Bend-core liquid crystals (banana mesogens) were first discovered by Watanabe and Takezoe group as mesogens exhibiting characteristic properties from polarity and chirality viewpoints and now widely studied all over the world. The present paper is related to the control of chirality. Under a polarizing microscope in slightly uncrossed condition, the B4 phase shows two distinct domains, bright and dark, as shown in Fig. 1. These are attributed to chiral domains with opposite chirality due to circular dichroism (CD) and etc. Bent-core molecules are typically have a chemical structure, as shown in Fig. 2(a), i.e., achiral molecules. It is interesting that achiral molecules are spontaneously segregated into chiral domains. It is natural that there is no preferential chirality. By doping this achiral system with chiral molecules, preferential chirality can be obtained. In the present study, we succeeded in obtaining finite enantiomeric excess (e.e.) using chiral surfaces.

The substrate surfaces used were polyimide with chiral side chains, as shown in Fig. 2(b). Introducing bent-core mesogens (Fig. 2(b)) into a sandwich cell of several micron thick. We obtained largest e.e. using rubbed surfaces. According to the area ratio between bright and dark domains and CD intensity ratio, e.e. was determined to be 10%. Thus, we succeeded in nucleating chiral systems with finite e.e. in liquid crystal systems consisting of achiral bent-core molecules. This method opens up the possibility for controlling chirality in chemical and biological systems.