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The Dynamic Properties of Confined Antiferroelectric Liquid Crystal Investigated By Photon Correlation Spectroscopy

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Abstract

Dynamic light scattering was used to examine ferroelectric liquid crystalline phases in porous media. Whereas in larger pores (200 Å) ferroelectric phases were observed, they were not found in the smallest pores (200 Å). Additionally, the temperatures of SmC - SmA phase transition were found to be suppressed in the pores relative to bulk, while SmCA - SmC_γ phase transition is not affected by the confinement. These observations have been explained by the structural aspects of antiferroelectric liquid crystalline materials in a confined geometry and show the importance of long range electrostatic interaction for existence of ferroelectric phases.

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