

Analysis on the Dispersion Structure of Tetrapods Using SAXS

서석규¹, 차국헌^{2,3,†}

¹서울대학교; ²서울대학교 지능형유도조합체 창의연구단;

³서울대학교 화학생물공학부

(khchar@plaza.snu.ac.kr[†])

Dispersion of nanoparticles has typically been characterized by microscopic methods. However, characterization of the dispersion with microscopic methods has lack of reproducibility as well as quantization. Scattering methods, evaluating the ensemble averages of object volume, would be a good alternative to secure data reliability. We demonstrate the dispersion structure of nano-sized tetrapods using small angle X-ray scattering (SAXS) analysis. A scattering profile from a single tetrapod, the Form Factor, is measured from dilute solution and the profiles of inter-particle correlations which are known as the Structure Factor, are measured from polymer nanocomposites of tetrapods and polystyrene. SAXS experiment data obtained are evaluated by theoretical modeling methods and a model-independent method of indirect Fourier transform. Comparisons between theoretical modeling, the result of indirect Fourier transform of SAXS data, and the structure factor of tetrapods within polymer nanocomposites are presented.