Abstract Submitted
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Local orientation and temperature effects of a liquid crystal in contact with a nanoparticle[1] JEFFERSON WARD TAYLOR, University of Maryland, College Park, MD, LYNN K. KURIHARA, Naval Research Laboratory, Washington, DC, LUZ J. MARTINEZ-MIRANDA, University of Maryland, College Park, MD — We have studied the effects on the orientation of the liquid crystal in the immediate vicinity of a nanoparticle. We have observed a "halo" surrounding the nanoparticle, when studying the effects of the nanoparticle on the liquid crystal with the AFM. We believe this halo has an effect on the ordering of the liquid crystal in the immediate vicinity of the nanoparticle. We have also observed a short range order peak in the X-ray scattering signal, which is also associated with the effects on the liquid crystal in the immediate vicinity of the nanoparticle. The value of the coherence length of this peak is close to the value of the molecular spacing or very close of the liquid crystal in the X-ray scattering experiment for all nanocomposites studied. This coherence length does not change as a function of temperature, when the temperature is changed and goes through the SmA-nematic transition temperature. The peak and its coherence length persist into the nematic phase.

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