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Synthesis of liquid crystals precursors containing the isoxazole core

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Resumo/Abstract

Isoxazolines and isoxazoles are interesting intermediates in organic synthesis,[1] and play an important role in the synthesis of novel liquid crystalline materials.[2] The isoxazole ring incorporates a strong dipole moment and this polar effect favors the increasing of molecular anisotropic polarizability. Consequently, it induces the formation of stable mesophase with enantiotropic behavior. The incorporation of fluorine into organic molecules has received intensive attention due to the unique characteristics that this substituent gives to the products, both in material science and in pharmaceutical industry. In fact, the study of fluorine influence on the control of the liquid crystalline properties is being stimulated because it ensures significant modifications in respect of melting point, mesophase morphology and transition temperatures.[3]

Isoxazolines were obtained by [3+2] 1,3-dipolar cycloaddition of arylnitrile oxide with 4-*tert*-butoxystyrene, followed by MnO2-oxidation reaction to yield the corresponding isoxazoles. Arylnitrile oxide was obtained by oxidation of corresponding aryloxime. To achieve the target compounds, other two simple steps were added to the synthetic route. The first one was the removal of the protective group in acidic medium to provide the phenol, which was them alkylated using alkyl dibromide.[4] All the products were obtained with moderate yields. In the present work we have synthesized and characterized new bromine-terminated isoxazoles which will be connected to glycerol framework to produce polymerizable liquid crystals allyl monomers.

References

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