Twist sense inversion of helical structure in liquid crystals by spectroscopy methods

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Liquid crystals are materials which molecules undergo self-organization. When chiral molecules form liquid crystalline phases, the macroscopic helical structure is formed [1]. It is characterized by two parameters helical pitch and helical twist sense. In compounds forming antiferroelectric phase SmC*A the helical pitch can be right-handed (RH), left handed (LH) or right handed at low temperatures and left handed at higher temperatures. In the last case the twist sense inversion appears in between, see Fig. 1 for compound C₅H₇(HPhF) [2]. Many of such examples are given in [3, 4].

Fig. 1. Temperature dependence on helical pitch for compound C₅H₇(HPhF)

The results of measurements of compounds showing helical twist sense inversion by spectroscopy methods UV Vis, IR, VCD, ECD, NMR will be presented [5].

Keywords: liquid crystals; antiferroelectric phase; twist sense inversion

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References