Nematic and smectic mesophase from calamitic bisazobenzene liquid crystal: Synthesis and characterization of 1- methoxyhexyloxy-4'-(4-Phenylazo) azobenzene hybrid molecule

Abstract

A new hybrid calamitic liquid crystal material with rod-shape bisazobenzene moieties as a core has been synthesized and characterized by spectroscopic methods. The mesomorphic properties were investigated by differential scanning colorimetry, polarizing optical microscopy and X-Ray diffraction. The rod-shaped molecule 1-methoxyhexyloxy-4'-(4-phenylazo)azobenzene was prepared by diazotization of 4-phenylazoaniline, coupling with phenol and subsequent etherification of 1-Bromohexyloxy-4'-(4-phenylazo)azobenzene in methanol. The presence of enantiotropic nematic and smectic A mesophases were confirmed by the textures and X-Ray diffraction.