

Thermal stability of liquid crystals doped with magnetic nanoparticles

A. Jurikova,¹ K. Csach,¹ J. Miskuf,¹ N. Tomasovicova,¹ Z. Mitroova,¹
V. Zavisova,¹ M. Koneracka,¹ P. Kopcansky,¹ K. Fodor-Csorba,² and
A. Vajda²

¹*Institute of Experimental Physics,
Slovak Academy of Sciences, Košice, Slovakia*

²*Institute for Solid State Physics and Optics,
Hungarian Academy of Sciences, Budapest, Hungary*

Creating mixtures of bent-core and rod-shaped molecules can form liquid crystalline phase at the room temperature and be useful in possible practical applications. In the work phase transitions of binary mixtures of the bent-core and the rod-shaped liquid crystals dopped with different types of magnetic nanoparticles were studied using differential scanning calorimetry. For the binary mixture with the ratio of 50:50 the nematic to smectic transition below 40 °C was appeared and the crystallization temperature was shifted to the sub-ambient temperature. The influence of doping of liquid crystals with magnetic nanoparticles on the kinetics of all observed phase transitions was studied. The phase transition temperatures are shifted depending on the nanoparticle shape and changed significantly with varying cooling rate for all studied samples.

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