

The BIC is equipped with state-of-the-art instrumentation to aid industry and academic researchers in characterizing molecular interactions, sample integrity, stability, structure, and more.



Equipment

- Jasco J-1500 High-Throughput Circular Dichroism Spectrophotometer (HTCD)
- Jasco FP-8350 Fluorescence Spectrophotometer
- NanoTemper Monolith Microscale Thermophoresis Instrument (MST)
- Cytiva Biacore 8K Surface Plasmon Resonance System (SPR)
- Agilent High-Performance Liquid Chromatography System (HPLC)
- Waters-Wyatt Dawn Neon Multi-Angle Scattering Detector (MALS)
- Waters-Wyatt NanoStar 2 Dynamic Light Scattering Detector (DLS)
- Waters-Wyatt OptiLab Refractive Index Detector (dRI)
- Waters-TA Instruments AffinityITC Isothermal Titration Calorimeter (ITC)
- Waters-TA Instruments NanoDSC Differential Scanning Calorimeter (DSC)



Example Capabilities

- The HTCD can screen up to 192 samples stored within a temperature programmable chill block.
- The Biacore 8K SPR instrument can collect eight simultaneous binding experiments with high resolution for measuring kinetic and equilibrium binding constants.
- The Monolith MST is equipped with both PicoRed and unlabeled fluorescence channels for monitoring red fluorophores (e.g., Cy5) and intrinsic protein tryptophan residues, respectively, to calculate equilibrium binding affinities.
- Use fluorescence anisotropy or calorimetry for measuring equilibrium binding constants.
- Measure the energetics of processes in solution using ITC and DSC.
- Evaluate the size and shape of molecules and complexes in solution using size exclusion chromatography (SEC)-MALS-DLS, including UV and dRI detection for conjugate analysis.
- Monitor thermal denaturation processes by CD, fluorescence, light scattering, or calorimetry.



Dr. Daniel P. Dowling, PhD
*Associate Professor of Chemistry
and BIC Director*

As director of the BIC, Dr. Dowling and his team provide technical assistance and training to internal and external users. Dr. Dowling's expertise includes X-ray crystallography, biophysical methods, and enzymology.



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