From Non-equilibrium to Equilibrium: Micellar Kinetics seen by Time-resolved Small-angle Scattering

REIDAR LUND, Department of Chemistry, University of Oslo — The kinetic pathways of self-assembled nanostructures are not fully understood. Time-resolved small-angle X-ray/neutron scattering (TR-SAXS/SANS) is a powerful technique\(^1\) that allows kinetics processes such as nucleation processes\(^2,3\) and morphological transitions\(^4,5\) to be followed with structural resolution over time scales starting from milliseconds. Neutrons offer the additional advantage of facile contrast variation through H/D substitution schemes, which also allow equilibrium processes such as molecular exchange and diffusion to be studied\(^1,6,7\). Here we will highlight the current capabilities of TR-SAS and show results on the kinetics of polymeric micelles. We will address how the understanding of kinetic pathways can be used control the nanostructure.