

**MAGNETIC-FIELD INDUCED ISOTROPIC-NEMATIC PHASE
TRANSITION IN PDLC DOPED WITH MAGNETIC
NANOPARTICLES**

**Z. Mitróová^a, N. Tomašovičová^a, M. Timko^a, M. Koneracká^a, L. Tomčo^b,
J. Jadzyn^c, T. Palewski^d and P. Kopčanský^a**

^aInstitute of Experimental Physics, Slovak Academy of Sciences, Watsonova 47, 040 01
Košice, Slovakia

^bFaculty of Aeronautics, Technical University, Rampova 7, 04 121 Košice, Slovakia

^cInstitute of Molecular Physics, Polish Academy of Sciences, 60179 Poznan, Poland

^dInternational Laboratory of High Magnetic Fields and Low Temperatures, Polish
Academy of Sciences, Gajowicka str.95, Wroclaw, Poland

The polymer dispersed liquid crystals (PDLC) are a novel class of optical composites made from polymer and liquid crystal materials in an appropriate ratio. In this work we studied PDLC which consists of liquid crystal 4-(trans-4'-n-hexylcyclohexyl)-isothiocyanatobenzene (6CHBT) microdroplets dispersed in a polyvinyl-alcohol and doped with single walled carbon nanotubes functionalized with Fe₃O₄ nanoparticles (SWCNT/Fe₃O₄). The volume concentration of the particles was 2×10^{-3} . The phase transition temperature from isotropic to nematic phase in the external magnetic field up to 12T was monitored by precise capacitance measurements in the capacitance cells filled with prepared sample. The shift in the temperature about 0.2°C of the phase transition from isotropic to nematic phase at the external magnetic field of 12T was observed.

13.4 cm

Subject category :

7. Applications

Presentation mode :

poster

Corresponding author :

Z. Mitróová

Address for correspondence :

Institute of Experimental Physics
Slovak Academy of Sciences
Watsonova 47
040 01 Košice
Slovakia

Email address :

mitro@saske.sk

9.7 cm