

Synthesis of Bent-shaped Azobenzene Liquid Crystals Derived from Resorcinol for Optical Storage Properties

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ABSTRACT

The liquid crystalline and light-induced properties of resorcinol spacer based dimeric azobenzene were investigated. First, the compound was synthesized and elucidated the molecular structure by spectral analysis such as NMR, IR, and UV–VIS. polarizing optical microscope studied showed that compound exhibit nematic and smectic A phases. Then, the photoisomerization effect was evaluated in solution and also in the solid state. The photosaturation occurred exactly at 18 sec whereas thermal back relaxation was observed at around 11 hr. Long duration of the thermal back relaxation is due to the presence of rigid resorcinol spacer substituted in the bent-shaped molecules. This compound is useful in the fabrication of optical storage device and molecular switches.

KEYWORDS: Azobenzene; liquid crystal; optical storage; photoisomerization; synthesis

DOI: [10.1080/15421406.2016.1147328](https://doi.org/10.1080/15421406.2016.1147328)