

Synthesis and photoswitching properties of bent-shaped liquid crystals containing azobenzene monomers

Abstract

Three novel bent-shaped monomers, namely 1,3-phenylene bis-{4-[4-(n-allyloxyalkoxy)phenylazo]benzoate} 5a-c, containing azobenzene as side arms, resorcinol as central units and terminal double bonds as polymerisable functional groups were synthesised and characterised. The mesophase behaviour was investigated by polarising optical microscopy, differential scanning calorimetry and X-ray diffraction measurements and it was found that all three compounds display SmAintercal mesophases. These bent-shaped molecules exhibit strong photoisomerisation behaviour in solutions in which trans to cis isomerisation takes about 50 seconds whereas the reverse process takes almost 31 hours.