

Solubilization of N-alkylpyridinium ions in anionic nematic lyomesophases

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Deuterium quadrupole splittings from the aromatic ring of a series of linear N-alkylpyridinium-d₅ ions, with alkyl chains from 1 to 16 carbon atoms, were measured using ²H-NMR spectroscopy. The pyridinium ions, 10% deuteriated in the aromatic ring, were dissolved in nematic anionic lyomesophases prepared from sodium decyl sulfate (SDS) and cesium decyl sulfate (CsDS). With these splittings, the two order parameters that completely describe the average orientation of the aromatic ring with respect to the magnetic field were calculated. The added pyridinium ions have a dramatic effect on the mobility of the CsDS mesophase components. The smaller N-methyl and N-ethylpyridinium ions, C1 and C2, have a disruptive effect on the integrity of the mesophase, C3 and C4 do not have an appreciable effect, and the larger ones, C5 to C12, show the opposite effect, increasing the order of the system with the length of the alkyl chain. This phenomenon, not observed in the SDS mesophase, may be attribu