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Protein associations and analytical ultracentrifugation

TOM LAUE, University of New Hampshire

Analytical ultracentrifugation (AUC) is a first principle method for characterizing the thermodynamics of macromolecules in solution. Since AUC directly assesses mass, it is particularly useful for characterizing both reversible and irreversible binding interactions between macromolecules. The principle measurement in AUC is the concentration as a function of radial position, which may be provided by either absorbance, interference or fluorescence detection. Each of these three different detectors may be used to characterize protein associations using either sedimentation equilibrium or sedimentation velocity analysis. Examples will be shown for characterizing irreversible (aggregate) formation, high-accuracy reversible association analysis, and the detection of protein interactions in complex and concentrated fluids (e.g. serum, cell cytosol).