Synthesis and mesomorphic evaluation of new calamitic liquid crystals containing benzothiazole core

Abstract:

The design and synthesis of new calamitic benzothiazole-based liquid crystals, 2-[4-(4-alkyloxybenzoyloxy)-phenyl]benzothiazoles are presented. The target compound was characterized using spectroscopic techniques, such as FT-IR, NMR (1H and 13C), microanalysis and EI-MS. The liquid crystalline behaviours of these compounds were thoroughly examined by differential scanning calorimetry and polarizing optical microscope techniques. These materials exhibited enantiotropic nematic phase with high thermal stability (>168 °C). Smectic A phase starts to emerge as monotropic (metastable) phase from C10 member and changes into enantiotropic (stable) phase from C12 and persists up to C16 members.