Induced Smectic-G Phase through Intermolecular Hydrogen Bonding Part IX: Comparative Thermal and Phase Behaviour Studies on Two Distinct Structural Isomers Possessing Linear and Bow Shapes

Swathi Pisupati, P. A. Kumar, and V. G. K. M. Pisipati

Centre for Liquid Crystal Research and Education, Faculty of Physical Sciences, Nagarjuna University, Nagarjuna Nagar 522 510, India

Reprint requests to Prof. V. P.; E-mail: venkata_pisipati@hotmail.com

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Two novel intermolecular hydrogen bonding mesogenic series comprising two distinct structural isomers nABA:R:nABA and nABA:H:nABA (where R = resorcinol; H = hydroquinone; nABA = p-n-al-kyloxybenzoic acid with the alkyl carbon number varying from propyl- to decyl- and dodecyl-) have been synthesized using resorcinol and hydroquinone as central bent and linear cores, respectively. The thermal and phase behaviour of these complexes is studied by thermal microscopy and differential scanning calorimetry. The IR spectral data confirm the formation of intermolecular hydrogen bonding between the OH group of the non-mesogen and –COOH group of the nABA moiety. Thermal studies reveal the existence of new phases: smectic-A and smectic-G. Comparative phase transition studies suggest that these isomers exhibit a different trend of mesomorphism.

Key words: Hydrogen Bonding; Thermal; Phase Behaviour; nABA:R:nABA, nABA:H:nABA.