

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Control of three dimensional alignment in liquid crystalline polymer by magnetic field TOSHIAKI OUGIZAWA, JUN TAKEDA, Tokyo Institute of Technology, KEIICHI KUBOYAMA, Tokyo Institute of Technolgy, TETSUYA UESAKA, TAKEHIRO TOYOOKA, NIPPON OIL Corporation — The alignment of the aromatic main-chain type liquid crystalline polymer (LCP) by the magnetic field was studied. Magnetic field was applied to the sample-cells which LCP was sandwiched between the glass substrates or glass substrates with rubbed polyimide. It was found that main chains of LCP were orientated parallel to the magnetic field (Homogeneous alignment). It was also found that LCP chains were oriented even when the magnetic field was applied perpendicularly to the substrates (Homeotropic alignment). By combining these alignments, the three dimensional alignments such as twist nematic like structure and tilt angle changing structure were obtained. Furthermore, it was suggested that there was the possibility of freely controlling three-dimensional alignments of LCP by changing the substrates of the sample cell and the direction of magnetic field. The applications to the optical films for the liquid crystal display were expected.

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Date submitted: 20 Nov 2006

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