exporter certifications have been completed and maintained and all other applicable certification requirements have been met such that the entry is entered into the United States as not subject to the antidumping and countervailing duty orders on corrosion-resistant steel from the People's Republic of China, the antidumping and countervailing duty orders on corrosion-resistant steel from the Republic of Korea, or the antidumping duty order on corrosion-resistant steel from Taiwan.

The products subject to the investigations are currently classified in the Harmonized Tariff Schedule of the United States (HTSUS) under item numbers: 7210.30.0030, 7210.30.0060, 7210.41.0000, 7210.49.0030, 7210.49.0040, 7210.49.0045, 7210.49.0091, 7210.49.0095, 7210.61.0000, 7210.69.0000, 7210.70.6030, 7210.70.6060, 7210.70.6090, 7210.90.6000, 7210.90.9000, 7212.20.0000, 7212.30.1030, 7212.30.1090, 7212.30.3000, 7212.30.5000, 7212.40.1000, 7212.40.5000, 7212.50.0000, 7212.60.0000, 7225.91.0000, 7225.92.0000, 7226.99.0110, and 7226.99.0130.

The products subject to the investigations may also enter under the following HTSUS item numbers: 7210.90.1000, 7215.90.1000, 7215.90.3000, 7215.90.5000, 7217.20.1500, 7217.30.1530, 7217.30.1560, 7217.90.1000, 7217.90.5030, 7217.90.5060, 7217.90.5090, 7225.99.0090, 7226.99.0180, 7228.60.6000, 7228.60.8000, and 7229.90.1000.

The HTSUS subheadings above are provided for convenience and customs purposes only. The written description of the scope of the investigations is dispositive.

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DEPARTMENT OF COMMERCE

National Institute for Standards and Technology

Artificial Intelligence-Powered Autonomous Experimentation (AI/AE) for Sustainable Semiconductor Materials

AGENCY: National Institute of Standards and Technology, Department of Commerce.

ACTION: Notice of intent (NOI).

SUMMARY: The CHIPS Research and Development Office (CHIPS R&D) intends to announce an open competition for industry-informed, university-based collaborations demonstrating artificial intelligence-powered autonomous experimentation (AI/AE) into sustainable materials and processes relevant to semiconductor manufacturing. CHIPS R&D expects a total Federal commitment of up to approximately $100 million over a period not to exceed five years as needed to support at least two large, team-oriented awards.

FOR FURTHER INFORMATION CONTACT: Questions may be submitted via email to *askchips@chips.gov* with ''2024–NIST–CHIPS–AI/AE–NOI'' in the subject line or via phone to Jim Warren at (301) 975–5708. Responses to questions received, provided at the sole discretion of CHIPS R&D, will be posted on the CHIPS R&D website at *https://www.nist.gov/chips/chips-RD-funding-opportunities,* with further information provided on this site once the open competition has been announced.

SUPPLEMENTARY INFORMATION:

Purpose. CHIPS R&D intends to announce, via a Notice of Funding Opportunity (NOFO), an open competition for industry-informed, university-based AI/AE collaborations relevant to sustainable semiconductor manufacturing. The NOFO would seek to support the long-term viability of domestic semiconductor manufacturing by accelerating the discovery, design, synthesis, and deployment of new materials and processes and the development of new researchers needed to meet the industry's technological, economic, and sustainability goals. These goals may include but are not limited to improving leading-edge product performance; improving manufacturing yield, energy and water efficiency, and supply chain resiliency; and reducing manufacturing emissions and waste (including PFAS) through the development of materials and process alternatives, for the benefit of human health and safety. If successful, the competition should demonstrate that new sustainable semiconductor materials and processes, meeting industry needs, can be designed and adopted for industry testing within five years. The competition should further accelerate a step-change in the number of universities, researchers, and graduates participating in the U.S. semiconductor R&D ecosystem, including in CHIPS Act funded activities at the National Semiconductor Technology Center (NSTC) and CHIPS Manufacturing USA Institute.

For general planning purposes, CHIPS R&D expects a total Federal commitment of up to approximately $100 million over a period not to exceed five years, as needed to support at least two large, team-oriented awards. CHIPS R&D expects eligible uses of Federal funds to include the procurement, upgrade, or maintenance of necessary research equipment at universities; accessing such equipment outside of academia or outside of the project team; basic and applied research and development (R&D); workforce development; and technology transition. CHIPS R&D further envisions that university research teams may leverage industry-provided expertise, intellectual property, facility access, or other forms of partner co-investment during the award period of performance. The anticipated program outcomes, if successful, should prove relevant and translatable to the NSTC, CHIPS Manufacturing USA Institute, and other CHIPS programs.. The purpose of this NOI is to facilitate the development of meaningful collaborations and responsive proposals by offering preliminary information to potential applicants. Consistent with the direction under Executive Order 14080 (Implementation of the CHIPS Act of 2022) for agencies to prioritize benefitting a broad range of stakeholders and to establish collaborative networks, CHIPS R&D expects to encourage proposals that significantly expand the capabilities of emerging research institutions (ERIs) in partnership with industry, other research universities, and national laboratories.

This NOI is provided to allow potential applicants sufficient time to develop meaningful collaborations and responsive proposals. CHIPS R&D intends to announce the competition by posting the NOFO on *Grants.gov* (*https://www.grants.gov*) in the fourth quarter of calendar year 2024. CHIPS R&D will refine program structure, cost, and other program details in the upcoming NOFO. In the event of inconsistencies between the NOI and the NOFO, the NOFO shall govern and control. More information about the expected NOFO will be made available on the CHIPS for America website at *https://www.nist.gov/chips/chips-rd-funding-opportunities.*

Background. Accelerated discovery, design and validation of new materials promises critical benefits to the future of the global semiconductor industry.[1] [2] In its 2023 Microelectronics and Advanced Packaging Technologies Roadmap (''Roadmap''), the Semiconductor Research Corporation indicated a demand for innovative semiconductor materials and chemistries. The Roadmap stated that ''tools encompassing co-optimization of performance metrics and environmental, health, and safety metrics will help accelerate the

[1] Semiconductor Research Corporation, ''MAPT Microelectronics and Advanced Packaging Technologies Roadmap'', 2023. Available online at: *https://srcmapt.org/wp-content/uploads/2024/03/SRC–MAPT-Roadmap-2023-v4.pdf.*

[2] AI Aspirations: AI for Sustainable Materials, White House Office of Science and Technology Policy, 2024. Available online at: *https://ai.gov/aspirations/.*

discovery of more sustainable materials and chemicals without compromising the performance of the product.'' [3] Other industry reports, including one from the Semiconductor PFAS [4] Consortium, recognize the need to identify and test substitute semiconductor manufacturing materials or to develop abatement technologies that prevent the release of certain chemicals into the environment.[5]

However, the deployment of new materials and processes can require years of research, development, testing, and validation.[6] AI/AE has emerged as a potentially game-changing approach to accelerate materials R&D. AI/AE combines automated synthesis and characterization tools with an AI ''planner'' to determine the next round of an experimental campaign, vastly accelerating the design of new materials and the acquisition of materials data. The AI planner can have multiple objectives, reflecting the materials designer's goals. For materials development, AI/AE systems may include, for instance, (1) a combination of specialized and generalized automated laboratory devices for materials handling, (2) software for data analysis, and (3) machine learning tools (which may be informed by physics-based models and shared databases) to predict material properties and help plan further experiments. Accessing this combination of capabilities will likely require multiple organizations, including universities, industry, and national laboratories, operating in partnership. If successful, these techniques can enable the co-optimization during materials discovery of multiple metrics important to next-generation microelectronics including microelectronics performance, manufacturing readiness, manufacturing economics, human health and safety, and environmental impact, including but not limited to PFAS mitigation and elimination, waste reduction and manufacturing water/energy efficiency. CHIPS R&D intends for the technical focus and R&D goals of the planned NOFO to emphasize the sustainability of the U.S. semiconductor industry and the demand for improved microelectronics power, performance, area, and cost metrics. By leveraging AI/AE and working in close partnerships with industry, CHIPS R&D intends to allow for the more rapid and cost-efficient discovery, design, validation, and deployment of sustainable materials and processes compared to traditional R&D approaches.

CHIPS R&D Mission. The CHIPS and Science Act appropriated approximately $50 billion to the Department of Commerce, which includes $39 billion in incentives to onshore semiconductor manufacturing and $11 billion to advance U.S. leadership in semiconductor R&D. Within CHIPS for America, the mission of CHIPS R&D is to accelerate the development and commercial deployment of foundational semiconductor technologies by establishing, connecting, and providing access to domestic research efforts, tools, resources, workers, and facilities.

NOFO Objectives. CHIPS R&D expects that the planned NOFO will solicit proposals seeking to achieve the following objectives:

1. Through the application of AI/AE, accelerate research into and delivery of targeted, industry-relevant, sustainable semiconductor materials and processes;
2. Propagate models for incorporating sustainability metrics into the semiconductor industry materials discovery, in addition to traditional power, performance, area, and cost metrics;
3. Expand the capabilities of emerging research institutions through aggressive, innovative teams of universities, industry, government labs, and other stakeholders; and
4. Build an exceptional workforce of university graduates and research faculty with AI/AE R&D expertise.

Application Process and Award Information. The envisioned application process consists of a mandatory concept paper and a required full application. CHIPS R&D anticipates a due date for concept papers of approximately 60 days after the date of NOFO publication. Full applications would only be accepted from applicants that are invited to apply after completion of the concept paper stage. Submissions received from entities other than those invited to submit a full application would not be reviewed or considered in any way. CHIPS R&D expects to fund at least two awards, subject to the availability of funds and the merit of applications received.

CHIPS R&D expects to host one or more webinars to provide additional opportunities to learn about this NOI. Details regarding the time and date of webinar events will be posted on the CHIPS R&D website at *https://www.nist.gov/chips/chips-RD-funding-opportunities.* Participation in webinars is not a prerequisite for submitting a concept paper or a full application.

Competition Information. Once the open competition has been announced, further information may be found at *https://www.nist.gov/chips/chips-RD-funding-opportunities.*

System for Award Management and Grants.gov. In anticipation of the NOFO, CHIPS R&D encourages potential applicants to complete the following steps, which are required to submit concept papers and full applications for Federal assistance:

- Register with the System for Award Management (SAM) at *https://www.sam.gov.* CHIPS R&D strongly encourages applicants to register for *SAM.gov* as early as possible. While this process ordinarily takes between three days and two weeks to complete, in some circumstances it can take six or more weeks to complete due to information verification requirements. Recipients will be required to maintain an active registration in SAM and re-validate registration annually.
- Register for a *Grants.gov* (*http://www.grants.gov/*) account. It is advisable also to go to ''manage subscriptions'' on *Grants.gov* and sign up to receive email notifications and updates on specific opportunities, including amendments to published opportunities. Information about how to manage subscriptions is available at *https://grants.gov/connect/manage-subscriptions/.*

Disclaimer. This NOI does not constitute a solicitation. An application may not be submitted in response to this NOI. Any inconsistency between information in this NOI and the planned NOFO announcing a CHIPS R&D award competition shall be resolved in favor of the NOFO.

Authority. CHIPS R&D activities are authorized by Title XCIX—Creating Helpful Incentives to Produce Semiconductors for America of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Pub. L. 116–283), often referred to as the CHIPS Act.

Alicia Chambers,

NIST Executive Secretariat.

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[3] Semiconductor Research Corporation, ''MAPT Microelectronics and Advanced Packaging Technologies Roadmap'', 2023. Available online at: *https://srcmapt.org/wp-content/uploads/2024/03/SRC-MAPT-Roadmap-2023-v4.pdf.*

[4] Perfluoroalkyl and polyfluoroalkyl substances.

[5] Semiconductor PFAS Consortium, ''Background on Semiconductor Manufacturing and PFAS'', May 17, 2023. Available online at: *https://www.semiconductors.org/wp-content/uploads/2023/05/FINAL-PFAS-Consortium-Background-Paper.pdf.*

[6] *Id.*