Liquid-crystalline polymorphism of 4-heptyloxybenzylidene-4'-alkyloxyanilines and their phase equilibrium with 4-octyloxyphenyl 4-nitrobenzoate.

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Streszczenie

This paper describes the synthesis and liquid-crystalline properties of the homologous series of 4-heptyloxybenzylidene-4′-alkyloxyanilines (7-*n*). Six of them are presented for the first time. Based on the polarization microscopy (POM and TOA methods) and the calorimetric (DSC) measurements following polymorphism has been detected: nematic, smectic C and smectic I mesophases. The presence of these mesophases was confirmed by the miscibility method, using 4-octyloxyphenyl 4-nitrobenzoate and terephtal-bis (4-butyloaniline) as a mesophase references.

Extraordinary results have been found in the mixtures of the investigated compounds with 4-octyloxyphenyl 4-nitrobenzoate; Induced smectic A has been observed, which is connected with very strong intermolecular interactions. Additionally destabilization of nematic and smectic C phases was visible.

Highlights

► New liquid crystalline series 4-heptyloxybenzylidene-4′-alkyloxyanilines. ► Phase transitions, change of entropies and types of mesophases are discussed. ► Phase diagram technique was applied to mesophase identification. ► Induce of SmA mesophase in mixtures with 4-octyloxyphenyl 4-nitrobenzoate.

Słowa kluczowe

liquid crystals, DSC, POM, nematic, Smectics, Schiff-base, Phase diagrams, phase transition

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