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Development of Modular Sample Environment for Simultaneous SANS and Spectroscopic Characterization of Non-Equilibrium Soft Matter

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The scientific objective of this project is to craft a modular sample environment that facilitates the utilization of small-angle neutron scattering (SANS), a potent technique for probing the mesoscopic structural intricacies of soft matter systems amidst non-equilibrium conditions. Moreover, the design of the sample environment should enable the integration of spectroscopic measurements, such as fluorescence, UV-Vis, and infrared spectroscopy, for simultaneous monitoring of kinetics to gain complementary insights into structural evolution at molecular length scales. The integrated approach of characterizing soft matter systems simultaneously with complementary techniques is crucial because various soft matter systems not only depend on precise control of sample parameters, such as temperature, pressure, pH etc., but also are strongly sensitive to the parameter history. Thus, the modular sample environment being developed will ensure precise control of temperature and flexibility in modifying the systems composition, enabling SANS and spectroscopic observations of non-equilibrium soft matter samples in a flow-through cell in a continuous fashion. Such studies will aid in unraveling the fundamental mechanisms governing the evolution of soft matter systems, which is particularly crucial for the development of tailored materials with specific functionalities in fields ranging from drug delivery to advanced materials engineering.

I apply for the best Poster Poster Award

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Sitzung Einordnung: Mounting Posters, Beer and light Dinner

Track Klassifizierung: Soft Matter