Title:	Cybotactic nematic phase of achiral unsymmetrical bent-core liquid crystals – Quelling of polar ordering and the influence of terminal substituent moiety
Authors:	Mohiuddin, G. (/jspui/browse?type=author&value=Mohiuddin%2C+G.) Pal, S.K. (/jspui/browse?type=author&value=Pal%2C+S.K.)
Keywords:	Bent-core Liquid crystals Cybotactic Ferronematic
Issue Date:	2018
Publisher:	Elsevier
Citation:	Journal of Molecular Liquids, 257, pp. 144-154.
Abstract:	Nematic phase of bent-core liquid crystals (LCs) exhibiting cybotactic clusters (NCyb) have gained significant importance owing to its promising ability to demonstrate macroscopic biaxiality and the ferronematic phase. In this context, three achiral unsymmetrical four-ring bent-core LC compounds, bearing a long alkyloxy chain and differing only in the terminal substituent moiety (methyl, chloro, nitro), are designed and synthesized followed by their optical, dielectric, electro-optic and structural investigations. The presence of NCyb in the methyl and chloro substituted compounds was confirmed via dielectric spectroscopy and X-ray diffraction observations. The absence of ferroelectric behaviour in any of these compounds, even in the cybotactic nematic phase and in presence of polar substituent moieties (chloro and nitro), is attributed to the increased alkyloxy chain length and antiparallel molecular arrangement. The density functional theory (DFT) optimized molecular structure along with the experimental observations further substantiates these findings. The study establishes that cybotactic clusters and polar end moiety, although being a prerequisite for ferroelectric-like nature, do not necessarily result in a ferronematic phase.
Description:	Only IISERM authors are available in the record.
URI:	https://www.sciencedirect.com/science/article/pii/S0167732217351000 (https://www.sciencedirect.com/science/article/pii/S0167732217351000) http://hdl.handle.net/123456789/2043 (http://hdl.handle.net/123456789/2043)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Show full item record (/jspui/handle/123456789/2043?mode=full)

(/jspui/handle/123456789/2043/statistics)