

Abstract Submitted
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Smectic Liquid Crystal-Nanoparticle arrangement observed with X-ray Scattering¹ LUZ J MARTINEZ-MIRANDA, University of Maryland, College Park, MD, PATRICIO ROMERO-HASLER, ARIEL MENESES-FRANCO, EDUARDO A. SOTO-BUSTAMANTE, Universidad de Chile, Santiago, Chile — We observed the alignment of two different monomeric liquid crystals combined with TiO₂ in a concentration of 0.3 wt of TiO₂. The liquid crystals are M6R8 and I6R8. These two monomeric compounds have a crystal-SmC-SmA-isotropic phase progression. The two monomeric compounds differ in the final group at the end of one of the carbon chains. The nanoparticle ties itself to the monomers through hydrogen bonding. The difference in the final group determines where the nanoparticle attaches to the liquid crystal molecule. This difference in the way it attaches can be observed using X-ray scattering. The way the nanoparticle attaches has consequences in the current-voltage curve obtained [1]. Under the influence of an electric field, the M6R8 polymerizes. We observe by X-ray scattering that the nanoparticles migrate and the scan is very similar to the scan of the I6R8 monomer with the nanoparticle. In addition the nanoparticle is ordered along one direction and does not seem as ordered in the direction perpendicular to this direction. [1] A. Meneses-Franco, *J. Mater. Chem. C*, 2015, 3, 8566.

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