Analysis of Hybrid Organic Particle by the Phase Lag Mapping Atomic Force Microscopy

한상훈, 옥동석, 박동원*
동아대학교
(dwpark@dau.ac.kr*)

We applied a new analyzing technique for the polyurethane acrylate hybrid emulsion sample composed of polyurethane resin and acrylate resin using the phase-lag mapping techniques of atomic force microscopy. The multiphase structure emulsion in each polymer particle provide a broader spectrum of physical properties than emulsions with uniform composition of particles. For the analysis, we synthesized similarly sized pure polyurethane dispersion and acrylate emulsion particles, which were used for measuring the standard phase-lag intensities for each material. Based on these signal intensity, we could discriminate acryl particle in the polyurethane dispersion matrix with the resolution of a few tens of nanometers. Thus, the techniques show a new possibility in the analysis of the organic two-phase particles, and we believe the techniques are helpful to design organic particles.