

Correlated Structural and Quantitative Analysis of Multi-component Systems by Anomalous Small-Angle X-ray Scattering

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Synchrotron Radiation (SR) provides Small-Angle X-ray Scattering (SAXS) with major improvements, among others the photon flux, allowing the study of samples with only weak small-angle X-ray scattering like diluted chemical solutions. Additionally the continuous energy spectrum of SR provides energy tunability in the vicinity of the K- and L_{III}-absorption edges of most of the elements giving access to an element specific structural and quantitative analysis. From this technique - known as Anomalous Small-Angle X-ray Scattering (ASAXS) – crucial chemical parameters like volume fractions and chemical concentrations can be obtained, which can be correlated to the structural properties.