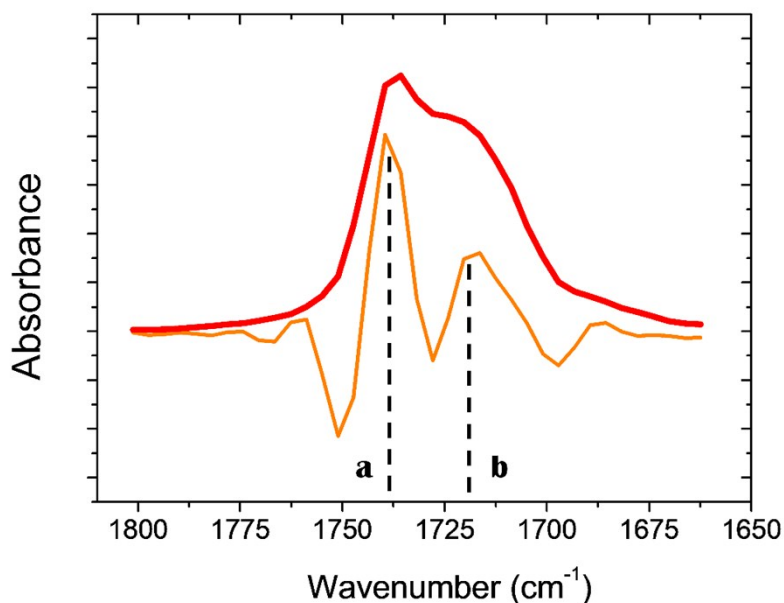


Electronic Supporting Information (ESI)

Dual-responsive nanogels based on oligo (ethylene glycol) methacrylates and acidic co-monomers

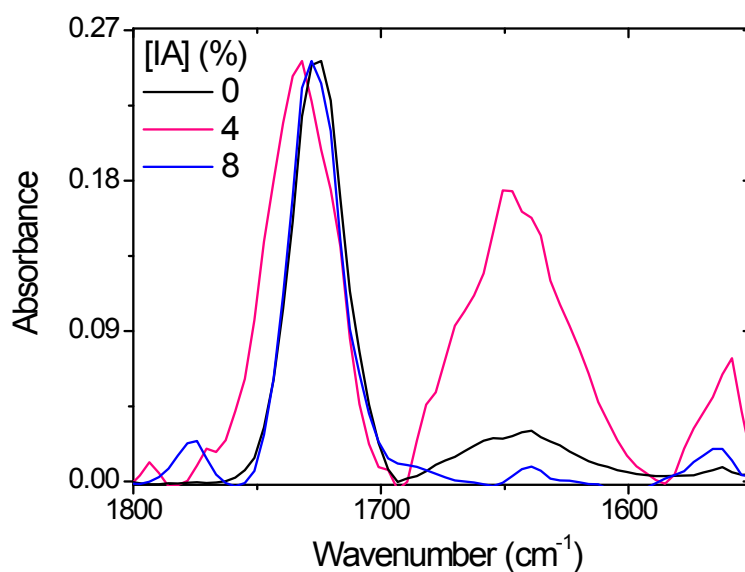
Micaela A. Macchione, M. Florencia Sacarelli, Ana C. Racca, Catalina Biglione, G.M. Panzetta-Dutari, Miriam C. Strumia

Structural Characterization



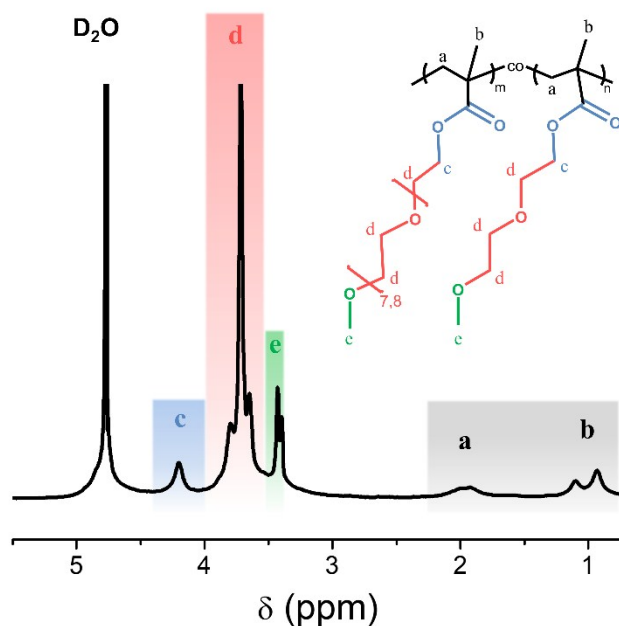
ESI-1. Zoom of C=O peak of NG 6 (4% IA) and its deconvolution.

The deconvolution of this spectra shows two peaks at 1739 cm^{-1} and 1718 cm^{-1} , corresponding to C=O of ester and C=O of carboxylic acid (IA in this case), respectively.



ESI-2. IR spectra obtained for NG re-suspended in NaOH.

^1H NMR spectrum of NGs (**ESI-3**) shows typical signals of OEG moieties previously described [1].

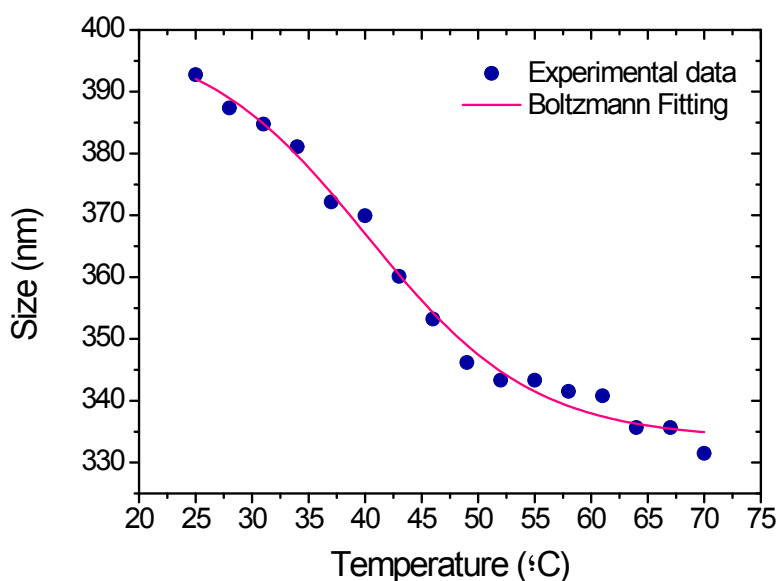


ESI-3. ^1H NMR of NGs.

Determination of Phase Transition Temperature

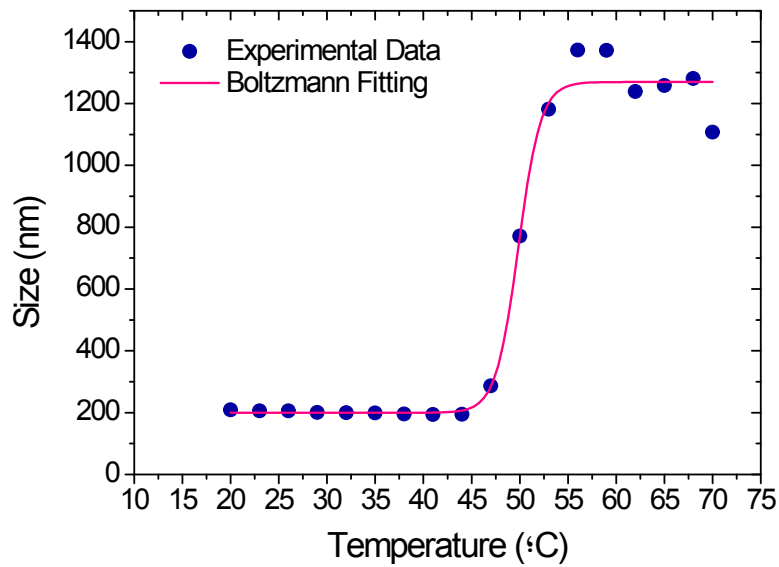
Phase Transition Temperature values (T_{PT}) were obtained as the inflection point of the plot of the average hydrodynamic diameters versus the temperature of the aqueous medium.

- NG0: DEGMA-co-OEGMA



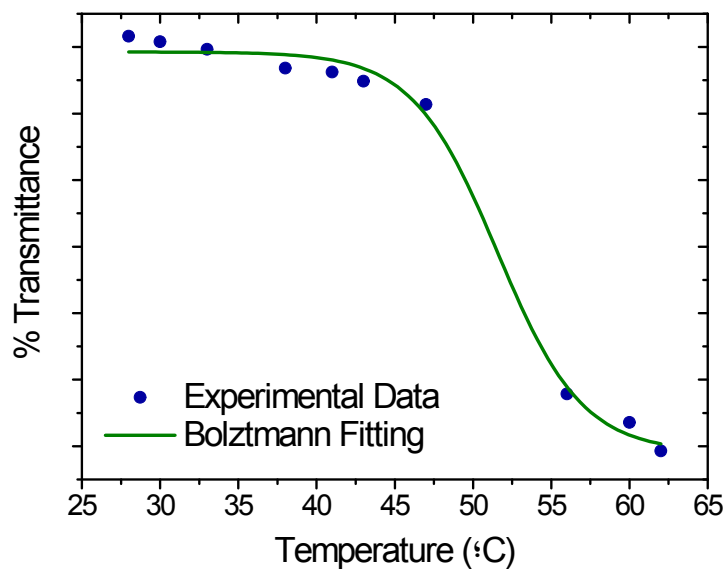
ESI-4. NG0: $x_0 = 40 \pm 1$

- NG1-4AA



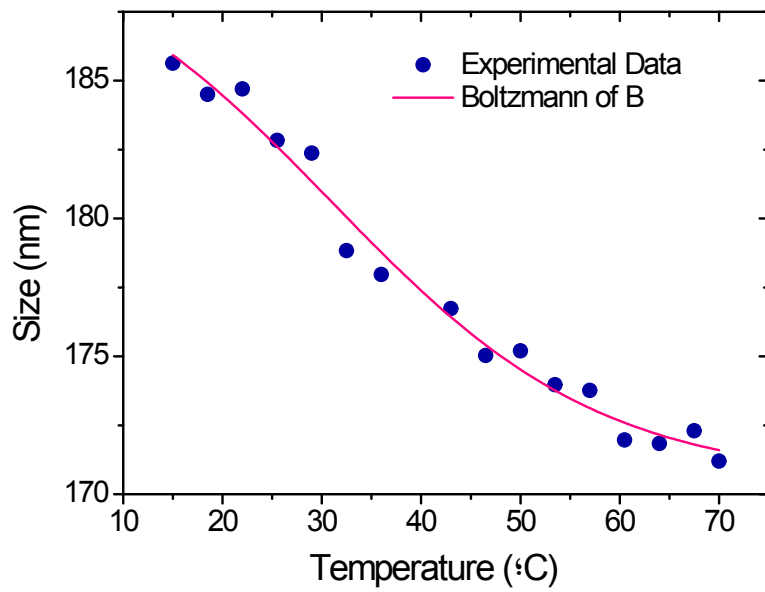
ESI-5. NG1-4AA: $x_0 = 49.8 \pm 0.3$

T_{PT} for NG1-4AA was also evaluated by UV-Vis-based turbidity experiments (**ESI-6**). Transmittance values were recorded at $\lambda = 600$ nm (1 cm path length) against temperature. The measurements were performed a Shimadzu 1800 UV-vis spectrophotometer. The T_{PT} was determined using the inflection point of the curve of the % transmittance vs. temperature.



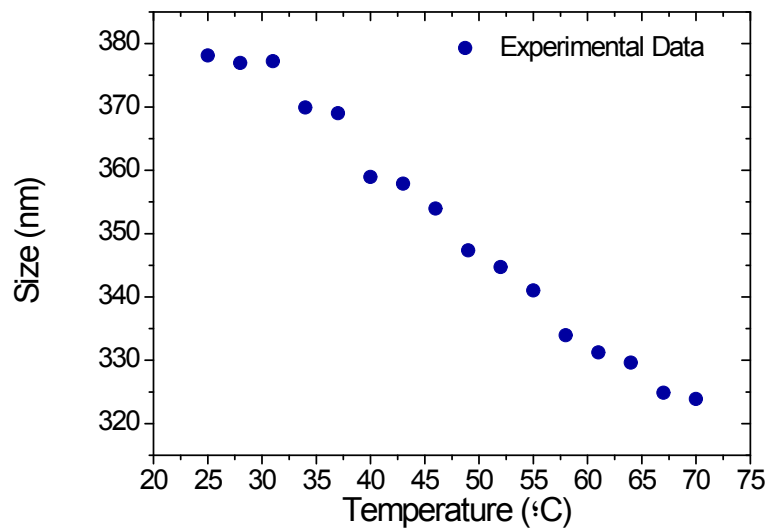
ESI-6. NG1-4AA: $x_0 = 51.6 \pm 0.7$

- NG2-4AA: 9:1 MEOMA:OEGMA

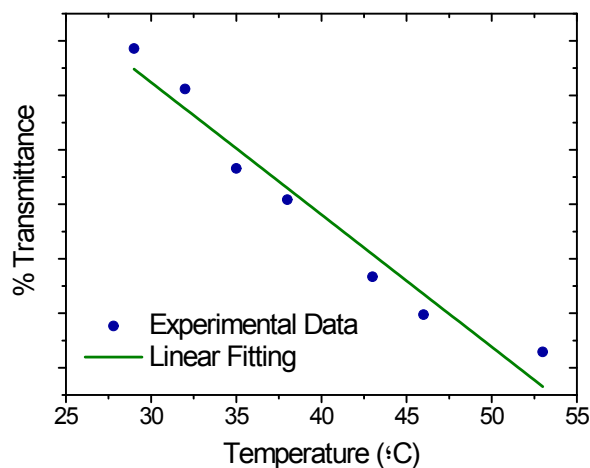


ESI-7. NG2-4AA: $x_0 = 31 \pm 5$

- NG3-8AA



ESI-8. NG3-8AA: linear thermo-sensitive behaviour.



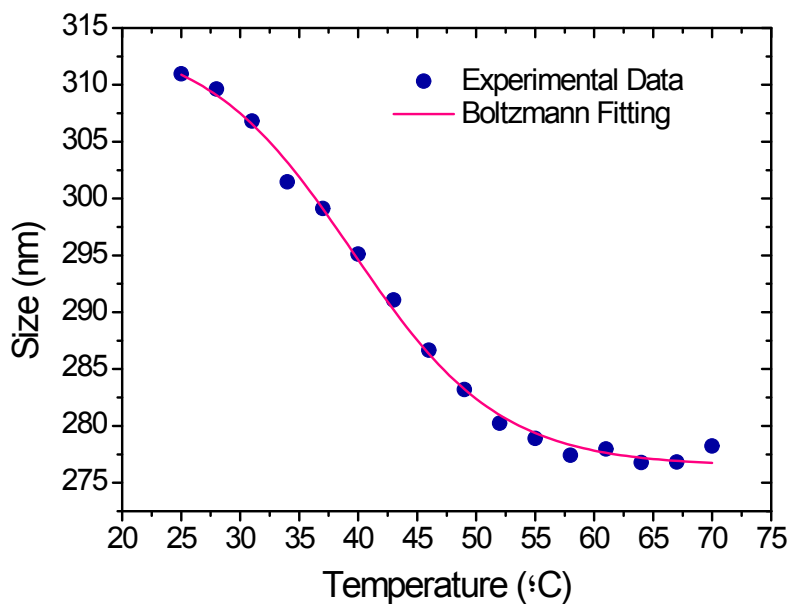
ESI-9. NG3-8AA: linear thermo-sensitive behaviour.

NG3-8AA T_{PT} evaluated by UV-Vis-based turbidity experiments confirmed a linear thermo-sensitive behaviour.

- NG4-12AA

T_{PT} was not measured.

- NG5-4AI



ESI-10. NG5-4AI: $x_0 = 39.5 \pm 0.6$

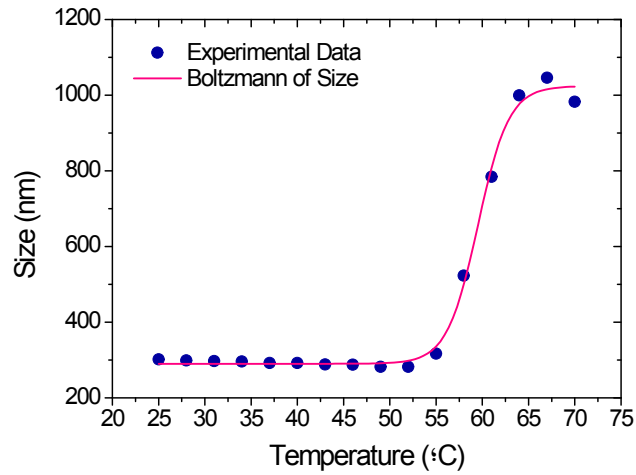
- NG6-8IA

T_{PT} was not measured.

- NG7-12AA-C

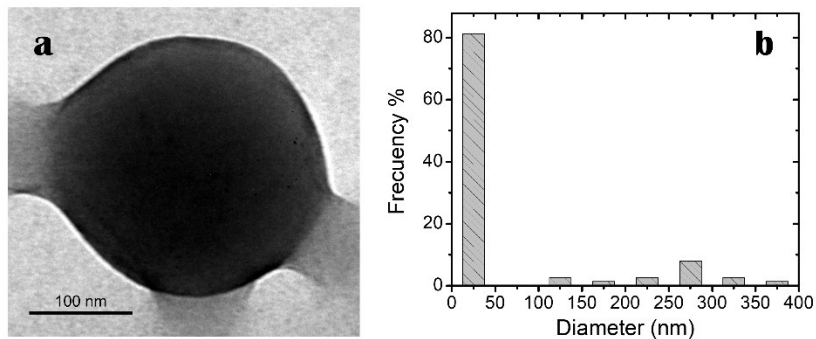
T_{PT} was not measured.

- NG8-4IA-C



ESI-11. NG8-4IA-C: $x_0 = 59.5 \pm 0.2$

TEM images and distribution



ESI-12. Characterization of NG5-4AI by TEM: a. TEM image of a NG with bigger size; b. Complete distribution of sizes.

References

- [1] H. Dong and K. Matyjaszewski, "Thermally responsive P(M(EO)2MA- co - OEOMA) copolymers via AGET ATRP in miniemulsion," *Macromolecules*, vol. 43, no. 10, pp. 4623–4628, 2010.