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Liquid Crystals

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Synthesis and liquid crystalline behaviour of substituted (E)-phenyl-4-(phenyldiazenyl) benzoate derivatives and their photo switching ability (Article)Hegde, G.^a, Shanker, G.^b, Gan, S.M.^c, Yuvaraj, A.R.^c, Mahmood, S.^d, Mandal, U.K.^d^a BMS R and D Centre, BMS College of Engineering, Bangalore, India^b Department of Studies in Chemistry, Bangalore University, Central College Campus, Bangalore, India^c Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang, Kuantan, Malaysia^d Department of Pharmaceutical Technology, Kulliyah of Pharmacy, International Islamic University, Kuantan, Malaysia[Hide additional affiliations](#)

Abstract

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Azobenzene derivatives containing phenyl/4-halogen-phenyl 4-((E)-[4-(pent-4-en-1-yloxy)phenyl]diazenyl)benzoate group with different electronegative substituent (H, F, Cl, Br and I) at other end was synthesised. These azo-based benzoate derivatives have been characterised by FTIR, ¹H-NMR, ¹³C-NMR, elemental analyser, POM and UV-Vis spectroscopy. Photosaturation at 358 nm obtained after 82 s of UV irradiation and the longest thermal back relaxation time of 45 h recorded by UV-Vis. The azo derivative could be possible photolock under UV light, as observed by the improved thermal back relaxation time. The resulting photolockable chain of azobenzene might prove valuable in the development of optical device application. These azobenzene moieties also exhibit liquid crystalline behaviour with respect to the halogen substitution as an electron withdrawing group shows that strong structure property relationship exists among them. © 2016 Informa UK Limited, trading as Taylor & Francis Group.

Author keywords

azobenzene derivatives; liquid crystals; Photoisomerisation; photolock; storage device; thermal back relaxation

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