Collaborative Research Projects – 2026
Joint Usage/Research Center Research Center for Advanced Inorganic Materials
Materials and Structures Laboratory, Institute of Integrated Research,
Institute of Science Tokyo

Outline and Application Instructions

1. Outline of the Projects

The Collaborative Research Projects (hereafter, "CRP") of the Materials and Structures Laboratory (hereafter, "MSL"), Institute of Integrated Research, Institute of Science Tokyo, include the following five different types of research and workshop to be carried out at MSL/ organized by MSL in collaboration with MSL faculties including Assistant, Associate, and Full Professors (hereafter, "MSL Faculties").

International CRP (of Category A or B):

Research project conducted by a team consisting of MSL faculties and researchers of foreign organizations using the facilities, equipment, data, etc., available at MSL.

General CRP (of Category A, B or C):

Research project conducted by a team consisting of MSL faculties and researchers of other organizations, using the facilities, equipment, data, etc., available at MSL.

Topic-Specified CRP:

Research projects on one of the following topics coordinated by MSL faculties and conducted by a team consisting of MSL faculties and researchers of other organization, using the facilities, equipment, data, etc., available at MSL.

Specified Research Topics (Please see the abstracts of the topics on page 4.)

1. Structural Dynamics-Based Functional Modification of Biomolecules
2. Development of solution-processed organic light-emitting diode
3. A study on functional maintenance and resilience of wooden buildings subjected to repeated earthquake motions
4. Development of materials digital transformation approach and new electronic functional materials and devices

International Workshop:

Small-scale international discussion meeting on a focused topic to promote MSL CRP, organized by MSL.

Workshop:

Small-scale discussion meeting on a focused topic to promote MSL CRP, organized by MSL.

＊ Award for Outstanding Researchers

The MSL Award for Research will be presented to the outstanding researchers.

＊ Financial Support for Conferencing

MSL provides financial support for conferencing.

2. Qualified Applicants

Researcher with a doctoral or an equivalent who reasonably approves the agreements on intellectual property rights with MSL. (Please see Appendix 1. the Regulation on Intellectual Property Right yielded from MSL CRP on page 9.)

(Technical staff and postgraduate students may be a collaborator for CRP.)

Project representative may apply once for International or General CRP, and once for International Workshop or Workshop, at most.

3. How to apply

Prior to application, applicant should consult with MSL faculties regarding research subject, period, and expenses, etc.

General information of MSL including organizations, faculty members, and research abstracts, can be obtained in MSL website (https://www.msl.titech.ac.jp/english.html).

International CRP, General CRP and Topic-Specified CRP:

Applicant should submit application forms (use Form 1 and Form1_(description) attached) to the office for MSL CRP by e-mail (suishin@msl.titech.ac.jp). The application form can be downloaded from MSL website (https://www.msl.titech.ac.jp/english/msl_crp_en/crp__en/application_forms 2025.html).

International Workshop and Workshop:

Applicant should submit application forms (use Form 2 and Form2_(description) attached) to the office for MSL CRP by e-mail (suishin@msl.titech.ac.jp). The application form can be downloaded from MSL website (https://www.msl.titech.ac.jp/english/msl_crp_en/crp_2025_en/application_forms 2025.html).

4. Period of Project

International CRP and General CRP:

About one year from April 10th 2026 to March 31st 2027. Research period may be extended up to a maximum of three years, provided that project representative of project should apply newly in each year.

International Workshop and Workshop:

Between April 10th 2026 to March 20th 2027

5. Research Expenses

Necessary expenses for the CRP or Workshop may be covered in accordance to the budget allocated.
（The airfare and public transportation fare are covered.）

6. Deadline of Application

January 5th, 2026 (No application will be accepted later than the deadline.)

7. Selection and Notification

The decision shall be notified to each applicant (i.e. project representative) early in April, 2025.

8. Report of CRP / Workshop

After the completion of CRP or Workshop, representative of CRP or Workshop is required to submit "Report on CRP" or "Report on Workshop" to the office for CRP by e-mail (suishin@msl.titech.ac.jp).

The report should include a power point slide describing the results of CRP or Workshop.

9. Publication of Research Results and Others

In case of publishing the results of MSL CRP, please acknowledge the sponsorship for the collaborative research project provided by the Materials and Structures Laboratory.

Please use the following name(s), if necessary, in your acknowledgment.

1. **Materials and Structures Laboratory, Institute of Integrated Research, Institute of Science Tokyo**

2. **Collaborative Research Project of Materials and Structures Laboratory, Institute of Integrated Research, Institute of Science Tokyo**

Please note that the intellectual property rights yielded from MSL CRP are under the regulation of MSL, as stated in Appendix 1. For details of the regulation, please contact the office for MSL CRP.

10. Accommodation

Accommodations in Tokyo Institute of Technology are not available.

11. Where to submit and contact

Office for MSL Collaborative Research Projects
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Abstracts of Topic-Specified Collaborative Research Projects

Structural Dynamics-Based Functional Modification of Biomolecules

Representative: Saeko Yanaka

This study aims to understand and rationally modify biomolecular functions by precisely analyzing their dynamic structural changes. Focusing on glycoproteins, we investigate conformational fluctuations and structural flexibility using molecular dynamics simulations and nuclear magnetic resonance (NMR) spectroscopy. By elucidating the correlation between structural dynamics and functional expression, we design targeted strategies to control or enhance molecular functions, with potential applications in drug discovery and biotechnology.

Development of solution-processed organic light-emitting diode

Representative: Seiichiro Izawa

Although organic light-emitting diode (OLED) has been commercialized for smartphone displays, reducing manufacturing costs requires shifting from the current mainstream vacuum deposition process to simpler solution-processed film formation. This research aims to fabricate OLEDs using solution processes and improve their performance by controlling the interface and surface structures during film formation through appropriate control of intermolecular interactions, such as self-assembly phenomena. Specifically, OLEDs utilizing the upconversion process will be fabricated via solution process.

A study on functional maintenance and resilience of wooden buildings subjected to repeated earthquake motions

Representative: Yoshihiro Yamazaki

The Japanese seismic design standard aims to prevent building collapse during a single major earthquake. However, the 2016 Kumamoto Earthquake and the 2024 Noto Peninsula Earthquake demonstrated that buildings may experience multiple strong earthquake events within their service life. Consequently, interest in safety against repeated major earthquakes has grown. This research proposes performance evaluation methods and design approaches necessary to achieve functional maintenance after experiencing earthquakes, targeting wooden structures commonly used in many residential houses and public buildings. It comprehensively evaluates building resilience by focusing not only on the mechanical behavior of structural members subjected to repeated deformation but also on the functional degradation of non-structural materials.

Development of materials digital transformation approach and new electronic functional materials and devices

Representative: Toshio Kamiya

Combining data analysis as well as materials simulations and experimental materials research has become important to accelerate the development of new materials and devices. Thus, it is an urgent issue to build a new materials digital transformation system (MDX). In this project, we welcome ideas of a part of such MDX approach, its total design, or related issues.

MSL faculty members

Name, Extension Number and E-mail Address:
Dial +81-45-924- followed by the extension number of each faculty member, except for *

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(Excerpt) Equipment Available for Collaborative Research at the Laboratory for Materials and Structures [MSL faculty members to contact]

Equipment	Contact person
(06) Physical Property Measurement System Under High Magnetic Field (14) Atomic Force Microscopy System (22) High-pressure synthesis appraratus (23) SQUID Magnetometer (MPMS; Quantum Design) (41) Walker-type high pressure apparatus	AZUMA Masaki SHIGEMATSU Kei

Equipment	Contact person
(25) High performance liquid chromatography (29) Electron Spectroscopy for Chemical Analysis (30) Infrared Spectrometer (37) CHN elemental analyzer (38) Glovebox System (39) Fourier Transform Infrared Spectroscopy	HARA Michikazu ISHIKAWA Satoshi HATTORI Masashi
(36) Experimental Equipment for Non-Structural Components	ISHIHARA Tadashi
(18) High-Resolution Solid-State NMR Spectrometer (BRUKER AVANCE III HD) (24) Capillary gas chromatography (42) Fourier Transform Infrared Spectrometer (43) UV-Vis Absorption Spectrometer	KAMATA Keigo AIHARA Takeshi
(09) 2000kN Dynamic Loading Actuator (10) Reaction Frame (1000kN and 500kN Oil Jacks) (11) 200tf Universal Testing Machine (12) 500kN Temperature Variable High Rigidness Material Testing Machine (13) Multi-Dimensional Long Stroke Loading System (33) Load & Displacement Control System for Structural Experiments (34) 1000kN hydraulic jack with 2 directional load cells (40) 200kN hydraulic jacks	KISHIKI Shoichi KUROSAWA Miku
(01) DATA LOGGER TDS630, Tokyo Sokki Kenkyujo (02) Servo controlled static hydraulic pump and controlling units (03) 4MN hydraulic jacks (32) Concrete cylinder specimen end grinding machine	KONO Susumu
(15) “Scanning Electron Microscope” Hitachi Regulus8230	MAJIMA Yutaka
(27) Equipment for single crystals growth (28) Equipment for physical properties evaluation under extreme conditions (29) Maskless Electronic Device Fabrication System	SASAGAWA Takao
(26) X-RAY DIFFRACTOMETER	YASUI Shintaro

Maximum budget for individual grants

Type of CRP	Category	Maximum Allocation	
		Travel	Materials and Supplies
International CRP	*A	¥ 1,000,000	¥ 400,000
	B	¥310,000	¥ 40,000
General CRP	*A	¥ 650,000	¥ 400,000
	B	¥140,000	¥ 100,000
	C	¥ 30,000	¥ 100,000
International Workshop,		¥ 900,000	¥ 180,000
Workshop		¥300,000	¥60,000

* Project representative may apply once for International or General CRP, and once for International Workshop or Workshop, at most.

Appendix 1: Regulation on Intellectual Property Right Yielded from MSL CRP

·Case of researchers who belong to universities

In general, the yielded right shall belong to the researcher or his/her institute/university. In case when the contributions from researchers of Institute of Science Tokyo to the invention you are to file as an intellectual property are recognized to be significant, Science Tokyo shall discuss with you the property right.

When you file patents and/or intellectual property rights yielded from MSL CRP, you shall provide us at the office for MSL CRP with a copy of the filing/filed documents. (The office for MSL CRP shall strictly storage the copy and keep the secrecy of your filing.)

·Case of those other than afore-defined

In general, the yielded right shall belong to the researcher (of this category) or his/her institute/company. In case when the contributions from researchers of Science Tokyo to the invention you are to file as an intellectual property are recognized to be significant, Science Tokyo shall discuss with you the property right.

When you file patents and/or intellectual property rights yielded from MSL CRP, you shall provide us at the office for MSL CRP with a copy of the filing/filed documents. Moreover, in case when profits from the utilization of the filing/filed intellectual properties are anticipated, Science Tokyo shall discuss with the right holder the consideration of the utilized facility at Science Tokyo. (The office for MSL CRP shall strictly storage the copy and keep the secrecy of your filing.)