

SYNTHESIS AND CHARACTERIZATION OF NEW STAR-SHAPED STRUCTURES BASED ON BENZENE RING

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Abstract. A liquid crystal materials have a number of ordinary uniqueness. Among these are a rod-like molecular structure, rigidness of the long axis, and strong dipoles and/or easily polarizable substituent's. New star-shaped compound based on benzene ring was obtained starting from 1,3,5-trichlorobenzene as a central core, substituted with two armed of 2,4-bis(dodecyloxy)-6-ethynyl-1,3,5-triazine which built up from 1,3,5-triazine and dodecan-1-ol and one arm of phenol. The substitution was achieved efficiently by Sonogashira coupling. The presence of alkyl chain groups on the periphery reduced the mesophase transitions which are desirable for low temperature applications of liquid crystals. The target compound did not exhibit a transition phase in its pure state but, after ionic interaction with 4-DBA which already possess a phase transition, it showed a phase transition and liquid crystal properties. The organic salts, which made between the π -conjugated system and 4-dodecyloxy benzoic acid were investigated for their liquid crystal properties by optical polarizing microscope (POM) and differential scanning calorimetry (DSC). All the intermediate and final compounds were confirmed by spectroscopic techniques (FT-IR, ^1H NMR, ^{13}C NMR, and mass spectrometry).

Keywords: Star-shaped structure, hydrogen bonding, liquid crystal, synthesis and characterization