

***Ortho*-fluorinated chiral azobenzenes in cholesteric liquid crystals**

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Azobenzenes are a class of well-studied and applied photochromic switches. Chiral azobenzenes are widely employed in cholesteric liquid crystals (CLC) as chiral dopants. Two main challenges are associated with the use of chiral azobenzenes as chiral dopants : i) information storage applications require that the stability of the *cis*-form is increased, and ii) the photo-response of the cholesteric helix must be optimized while switching from the *trans*- to the *cis*-form. Focus on this two challenges, several methods have been developed in past decade. Bléger *et.al* had developed *o*-fluoroazobenzenes, which are stable on both *trans*- and *cis*-form, with a half-life time of *cis*-form thermo relaxation more than 700 days¹. On the other hand, Pieraccini *et.al*² and Li *et.al*³ had developed a series of axial chiral azobenzene based on chiral bi-naphthalene, which showed evidently higher efficient ability to induce the CLC phase than the azobenzenes with tetrahedral chirality⁴. In this work we synthesized a novel axial chiral azobenzene, which contents both axial chirality and *ortho*-fluorine atoms. Compare to the molecule without fluorine atoms, this fluorinated azobenzene shows similar behavior in induce the CLC phase and meanwhile an obviously longer half life time of the *cis*-form thermo relaxation.

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