

Phase diagram of *trans*–*cis* isomers for photoactive and mesogenic 4-hexyl-4'-propoxyazobenzene.

Autorzy

Joanna Jaworska
Stanisław Bartkiewicz
Zbigniew Galewski

Rok wydania

2013

Czasopismo

Journal of Physical Chemistry
C

Numer woluminu

117

Strony

27067-27072

DOI

10.1021/jp407628c

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The photochromic materials with fast switching times are very important in modern holography. The best for these applications seem to be mesogenic azobenzene derivatives with their change of optical parameters at the isotropization temperature. The problem is that the phase situation depends on the *cis* isomer content in the mixture. In this paper, the authors present for the first time a method for the construction of the phase diagram of the *cis*–*trans* isomers mixtures of 4-hexyl-4'-propoxyazobenzene in the isothermal conditions. The content was changed by light irradiation, and isothermal conditions were obvious because the rate constants are temperature-dependent. The obtained phase diagram allows one to describe the light influence on the phases generation in these type of photochromic materials. It shows that the temperatures of the phase transitions can be changed in a controlled manner. Furthermore, the liquid-crystalline nematic state can be obtained at room temperature as a supercooling, thermodynamically unstable, phase. This property was used in the holographic recording which shows the possibility to apply the material in the area of optical information storage and processing at room temperature.

Adres publiczny

<http://dx.doi.org/10.1021/jp407628c>

Strona internetowa wydawcy

<https://www.acs.org/content/acs/en.html>