

Abstract Submitted
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Chiral Liquid and Liquid Crystal Phases from Achiral Molecules¹

GORAN UNGAR, HUANJUN LU, XIANGBING ZENG, University of Sheffield, Sheffield, UK, CHRISTIAN DRESSEL, CARSTEN TSCHIERKE, Martin Luther University, Halle, Germany — There is a growing number of examples where chirality in mesophases is induced in non-chiral compounds, due to the mesophase structure (C. Tschierske, G. Ungar, *ChemPhysChem* 2016, 17, 9.). The induced chirality often emerges due to synchronized selection of one of the two enantiomeric conformers of a bistable molecule that are separated by a sizeable but not unsurmountable energy barrier. Recent studies have revealed more complex and puzzling cases. Thus it was found that some long known cubic liquid crystal phases are always optically active, while others, like the “double gyroid”, often appearing in the same non-chiral compound, never are (C. Dressel *et al.*, *Angew. Chem. Int. Ed.*, 2014, 53, 13115). Even more puzzling is the recent discovery of a liquid phase, Iso*, containing no chiral molecules and having no long range positional or orientational order whatsoever, yet displays strong optical activity. The induced chirality in such a liquid develops over virtually unlimited distances (C. Dressel *et al.*, *Nat. Chem.* 2014, 6, 971). The nature of these and some new phases and of their transitions will be discussed.

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