



Development of isoscattering point approach in SANS contrast variation for polydisperse and anisotropic particles

Tuesday, 21 March 2023 16:00 (2 hours)

There are several approaches to the analysis of contrast variation data in small-angle neutron scattering (SANS) when the solvent scattering length density (SLD) is manipulated by H/D substitution. There are specific points at which the scattering intensity from the liquid system is independent of the SLD contrast between dispersed particles and dispersing media. These points, q , are referred to as 'isoscattering points' [1]. q^{**} is analytically related to particle size. Usually, the nature of the isoscattering point is associated with the high symmetry of the nanoparticle shape and low polydispersity. Here we discuss the conditions for observing an isoscattering point for non-spherical and non-monodispersed core-shell structures, as well as additional possibilities of structural characterization via SANS based on this effect. It seems that certain ratios of the SLDs of the components make it possible to detect an isoscattering point even for significantly polydisperse [2] or elongated [3] inhomogeneous particles.

[1] Kawaguchi T., *Crystallogr. Rev.* **10** (2004) 233–246.

[2] Tomchuk O.V., Bulavin L.A., Avdeev M.V., *Soft Materials* (2022) *in press*.

[3] Tomchuk O.V., Bulavin L.A., Zabulonov Yu.L., *Phys. Part. Nucl. Lett.* **19** (2022) 536–538.

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