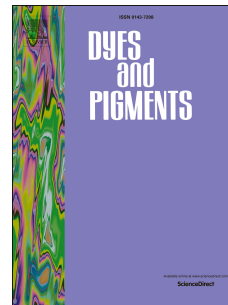


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Triphenylene 2, 3-dicarboxylic imides as luminescent liquid crystals: Mesomorphism, optical and electronic properties

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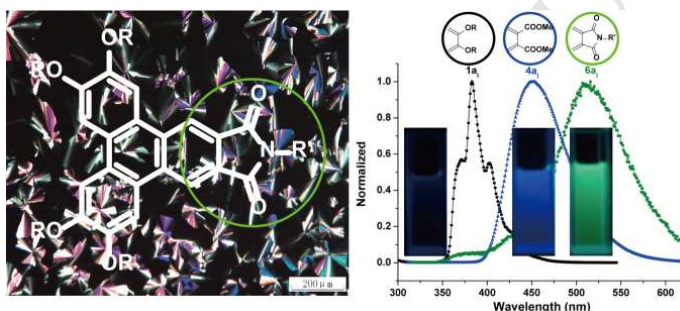
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ABSTRACT: A novel small-sized discotic core was constructed by fusing an imide unit with well-known triphenylene core. All target compounds 6a-k self assemble into a liquid crystalline phases having high clearing temperatures and broad phase ranges over 200 °C, and exhibit green luminescence both in solution and solid states. On cooling from the isotropic phase, compounds 6d-e and 6i-j containing the branched N-alkyl chain show only one peak for the isotropic to mesophase transition which is stable down to -50 °C. Comparison of 6a's mesomorphic behaviors and photophysical properties to a known hexahexyloxytriphenylene (1a) and the parent compound (4a) demonstrates the importance of peripherally attached functional groups in stabilizing columnar mesophases and inducing long-wavelength emission. Both the experimental results and computational calculations show that suitable peripheral functionalization of the discotic liquid crystal molecules not only results in

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