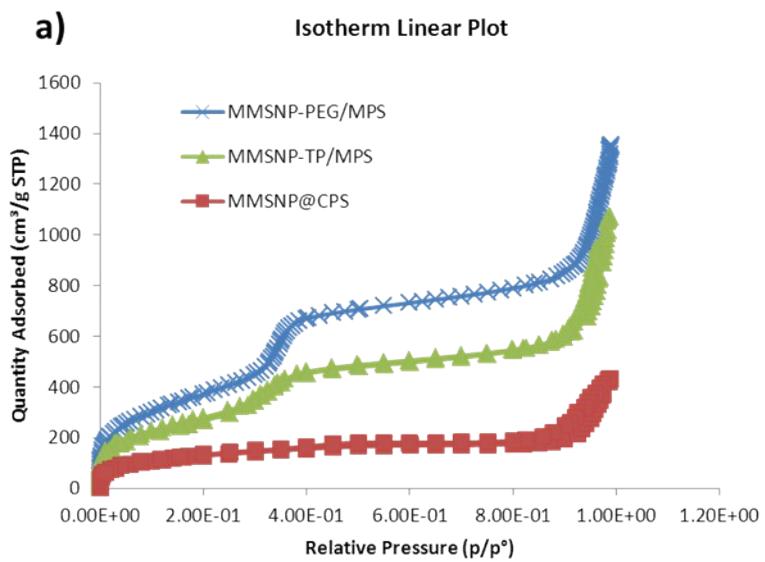
**Figure S3.**  $^1\text{H}$ -COSY spectra of ABCVA-APTES initiator.



**Figure S4.** Polymer transition temperatures measured by UV-Vis spectroscopy (n. d.: not detectable) for different NIPAM/NHMA ratios determined by  $^1\text{H}$ -NMR. In the legend, the number is referred to the percentage of NHMA monomer feed.



**Figure S5.** TGA of (a) MMSN@CPS and (b) MMSN@HP hybrid nanoparticles and its precursors.



**c)**

| Sample        | S <sub>BET</sub> (m <sup>2</sup> /g) | V <sub>p</sub> (cm <sup>3</sup> /g) | D <sub>p</sub> (nm) |
|---------------|--------------------------------------|-------------------------------------|---------------------|
| MMSNP-PEG/MPS | 1391.33                              | 2.077792                            | 2.9                 |
| MMSNP-TP/MPS  | 1031.25                              | 646.97                              | 2.6                 |
| MMSNP@CPS     | 470.86                               | 0.536842                            | none                |

**Figure S6.** N<sub>2</sub> Absortion porosimetry. Isotherm linear plot of precursors and MMSN@CPS (a), pore size distribution (b) and data values (c).