

CROWN ETHER-BASED MESOGENS WITH BRANCHED ALKYL CHAINS

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Thermotropic discotic mesogens generally have useful properties for applications as functional materials, such as electronic devices. However, a limiting factor remains the access to such liquid crystals having their mesophase at ambient temperatures which would enhance the potency as functional materials enormously. Promising compounds are [15]crown-5-ethers with alkyl side chains. However, these compounds mostly show high phase transition temperatures, which makes an application at moderate temperature difficult. In order to encounter this problem, a series of [15]crown-5 ethers with terphenyl- and triphenylene scaffolds and various branched alkyl chains were prepared. Differential scanning calorimetry, polarizing optical microscopy and X-ray diffraction were used to investigate the mesomorphic properties. These studies showed significantly decreased melting points, especially by looking at the compounds with δ -methyl-branched alkyl chains, which led to hexagonal columnar phases at room temperature. Furthermore, in particular for the triphenylenes, broad mesophases could be observed, ranging up to 147 K depending on the side chain lengths.[1]

