



U.S. NATIONAL SCIENCE FOUNDATION  
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ALEXANDRIA, VIRGINIA 22314

NSF 24-060

## Dear Colleague Letter: Supplemental Funding Requests to Conduct U.S.-South Korea Collaborative Research on Semiconductor Chips

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February 20, 2024

Dear Colleague:

With this Dear Colleague Letter (DCL), the U.S. National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) and Directorate for Engineering (ENG) wish to notify the community of their intention to **support supplemental funding requests for active research awards to conduct U.S.–South Korea Collaborative Research on semiconductor chips, ranging from devices to systems.**

This collaborative research opportunity focuses on semiconductor chips supporting communications, sensing, control, and domain-specific computing, spanning (1) application domain (e.g., AI, next-G wireless, healthcare, transportation, power grid); (2) computing strategy domain (e.g., disaggregated systems, cloud-edge-IoT continuum, joint communication/sensing/computing); and (3) technology domain (e.g., emerging device technologies; heterogeneous and 3D integration; thermal management; in-memory computing; CMOS+X, where X can be any emerging technologies co-integrable with CMOS at both fine and coarse granularity), among other topics. Supplemental funding requests are expected to target awards made in the following programs:

### Directorate for Computer and Information Science and Engineering

- Division of Computing and Communication Foundations
  - Computer and Information Science and Engineering Core Programs ([https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505667](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505667))
- Division of Computer and Network Systems
  - Computer and Information Science and Engineering Core Programs ([https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505667](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505667))

## Directorate for Engineering

- Division of Electrical, Communications and Cyber Systems
  - Addressing Systems Challenges through Engineering Teams (<https://new.nsf.gov/funding/opportunities/addressing-systems-challenges-through-engineering>)
  - Communications, Circuits, and Sensing-Systems (<https://new.nsf.gov/funding/opportunities/communications-circuits-sensing-systems-ccss>)
  - Electronics, Photonics and Magnetic Devices (<https://new.nsf.gov/funding/opportunities/electronics-photonics-magnetic-devices-epmd>)
  - Energy, Power, Control, and Networks (<https://new.nsf.gov/funding/opportunities/energy-power-control-networks-epcn>)

These supplemental funding requests are anticipated to be up to \$100,000 but may not exceed 20% of the original award amount. Supplemental funding requests should add a new—or strengthen an existing—international dimension to the award. International collaboration should advance fundamental knowledge and discovery related to future semiconductor-based systems and enhance the NSF Principal Investigator's (PI) own research and/or education objectives as outlined in the existing NSF award. Supplemental funding requests should represent mutual benefit and true intellectual collaboration with South Korean partners.

It is expected that South Korean research collaborators will apply for complementary full-scale, 3-year awards from the Ministry of Science and Technology. South Korean researchers are invited to review the Integrated R&D Information System at <https://www.iris.go.kr/main.do> for more information.

### ELIGIBILITY

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Active NSF-funded researchers with awards from the above-listed programs may propose, as part of their supplemental funding request, collaborative projects with South Korean counterparts. The parent NSF award must not be in a no-cost extension period at the time of submission. Supplemental funding is not intended to add new Co-PIs or Senior Personnel onto the NSF-supported grant. NSF funding can apply only to NSF researchers, postdocs, students, and their travel, not to South Korean collaborators.

### HOW TO APPLY

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All supplemental funding requests will be subject to NSF's merit review process, as described in the NSF *Proposal and Award Policies and Procedures Guide* (PAPPG).

There is a two-stage application process, as described below. Stage 1 must be completed prior to Stage 2. It is expected that the South Korean PIs will submit a proposal to the appropriate South Korean funding agency concurrently with Stage 2.

## **STAGE 1: EXPRESSION OF INTEREST (EOI)**

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1. By March 18, 2024, U.S. PIs must submit an EOI containing the information below to [skorea-SC-collab@nsf.gov](mailto:skorea-SC-collab@nsf.gov), with the cognizant Program Director for the parent award on the CC: line.
  - Project title
  - Parent award number, title, and original end date
  - Target NSF programs
  - Names, email addresses, and departmental and institutional affiliations of the U.S. and South Korean PIs
  - Summary (no more than 1,000 words) of the proposed research, outlining specific objectives, methods, approaches, main research challenges, and anticipated outputs, impacts, and beneficiaries. A clear breakdown of the individual South Korean and U.S. contributions for each objective must be included.
  - Bottom-line estimates of total funding (including indirect costs) and duration to be requested from NSF. Although a detailed budget is not required at this time, we strongly encourage proposers to submit as accurate a bottom-line funding estimate as possible. It is advisable for proposers to consult with their organization's Office of Sponsored Research for budget advice prior to finalizing a bottom-line estimate.
  - Supplement request budgets submitted during Stage 2 should not vary from those specified in the EOI by more than 10%, and any such changes should be fully justified. It is recommended that proposers speak with the cognizant program director regarding any changes.
2. NSF will evaluate the eligibility of the U.S. PI and project, as well as the reasonability of the budget and anticipated value-add of the proposed supplemental activity. NSF intends to communicate EOI decisions to the U.S. PI by April 1, 2024. U.S. PIs with accepted EOIs will be invited to submit a formal supplement request. Formal supplemental funding requests that have not been invited by NSF will be returned without review.

## **STAGE 2: FORMAL SUPPLEMENTAL FUNDING REQUEST**

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The supplemental funding request must be prepared in accordance with PAPPG Chapter VI.E.5 and submitted electronically via Research.gov by April 29, 2024. The following information should be included in the request:

- Justification of need. Provide a succinct statement of the research problem pursued in the supplemental project, describing both the intellectual merit and broader impacts of the proposed activities. Provide a justification of the need for the proposed collaborative research in the context of the original NSF award based on the aforementioned objectives.
- Summary of proposed work. Summarize the major goals of the work, the scientific and technical approaches to be used, and the expected outcomes. Describe collaborative arrangements, including the roles of the international investigator(s). If applicable, provide information on the history of collaborative efforts between the proposed partners. This description should address why international collaboration is needed to conduct the proposed research and the benefit of the partnership to advance the field of study. This might include—but is not limited to—specialized skills, knowledge, data, equipment, facilities, and other resources the collaborators bring to the project. The description should also describe active engagement of U.S. students and early career researchers in the collaborative research, where appropriate.
- Budget and budget justification. Provide a budget for the amount requested from NSF. In the budget justification, provide details on the number of international trips and identify whose travel (students, postdoctoral researchers, and/or research scientists) will be supported by the supplemental funding. All supplements are capped at \$100,000.00 and may not exceed 20% of the original award amount.
- Qualifications of the research partners. Provide a biographical sketch for each international investigator named in the supplemental funding request. The biosketch(es) for the South Korean PI(s) do(es) not have to be in the required NSF format, but must be no longer than 2 pages per individual (to be uploaded as a supplementary document).
- Documentation from the international investigator (uploaded as a supplementary document). Provide a letter of collaboration signed by the international PI of the foreign organization(s). This letter must indicate their role in the project and the proposed duration of the collaboration.

## WHAT MAY BE COVERED

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The supplemental funding request must include travel to South Korea for at least one student or postdoc. The budget may only cover costs for the U.S.-based investigators (including students) engaged in the proposed international collaboration, such as:

- Travel expenses for the U.S. investigators and/or students;

- Research-related expenses (as allowed in the PAPPG) for the U.S. investigators and/or students to conduct the proposed collaborative research at the foreign partner's home organization; and/or
- Research-related expenses (as allowed in the PAPPG) that are necessary to conduct the proposed collaborative research at the U.S. host institution.

NSF funds may not be used to support:

- Research and training activities of international collaborators (e.g., scientists and/or their students) at non-U.S. locations;
- Travel and living expenses of international scientists and students to visit the U.S. host institution; or
- Salary or other compensation for international collaborators (e.g., scientists and/or their students).

NSF will not approve requests for supplemental support for such purposes as defraying the costs of salary increases, wages or staff benefits, or additional indirect cost (F&A) reimbursement, whether caused by a change in the indirect cost rate or by changes in direct cost expenditures which affect the indirect cost base.

Note: PIs are responsible for obtaining any required visas for foreign travel and, through the U.S. host research institution or laboratories, for providing documentation in support of U.S. visas for foreign counterpart investigators. Information about obtaining visas for foreign visitors to the U.S. can be found here: <https://www.nsf.gov/od/oise/for-travelers-main.jsp>. PIs are also responsible for obtaining research permits and import/export documents, where necessary.

## **WHEN TO APPLY**

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EOIs are to be submitted by March 18, 2024. Invited formal supplement requests are to be submitted to NSF by April 29, 2024.

Questions about this DCL may be directed to [skorea-SC-collab@nsf.gov](mailto:skorea-SC-collab@nsf.gov).

Sincerely,

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