



SACLA Users' Meeting 2021

Overview

Makina Yabashi

On behalf of SACLA

March 9, 2021

SACLA Users' meeting 2021

- First “online” meeting
- > 270 registrations
- Special thanks to ...

Yoneda-sensei (Chair of SACLA UC)

Yabuuchi-san, Tono-san, and secretary office (SACLA)

Timeline of SACLA

- 2011/6 First lasing
- 2012/3 First user operation
- 2013~ Construction of BL2/500 TW laser
- 2013/4 Inauguration of SACLA User Community
- 2016 User operation of BL1
- 2017 Parallel operation of BL2&3
- 2018/1 First lasing of reflection self-seeding

Steady operation and support, enhancement of capabilities, expansion of capacity

- Total beamtime: ~3000 h (FY2012) -> > 6000 h (FY2019)

Strategic approaches

- Uniqueness (incl. approach for experiments) among facilities
- Promotion to non-experts (especially for domestic industries)

Produce novel science & technologies with SACLA user community

Program Day 1

Facility session

Day 1 (Tuesday, March 9, 2021)

JST	GMT	PST			
15:00	6:00	22:00	Welcome		
15:10	6:10	22:10	Facility Session	Overview	M. Yabashi (SACLA)
15:30	6:30	22:30		Facility Update	K. Tono (SACLA)
16:00	7:00	23:00		Remote Participation in Experiments	T. Yabuuchi (SACLA)
16:20	7:20	23:20		Data Handling Environment	Y. Joti (SACLA)
16:40	7:40	23:40		Discussion	

Program Day 2

Day 2 (Wednesday, March 10, 2021)

Parallel sessions

JST	GMT	PST			
9:00	0:00	16:00	Breakout Sessions A	Parallel Sessions:	
				A1: Synchronized Optical Lasers	
				A2: High-power Optical Lasers	
				A3: Detectors	
11:30	2:30	18:30	Break		
13:00	4:00	20:00	Breakout Sessions B	Parallel Sessions:	
				B1: Hard X-ray FEL Beamlines (BL2/3)	
				B2: Soft X-ray FEL Beamline (BL1)	
				B3: Experimental Support and Information Sharing (Language: Japanese)	
15:00	6:00	22:00	Break		
15:30	6:30	22:30	Facility Session	* Meet the Beamline Scientists	
17:00	8:00	0:00			

Program Day 3

Science talks

S. Iwata (Kyoto U): “Beyond the Molecular Movies”

H. Nojiri (Tohoku U): “X-ray Diffraction in High Magnetic Fields -Applications to Magnetic Field Induced Phase Transitions”

H. Ihee (KAIST): “Molecular Structural Dynamics Probed by Femtosecond X-ray Liquidography”

M. Koenig (LULI-CNRS): “Astrophysics in the Laboratory: Death and Birth of Stars”

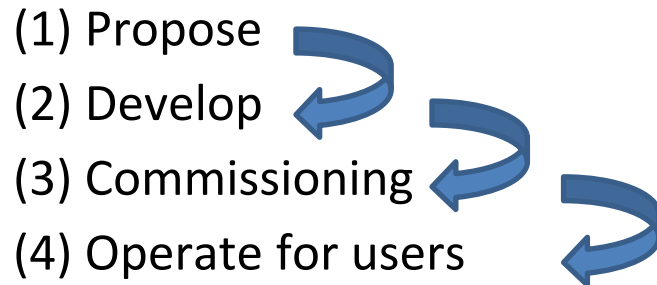
SACLA Basic Development Program

9:00	0:00	16:00	SACLA Basic Development Program 2020	Time Resolved Resonant Inelastic X-Ray Scattering of Collective Excitations	M. Dean (BNL)
9:15	0:15	16:15		Development of Sub-10 nm XFEL Focusing System Based on Novel Imaging Mirror Optics	K. Yamauchi (Osaka Univ.)
9:30	0:30	16:30		Feasibility Study on Solution Sample Holding Technique for XFEL Based Single-particle Imaging	Y. Nishino (Hokkaido Univ.)
9:45	0:45	16:45		Measurement Systems for Biomolecular Movies using X-ray Free Electron Lasers	E. Nango (Tohoku Univ.)
10:00	1:00	17:00		Development of Protein Crystal Delivery for Simultaneous Measurements of XDS and XES	Y. Umena (Jichi Medical Univ.)
10:15	1:15	17:15		Development of High-performance Focusing System for SACLA-coupled High-power Laser	N. Ozaki (Osaka Univ.)
14:00	5:00	21:00	SACLA Basic Development Program 2020	Development of a Wide-dynamic-range and High-frame-rate CMOS Image Sensor for Soft X-ray	T. Arima (Univ. Tokyo)
14:15	5:15	21:15		Developing the General Purpose-type Experimental Station for Soft-XFEL Opto-spintronics	I. Matsuda (Univ. Tokyo)
14:30	5:30	21:30		Development of SXFEL Focusing and Imaging Systems Based on Rotationally Symmetric Mirrors	H. Mimura (Univ. Tokyo)

SACLA Basic Development Program

SACLA基盤開発プログラム

- Typical cycle for instrumental development



- Before 2018, all processes have been conducted by the SACLA facility internally
- Contributions from external users will boost development of new & unique capabilities to promote innovative science
- Start in autumn of 2018; We invite you to engage this cycle, especially for process (1) and (3)
 - Note: the budget could not be allocated directly to users' institutions

-> 9 Talks for "accept I"

Flow



Submit proposal by user group

Evaluated by dedicated committee at SACLA

Similar proposals may be merged

Accept I

Accept II



Discussion between U & F to finalize specification

Feasibility study by U & F

Developed by SACLA

Report



Commissioning with U & F

Open for public users

2021 Program: 17 proposals submitted (incl. 4 for SP8); result will be announced soon

Satellite meeting Day 1

“Introduction of SACLA for SR users (in Japanese)”

Introduction of typical examples in materials science, SFX, and industrial applications

9:00	はじめに		米田仁紀 (電気通信大学)
9:10	施設紹介	SACLAの特徴とその活用	犬伏雄一 (高輝度光科学研究センター)
9:40	研究紹介	物質科学におけるXFELと放射光の相補的利用の可能性 ～SFX、CDI、時分割実験を経験して～	西堀英治 (筑波大学)
10:05		構造生物学におけるXFELと放射光の相補的利用 ～金属酵素の反応機構解明を目指して～	當舎武彦 (理化学研究所)
10:30		XFELと放射光の産業利用 ～鉄鋼材料の二次元時間分解その場観測～	米村光治 (日本製鉄株式会社)
10:55	質疑応答		
11:25	おわりに		雨宮慶幸 (高輝度光科学研究センター)

Perspective

- Tohoku 3-GeV SR facility is under construction; will start operation in FY2023
- SPring-8 is seeking an opportunity for upgrade to “SPring-8-II” in the mid 2020’s; SACLA linac plays a key role as a low-emittance e-beam injector
- Prior to SPring-8-II, we have started upgrade of beamlines; 1/3 will be refurbished by 2023
- Transfer of technologies and know-how between SACLA and SPring-8 -> Synergetic enhancement of strength (e.g., CITIUS detector)
- A long-term target is to increase rep rate to \sim kHz with NC (not SC) accelerator technologies

Enjoy the Meeting !!