

Abstract Submitted
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The role of disclinations on the organization and conductivity in liquid crystal nanocomposites¹ LUZ J MARTINEZ-MIRANDA, University of Maryland, College Park, MD, USA, P. ROMERO-HASLER, A. MENESES-FRANCO, E A SOTO-BUSTAMANTE, Universidad de Chile, Santiago, Chile — The structure of TiO₂ nanoparticles in a liquid crystal nanocomposite was found to be an oblique structure due to the alignment of the TiO₂ with respect to the liquid crystals. This order is anisotropic due to the ordering of the liquid crystals. The particles are highly localized in the nanocomposite, which has consequences in the electrical percolation. We want to obtain an understanding of how the nanoparticles organize in this highly localized fashion. The nanoparticles and the liquid crystals phase separate, with the nanoparticles accumulating in the defects exhibited by the liquid crystal even after being sonicated initially. The liquid crystal is polymerized by the process of electropolymerization that takes place in the isotropic phase of the monomers. The nanoparticles are free to move away from the defects where they phase separate since the defects disappear in the isotropic. We believe the polymerization imposes a limitation in the movement of the nanoparticles. The combination of the accumulation in the disclinations, the polymerization in the isotropic and the formation of the liquid crystal unit side chains can affect the conductivity of the nanocomposite.

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