

**P74. Anisotropic Phase Separation of Polymer and Liquid Crystal Composites on Patterned Alignment Layer**

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We studied the surface wetting driven anisotropic phase separation of polymer and liquid crystal composites through experiments and numerical calculation. Since the development of polymer dispersed liquid crystal mode, the phase separation of polymer and liquid crystal composites have drawn much attention because of its potential of various kind of display application as well as optical devices. Typically the morphologies of phase separation are droplet or spinodal decomposition depending on mixing ratio and quenching rate, which were called isotropic phase separation. By controlling the surface wetting properties, we could obtain the macroscopic and anisotropic phase separation of polymer and liquid crystal composites. In this experiments, the surfaces are modulated by patterning the alignment layer. The polymer and liquid crystals were separated according to surface modulation as temperature cooled down. We examined this phenomena with numerical calculation using simple 1-dimensional diffusion model of binary mixture with assumption of simple surface potential. This technology can be applied to fabrication of flexible LCD and optical grating devices.



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