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Effect of the Functionalization Compound on the Magnetic Nanoparticle – Smectic-A Liquid Crystal Interaction: A Phenomenological Model LUZ J. MARTINEZ-MIRANDA, University of Maryland, LYNN K. KURIHARA, Naval Research Laboratory — We present the details of a phenomenological model that explains how the functionalization or surface compound affects the way that a magnetic nanoparticle interacts with a liquid crystal molecule. This model considers the surface interaction between the functionalization compound and the liquid crystal, and the relative size of the liquid crystal compared to the size of the nanoparticle. These two properties can aid or hinder in the effects of the nanoparticle on the orientation of the liquid crystal, specifically on the magnetic field effects of the nanoparticle in the reorientation of the liquid crystal. Comparisons with experimental data will be presented.

Luz J. Martinez-Miranda
University of Maryland

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