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材料物理和化学

手征性向列相液晶复合体系的研究

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摘要： 以(+)-2-甲基丁醇为不对称中心制备了单手性中心与双手性中心两个系列的液晶用手性掺杂物,分别将其与4-烷基联苯氰类向列相液晶混合。通过对单手性中心掺杂物/向列相液晶复合体系的研究,发现了手性中心的旋转自由度对其螺旋扭曲力的影响规律;进一步制备了双手性中心掺杂物,并对双手性中心掺杂物/向列相液晶复合体系的螺旋扭曲力及其螺距的温度依赖性进行研究,发现两个手性中心之间的链接方式对其螺旋扭曲力的温度依赖性有强烈的影响。

关键词： 手性掺杂物 螺旋扭曲力 螺距 液晶

Helical Twisting Behavior of Chiral Nematic Mesophase

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Abstract: Chiral dopants based on optically active (+)-2-methylbutan-1-ol were prepared. Two kinds of induced chiral nematic liquid crystal (N^*-LC) were achieved by mixing the chiral dopants in 4-n-alkyl-4'-cyanobiphenyl (CBS) host nematic liquid crystal. The helical pitches of the N^*-LC were measured and the regularities of change were analyzed. The results showed that the steric hindrance in the chiral region contributed to the helical twisting power (β) of the N^* phase. The substitution between the two chiral center had a strongly effect on β and the temperature dependence of the helical pitch (dp/dt).

Keywords: chiral dopant helical twisting power helical pitch liquid crystals

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