Remote Access Crystallography at SSRL

Introduction: The Stanford Synchrotron Radiation Lightsource (SSRL) provides state-of-the-art facilities for structural biology research to the academic research community. All SSRL crystallography beam lines are fully remote accessible. Up to 288 cryo-cooled crystals can be mounted by the beamline robot without human intervention (the Stanford Automated Mounter, or SAM) for automated diffraction data collection, from the researcher's home laboratory. A recent upgrade enables remote data collection using crystals at ambient temperatures and at controlled humidity conditions. An intense micro-focus beamlines, BL12-1 and BL12-2, enable rapid "shutterless" data collection using very small crystals. A UV-Vis absorption microspectrophotometer is available at BL9-2 to confirm the electronic state for metalloprotein complexes and poised intermediates and to monitor specific effects of radiation exposure. Other advanced options include support for serial and time-resolved crystallography at SSRL and LCLS, and laboratory space and glove boxes for anerobic crystal growth and mounting.

Program: During this workshop, SSRL scientists will introduce the SMB Macromolecular Crystallography Resource at SSRL, including a live remote access demonstration. Students will connect to SSRL beamlines to test features accessible to remote users. There will be a hands-on component covering the collection and processing of diffraction data, sample and pin preparation, the use of SSRL cassettes and Unipucks, installation of the NX client software, assistance with SSRL User Portal registration and obtaining User accounts.

Organizers: Jamaine Davis (MMC)
Darya Marchany-Rivera, Clyde Smith, Silvia Russi and Aina Cohen (SSRL-SMB)

Schedule: **Friday, May 24, 2024**

9:00 am	Introduction to Crystallography at the SSRL Synchrotron
9:45 am	Live Demonstration of Synchrotron Data Collection
10:30 am	Remote-access Room Temperature and Controlled Humidity Crystallography
11:00 am	Advanced Crystallographic Techniques – Neutron, Metalloenzymes and Time-resolved
11:30 am	Visiting SSRL for Onsite Experiments – Access for Education & Challenging Samples
12:00 pm	Lunch
1:00 pm	Concurrent hands-on sessions (participants rotate every ~30 min) - Bring your own laptop! (i) Connecting to the SSRL Computing Environment (ii) Sample Preparation and Shipping for Remote-access Collection
2:00 pm	Concurrent hands-on sessions (participants rotate every ~30 min) (iii) Hands-on Remote-access Diffraction Data Collection (iv) Hands-on Diffraction Data Processing and SSRL Software Environment
3:00 pm	Photo of Participants
3:15 pm	Wrap-up and final questions

Registration: https://forms.office.com/r/ZSex5zPyuN
Questions: Jamaine Davis: jdavis@mmc.edu