

SYNTHESIS OF AZOBENZEN AND PHENYL ACRYLATE-CONTAINING MONOMER

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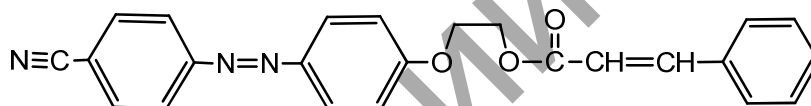
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In recent years, the attention of researchers for the presence of high-molecular compounds has shown great interest in the creation of polymer liquid crystal (LC) systems [1-3], which determine success in the study of structures, and medicine [4-5], as well as the natural and specific macromolecular substances. The development of this field of research is inevitably associated with the development of methods for creating polymer LC systems and controlling the processes of structure formation in polymers in order to obtain polymeric materials with the required complex of physicochemical properties.

Maintaining the side groups into the composition of macromolecules that carry a certain functional load provides, under certain conditions, the manifestation of their functional properties. For example, the inclusion of comb-shaped photochromic fragments, such as azobenzene dye molecules, which undergo cis-trans isomerization under the action of light, makes them photo-optical sensitivity and opens up possibilities for obtaining new photosensitive LC polymers.

This paper describes the synthesis of a azobenzene-containing monomer, the side chains of which are the mesogenic group of 4-hydroxy-4-cyanoazobenzene. The combination of different side groups in the composition of the copolymers significantly expands the potential possibilities of comb-shaped polymers.



The monomer was synthesized by reacting 4-(2-hydroxyethoxy)-4-cyano-azoxybenzene with cinnamoyl chloride in the presence of potassium- K_2CO_3 in DMF. The reaction mixture was stirred at 60–70°C for 24 hours. The precipitated salt was filtered, the monomer was precipitated with water, the orange product was filtered, washed several times with water, and dried under vacuum. The monomer yield is 70%.

The composition and structure of the compounds was confirmed by IR, NMR 1H - and ^{13}C -spectroscopy, as well as methods of two-dimensional NMR spectroscopy COZY (1H - 1H) and HMQC (1H - ^{13}C), which allows to establish the spin-spin interactions of homonuclear and heteronuclear nature.

References

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