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Temperature Dependence of Smectic Liquid Crystals Mixed With Magnetic Nanoparticles[1] JEFFERSON W. TAYLOR, University of Maryland - College Park, LYNN K. KURIHARA, Naval Research Laboratories, LUZ J. MARTINEZ-MIRANDA, University of Maryland - College Park — We investigate the properties of bulk liquid crystal mixed with a magnetic nanoparticle (CoFe) as a function of temperature. We compare our results to those of a heat capacity measurement of Cordoyiannis et al.[2] and compare the way the smectic as a function of temperature the way the nematic behaves. We study how the liquid crystal reorganizes in the presence of the functionalized nanoparticles as a function of temperature and compare it to how it behaves at room temperature.[3] The X-rays give rise to three or four peaks whose evolution in temperature varies depending on their origin. In particular the second peak does not seem to vary much with temperature, and can be associated with the first several molecular layers attached to the nanoparticles.

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[2]George Cordoyiannis, Lynn K. Kurihara, Luz J. Martinez-Miranda, Christ Glorieux, and Jan Thoen, Phys. Rev. E **79**, 011702 (2009)
[3]L. J. Martínez-Miranda, and Lynn Kurihara, J. Appl. Phys, **105**, p. 084305 (2009).

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