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Novel fluorescent liquid crystal containing azo moiety- synthesis, mesogenic and spectroscopic studies

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Liquid crystals containing azo moiety are extensively studied group of compounds. Main reason of this situation are their interesting physicochemical as well as optical properties. An important role in the azobenzene derivatives studies plays the photosensitivity [1], through which the trans-cis-trans isomerization of -N=N- group is possible. Highly developed optoelectronic industry is looking for these type of materials, with a number of specific properties for example luminescent. In order to achieve this property a special group must be implemented to the molecule structure. For this purpose the most commonly used are f-electron elements such as europium [2] or lanthanum [3,4]. In recent years, the heterocyclic components such as those based on oxidazole [5] or coupled ring systems like perylenes are becoming increasingly popular [6].

The main aim of this research was the synthesis of the bifunctional fluorescent molecule with azo and stilbene groups. Moreover, the crucial spectroscopic and mesogenic properties were investigated. By the use of POM (polarized optical microscopy), TOA (thermo-optical analysis) and DSC (differential scanning calorimetry) the presence of the smectic A mesophase was confirmed. Also the fluorescent properties were studied.

References

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Primary author: Ms NIEZGODA, Izabela (Faculty of Chemistry, University of Wroclaw, Poland)

Co-authors: Ms JAWORSKA, Joanna (Advanced Materials Engineering and Modelling Group, Faculty of Chemistry, Wroclaw University of Technology, Poland); Prof. GALEWSKI, Zbigniew (Faculty of Chemistry, University of Wroclaw, Poland)

Presenter: Ms NIEZGODA, Izabela (Faculty of Chemistry, University of Wroclaw, Poland)

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