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Opportunities and challenges for Small Angle Neutron Scattering of polymers

For the past 5 decades, small angle scattering techniques have brought considerable knowledge on polymers (melt, blends, in solution, self-assembling), and the isotopic labelling allowed by neutrons has been leveraged to offer a unique insight. With modern sources and instruments, the flux, data quality and window of observation that span from atoms to micrometers is creating new possibilities of investigations, but also demonstrating sometimes the limits of our current understanding of polymers, whether at the short scale of monomers and solvent molecules or at the long scale where chain-chain interactions occur even in dilute conditions. These problems are illustrative of the challenges in multi-scale simulations that must be tackled to mine the whole information content of experimental data sets. We will show developments of instruments, sample-environment and data handling but also examples of actual data that defy our analysis.

Preferred topic

Characterization - large instruments

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