SACLA Users' Meeting 2025
Breakout Sessions

(Updated: Feb. 3, 2025)

Breakout Session 1
9:00 – 10:30, March 4

Session 1A:
    Advances in liquid sample delivery systems and their applications at SACLA

Session 1B:
    Data acquisition and handling

Breakout Session 2
13:30 – 15:00, March 4

Session 2A:
    New development of XFEL experiments with synchronized optical lasers

Session 2B:
    High-resolution detector and its applications

Session 1A:
Advances in liquid sample delivery systems and their applications at SACLA

Organizers:
> A. Suzuki (Hokkaido University)
> Y. Inubushi (SACLA)

Liquid samples are becoming increasingly important in XFEL experiments due to their compatibility with high-repetition-rate XFELs, their suitability for destructive measurements, and their inherent scientific interest. In this session, we will introduce advances in the liquid sample delivery systems used at SACLA, highlight examples of their applications, and discuss their current status and future prospects.

Program

9:00-9:05
Opening
> A. Suzuki (Hokkaido Univ.)

9:05-10:10
Instruments and applications
> A compact tape-driven system for liquid sample droplet delivery
> > J. Kang (SACLA)

> Molecular movie of the catalytic reaction of bacterial copper amine oxidase
> conducted by mix-and-inject serial femtosecond X-ray crystallography
> > T. Murakawa (Osaka Medical and Pharmaceutical Univ.)

> Liquid sample delivery for ultrafast X-ray chemistry
> > T. Katayama (SACLA)

> Micro-liquid enclosure array for XFEL-based coherent diffractive imaging
> > A. Suzuki (Hokkaido Univ.)

> Mn Kα-laser experiment with burnable liquid sample
> > Y. Michine (Univ. Electro-Communications)

10:10-10:30
Discussion
> Chairs:
> A. Suzuki (Hokkaido Univ.) and Y. Inubushi (SACLA)

Session 1B:
Data acquisition and handling

Organizer:
      T. Osaka (SACLA)

This session aims to share the current capabilities of data acquisition and handling at SACLA. Using Python-based APIs developed at SACLA, involving Data Access User API Python (dbpy and stpy) and Experiment Control API Python (ecpy), users can design/code advanced data acquisition and handling processes, which are not able to be accomplished by standard tools officially supported by SACLA. In addition to overview of these tools, the current status and perspectives on data access environment from your institutes will be presented. Then, some good examples that realized efficient experiments by means of those APIs will be introduced by leading users. Finally, we will discuss how we can maximize scientific outcomes from the viewpoint of data acquisition/handling capabilities.

Program

9:00 - 9:25
Introduction
      Efficient experiments at SACLA using Python APIs
                                    T. Osaka (SACLA)

9:25 - 9:35
From facility side
      Current status and perspectives on data access environment
                                    Y. Joti (SACLA)

9:35 - 10:10
From user side
      Efficient pump–probe experiments
                                    T. Sato (LCLS)

      Efficient nonlinear X-ray optics experiments
                                    Z. Abhari (Univ. Wisconsin–Madison)

10:10-10:30
 Discussion
                              Chair: T. Osaka (SACLA)

Session 2A:
New development of XFEL experiments with synchronized optical lasers

Organizers:
    H. Itoh (Kwansei Gakuin Univ.)
    N. Kida (SACLA)

This breakout session aims to discuss the capabilities of the platforms with synchronized optical lasers in SACLA. First, we inform you about the current status of terahertz and ultrafast optics in SACLA. Next, recent activities on ultrafast photoinduced phase control of solids are presented from participants. Finally, future prospects on SACLA's experiments with synchronized optical lasers are discussed with all participants in this session. We welcome participants who are interested in pump-and-probe experiments.

Program

13:30 - 13:45
Introduction
    Current status of terahertz and ultrafast optics in SACLA
                                    N. Kida (SACLA)

13:45 - 14:40
Research highlights
    Photoinduced sequential dynamics in a halogen-bonded hybrid system
    by complementary ultrafast optical and electron probes
                                    T. Ishikawa (Inst. Science Tokyo)

    Photoinduced charge/spin dynamics studied by time-resolved X-ray absorption spectroscopy
                                    H. Wadati (Univ. Hyogo)

    Terahertz enhancement of electronic-ferroelectric polarization
    traced by time-resolved X-ray and nonlinear optics experiments
                                    H. Itoh (Kwansei Gakuin Univ.)

14:40 – 15:00
Discussion

                            Chairs:
                            N. Kida (SACLA) and H. Itoh (Kwansei Gakuin Univ.)

Session 2B:
High-resolution detector and its applications

Organizers:
    N. Ozaki (Osaka University)
    G. Yamaguchi (SACLA)

High-resolution detectors, such as scintillator-lens-coupled systems (e.g., DIFRAS detectors) and LiF crystal detectors, play a crucial role in experiments observing fine details of X-ray signals. These detectors enable two-dimensional X-ray detection with spatial resolution at the micron and even sub-micron levels. This session will share the latest advancements in high-resolution detectors and discuss future perspectives. We encourage your participation and look forward to hearing your ideas.

Program

13:30-13:35
Introduction
                             N. Ozaki (Osaka Univ.)

13:35-13:55
Facility talk
    X-ray imaging detector DIFRAS for SACLA experiments
                             T. Kameshima (SACLA)

13:55-14:30
User talks
    Laser fusion plasma study with XFEL imaging technique
                             S. Fujioka (Osaka Univ.)

    Single-shot nano-holography with scintillator-based detector
                             G. Yamaguchi (SACLA)

14:30-15:00
Discussion
                    Chairs:
                    N. Ozaki (Osaka Univ.) and G. Yamaguchi (SACLA)