

SLS Monitoring of Nucleation in Protein Crystallisation

Alaa Adawy

Faculteit Wiskunde en Natuurwetenschappen, Drug Design, Groningen

Research Institute of Pharmacy, Antonius Deusinglaan 1, 9713 AV Groningen

Setting a protein to crystallise is the most challenging step in the process of its 3D structure determination by means of macromolecular crystallography. Exploring different crystallisation conditions by using the conventional sparse matrix screening to get the crystal *hit* is material and time consuming and largely a trial-and-error procedure. Better understanding of the protein state in solution can give direct information on the possibility of getting nucleation. Multi angle static light scattering provides a facile means to monitor the target protein state in a solution and its probability to assemble to large entities surpassing the size of a critical nucleus. In this talk, it will be shown how this approach can guide a controlled probing of the crystallisation phase diagram. By exploiting the microfluidics technology, online SLS measurements can be realized for real-time mixed protein solution with gradually changing precipitant concentrations at the expense of much less material. This combination should eventually lead to a rational approach to protein crystallisation.