

**Guidelines for GIMRT program of Collaborative Research  
at Cooperative Research and Development Center for Advanced Materials**

1. Application Guidelines

For researchers who develop, design, and evaluate new materials, we call for two types of **collaborative research proposals** in the Cooperative Research and Development Center for Advanced Materials (hereinafter referred to as the “CRDAM”)

- a) to be performed in collaboration with a research division in CRDAM.
- b) to use the equipment installed at CRDAM.

In each FY, we will recognize a few research proposals that have produced excellent results.

2. Applicant qualifications

- (1) For this collaborative research, faculty members of national/public/private universities and technical colleges as well as full-time researchers belonging to incorporated administrative agencies, national research and development corporations, special corporations, and national public research institutions may apply as proposal representatives.
- (2) Overseas researchers holding the equivalent status as one of above can also apply.
- (3) Faculty staffs, graduate students, and undergraduates (for technical colleges, major college students and academic advisors shall be specified) may be included as collaborator.

3. Application method

Electronic application is available at GIMRT user system.

<https://imr-kyodo.imr.tohoku.ac.jp/?lang=en>

A researcher may only submit one application as a principal representative.

○ **Collaborative research with a research department of the Center**

- (1) Before application, please contact a researcher of the CRDAM research division (see website) and discuss about the research plan.
- (2) For researchers who do not belong to IMR, “Collaborative Research Agreement” (Attachment 1) must be submitted by three weeks before your visit. The document must be signed by the head of visitor’s home institution. It can be sent by postal mail or by e-mail. It is requested only for an accepted proposal.

○ **Collaborative research conducted using equipment**

- (1) Before application, please contact both the deputy manager of the each equipment facility and the responsible equipment operator at CRDAM (see Attachment 2: “Equipment List”) about the research protocol, planned visiting period, etc.
- (2) For researchers who do not belong to IMR, “Collaborative Research Agreement” (Attachment 1) must be submitted by three weeks before your visit. The documents must be signed by the head of visitor’s home institution. It can be sent by postal mail or by e-mail. It is requested only for an accepted proposal.

○ **Application Deadline**

1. Application proposal

**Application deadline 20 December 2018 (Thursday)**

(Apply electronically via the GIMRT user system)

2. Collaborative Research Agreement (requested only for accepted proposal)

It must be submitted by three weeks before your visit. The document must be signed by the head of visitor's home institution. It can be sent by postal mail or by e-mail.

4. Research period

For the domestic users, the formal research period is one year from the 1<sup>st</sup> April of each physical year. However, we request users to finish the research by the end of February of each year, because the center needs some time for maintenance and there is a practical issue for travel budget control.

For overseas users, the call is open in December, March, June and September considering the different school and physical years. Please discuss with your local contact in advance to decide the schedule of your visit.

If you continue with the same research proposal, the maximum research period is 3 years from the initial start. For support of the international traveling, the certain priority is given to the new user and the availability may depend on the numbers of applications in each call.

5. Contact Address

GIMRT-office, Research Cooperation Division, General Affairs Section, Institute for Materials Research, Tohoku University

2-1-1 Katahira, Aoba-ku, Sendai, Miyagi 980-8577, Japan

Phone +81-22-215-2183

FAX +81-22-215-2184

Email [gimrt-office@imr.tohoku.ac.jp](mailto:gimrt-office@imr.tohoku.ac.jp)

6. Application results

Each proposal is reviewed by three referees, and decision is made by the corresponding proposal committee based on the review results. Applicants will be notified directly of the review results around the end of March for December call. In the selection, a matching with the scope and the mission of CRDAM is primarily important. For continuing proposal, results obtained in the previous proposal is also considered. When applying new research proposal, please be sure to fill out the "Previous Ongoing Achievement" column.

7. Travel expenses

Travel expenses can be paid within the available budget resource of each year. The expected upper limit is 300,000 JPY for domestic user and 500,000 JPY for overseas user.

8. Report

The project representatives are requested to submit the research report containing the outcomes such as journal publications via the GIMRT user system. The project representatives shall submit the "Collaborative Use Research Report" via the GIMRT user system by **10<sup>th</sup> of April 2020 for FY2019 call closed at December 2018**. [Time is of the essence.] Every result that is obtained in the collaborative research, even partly, shall be included in the report. We request users to publish research results within 3 years. Papers may be published after the research period and thus please be sure to register at the GIMRT user system even after submitting the research report for each fiscal year. For proposal for other

calls, the deadline is informed independently.

If the report cannot be submitted due to unusual circumstances, submit a reason statement or a progress report. Please contact CRDAM for additional information.

#### 9. Submission of papers

The results obtained in this collaborative use research shall be published as a paper. Please be sure to recognize CRDAM in the Acknowledgments section of the paper. In this case, insert a sentence indicating the collaborative use research as the “Cooperative Research and Development Center for Advanced Materials, Institute for Materials Research, Tohoku University.”

Sample sentences are shown below.

- 1) This work was performed under the GIMRT program (Proposal No. \*\*G\*\*\*\*) of the Cooperative Research and Development Center for Advanced Materials, Institute for Materials Research, Tohoku University.
- 2) This work is a collaborative program (Proposal No. \*\*G\*\*\*\*) of the Cooperative Research and Development Center for Advanced Materials, Institute for Materials Research, Tohoku University.
- 3) This work is a collaborative program (Proposal No. \*\*G\*\*\*\*) of the CRDAM-IMR, Tohoku University

Note: When you publish a paper, submit one copy of the paper to CRDAM.

#### 10. Accommodations

Visitors may use the accommodation facility of the Institute (three single rooms, two twin rooms; total capacity of seven). To apply, contact your local contact or GIMRT user office. For details of the accommodation facility, see the “Collaborative Research Guidance”.

#### 11. Handling of intellectual property rights

Intellectual property rights generated as a result of research shall conform to the Tohoku University Joint Research Regulations.

#### 12. Miscellaneous

##### o Insurance

When graduate students and undergraduate students (major students for technical colleges) use the laboratory in IMR, they must have Personal Accident Insurance for Students Pursuing Education and Research or equivalent one. All other users also must hold a proper insurance. IMR will not provide any insurance for users.

##### o Provision of collaborative research results to industry

CRDAM may introduce our collaborative research results to industry if all the researchers agree on it. Since the results of collaborative research of materials science should be used widely by industry, we ask for your kind support.

### Collaborative Research Agreement

To Director of Institute for Materials Research, Tohoku University

Subject Number:

Research Subject Title:

Name	Job Title	Home Organization

We acknowledge that the above persons will become collaborators.

Day Month Year

Director of Research Institution

Affiliation/Title /Name

Personal Seal or Signature

I acknowledge that the undergraduate students (or students in advanced courses in national institutes of technology) among the aforementioned persons will become collaborators in this research.

Supervisor:

Personal Seal or Signature

#### Notes

1. "Director of Research Institution" is the head of the home institution: such as president, dean, director of the department, head of center, or person in the equivalent position who has the responsibility for this agreement.
2. If an undergraduate (major student of a technology college) is included as a collaborator, the supervisor must acknowledge the student.

As of April 2019

## CRDAM 2019 List of Equipment open for collaborative research

General Responsible Person : CRDAM Director Prof. Furuhara  
tel.+81-22-215-2045 e-mail : furuhara@

### 1. Material synthesis station

	Equipment	Deputy Manager	Contact		Responsible Operator	Contact		Set year
			Tel.	e-mail		Tel.	e-mail	
1-1	Electron Beam Lithography & Ion Milling System	Takanashi Prof.	215-2095	koki@	Seki Associate professor	215-2097	go-sai@	2003
1-2	Multi-Target Reactive Sputtering (Ion Beam Sputtering)				Sasaki Technical Staff	215-2375	tomoko3121@	1989
1-3	Reflection High Energy Electron Diffraction System				Seki Associate professor	215-2097	go-sai@	1997
1-4	Multi-Ion Vapor Deposition System				Sasaki Technical Staff	215-2375	tomoko3121@	1999
1-5	Multi-Layer Chemical Vapor Deposition Reactor				Sasaki Technical Staff	215-2375	tomoko3121@	1988
1-6	3 cathode-equipped compact sputtering system				Seki Associate professor	215-2097	go-sai@	2012
1-7	Hot Deformation Simulator	Chiba Prof.	215-2115	a.chiba@	Yamanaka Assistant professor	215-2118	k_yamanaka@	2009
1-8	Spark Plasma Sintering SPS-1050	Kato Prof.	215-2114	hikato@	Harata Technical Staff	215-2375	harata.kinken@	1992
1-9	Spark Plasma Sintering SPS-3.20 Mark IV				Harata Technical Staff	215-2375	harata.kinken@	2005
1-10	Electron-beam Melting Furnace				Sugawara Technical Staff	215-2799	takas@	1995
1-11	Gas-atomization				Wada Associate professor	215-2112	wada-t@	1998
1-12	High Frequency Induction Tilt Casting				Yodoshi Assistant professor	215-2159	ynoriharu@	2005
1-13	Single Roll Melt Spinning				Yodoshi Assistant professor	215-2159	ynoriharu@	1999

e-mail address : Add imr.tohoku.ac.jp after @mark.

Tel. No. : Add the nation and area codes (+81-22) first.

## 2. Performance evaluation station

	Equipment	Deputy Manager	Contact		Responsible Operator	Contact		Set year
			Tel.	e-mail		Tel.	e-mail	
2-1	Magnetic Property Measurement Unit System	Takanashi Prof.	215-2095	koki@	Seki Associate professor	215-2097	go-sai@	2014
2-2	X-ray Diffractometer (Micro Area Type)	Masahashi Prof.	215-2117	masahasi@	Murakami Technical Staff	215-2375	murakami@	2009
2-3	X-ray Diffractometer (Horizontal Sample Setting Type)				Murakami Technical Staff	215-2375	murakami@	2012
2-4	X-ray Photoelectron Spectrometer(XPS)				Omura Technical Staff	215-2375	kazu-oomura@	2009
2-5	Field Emission Scanning Electron Microscope (FE-SEM)				Narita Technical Staff	215-2375	narita.kinken@	2009
2-6	Field Emission Electron Probe Micro Analyzer (FE-EPMA)				Narita Technical Staff	215-2375	narita.kinken@	2009
2-7	Scanning Electron Microscope (tungsten filament) (W-SEM)				Narita Technical Staff	215-2375	narita.kinken@	2008
2-8	Superconducting Quantum Interference Device (SQUID) Magnetometer				Umatsu Associate professor	215-2199	rieume@	2001
2-9	Instron Tensile Test				Kato Prof.	215-2114	hikato@	Wada Associate professor
2-10	Differential Scanning Calorimetry (DSC)	Wada Associate professor	215-2112	wada-t@				2010
2-11	Conventional Type Thermal Analysis Measurement System (DTA, DSC, TMA)	Masahashi Prof.	215-2117	masahasi@	Zhang Assistant professor	215-2158	zy-jp@	2007
2-12	Multi-purpose X-ray Diffractometer	Sugiyama Prof.	215-2075	kazumasa@	Sugiyama Professor	215-2075	kazumasa@	2012
2-13	Single Crystal X-ray Diffractometer				Sugiyama Professor	215-2075	kazumasa@	2012
2-14	Micro X-ray Diffractometer (Rotating Anode, Micro Area Type with 2D Detector)				Murakami Technical Staff	215-2375	murakami@	2016
2-15	Vibrating Sample Magnetometer (VSM)	Masahashi Prof.	215-2117	masahasi@	Zhang Assistant professor	215-2158	zy-jp@	2006
2-16	Laue X-ray Back Scattering by Digital CCD Camera				Umatsu Associate professor	215-2199	rieume@	2014
2-17	Seebeck Coefficient/Electrical Resistivity Measurement System				Umatsu Associate professor	215-2199	rieume@	2015

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## 3. Crystal Growth Research Station

	Equipment	Deputy Manager	Contact		Responsible Operator	Contact		Set year
			Tel.	e-mail		Tel.	e-mail	
3-1	Solidification Control Equipment from Liquid Phase	Furuhara Prof.	215-2045	furuhara@	Tozawa Technical Staff	215-2799	stozawa@	1990
3-2	Crystal Growth Equipment with Horizontal Magnetic Field Application System				Tozawa Technical Staff	215-2799	stozawa@	1989
3-3	Crystal Growth Equipment for Bridgman Method				Tozawa Technical Staff	215-2799	stozawa@	1991
3-4	IR Image Furnace for Floating Zone Melting				Sugawara Technical Staff	215-2799	takas@	1989
3-5	Electron-beam Furnace for Floating Zone Melting				Sugawara Technical Staff	215-2799	takas@	1974
3-6	Crystal Growth Furnace with HF-inductive Heating System				Sugawara Technical Staff	215-2799	takas@	1981
3-7	Tungsten Resistivity Element Furnace for Vacuum Heating				Sugawara Technical Staff	215-2799	takas@	1971
3-8	High-frequency Induction Furnace				Sugawara Technical Staff	215-2799	takas@	2004
3-9	High Temperature Floating Zone Furnace for Composite Ceramics				Sugawara Technical Staff	215-2799	takas@	1998
3-10	Conventional Type Arc-melting Furnace				Nomura Technical Staff	215-2799	nmran@	1969
3-11	Arc-melting Furnace with Horizontal-traveling Hearth				Nomura Technical Staff	215-2799	nmran@	1985
3-12	Programmable Furnace with MoSi <sub>2</sub> Heater				Nomura Technical Staff	215-2799	nmran@	1998
3-13	Programmable Furnace for Flux Growth				Nomura Technical Staff	215-2799	nmran@	2008
3-14	μ-PD Apparatus for Smaller-diameter Crystal Growth				Nomura Technical Staff	215-2799	nmran@	2006

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