

Asian Workshop on Hydrodynamic and Thermodynamic Analysis of Biological Macromolecules with SEDFIT and SEDPHAT

Workshop at the Yokohama City University, Yokohama, September 8-12+13, 2011, co-organized by

BMIA forum

Lecturers: Chad Brautigam (UT Southwestern, Dallas), Rodolfo Ghirlando (NIH, Bethesda), Grzegorz Piszczek (NIH, Bethesda), Peter Schuck (NIH, Bethesda)

Organizing Committee: Fumio Arisaka (TIT), Susumu Uchiyama (Osaka University), Satoru Unzai (Yokohama City University), Damien Hall (Tsukuba University)

Approximate Schedule

Saturday, September 8th

10:30 – 11:00 **Registration**

11:00 – 11:30 **Welcome/Announcements**

11:30 - 12:30 **Introduction to Analytical Ultracentrifugation: Experimental**

12:30 – 13:30 **Lunch Break**

13:30 - 15:00 **Lab Session 1. Running a Sedimentation Velocity Experiment**

15:00 -15:20 **Coffee Break**

15:20 -15:50 **Lab Session 2. Collection of Sedimentation Equilibrium Data**

15:50 – 16:30 **Introduction to Isothermal Titration Calorimetry**

16:30 – 17:10 **Introduction to Dynamic Light Scattering**

17:10 – 18:00 **Introduction to Fluorescence Spectroscopy**

Sunday, September 9th

9:00 – 12:00 **Theory and Practice of Sedimentation Velocity Analysis (1): Non-Interacting Species**

10:30 – 10:50 **Coffee Break**

12:00 – 13:00 **Introduction to SEDPHAT**

13:00 -14:00 **Lunch Break**

14:00 – 15:00 **Optimization and Statistical Error Analysis**

15:00 – 15:30 **Basic ITC Data Processing and Analysis**

15:30 – 16:00 Trivia Challenge (Round 1)

16:00 – 16:20 **Coffee Break**

16:20 – 18:30 **Introduction of Participants – POSTER SESSION**

Monday, September 10th

9:00 – 13:00 **Theory and Practice of Sedimentation Velocity Analysis (2): Interacting Systems**

10:30 – 10:50 **Coffee Break**

13:00 -14:00 **Lunch Break**

14:00 – 15:00 **Theory and Practice of Sedimentation Velocity Analysis (3): Multi-signal analysis**

15:00 – 17:30 **Parallel Focus Sessions (Pre-Selection of up to 3 Topics Required, runtime ~40 min each, in parallel sessions, dependent on interest)**

- Trace determination
- Advanced c(s) analysis
- Multi-Signal SV
- Isotherms Analysis
- Hands-On Lab Session I -III
- Isothermal Titration Calorimetry (ITC)
- Surface Plasmon Resonance (SPR)
- Nanoparticles Analysis
- Basic c(s)
- Fluorescence Spectroscopy
- Membrane proteins

15:00 – 15:40 **Focus Sessions I**

15:40 – 16:00 **Focus Sessions IIa**

16:00 – 16:20 **Coffee Break**

16:20 – 16:40 **Focus Sessions IIb**

16:40 – 17:20 **Focus Sessions III**

Tuesday, September 11th

9:00 – 10:00 **Theory of Sedimentation Equilibrium Analysis**

Overview of SEDPHAT Structures and Strategies for SE Constraints

- 9:45 – 10:30 **Practical: Analysis of SE data in SEDPHAT**
- 10:30 – 10:50 **Coffee Break**
- 10:50 – 11:30 **Practical: Sedimentation Equilibrium Analysis of an Interacting System**
- 11:30 – 12:15 **Practical Error Analysis**
- 12:15 – 13:00 Trivia Challenge (Round 2)
- 13:00 – 14:00 **Lunch Break**
- 14:00 – 16:00 **Optional Individual Data Analysis Sessions I**
- 16:00 – 16:20 **Coffee Break**
- 16:20 – 17:30 **Optional Individual Data Analysis Sessions II**
- 17:40 – 19:30 **Get-together Dinner** (Suzukake-Hall Lounge)

Wednesday, September 12th

- 9:00 – 9:30 **Hydrodynamic Parameters Estimates from Crystal Structures**
- 9:30 – 10:30 **SPR Analysis of Binding Site Distributions in EVILFIT**
- 10:30 – 10:50 **Coffee Break (and group picture)**
- 10:50 – 11:20 **Practical: DLS Analysis in SEDFIT and SEDPHAT**
- 11:20 – 12:00 **Practical: Global ITC analysis of linked binding**
- 12:00 – 12:15 **Practical: Spectroscopy Data**
- 12:15 – 13:00 **Practical: Global Fitting of Data from Different Techniques**
- 13:00 – 14:00 **Lunch Break**
- 14:00 – 14:30 **Plotting utilities in SEDFIT and SEDPHAT**
- 14:30 – 15:00 **New and Special Features of SEDFIT and SEDPHAT**
- 15:00 – 15:30 **How to Simulate Data**
- 15:30 – 16:00 Trivia Challenge (Final Round)
- 16:00 **Final Discussion and Departure**