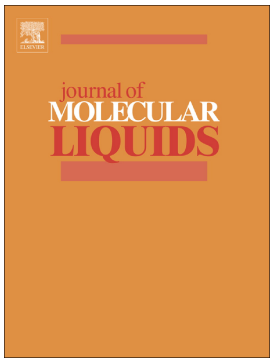

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Synthesis and liquid crystal behavior of new side chain aliphatic polycarbonates based on cholesterol

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Abstract

In this study, we synthesized a series of new liquid crystal aliphatic block polycarbonates copolymers **mPEG$_{43}$-*b*-P(MCC-C$_n$)$_{51}$** (n=1-4) via the ring-opening polymerization, hydrogenation reduction and coupling reaction, which contained side functionalized cholesteryl groups and were different in the number of the flexible methylene groups. The chemical structures of the chiral compounds and copolymers obtained in this study were characterized by FT-IR and ^{1}H NMR spectra, and the average molecular weights of the copolymers were investigated by average molecular weights gel permeation chromatographic (GPC). The polarizing optical microscopy (POM), differential scanning calorimetry (DSC) and X-ray diffraction (XRD) were used to characterize the liquid crystal behavior. the relationship of the structure and phase behavior of the chiral compounds and copolymers influenced by spacer lengths was discussed. As a result, the chiral compounds with two methylene only showed a smectic A (SmA) phase, while those with more methylene showed a

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