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Diffusive and re-orientation dynamics in lyotropic gels of self-assembled organic nanotubes LUTZ WIEGART, Brookhaven National Laboratory, PIERRE WIEGART, CEA-Grenoble, UM5819, INAC-SPrAM , CHIARA CARONNA, SLAC National Accelerator Laboratory — It is known that dispersing lithocholic bile acid (LCA) in aqueous solutions of sodium hydroxide or ammonia leads to the formation of organic nanotubes with well-defined diameters on the nanometer scale. The suspensions appear to be tunable from liquid- to solid-like via the LCA concentration. The length of the tubes is decreasing as a function of temperature, favoring the formation of a phase where the tubes form hexagonally ordered bundles for an appropriate LCA concentration and temperature. In the present study, we have used X-ray Photon Correlation Spectroscopy (XCPS) to probe the diffusive dynamics of the nanotubes in these lyotropic gels under various conditions (concentration, counter ion, temperature). The multispeckle analysis of the coherent scattering pattern reveals domains in the sample with differing diffusive dynamics. The re-orientation process of different domains of nanotube bundles into a preferred parallel alignment has been observed.

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