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Relaxation Processes and Phase Transitions in Nanoconfined Liquid Crystal EDWIN ARROYO, SARMISTHA BASU, VLADIMIR DOLIDZE, FOUAD ALIEV, University of Puerto Rico, San Juan, PR 00931 — The results of static and dynamic light scattering (DLS), broadband dielectric spectroscopy (DS) and differential scanning calorimetry (DSC) investigations of the influence of confinement on the dynamic behavior and phase transitions of liquid crystal-8CB dispersed in porous matrices with randomly oriented, interconnected pores with average pores sizes of 10nm and 100nm will be presented. The combination of these methods allow us to obtain detail information about orientational fluctuations of director-collective mode (DLS) the dynamics of molecular modes (DS) as well as phase transitions (DSC and static light scattering). The influence of confinement on physical properties under investigation was strongly pore size dependent and was resulted in absence of clear phase transitions in narrow pores (10nm). In large pores (100nm) broadening and shift of phase transitions was observed. The dynamics of both molecular and collective modes was also drastically affected by confinement.

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