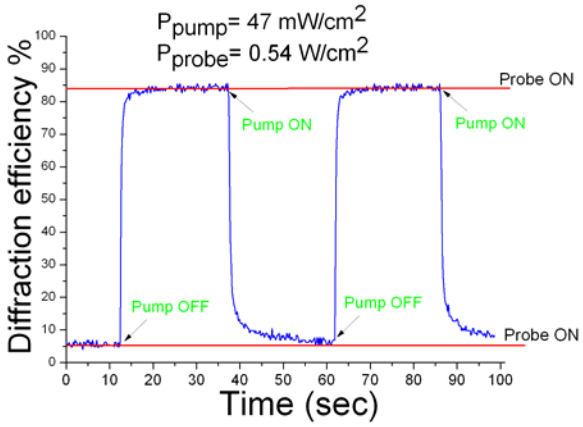
Supplementary Information

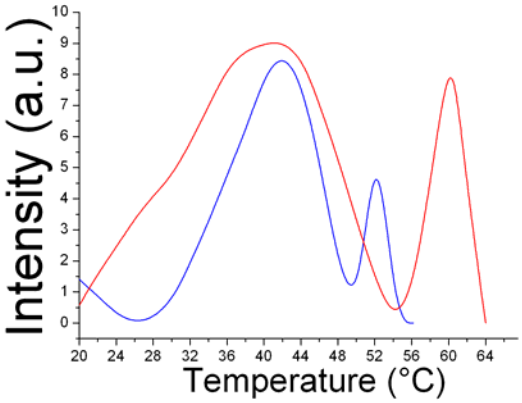
a) Comparison under similar experimental conditions:



Supplementary information 1: reversible and repeatable changes of the diffraction efficiency of the CPND based sample

b) Influence of dyes on nematic range and order parameter.

To further confirm the interesting properties of CPND-57, we measured the temperature range of nematic phase of the NLC doped both with MR and CPND. To this end, we measured, for both samples, the intensity transmitted (at λ=633 nm) between crossed polarizers while varying the temperature; results are reported in the supplementary information 2. Spectra show that, while



Supplementary information 2: Transmitted intensity versus the temperature for the NLC doped with MR (blue curve) and CPND (red curve)

the Nematic to Isotropic (N → I) transition temperature of the pure NLC (E7, provided by Merck) is 60 °C, in the case of NLC doped with MR (blue curve) the transition value is reduced to 56 °C and, on the contrary, for the NLC doped with CPND, the value is increased to 64 °C. These results point out that the mesogenic azo dyes (CPND) do not affect, but even improve, the nematic range. Indeed, we have measured the birefringence (Δn) of both samples at room temperature and results show that in the case of NLC doped with CPND Δn is 0.214 while in the case of NLC doped with MR Δn is reduced to 0.182.