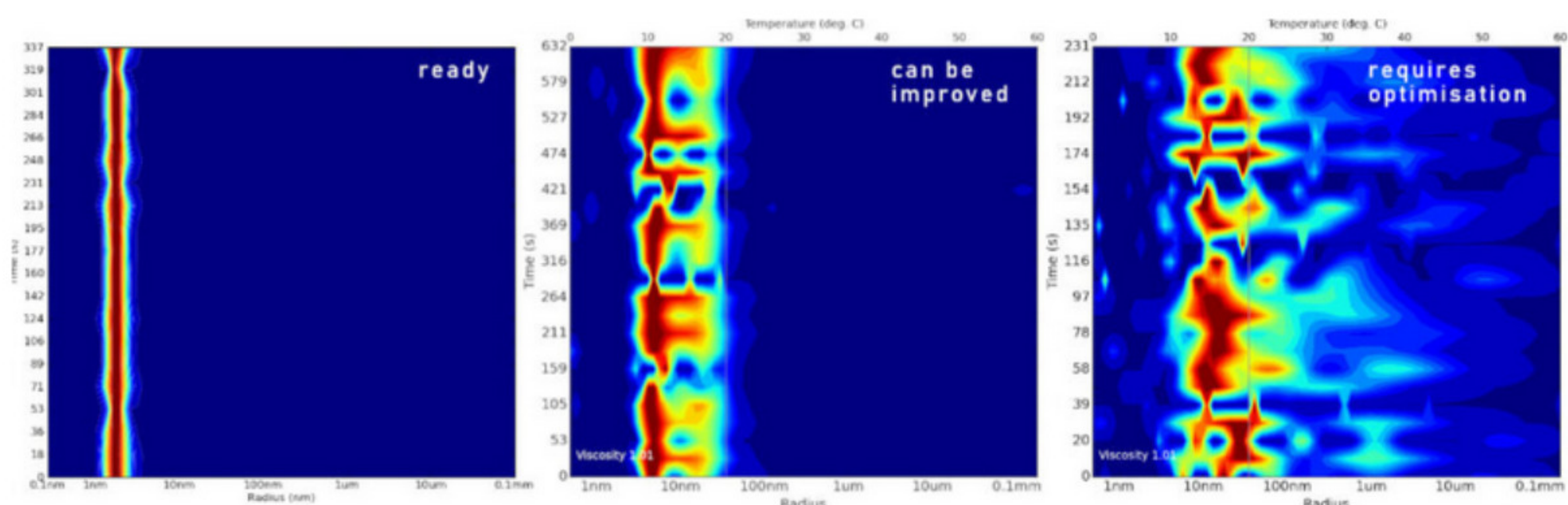


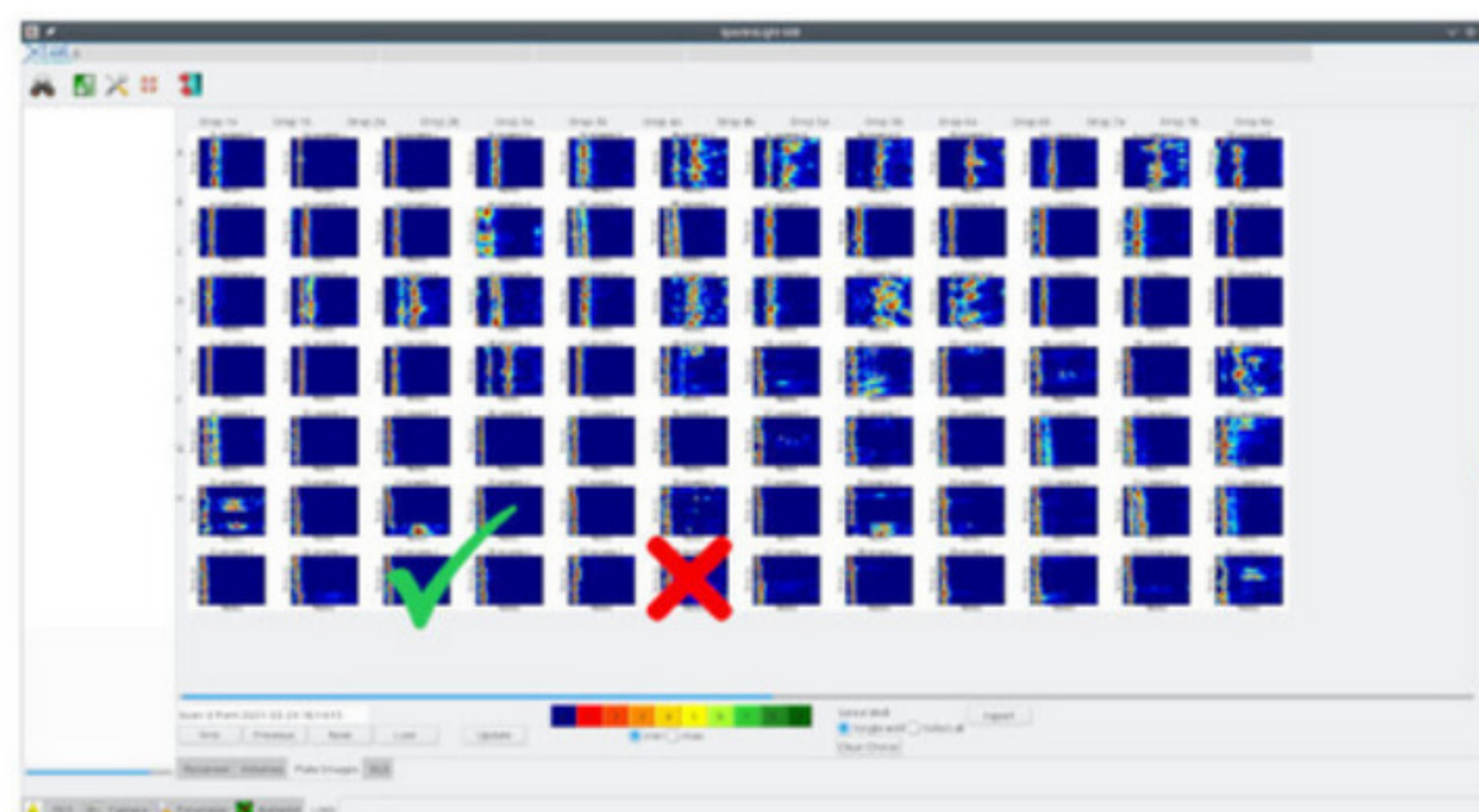
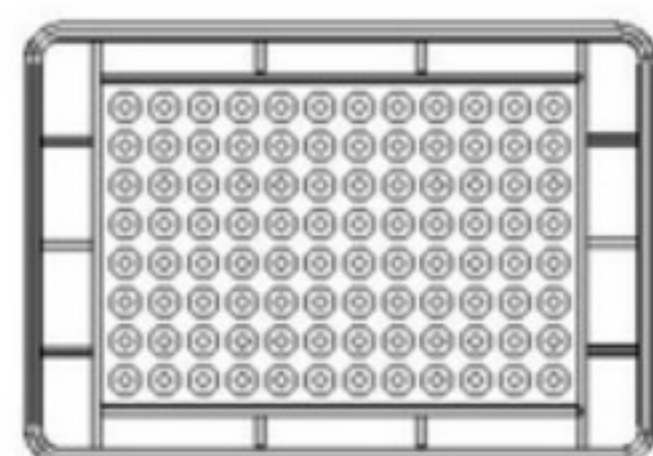
Buffer Identification for Optimising Protein Solubility and Stability

Protein solubility and stability is a fundamental requirement in a wide range of applications including general biochemical studies, pharmaceutical protein preparation, structural biology including 3D single particle cryo-EM and crystallisation. The preparation of a concentrated, soluble and stable protein solution can often be a time and material consuming task, as proteins often aggregate or even precipitate irreversibly.

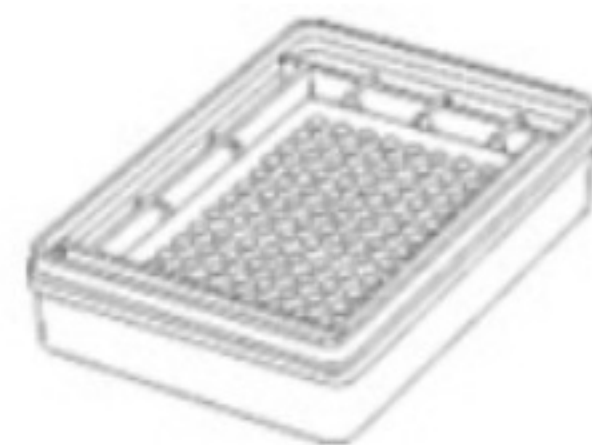
Dynamic Light Scattering (DLS) is a rapid method for monitoring the aggregation state of a sample and is ideal for evaluating new buffer conditions as it is very sensitive to the detection of aggregates.



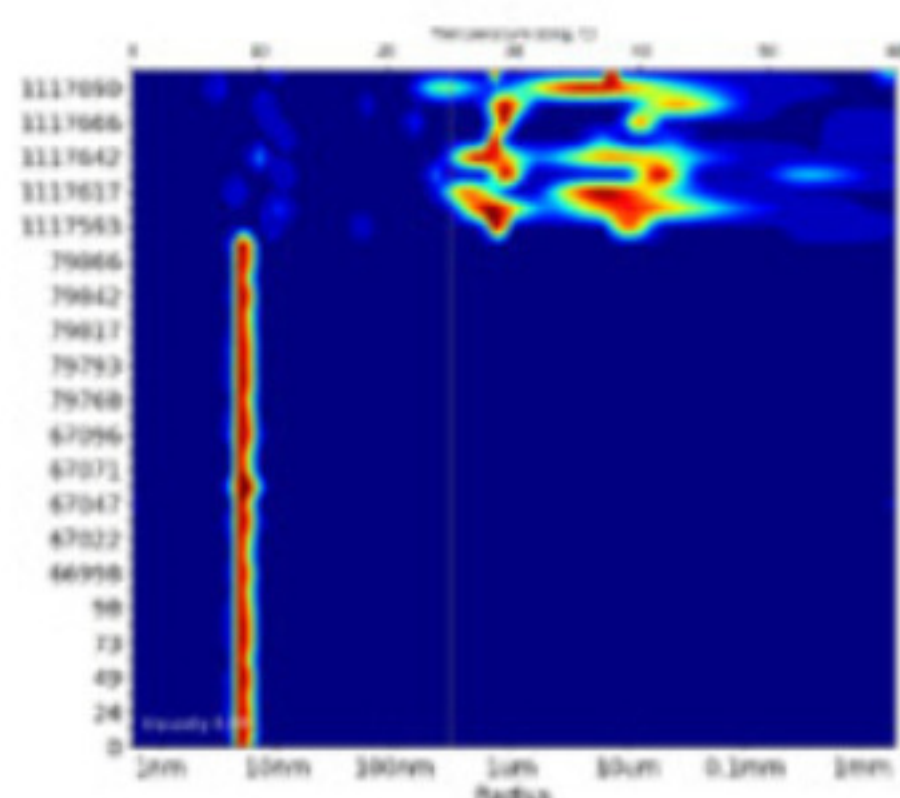
Evaluation of new buffer conditions is crucial to the subsequent use of a sample. Repeated visual inspection is often insufficient as even highly aggregated samples appear clear under light microscopy. Inadequate formulation is characterised by unstable samples leading to the formation of oligomers and aggregates. Such sample changes are often delayed, sometimes hours, days or even weeks after preparation. Sample storage in plates allows monitoring of the sample behaviour over weeks.



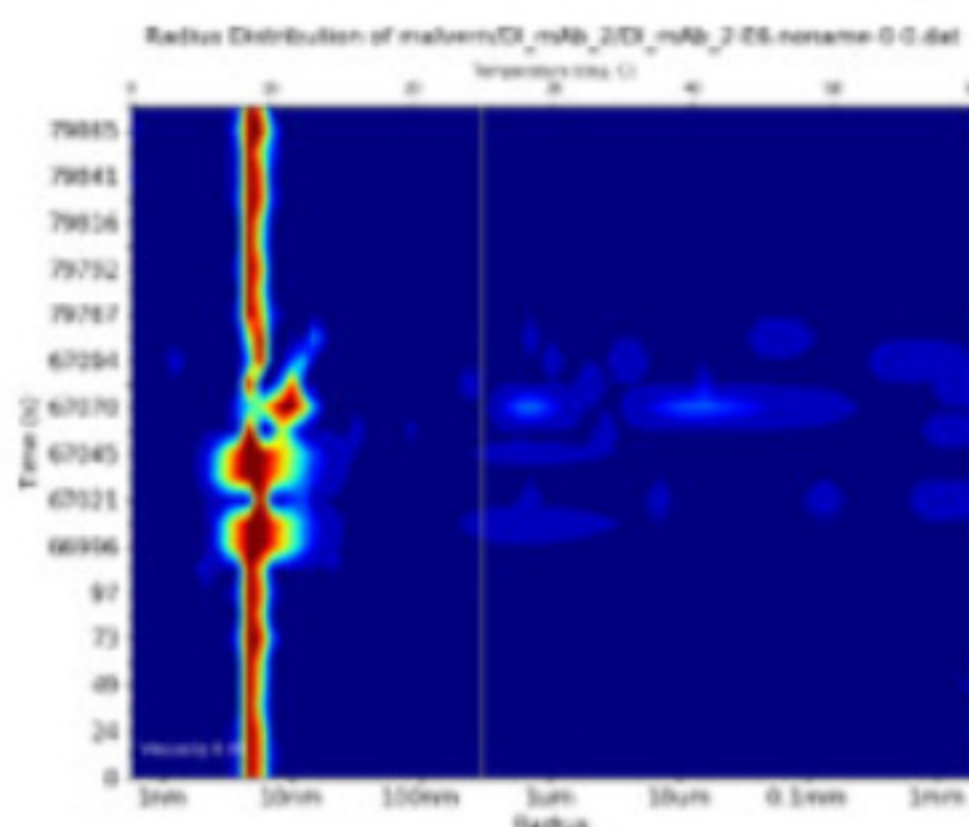
An initial solubility buffer screening often provides only a rough direction for solubility improvement. Subsequent optimisation is often required to achieve a final formulation in which the protein is stable. *In plate* DLS offers several ways to investigate buffers in the course of optimisation.



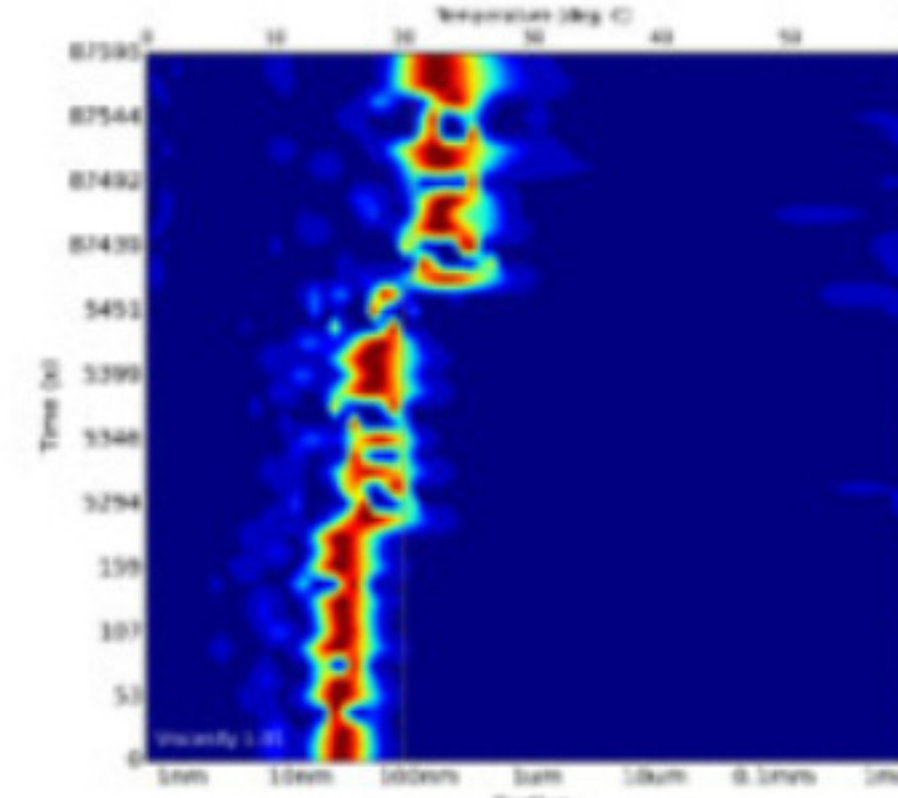
Long term
Stability



Heterogeneity
Check (Z-Axis
Check)



Temperature
Stability Check



Unmatched sample efficiency is achieved with *in plate* DLS, either by manual pipetting of 500 nl droplets per well or automated dispensing down to 80 nl per well. Loaded plates can be stored for weeks and automatically re-analysed. Long term analysis based on such repeated testing of the same aliquot makes the method extremely sample efficient and simple.

This information about a sample is the key to successful structural characterisation. For more information on our products and the *in plate* DLS method with SpectroLight 600/610, please visit our [website](#).

