Easy and Rapid Analysis of Protein Interactions and Stability in Solution

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Binding affinities, protein stabilities, and protein aggregation are crucial properties, which must be determined in basic and pre-clinical research up to formulation processes. The search for an optimal combination of biophysical techniques can be challenging in various points. The goal is to achieve the maximal information content, sensitivity and robustness in an easy, fast and precise way.

Here we describe two technologies, nanoDSF and MicroScale Thermophoresis, which can facilitate and accelerate your experiments and giving you additional insight in your system.
nanoDSF is a label free approach to determine protein stability in solution. By the combination of a dual-UV technology it is possible to obtain high resolution unfolding curves with an unmatched reproducibility to determine thermal and chemical stability. In combination with a back-reflection optic, which determines aggregation in parallel to the melting, this is a tool for determining long term stability or storage conditions. Additional applications are for example buffer and detergent screenings, ranking mutant stabilities, batch comparisons, and quality control.

MicroScale Thermophoresis (MST) quantifies biomolecular interactions in immobilization-free assay. It measures the motion of molecules along microscopic temperature gradients and detects changes in their hydration shell, charge or size. Almost all interactions between molecules and virtually any biochemical process are linked to a change in size, charge and/or conformation of molecules which alter this hydration shell and therefore can be detected and quantified by MST.
The presentation will cover the basic principle of both technologies and show you some practical applications.