MSTF-CRMT Grant

Call for Joint Research Project

Design and Development of Integrated Membrane Devices (IMDs)

Objective

The Mustafa(pbuh) Science and Technology Foundation (MSTF) and the Advanced Materials and Manufacturing Council (AMC) are pleased to announce the availability of a grant for a joint research project in the area of "Design and Development of Integrated Membrane Devices (IMDs)". This initiative is specifically directed towards Iranian researchers who are associated with educational or research institutions, as well as distinguished Muslim researchers from esteemed international universities. The primary objective of this call for proposals is to solicit innovative designs for IMDs that can be utilized in research studies and the development of various applications. We cordially invite interested individuals to contribute to this shared research effort, and play a significant role in shaping the future of advanced membranes.

Goals

1. To promote interdisciplinary collaboration among Iranian and global Muslim researchers in the field of water treatment membrane architectures for the development of integrated membrane devices (IMDs).
2. To simplify the manufacturing and development processes in thin film deposition methods in IMDs for Islamic nations, making them more accessible and efficient.
3. To explore and develop novel layer by layer deposition methods for the fabrication of multifunctional membranes in integrated membrane devices.
4. To investigate and optimize deposition systems and wet chemical-based thin film deposition methods for the production of IMDs.
5. To design and integrate sensors and instruments within IMD architectures to enhance their functionality and performance in water treatment applications such as sea water desalination, wastewater treatment, and in-house or local municipalities water treatment sites.

Research Themes

1. Emerging materials and fabrication techniques: Investigating new materials and fabrication techniques for IMDs can enhance their performance, durability, and efficiency. This theme could explore the use of advanced polymers, novel materials, or composite membranes, as well as innovative methods like 3D printing or thin film deposition.
2. Integrated device design and modeling: Understanding the complex interactions between different components in an IMD is crucial for its effective design. This theme involves investigating the integration of membranes with other components like sensors, pumps,

and valves. Furthermore, developing computational models to simulate and optimize the overall performance of IMDs can also be explored.

3. Membrane fouling prevention and mitigation: Fouling, where undesired substances accumulate on the membrane surface, is a primary challenge in IMDs. Research in this area could focus on novel fouling-resistant membrane designs or surface modifications, along with the development of advanced cleaning or anti-fouling strategies to maintain optimal membrane performance.
4. Applications and scalability: Investigating the potential applications of IMDs and their scalability is an important research theme. This could involve studying different sectors where IMDs can be utilized, such as water treatment, desalination, and gas separation applications. Examining the economic feasibility, environmental impact, and scalability of IMDs for these specific applications is valuable for broader implementation.
5. Membrane characterization and optimization: This research theme focuses on characterizing the properties of membranes used in IMDs, such as selectivity, permeability, and fouling resistance. Design strategies to optimize these membrane properties and develop high-performance IMDs can be studied to enhance their efficiency and lifespan.

Grant Provision Requirements

- At least two principal investigators (PI), one from Iran and one from another Islamic country (OIC member state), must participate in the project;
- During the implementation of the project, at least one of the PIs must conduct research and development for at least one month at the other party's institution.

Grant Amount: 10,000 USD

Project Duration: The funding period for projects is one year, with the possibility of a 3-month extension without extra funding.

Project Output: Belongs to the participating researchers, MSTF, and AMC.

Applicants: Must have scientific and technical background related to the project and affiliation with educational/research centers or knowledge-based companies/SMEs:

- Applicants who define the project with the Mustafa$^{(pbuh)}$ Prize Laureates or have a background of cooperation with them, as well as the winners of KANS Scientific Competition, benefit from an extra score in the evaluation process to receive the grant;
- Research groups using this grant are encouraged to collaborate closely with each other beyond project-related activities and define other areas for joint work.

Partnerships

The level of dedication shown by the partners in both countries will demonstrate how strong the research project is. This entails all partners contributing their resources to support the project. The outcomes of the project will be shared among the participating researchers, MSTF, and AMC.

Funding

- The Iranian partner is eligible to receive a seed money grant of up to 10,000 USD, while the remaining partners are responsible for funding their respective research group members.
- Both parties are required to cover the expenses for travel, subsistence, and accommodation of their respective research group members during visits related to this collaboration.
- The grant will be distributed in two payments: 80% after the grant contract is signed and 20% after the final report and financial statement are approved.
- When presenting the project proposal, a detailed budget is necessary. The allocated expenses need to be supported with valid reasoning and align with the planned research endeavors.
- Each partner is required to contribute, and this contribution must be clearly specified either in cash or as a form of non-monetary assets.

Application

Applications need to be submitted to the AMC mail address:

Amc@isti.ir

Timeline

- Applications will be accepted until: 31 January 2024
- Evaluation and funding decision: End of March 2024
- Notification: Within 2 weeks after the funding decision
- Latest project start date: End of June 2024
- Project duration: up to 12 months

Evaluation and selection

The evaluation of applications will be conducted by an independent panel, and the AMC will notify the applicants. The assessment will consider the following criteria (not listed in any particular order of priority):

- Development of a new or consolidation of an existing partnership
- Scientific merit or impact of the anticipated outcomes
- Potential for long-term collaboration and follow-up activities
- Originality and Feasibility of the proposed activity
- Expertise and complementarities of the partner institutes and the applicants
- Contributions by all involved partners, including funding and in-kind contributions

Reporting

The responsibility of managing and reporting the funds lies with the Iranian candidate. They are required to submit a scientific report and a financial statement within one month of the project's completion.

Contact

Dr. Sadegh Sadeghzadeh
Secretary of the Advanced Materials and Manufacturing Council.
Tel: +98 (21) 88064947
Email: Amc@isti.ir
https://Amc.isti.ir