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Stable, Low-Temperature Discotic Nematic Superstructures by Incorporating a Laterally Substituted Sidearm in
Hexakis(phenylethynyl)benzene Discogens

Low-Temperature Discotic Nematic Liquid Crystals

Significance: Replacement of one of the 6-symmetrical para-substituted aryl groups in the hexa-
alkynylbenzene moiety with an aromatic ring possessing 'lateral' (ortho and/or meta) substitution
gives disklike molecules that exhibit the discotic nematic (N_D) liquid crystal (LC) phase. The authors
are able to achieve low temperature (30 °C) non-columnar N_D LC. It is likely that the large
ortho substituents cause the laterally substituted aryl ring to twist out-of-plane. These same substituents
then provide a steric barrier to column formation.

Comment: There are relatively few examples of N_D liquid crystals; this is in contrast to the large
number of calamitic (rod) nematic LCs, which make up the bulk of liquid crystal display (LCD)
technology. By making simple but highly effective modifications to the well-established (see: Chimia
1987, 41, 196) hexaalkynylbenzene scaffold the authors have developed a variety of discotic LCs
with good nematic properties. This technique is likely to find further use in the development of low-
temperature N_D liquid crystals.