

「특별강연」

SPINODAL DECOMPOSITION IN POLYMER BLENDS
AND ITS APPLICATION

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A brief review will be given on the phase equilibrium of polymer blends, the spinodal decomposition, and the development of modulated structure—a highly interconnected two-phase structure with unique periodicity. Then we will discuss the structure-properties of the polymer blends with modulated structure: (1) plastic/rubber blend, exhibiting an interesting stress-strain behavior; high initial modulus close to plastic, large extension at break, and complete strain recovery like rubber, (2) plastic/plastic blend with excellent heat resistance, reflecting the phase-connectivity of high T_g component even when it is minor in composition, (3) an excellent charge-mosaic membrane, which exhibits negative osmosis and selective permeability; permeable to salt but not to nonelectrolyte, and (4) poly(ether sulphone) (PES) modified epoxy resins with high adhesive strength in both peel and shear modes. Structure development in the PES modified epoxy will be discussed in terms of the reaction-induced phase-decomposition on the basis of computer simulation on concentration fluctuation by the Cahn-Hilliard nonlinear diffusion equation.