

*Title:* **Control of colloidal systems by means of thermoresponsive polymers**

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Disodium cromoglycate (DSCG) molecules in water pack in stacks, whose length and liquid crystal (LC) phases depends on temperature, concentration and the presence of depleting agents. In the present work, DSCG-Water LC phases and phase transitions are studied in free-depletant, non-thermoresponsive depletant (polyethylene glycol, PEG) and thermoresponsive depletant (poly(N-isopropylacrylamide), PNIPAM) mixtures. Nematic (N) to isotropic (I) phase transition temperature is increased in the presence of these depleting agents. PNIPAM loses that property above the lower critical solution temperature (LCST), whereas PEG effect is not modified. Both polymers depleting capacity is also compared by dynamic light scattering (DLS) analysis, showing that PNIPAM applies a stronger depletion force than PEG of the same molecular weight at 25 °C. Finally, PNIPAM-functionalized surfaces and microgel particles have been synthesized and their thermoresponsive properties have been studied.

**Keywords:** Chromonics, liquid crystals, PNIPAM, depletion, thermoresponsive