**SACLA Proposal Application Template**

**(General Proposal : Non-proprietary)**

**<Important Notices>**

**(1) Notice for Applicants Planning to Perform Experiments at BL3**

**Starting from the 2024A term, new experimental capabilities at EH3 of BL2 will enable users to carry out certain types of experiments at EH3 that were solely conducted at BL3 previously.** The details of new capabilities are summarized in the [call for proposals](https://sacla.xfel.jp/?p=10944&lang=en).

**If applicants for BL3 consider that the assignment of beamtime at BL2 is also acceptable, they are encouraged to express their opinion as “The assignment of BL2 beamtime is also acceptable” in the section “Facility instruments to be used.”**

Note that the hutch and beamline assignment will be decided based on the overall judgment of the review results and the experimental conditions.

**(2) Response to Review Comments**

**If applicants/project leaders have received the review comments in past applications, it is required to respond to them in the field of “18. the preparation status related to this application proposal.”** The past review results can be found with the review comments on the SACLA User Information My Page for the last five terms.

**Please check the box below if applicable.**

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| Complementary Use of SPring-8, SACLA, J-PARC MLF or HPCI including the K computer / the supercomputer Fugaku | □Yes |

**[PAGE 1: Basic Information]**

1. Title of Experiment <required> (70 word limit)

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2. Research Area and Research Method

2-1-1. Research Area <required>

- Main Area: Please select a Main Research Area. <required>

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| Main Research Area |  |
| Select from the following <required> |
| □ | AMO (Atom, Molecular & Optical Science) |
| □ | BIO (Biology) |
| □ | CHM (Chemistry) |
| □ | HEDS (High Energy Density Science) |
| □ | IND (Industrial Applications) |
| □ | MAT (Materials Science) |
| □ | MI (Methods & Instrumentations) |
| □ | XOP (X-ray Optics) |
| □ | Others |

2-1-2. Main Research Area Keywords (30 word limit)

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2-1-3 Related Area:

-Please select all research areas that are related to your research in addition to the Main Research Area.

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| Related Research Areas |  |
| Multiple Choice Allowed |
| □ | AMO (Atom, Molecular & Optical Science) |
| □ | BIO (Biology) |
| □ | CHM (Chemistry) |
| □ | HEDS (High Energy Density Science) |
| □ | IND (Industrial Applications) |
| □ | MAT (Materials Science) |
| □ | MI (Methods & Instrumentations) |
| □ | XOP (X-ray Optics) |
| □ | Others |

2-1-4. Related Research Area Keywords (30 word limit)

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2-2-1. Main Research Method

- Please select a main research method. <required>

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| Method |  |
| Select from the following <required> |
| □ | XIM (X-ray Imaging) □Please put a check in case of CDI (Coherent Diffractive Imaging)  |
| □ | XSC (X-ray Scattering) |
| □ | XSP (X-ray Spectroscopy) - If you choose XSP, please put a check into one of the following.  □ X-ray Detection □ Charged Particle Detection |
| □ | XRD (X-ray Diffraction) □ Please put a check in case of SFX (Serial Femtosecond Crystallography) □ Please put a check in case of FPX (Fixed-target Protein Crystallography) |
| □ | Others |

2-2-2. Main Research Method Keywords (30 word limit)

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2-2-3. Related Research Methods

-Please select all research methods that are related to your methods in addition to the Main Research method.

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| Method |  |
| Multiple Choice Allowed |
| □ | XIM (X-ray Imaging) □ Please put a check in case of CDI (Coherent Diffractive Imaging)  |
| □ | XSC (X-ray Scattering) |
| □ | XSP (X-ray Spectroscopy) - If you choose XSP, please put a check into one of the following.  □ X-ray Detection □ Charged Particle Detection |
| □ | XRD (X-ray Diffraction) □ Please put a check in case of SFX (Serial Femtosecond Crystallography) □ Please put a check in case of FPX (Fixed-target Protein Crystallography) |
| □ | Others |

2-2-4. Related Research Method Keywords (30 word limit)

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3. Beamline (hutch) to be used <required>

- Click [here](http://xfel.riken.jp/eng/users/index.html) to see an overview of each hutch.

**- If applicants select an experimental hutch at BL3 and consider that the assignment of beamtime at BL2 is also acceptable, they are encouraged to express their opinion as “The assignment of BL2 beamtime is also acceptable” in the section “14. Facility instruments to be used.”**

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| (Check one) | Beamline (Hutch) |
| □ | BL1 (EH4a) | SXFEL |
| □ | BL2 (EH3&4b) | XFEL |
| □ | BL2 (EH6) | XFEL |
| □ | BL3 (EH2) | XFEL |
| □ | BL3 (EH4c) | XFEL |
| □ | BL3 (EH5) | XFEL |

4. Number of Shifts Requested [1 shift is 12 hours] <required>

- Explain how you estimated the number of requested shifts in the space provided for #17: Details of requested shifts.

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5. Co-Application with Feasibility Study Programs

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| □ | If our proposal is approved, we request to conduct a feasibility check before the implementation of this research proposal.\* (Limited to serial femtosecond crystallography experiments.) |
| □ | If this research proposal is not accepted, we hope to conduct a maximum of one shift as a Feasibility Study Program.\*\* |

\* Please refer to [the Call for Proposals](https://xfel.jp/s/cfp-en).

\*\* Please refer to [the Call for Proposals for SACLA Feasibility Study Program](https://xfel.jp/s/cfpfsp-en).

6. Unavailable Dates (50 word limit)
- Period covered: April 2024 – July 2024

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- Please note that we may not be able to fulfill your request.

- Please also check your collaborators’ schedule.

- Please describe the reason in detail if total “Unavailable Dates” are over 30 days.

 **[PAGE 2: Project Team Members]**

7. Project Team Members: User Card Number, Name, and Affiliation

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| User Card ID Number | Name | Institution/Company |
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- Project team members as well as project leaders are required to complete user registrations in advance. When you fill the form on the web, the member’s name and affiliation will automatically appear once you input the User Card ID Number. You can search the ID number of your team members from the User Information My Page only if they allow other users to search their registration information in the account settings of the User Registration page. If you cannot find your members’ information, please ask them to change their account settings (Log in to My Page > “Edit My Details” link in the top right-hand corner) to allow the search by other users. The project team members can be changed even after proposals are approved for beamtime.

- If you are affiliated with an institution outside Japan, please have at least one local contact person that is affiliated with a Japanese institution participate in your experiment. If you cannot find one, please contact the Users Office (sacla.jasri@spring8.or.jp).

**[PAGE 3: Known Safety Hazards & Measures to Be Taken]**

8. Does your proposed research involve any of the following? <required>

-If yes, you will be required to submit [additional forms](https://user.spring8.or.jp/s/documents-sacla-e) before your experiment.

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| (Check all that apply.) | Check Item |
| □ | High pressure gas cylinder from the outside of SPring-8/SACLA |
| □ | Radioisotope |
| □ | Radiation generator: installation, modification, change of purpose or specifications |
| □ | Internationally controlled materials (nuclear source/fuel materials) |
| □ | Installation of devices/equipment regulated by law:- High-pressure gas manufacturing plant- Local ventilation/gas supply and exhaust system- Crane |
| □ | Chemicals regulated by law:- Specific substances regulated by the "Act on the Prohibition of Chemical Weapons and Control of Specific Chemicals"- Specified poisonous substances regulated by the "Poisonous and Deleterious Substances Control Law"- Substances for which manufacturing is prohibited, asbestos, etc. under the "Industrial Safety and Health Law"- Narcotics, stimulant drugs, hemp (gum), opium, and their raw materials, psychotropic drugs, and no dangerous substances of 1/5 or more in quantity specified by the "Fire Service Act" |
| □ | Invasive alien species |
| □ | Specified risk materials (SRM) from cattle |
| □ | Prohibited imports regulated by the "Plant Protection Act" |
| □ | Recombinant DNA |
| □ | Human materials |
| □ | High-energy laser system (Class 4, Class 3B and Class 3R lasers specified by IEC 60825-1 standard) from the outside of SPring-8/SACLA |
| □ | Live animals (mammals, birds, or reptiles) |
| □ | Specific biological samples/biohazards (agents of biological origin that have the capacity to cause ill-effects in other organisms)- pathogenic microbes (incl. infectious nucleic acids, plasmids, prions), parasites, and the toxic substances, carcinogens, and allergens produced by them that can cause harm to humans, livestock, and farm/marine products. |
| □ | N/A |

9. Details of Samples (including substances prepared by SPring-8/SACLA as well as carry-in samples)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name of Substance\*1 | State/Figure\*2 | Qty & Unit (SI)\*3 | Hazards\*4 | Purpose of Use\*5 | Containment measure and disposal method | Prevention of Hazards | Risk Level\*6 | Remarks |
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\*1 Avoid abbreviations.

\*2 Capillary (powder), Cylinder (gas), Plate (crystal), metal foil, tablet, bulk, etc.

\*3 SI Unit.

\*4 Categorize the hazard of your sample as Poisonous Substances, Deleterious Substances, Specified Chemical Substances, Organic Solvents, Flammable/Explosive Substances, etc. These categories are based on Japanese legal regulations. You can refer the category and properties of your sample via links described in Section “Procedures to be followed in advance by principal investigators” in the following page.

(<http://www.spring8.or.jp/en/users/safety/form_procedure/chemistry#a-2>)

\*5 Measurement sample, Cleanser, Coolant, Tranquillizer, etc.

\*6 Risk assessment result. For details, see the following page (<https://sacla.xfel.jp/?p=10317&lang=en>). Choose “N/A” for chemical substances which are exempt from the regulation.

**[PAGE 4: Abstract]**

10. Abstract <required> (1200 word limit)

- Describe the background, purpose, significance, originality and expected results of the proposed research, and the consistency with these review criteria, which will be used to review the scientific validity of the proposed research. Please also be sure to provide the necessity of using SACLA as a research tool.

- If the proposed research is a continuation of previously accepted proposals, please describe the results of past experiments briefly, and clarify the expected progress from them. If this proposal relates to an accepted experiment that has not been carried out yet, please describe the aim of this new proposal based on the expected results of the coming beamtime.

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11. Provide the expected future developments and direction of the proposed research.

<required> (270 word limit)

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**[PAGE 5: Experimental Details]**

12. Experimental details such as measurement method, layout of experimental equipment, detector (MPCCD single/dual/octal-sensor detector, Rayonix MX300-HS, for example), concentration of samples. It is recommended that a figure (figures) of experimental setup is uploaded as an attachment. <required> (1350 word limit)

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13. XFEL parameters to use.
Photon energy (wavelength)/XFEL focus and desired beam size/Special operating modes ([self-seeding, two-colors XFEL, SDO](http://xfel.riken.jp/eng/users/bml02-11.html)) etc.

To use the special operating modes, proposers are requested to contact the facility (sacla-bl.jasri@spring8.or.jp) to clarify the feasibility well in advance of the proposal submission as noticed in [the Call for Proposals](https://xfel.jp/s/cfp-en).

<required> (135 word limit)

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14.Facility instruments to be used. (90 word limit).
To use the facility instruments listed in [the Call for Proposals](https://xfel.jp/s/cfp-en), proposers are requested to contact the facility (sacla-bl.jasri@spring8.or.jp) to clarify the feasibility well in advance of the proposal submission.

Please provide the name and the email address of the person who the facility staff should contact about the SACLA High Performance Computer (SACLA HPC). If the contact person already has a SACLA HPC account, please write it down.

If applicants for BL3 consider that the assignment of beamtime at BL2 is also acceptable, please express the opinion here as “The assignment of BL2 beamtime is also acceptable.”

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| (ex.) MPCCD single/dual/octal-sensor detector, Rayonix MX300-HS, DAPHNIS, SPINETT Contact person for HPC user account: name, email address and SACLA HPC accountThe assignment of BL2 beamtime is also acceptable. (Please remove this phrase if it is not applicable.) |

15. The synchronized laser systems to be used and their specifications (wavelength, pulse energy, beam size, intensity, time-resolution on pump-probe measurement, etc.). If you use the synchronized laser systems below or bring your own laser systems, please describe the details in the "Specifications".
To use the laser systems listed in [the Call for Proposals](https://xfel.jp/s/cfp-en), proposers are requested to contact the facility (sacla-bl.jasri@spring8.or.jp) to clarify the feasibility well in advance of the proposal submission.
Those who apply to use the high-power nanosecond laser (> 10 J) should carefully read the relevant terms of use at the [Call for Proposals](https://xfel.jp/s/cfp-en) page on the SACLA User Information website.

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| Laser System | Beamline (Hutch) | Wavelength |
| Femtosecond laser | BL1 (EH4a)BL3 (EH2)BL3 (EH4c) | □ 800nm□ 400nm□ 266nm□ 200nm |
| BL1 (EH4a)BL3 (EH2) | □ OPA |
| Nanosecond laser | BL1 (EH4a)BL2 (EH3) | □ 532nm□ OPO |
| High-power femtosecond laser (> 100 TW) | BL2 (EH6) | □ 800nm |
| High-power nanosecond laser (> 10 J) | BL3 (EH5) | □ 532nm |
| Others | ( ) | ( ) |

Specifications (225 word limit)

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| Pulse energy:Pulse duration:Beam size:Intensity:Time accuracy of synchronization with XFEL:Time resolution on pump-probe measurement:Timing monitor: necessary or unnecessaryDetails of other lasers:Terahertz radiation: (Please add/delete items if necessary)  |

16. Equipment that you will bring to SACLA.

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| Equipment | Specifications\* | Safety measures |
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\* Voltage, Ampere, Pressure, Temperature, etc.

17. Details of requested shifts (Please explain how to estimate the number of shifts). <required> (900 word limit)

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18. Provide the preparation status related to this application proposal, the relationship with other proposals submitted in this term (if any), similar experiments carried out at other facilities, and response to review comments on previous proposals. <required> (990 word limit)

Notice: If you have any performed experiments relevant to this application proposal, please fill a Progress Report in Term 19.

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| Preparation status related to this application proposalRelationship to other proposals submitted in this termSimilar experiments carried out at other facilitiesResponse to review comments on previous proposals |

**[PAGE 6: Progress Report]**

19. Please describe the following items about the proposals and feasibility study programs performed at SACLA being relevant to this application proposal (4500 word limit).

■Proposal titles　■Proposal No.　■Date of experiment and number of shifts

■Summary of the experiment

■Publication status of representative results obtained by using SACLA

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| (example)* Proposal titles
* Proposal No.
* Date of experiment and number of shifts
* Summary of experiment
* Publication Status (peer-reviewed papers, patents, invited talks)
 |

Acceptable file formats are JPEG (.jpg/.jpeg), GIF(.gif), PNG (.png) only.

Do not upload files without file extensions. Each image should be no larger than 1 MB in file size.

Fig. S1:

Fig. S2:

**[PAGE 7: Complementary Use Program\*]**

\* If applicable.

20. Complementary Use Facility (Check all applicable facilities.)

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| (Multiple selections allowed) |  |
| □ | SPring-8 |
| □ | J-PARC MLF |
| □ | HPCI including the K computer / the supercomputer Fugaku |

21. Abstract for Complementary Use (2250 word limit).

In the Complementary Use section of your online application form, please make sure to indicate that your proposal is intended for combined use of SPring-8, J-PARC MLF or HPCI including the K computer / the supercomputer Fugaku. Specify research goals, why you require complementary use of facilities, expected results from complementary use of facilities, etc.

 In addition, please make sure to also state the following information regarding SPring-8, J-PARC MLF or HPCI including the K computer / the supercomputer Fugaku applications.

 (a) If you have already carried out experiments at SPring-8, J-PARC MLF or HPCI including the K computer / the supercomputer Fugaku, please state relevant information such as the facility’s name(s), dates of research, the proposal number(s), titles of the experiments, name/affiliation of project leader(s), and the research group name(s).

 (b) If you plan to apply for use of SPring-8, J-PARC MLF or HPCI including the K computer / the supercomputer Fugaku at the same time as SACLA, please state application information such as facility's name(s), dates of research, titles of experiments, name/affiliation of project leader(s) or research group name(s) (including those which are scheduled).

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**[PAGE 8: Attachments]**

22. File Upload (up to 3 files). Acceptable file formats are JPEG (.jpg/.jpeg), GIF(.gif), PNG (.png) only.

Do not upload files without file extensions. Each image should be no larger than 1 MB in file size.

Fig. 1:

Fig. 2:

Fig. 3: