IIT BOMBAY-OHIO STATE
FRONTIER CENTER SCHOLAR GRANTS
REQUEST FOR PROPOSALS, 2019-2020

KEY DATES

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Sep. 20, 2019</td>
<td>Request for Proposals (RFP) released</td>
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<tr>
<td>Sep. 20 to Oct. 25</td>
<td>Information exchange through Frontier Center webinars, online researcher directory, one-on-one discussions, and letters of interest. Hosted events will be listed at the Frontier Center website.</td>
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<tr>
<td>Oct. 25</td>
<td><strong>Deadline for Proposals</strong> for Round 1 awards</td>
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<tr>
<td>Dec. 14</td>
<td>Round 1 awards announcement</td>
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<tr>
<td>Jan. 15, 2020</td>
<td>Round 1 contract initiation</td>
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<tr>
<td>Ongoing</td>
<td>Information exchange and consideration of letters of interest</td>
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<tr>
<td>Spring, 2020</td>
<td><strong>Proposal</strong> submission and consideration for Round 2 awards Deadline will be announced through the Frontier Center website</td>
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POINTS OF CONTACT

Submit **Letter of Interest** and **Proposal** via email to both frontier-center@osu.edu and pic.osu@iitb.ac.in.

Submit Frontier Center Questions to Prof. Ardeshir Contractor (Ohio State), Prof. Sanjay Krishna (Ohio State), Prof. Saurabh Lodha (IIT Bombay), or Prof. Raghavan Sunoj (IIT Bombay).

Submit RFP-related questions to TJ Ronningen.

Access and add your information to the Frontier Center researcher directory by sending “directory” to frontier-center@osu.edu.
The IIT Bombay-Ohio State Frontier Science and Engineering Research Center is dedicated to creating a global community of researchers, students and industry. This collaboration between the Indian Institute of Technology Bombay and The Ohio State University builds on both institutions’ research strengths to advance the creation and translation of knowledge, educate students for the global economy, and improve the well-being of our world.

The Frontier Center will act as a catalyst to develop and advance collaborative, industry- and government-funded projects. The Center will host joint workshops and webinars, facilitate courtesy and visiting faculty appointments in strategic areas of interests, and provide seed funding to researchers. The Frontier Center Scholars program is one of the core kernels of our efforts, combining seed funding and collaboration facilitation.

SCOPE OF THE FRONTIER CENTER SCHOLAR PROGRAM

The Frontier Center Scholars program supports collaborative research between a doctoral graduate student—the Frontier Center Scholar—from either university, a principal investigator (PI) at IIT Bombay, and a PI at Ohio State. The Scholar will be co-supervised on their doctoral research by their “home PI” (graduate advisor) and a “host PI” and will complete at least one semester of research at the host university. This initial collaboration will act as a catalyst for a sustained, extramurally funded, collaboration between the co-PIs.

The Scholar will receive travel support, accommodations, and living expenses for their stay at the host university for one semester (4-6 months). The Scholar will receive stipend and tuition support for one semester while they perform this research. The Scholar will receive a budget for research-related materials, supplies, or facility user fees. The Scholar will receive research support from the host PI throughout their doctoral research.

The co-PIs will both receive travel support for one visit to the partner university for the purpose of project planning, project support, and collaboration planning. The proposed project can be related to an existing, funded project from either PI. Cost sharing to ensure the Scholar’s success is highly encouraged. The proposed project must extend the scope of any funded projects, have a clear objective for the hosted research that can be completed within that semester, and increase the likelihood of extending and expanding the collaboration through extramural support (government agencies, industry, commercial ventures, or foundations).

The Frontier Center will support the co-PIs and Scholar in planning for extending the collaboration, including in identifying funding sources and project partners. The Frontier Center will support the Scholar in preparing for their visit and during their time at the host university. Once it is fully operational, the Frontier Center plans to support up to 15 Scholar Grants per year and will review grant proposals twice per year.

FRONTIER CENTER RESEARCH FOCUS AREAS

For this awards cycle, the proposed research collaboration must relate to one of these Frontier Center focus areas (but are not limited to these specific examples):
1. Renewable Energy (power electronics, energy storage, photovoltaics, microgrids, energy efficient electronics, integrated systems)
2. Advanced Manufacturing (additive manufacturing, data science-enabled processing)
3. Electronics (high speed devices, devices for sensing, and communications devices)
4. Photonics (photonic devices/circuits, sensing and imaging, and lasers)
5. Emergent Materials (quantum materials, 2D materials, topological systems, and spin/magnetic phenomena)
PROPOSAL SUBMISSION PROCESS

PROGRAM INFORMATION AND PARTNERING SUPPORT

The Frontier Center is hosting the following activities to support prospective PIs:

- Online informational sessions, available live and recorded, about the Center and the Scholars program
- Webinars, available live and recorded, with research presentations by potential partner researchers in select focus areas
- A researcher directory with research summaries and contact information for PIs at both universities who have expressed an interest in partnerships.

Additional details are available through the Frontier Center website. The recorded videos and the researcher directory can be accessed by all IIT Bombay and Ohio State PIs (see cover page).

LETTERS OF INTEREST

Interested PIs are encouraged to notify the Frontier Center of their interest with a brief letter/email (see cover page). A Letter of Interest is not required prior to a proposal. In the letter, include a few-sentence description of the proposed research, which of the five research focus areas it relates to, and the names of the PIs. The Frontier Center will be happy to provide preliminary feedback and engage in further discussions.

A PI who is interested in applying but has not yet identified a partner PI may submit a Letter of Interest, and the Frontier Center will assist to identify candidate partners. A PI who is interested in collaborating in an area outside of the five focus areas, with or without an identified partner, may also submit a letter, and the Frontier Center may consider it in future award cycles.

PROPOSAL SUBMISSION

To propose, the co-PIs must submit a 2 to 3-page proposal that addresses all of the requirements below. The Frontier Center has provided a proposal template on its website (Microsoft DOCX format) that PIs are encouraged to use. The proposal must be submitted in PDF or Microsoft DOCX format via email (cover page). The proposal must include:

1) A proposal cover page with:
   a) A project title and a concise project summary
   b) Names and contact information for the co-PIs and the Scholar
   c) The Frontier Center focus area(s) the research relates to
   d) A graphical element (diagram, chart, or table) summarizing the proposed collaboration

2) A proposal with:
   a) A description of the project to be performed by the Scholar, including its relationship to their doctoral research, and a project timeline
   b) The goals of the ongoing collaboration and how the project supports these; for example, what is the expected scientific or technological impact of the collaboration
   c) The targeted means of supporting an ongoing collaboration; for example, a technology development goal and a potential industry partner or commercialization path, or a research goal and the Government agency(ies) that would potentially support it
d) Evidence to support the proposed project and collaboration; for example, active funding that will provide matching support, citations to relevant publications, citations to joint publications, and/or documentation related to targeted funding opportunities

e) A budget justification for the Materials, Supplies, and User Fees to support the Scholar’s hosted research

EVALUATION PROCESS AND CRITERIA

Proposals will be considered twice per year. The selection of awards will be made by the Frontier Center leadership team. The proposals will be evaluated based on the following criteria:

1. Intellectual Merit (originality and potential impact in Frontier Center focus areas)
2. Benefit to the Scholar
3. Potential for Successful Collaboration (extramural funding and project partnerships)
4. Cost share through existing, funded projects

GRANT BUDGET

A budget request for materials, supplies, and user fees at the host university must be specified and justified in the proposal. The other grant expenses will be covered as specified in Table 1.

Table 1. Budget allotments for approved expenses

<table>
<thead>
<tr>
<th>Expense Category</th>
<th>IIT Bombay Scholar Hosted at Ohio State</th>
<th>Ohio State Scholar Hosted at IIT Bombay</th>
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<tbody>
<tr>
<td></td>
<td>Home Budget</td>
<td>Host Budget</td>
</tr>
<tr>
<td>Scholar Stipend, Tuition, and Fees</td>
<td>Covered for one semester</td>
<td>Covered for one semester</td>
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<tr>
<td>Scholar Travel</td>
<td>One round trip (airfare, visa, insurance) up to INR 150K</td>
<td>One round trip (airfare, visa), up to $2,000</td>
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<tr>
<td>Scholar Living Expenses</td>
<td>-</td>
<td>Lodging, living expenses, and medical insurance during research visit, up to $10,000</td>
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<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Home PI Travel</td>
<td>One round trip, up to two weeks (airfare, visa, insurance, hotel, per diem), up to INR 400K</td>
<td>One round trip, up to two weeks, up to $2,000</td>
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<tr>
<td>Host PI Travel</td>
<td>Lodging at IIT Bombay Guest House</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>One round trip, up to two weeks, up to $2,000</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>One round trip, up to two weeks (airfare, visa, insurance, hotel, per diem) up to INR 400K</td>
</tr>
<tr>
<td>Materials, Supplies, and User Fees</td>
<td>-</td>
<td>To be proposed, no more than INR 800K total</td>
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<tr>
<td></td>
<td>To be proposed, no more than $1,500 per project month</td>
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TERMS AND CONDITIONS

Full terms and conditions will be specified and agreed to at the time of the award. Each university will adhere to its standard policies and procedures in specifying these terms and conditions. These terms and conditions will include:

- **DELIVERABLE 1:** The co-PIs and Scholar shall prepare and deliver a project status presentation for the Frontier Center leadership. This presentation will discuss progress on, and outcomes of, the Scholar’s research and progress made towards an ongoing collaboration. The presentation will include a one-slide Research Summary approved for public disclosure. The presentation will include a one-slide summary of expenditures. The presentation will be delivered at least annually until project completion.

- **DELIVERABLE 2:** The co-PIs shall notify the Frontier Center of any publications, presentations, intellectual property, or extramural grants and contracts awarded as a result of the Scholar Grant.

- **DELIVERABLE 3:** A PI or the Scholar shall present at a Frontier Center sponsored event within six months of project completion. The Frontier Center website will list sponsored events with presentation opportunities.

- Funds from IIT Bombay or Ohio State shall only be used to support (1) Scholars’ stipend, tuition, fees, travel expenses, and hosted research expenses (materials, supplies, and user fees); and (2) the PI’s travel expenses in support of this grant.

- Grant funds from Ohio State or IIT Bombay shall not be used to support faculty, staff, or post-doctoral researcher salaries; equipment or computer purchases, refurbishments, or maintenance; or facilities and administration (overhead) fees.

- If a Scholar withdraws from participation, for any reason, before the project is completed, the co-PIs shall inform the Frontier Center within 14 days and either propose an alternative Scholar or agree to return all unused funds. The Frontier Center leadership must approve a change to the proposed Scholar before the expenditure of further funds.

- The co-PIs shall agree to a Frontier Center negotiated Intellectual Property (IP) agreement that abides by the governing policies of The Ohio State University and IIT Bombay. This agreement is under development and will be concluded prior to contract award.