

## **Synthesis and characterization of bent-shaped azobenzene monomers : Guest-host effects in liquid crystals with azo dyes for optical image storage devices**

### **Abstract**

Six novel bent-shaped monomers were synthesized such as substituted/or non-substituted 1,3-phenylene bis-{4-[(4-allyloxy)phenylazo]benzoate} (4a-c) and substituted/or non-substituted 1,3-phenylene bis-{4-[3-(4-allyloxy-3-fluoro)phenylazo]benzoate} (4d-f) in which azobenzene moiety in the periphery and substituted/or non-substituted resorcinol as central unit with polymerizable double bonds are linked at both ends of all the molecules. The mesophase behavior was investigated using polarizing optical microscopy, DSC and XRD measurements. Four members of the family show an intercalated smectic (Smintercal) phase and two were crystalline in nature. The trans-form of azo compounds (4a-f) showed a strong band in the UV region (355-366 nm), which was attributed to the  $\pi$ - $\pi^*$  transition, and a weak band in the visible region at 455-465 nm due to the  $n$ - $\pi^*$  transition. When one of the azo dye (4d) is mixed with liquid crystal as a guest, showed greater increase in thermal back relaxation time which is useful for creation of optical image storage devices. © 2009 Elsevier B.V. All rights reserved.