

## A New Series of Two-Ring-Based Side Chain Liquid Crystalline Polymers: Synthesis and Mesophase Characterization

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### Abstract

A new series of side chain liquid crystalline polymers containing a core, a butamethylenoxy spacer, ester groups, and terminal alkoxy groups were synthesised and their structures were confirmed. The core was constructed with two phenyl rings and an ester linking unit. All the polymers were characterised by hot-stage polarising optical microscopy, differential scanning calorimetry, variable temperature X-ray diffraction, thermogravimetric analysis, and gel permeation chromatography. The polymers were found to be liquid crystalline. The nematic and smectic A ( $S_A$ ) phases were observed for the homologues with short-terminal chains (C2 and C6), whereas the homologues with longer chains (C8 to C12) exhibited a smectic C phase. The thermal stability of the polymers was found to be in the range of 293 to 326°C and the molecular weights of the polymers were found to vary from  $6 \cdot 10^3$  to  $1.3 \cdot 10^4$ .