Analytical Ultracentrifuge PROTEOME LAB XL-I at ISB3D facilities

Web address
Visit Website

Institution
Institute of Structural Biology Drug Discovery and Development

Contact for service or sample analysis

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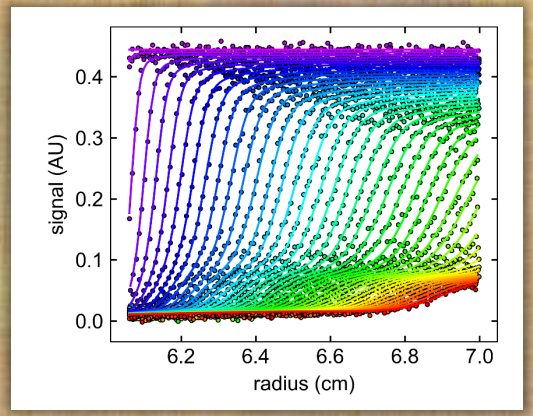
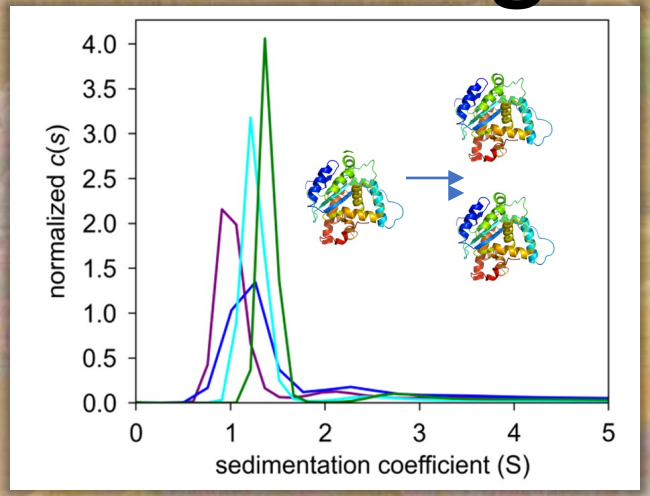
Analytical Ultracentrifugation (AUC)

- **A first principle approach for particle characterization**
  - *No labelling*
  - *No immobilization*
  - *No unique buffers*
- **A multi-faceted technique that is the <u>gold standard</u> when it comes to:**
  - Protein Characterization (Size Distribution, MW)
  - Protein-Ligand Interactions (Kd, Ka, Stoichiometry)
  - Protein-Protein interactions (Self Associations)
  - DNA/RNA/Viruses/Carbohydrates
- **Non-Biological Characterizations**
  - Exosomes
  - Lipid Nanoparticles
  - Polymers
  - Quantum Dots

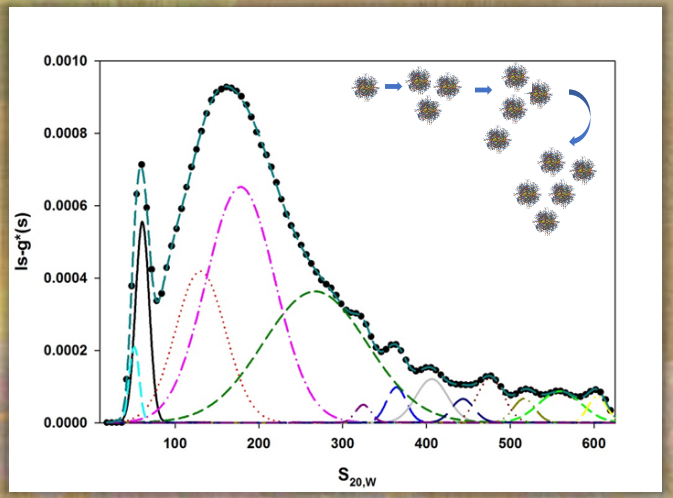
Beckman Coulter XLI



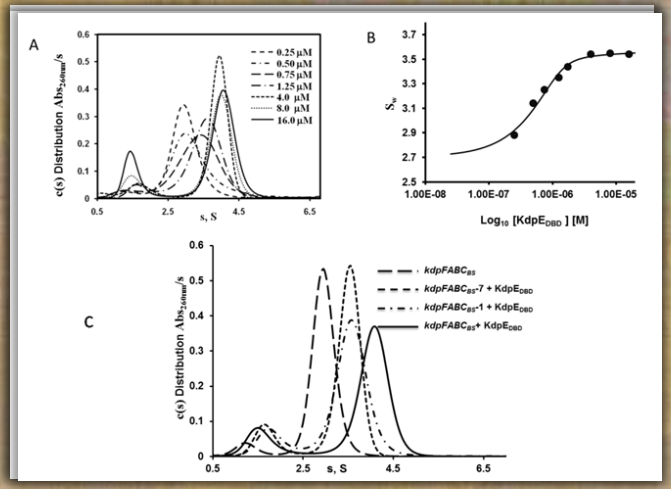
Boundary Movement showing particle sedimentation



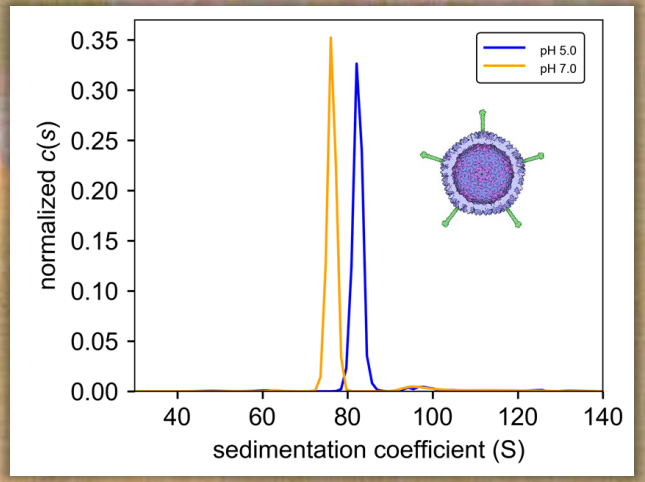
Self Association (Stoichiometry)



Nanoparticle Size Distribution



Hetero-Association (DNA:Protein)



Virus Characterization

AUC Applications

- Molecular Weight
- Stoichiometry
- Protein Aggregation
- Ligand Binding
- Conjugation efficiency
- Polydispersity
- Viral vector characterization

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AUC requirements	ProteomeLab XL-I
Optical Systems	
Fastest Data Acquisition Rate	ABS: 90 sec/cell INT: 5 sec/scan
Max # of Wavelengths	3
Wavelength Precision	+/- 3 nm
Lowest Radial Resolution	30 µm
Absorbance Flash Lamp Frequency	50 Hz
CCD Camera Specifications	2048 x 96 pixels
Interference Fringes	≥ 4 fringes/cell
Usable Concentration Ranges	ABS: .005 – 1.5 mg/mL INT: .025 – 3-4 mg/mL