Advanced Manufacturing Institute

Request for Proposals

RFP Issue Date:	**December 3, 2025**
Proposal Submission Deadline:	**January 6, 2026**
Expected Date of Award Notification:	**January 20, 2026**
Submit Proposals to	**selva@uh.edu**

Questions about this RFP? Email: selva@uh.edu

1. Advanced Manufacturing Institute

The Advanced Manufacturing Institute (AMI) was formally established in November 2018 as a University-wide initiative with a mission to address the challenges in scaling up lab-scale research advances demonstrated at the University of Houston to manufacturing as well as to develop unique solutions to manufacturing problems faced by industry. AMI consists of faculty members across various colleges and departments in the University with expertise or interest in transitioning their research developments to manufacturing or with pertinent know-how in computation, materials, devices, systems, controls or automation to support the mission of the Institute. The infrastructure for manufacturing research including workforce, equipment and space that already exist in buildings 15 and 14B at the UH Technology Bridge will be available for use by all members of AMI. The areas of manufacturing research undertaken at AMI covers superconductor tapes, solar energy, flexible electronics, nanomaterials, batteries, and health care. AMI will also establish programs to support workforce development on Advanced Manufacturing technologies.

2. Overview of Advanced Manufacturing

In order to keep up with an intense world-wide competition, there are a number of federal programs at the Department of Energy, Department of Defense, National Institute of Standards and Technology and the National Science Foundation that have been established to rejuvenate the U.S. manufacturing industry. Government and industry are investing in areas of additive manufacturing, automation, digital manufacturing and advanced technologies such as photonics, flexible electronics, composites and power electronics. Many top Universities are investing in specific areas of advanced manufacturing to access these investments as well as to train the next generation of the needed high-tech work force.

3. Advanced Manufacturing research at AMI

Advanced Manufacturing research has been ongoing at AMI since 2012 at the UH Technology Bridge (formerly Energy Research Park). The objectives of this research have been to address the challenges in scaling up lab-scale research advances demonstrated at UH to manufacturing as well as to develop unique solutions to manufacturing problems faced by industry. Unique manufacturing-scale equipment was established in AMI facilities for superconductor manufacturing and roll-to-roll manufacturing of semiconductors for energy and electronics applications.

The pilot superconductor manufacturing facility at AMI is unique with state-of-the-art equipment for fabrication and testing of long superconductor tapes. UH is the only non-industry entity in the U.S. with this capability. This has enabled multiple projects funded the U.S. Department of Energy, Department of Defense and industry.

Since 2019, there has been a surge in demand for large volumes of cost-effective superconductor tapes that can operate in magnetic fields of 20 Tesla and beyond. These ultra-high-field HTS tapes have enabled commercial Nuclear Magnetic Resonance (NMR) spectroscopy systems above 1 GHz. Compact fusion energy systems operating at 20 T is the main driver of the current surge in HTS tape demand that far exceeds world-wide capacity. Availability of high-performance, low-cost, ultra-high magnetic field HTS tapes will also enable the transformative, potentially disruptive energy-storage technology of superconducting magnetic energy storage (SMES) whose benefits include almost instant charging, an efficiency of up to 95%, long lifetime, no moving parts, and no chemical reactions that pose safety problems.

The main difficulty in realizing these applications has been the lack of availability of superconductor tapes in large volumes at an affordable cost. A viable solution has however been developed by AMI which has yielded superconductor tapes that are 4X better in high magnetic field operating conditions than the most popular tape made by industry today. These technologies are being implemented in pilot manufacturing tools at AMI to achieve the same level of performance over 300 meters as that demonstrated in tape lengths of 0.3 meters in R&D tools. In order to achieve uniform performance over such long lengths, in-line quality control (QC) tools have been established for real-time monitoring of superconductor tape quality in a pilot-scale metal organic chemical vapor deposition (MOCVD) manufacturing tool at AMI's pilot superconductor manufacturing facility. Abundant data is being collected in these operations which has to be efficiently and rapidly utilized for real-time feedback to control the manufacturing process. Additional in-line quality control tools to improve manufacturing yield are also of interest.

Another area of interest of AMI is additive manufacturing (AM) of metals, especially for hostile environments. AMI has procured an Optomec LENS MTS 500 Directed Energy Deposition (DED) hybrid metal additive-subtractive manufacturing tool. Features of this tool include capability to deposit highly-oxidizable materials and highly-reflective materials in addition to stainless steel and nickel superalloys; simultaneous deposition of four materials; build volume of 500×325×350 mm. AMI's interest in metal additive manufacturing includes a) development of novel materials and architectures to meet application needs, b) development of new applications for additive manufactured metals and alloys, c) development of new in-situ monitors to assure quality and repeatability of parts. There is strong interest in real-time, comprehensive, in-situ sub-surface structural analysis of the AM parts during fabrication and integration with multi-modal data from various in-situ sensors, that can bridge the critical knowledge gap between process conditions and properties. AMI has available off-line metrology tools such as micro computed tomography (micro-CT) and 2D X-ray Diffraction (2D-XRD) to support AM projects.

In FY'21, AMI began a collaboration with the **Hewlett Packard Enterprise Data Science Institute (HPE-DSI)** to implement machine learning techniques to analyze real-time data from various process monitors and in-line quality control tools in manufacturing of superconductor

tapes as well as performance data obtained from off-line metrology systems, to identify culprits that affect manufacturing yield. The objective of this partnership is to accelerate the investigative process, and develop predictive capability to implement in future real-time feedback control during manufacturing. This collaboration has been extended to metal additive manufacturing.

4. Funding Opportunity Description

In collaboration with HPE-DSI, AMI intends to make 2 - 4 awards, each $25,000 - $50,000, to provide seed funds for high-quality projects on manufacturing research. The period of performance is **calendar year 2026**. Projects are sought in the following topics:

a) Project 1: Research on machine-learning methods for real-time data analysis and process control to achieve high manufacturing yield for superconductor or metal additive manufacturing projects at AMI. Data from manufacturing and testing of superconductor tapes and metal AM parts will be provided.
b) Project 2: Development of new in-line control methods for superconductor manufacturing tools at AMI or for metal additive manufacturing tool at AMI.
c) Project 3: Development of additive manufacturing of metals/alloys using the Optomec DED tool at AMI. Projects need to be targeted on requirements of applications identified by the proposer and may include development of novel architectures, and materials, processes.
d) Project 4: Development, demonstration, and testing of superconducting devices using superconductors manufactured at AMI.

Projects may be awarded **only in these categories.** All projects will be done in close collaboration with AMI researchers working on superconductor and metal additive manufacturing.

The Principal Investigator (PI) Faculty as well as any Co-investigator (Co-I) Faculty who receive funding from awards issued through this RFP will become members of AMI for a four-year timeframe. AMI membership privileges include use of AMI's facility and equipment at the UH Technology Bridge, access to use of AMI's engineering staff and cost share for externally-funded grants. AMI faculty (PI and co-I) are required to submit at least one proposal in the funded manufacturing project category listed above, in calendar year 2026. AMI faculty (PI and co-I) members will be required to assign part of their IDC credit to AMI for manufacturing-based proposal(s) to external funding agencies as per the existing Agreement approved by the Deans of colleges of Engineering, Natural Science and Mathematics and Technology.

5. Eligibility Criteria

Any tenure-track/tenured faculty and research faculty of the University of Houston main campus is eligible to apply for an award. No funds shall be expended for subcontract work for

parties outside University of Houston or external consultants. Proposals that are primarily for equipment purchase or facility costs are not eligible for an award.

6. Review Process

The proposals will be competitively reviewed and acted upon by AMI leadership in consultation with HPE-DSI leadership. Only proposals that are on one of the four projects listed in section 4 will be reviewed. Incomplete proposals (without budget breakdown for example) may not be reviewed. Applicants may be requested to provide additional information as necessary.

7. Review Criteria

Proposals will be evaluated based on potential impact of proposed work to AMI's mission, innovativeness and feasibility of work, applicant's expertise in the proposed topic, quality of milestones and deliverables, potential external funding opportunities for the proposed work, with approximate equal weightage given to these criteria. If the applicant had been previously funded by AMI, the performance of the applicant in their projects including achievement of stated milestones, publications and patent applications that emanated from the project will be an additional review criterion. External proposals submitted and external funds obtained by the applicant in the area of manufacturing with credit to AMI will also be a review criterion.

8. Congruency Review

Congruency review by the Office of Research Integrity is required for all research submitted to this program. The review must be conducted within three months of the award announcement or the funds will be forfeited. Congruency review includes human subjects, animal usage, biological materials (rDNA, human samples, microorganisms, etc.), and radiation (radioactive materials, lasers, and x-rays).

All projects involving human subjects must be reviewed and approved by the Institutional Review Board (IRB) before the grant cost center will be established.

All projects involving the use of animals in research must be reviewed and approved by the Institutional Animal Care and Use Committee (IACUC) before the grant cost center will be established.

All projects involving biological materials must be reviewed and approved by the Biological Safety Manager and the Institutional Biosafety Committee (IBC) before the grant cost center will be established.

All projects involving radiation must be reviewed and approved by the Radiation Safety Officer (RSO) & Laser Safety Officer (LSO) and authorized by the Radiation Safety Committee (RSC) before the grant cost center will be established.

9. Annual Reports

Awardees (including co-investigators) have to submit an annual report by December 15 of each year of membership in AMI.

10. Proposal Content

- Description of your technology as applicable to projects 1, 2, 3, or 4.
- Current status of your technology including sources of funding.
- Statement of Work for the proposed project.
- Milestones (quantitative) and deliverables for the proposed project.
- Planned proposal submissions in CY 2026 to external agencies to support research. **Identify specific projects currently funded by these agencies in the topic of your proposed research.**
- Risks and Mitigation Plan for the proposed project.
- *If previously funded by AMI,* list proposals submitted in in which credit was assigned to AMI. Include title, duration, investigators, funding agency, funds requested, AMI credit allocated and outcome of proposals.
- *If previously funded by AMI,* a summary report on accomplishments in tasks proposed and status of milestones.
- Detailed budget for the proposed project (start date: February 1, 2026, end date: December 31, 2026) including breakdown of labor with fringe benefits, materials and supplies and travel. The budget must be constructed and presented using the standard UH budget template (http://www.uh.edu/research/resources/dor-forms/proposal-processing-forms/)
- CV (maximum 2 pages per Investigator) including list of up to 10 publications/patents relevant to the proposed topic.

The proposal should conform to the following requirements:

- Maximum 15 pages including title page, references, CV, budget
- Times New Roman Font size 12, 1" margins all sides of 8.5" × 11" page