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材料物理和化学

基于分子间氢键的棒状手性液晶的研究进展

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摘要：分子间氢键棒状手性液晶因其兼具手性液晶奇特的光电性能和氢键液晶的便捷制备以及独特的外界刺激响应性,在功能材料、非线性光学、生物医学等领域具有潜在的应用价值,一直是超分子液晶领域的研究热点。文章按照形成氢键互补基团的不同,将其划分为3种类型,即羧酸-羧酸类、羧酸-吡啶类和其他类型氢键,介绍了这三类氢键棒状手性液晶近年来的研究进展。详细归纳了氢键质子给受体的分子结构、氢键稳定性、手性中心位置、取代基、柔性链长度等对液晶性能的影响,并在此基础上,对其未来发展做了展望。

关键词：液晶 氢键 手性 棒状 超分子

Progress of Rod-like Chiral Supramolecular Liquid Crystals Based on Intermolecular Hydrogen Bonding

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Abstract: Due to its unique optical-electro properties, facile synthesis and stimuli responsiveness to the environment, chiral supramolecular liquid crystals based on intermolecular hydrogen bonding have been becoming one of the hot topics in domain of supramolecular chemistry and been winning more application in functional materials, nonlinear optics and biomedical science, etc. This paper presents a brief review on the rod-like hydrogen-bonding chiral liquid crystals (RHCLC). The molecular structure, chiral group, substituent group, flexible chain, stability of these hydrogen-bonded supramolecular complexes and their relation to the observed liquid crystalline phases are the main topics of this review. Recent research achievements about RHCLC sorted by hydrogen bonds groups such as carboxylic acid and pyridine are introduced. At last the future development of RHCLC is prospected.

Keywords: liquid crystal hydrogen bond chirality rod-like supramolecule

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