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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 \( \text{para} \)-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.