# Esters of 4-nitrocinnamic acids and 4-halogene-4'-hydroxyazobenzenes : synthesis, mesogenic and optical studies.

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Streszczenie

Six new compounds were synthesized that have no alkyl chains in their structure: 4-nitrocinnonates of 4-hydroxyazobenzene, 4-nitro-4’-hydroxyazobenzene, 4-fluoro-4’-hydroxyazobenzene, 4-chloro-4’-hydroxyazobenzene, 4-bromo-4’-hydroxyazobenzene and 4-iodo-4’-hydroxyazobenzene. Using the polarizing microscopy and differential scanning calorimetry, enthalpies and temperatures of phase transitions were determined. All investigated compounds have an enantiotropic nematic phase. These compounds proved to be extremely thermally stable. Thermal decomposition was observed in temperatures above 300°C. Investigated compounds contain two different chromophore groups (i.e. azo and ethene moieties), which influenced the complex *trans–cis* isomerization processes of both groups (three time-separated processes were observed). It was shown that the presence of the ethene group significantly shifts the π-π* band towards higher energies. The substituent polarity in the azo group also affected the energy of this absorption band. A weak luminescence effect was observed in the 4-nitrocinnonates of 4-hydroxyazobenzene compound.

Słowa kluczowe

Azobenzenes, nematic, DSC calorymetry, Polarizing microscopy, trans-cis izomerization, luminescence

Adres publiczny

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