Small-Angle Scattering: Modeling and Applications in Complex Colloidal Systems

Presenter:
Qiang Tian
Southwest University of Science and Technology,
Mianyang, China

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Abstract:

Small-angle scattering serves as one of the most important experimental methods for studying the structure of materials at the nanoscale. Compared to techniques such as microscopic analysis, in-depth interpretation of small-angle scattering data remains a challenging issue. Model-based analysis is the most commonly used method for processing small-angle scattering data. As long as the scattering cross-section of the system under study can be expressed or approximated analytically, it is possible to extract information such as the size, quantity, geometric morphology, interfacial structure, and interactions of nanoparticles through fitting. This report will systematically summarize commonly used data analysis models for small-angle scattering, as well as their applications in shaking gel (SiO_2-PEO), POM-POSS self-assembly, and interactions between colloids and radionuclides.