

Studies of intermolecular proton transfer, its influence on the liquid crystal properties and electrically-driven transport of chiral ions in mixtures of chiral liquid crystalline 4-phenylpyridine derivative and organic acids of various strength.

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Rok wydania

2021

Czasopismo

Journal of Molecular Liquids

Numer woluminu

336

Strony

116455/1-116455/14

DOI

10.1016/j.molliq.2021.116455

Kolekcja

Naukowa

Język

Angielski

Streszczenie

Series of organic acids with various strength were mixed with chiral liquid crystalline 4-phenylpyridine derivative and tendency of these *acid-base* mixtures to form either intermolecular hydrogen-bonded associates or ionic systems was characterized basing on mid-infrared absorption spectroscopy. For this purpose several liquid crystalline 4-carboxybiphenyl acids were synthesized, including two new fluorinated chiral compounds, with enhanced strength of the acid. The stoichiometric *acid-base* mixtures were investigated in terms of their phase types and phase transition temperatures. The *acid-base* mixtures were doped into nematic liquid crystal host with negative dielectric anisotropy and characterized in terms of their miscibility in twisted nematic phase at room and elevated temperature and in terms of their helical twisting power. Selected mixtures exhibiting intermolecular proton transfer, good solubility in the liquid crystal host forming twisted nematic phase and sufficient helical twisting power to observe reflection band below 2500 nm were investigated in liquid crystal cells with respect to the change of the transmission in the near-infrared range upon high amplitude AC and DC electric fields, searching for broadening of the reflection band.

Słowa kluczowe

proton transfer, chiral ionic compounds, electro-optical reflective modulator, broadening of reflection band

Adres publiczny

<http://dx.doi.org/10.1016/j.molliq.2021.116455>

Strona internetowa wydawcy

<http://www.elsevier.com>

Typ publikacji

Artykuł

Plik został wygenerowany dnia 2026-05-08 08:19:10

Adres w repozytorium <https://old.chem.uni.wroc.pl/pl/repozytorium/e9EYndb>.