

Mesophase diversity of bent-shaped dimers driven by enantiomeric purity

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The remarkable behaviour of bent-shaped dimers is the spontaneous formation of polar order even without molecular chirality. The first example of such behaviour was provided by the twist-bend nematic phase (N_{TB}) which is characterized by the formation of degenerate helices of opposite handedness [1]. Introducing molecular chirality into bent-shaped molecules provides the additional driving force for the formation of the helical structure [2]. Hence, it is of interest to investigate the competition between spontaneous structural and intrinsic molecular chirality.

Our research is focused on the development of bent-shaped dimers including phenyl-3-hydroxy propanoate ester moiety as a source of chirality (Fig. 1). Such dimers were synthesized in a racemic and enantiomerically pure form. Both forms exhibit unrelated mesomorphic properties and also small structural changes result in interesting mesophase diversity which will be discussed.

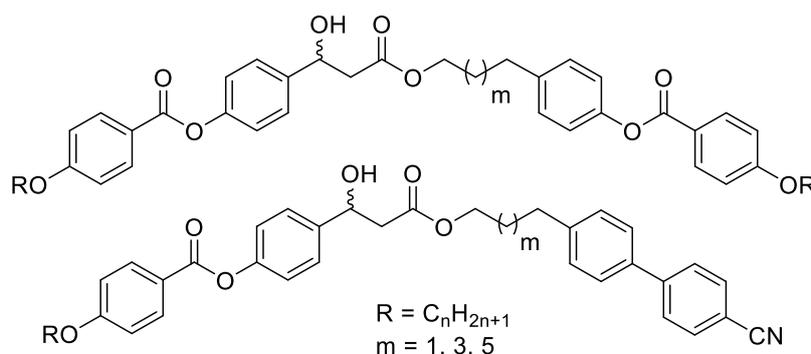


Figure 1 General structure of synthesized bent-shaped dimers

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References:

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