

American University of Beirut

Office of the Provost

Munib and Angela Masri Institute of Energy and Natural Resources (MI)

INVITATION TO SUBMIT A RESEARCH PROPOSAL ON A MASRI INSTITUTE RESEARCH PROJECT

Research Project Theme: Innovative technologies for effective energy capture

This is a Request-for-Proposal (RFP) for a project dealing with advancing knowledge and technology applications for high efficiency solar energy harvesting in the climates prevailing in the MENA region. Research collaboration and exchange of experiences with other societal actors of relevance to the project (such as other research teams, companies, and civic society if relevant) who may contribute to ensuring the relevance of the project results, and to realizing the potential of the project to contribute to the transition to a sustainable clean energy harvesting systems are considered a strength in the project evaluation.

Budget Limit: \$50,000 or less as determined by value of proposal and competing proposals. The budget categories are subject to the same URB restrictions with the exception of personnel, where the hiring of graduate research assistants, PhD students, or research assistants is not constrained by the same limit. The budget cannot be used for conference travel, summer pay, or course buyout.

Scheduled Project Start Date: September 1, 2020.

All proposals must be received **at MI online submission system** by 5:00 PM, February 20, 2020. No exceptions or extensions will be granted. MI has the right to reject any or all the proposals

If you have questions concerning the project, kindly you contact one of the below individuals:

For Technical Matters:

Nesreen Ghaddar, PhD
Director
Munib and Angela Masri Institute of Energy and Natural Resources
American University of Beirut
Telephone: 961-1-350000 ext. 3590/3594
Email: farah@aub.edu.lb

For Administrative Matters

Sandrine Assaad
Executive Assistant
The Munib and Angela Masri Institute of Energy and Natural Resources
Telephone: +961 1 350000 Ext. 4480
American University of Beirut
Email: sa113@aub.edu.lb

State of the Art (Background)

Climates of the MENA region are most vulnerable to global warming and to conditions that are challenging or favorable to the capture of solar energy for power generation. Specific challenges exist for the use of high efficiency photovoltaics (PV) or concentrated solar power (CSP) due to presence of harsh conditions including dust, high humidity, etc. Increased efforts have to be made to make these technologies cost competitive under suitable electricity market conditions. Advancement can take place in many fronts including durable/sustainable material development and combinations for solar energy capture systems, the novel solutions for addressing intermittency and energy storage options.

Proposals are sought for advancing innovations in technology dedicated to enhancing efficiency of solar energy harvesting and developing the energy storage technologies and/or electricity delivery systems needed to enable the transition to the future carbon free energy system. The sought solutions should include the rounded integration of disciplines to achieve the desired aim of developing/utilizing sustainable energy solutions/technologies adapted to our region. Proposals could also consider further development and improvement of current intermittent/integrated energy systems that meet power demand over 24 hours. Proposals should demonstrate solutions that aim for large scale roll-out according to defined business models and financial schemes for power stakeholders/investors as applicable. Proposal with focus on technology/science advancement of functional materials must demonstrate how the proposed advancement improved energy performance/capture.

Justification and Value to Masri Institute and AUB

Improving performance of solar energy harvesting and developing a deeper understanding of the material and interface characteristics for energy capture can lead to reduced GHG emissions and reduced energy costs. The project is expected to benefit the MI mission in the following ways:

- Will enhance the prospects for a sustainable energy future with lower impact on the environment
- Will support the responsible use of natural resources and energy conservation
- Will provide for an effective implementation of a low cost technologies to generate power
- Will facilitate the production of knowledge by an interdisciplinary team and integrate knowledge in multiple fields.

Objectives

To develop and validate the implementation of one or more innovative approaches/technologies and affordable solutions that can influence some market aspects for improving solar energy harvesting.

Scope:

The scope of the work in any submitted proposal is divided into the following tasks as applicable to the proposed project:

Task 1– Model development for the proposed technology/application and/or theoretical methodology

Task 2 – Experimental testing or field work for validation of concept/s

Task 3 – Evaluation of System Performance and relevance to existing codes of practice if applicable

Task 4 – Impact on society (Energy savings, life cycle assessment) with full implementation of the system as applicable

Task 5 – Reporting.

Deliverables:

a. Progress and Financial Reports

Progress and Financial Reports shall be made to the MI specifically on or before each first day of June of the contract period.

Furthermore, the Principal Investigator may be asked during the period of performance and after the Final Report has been submitted to meet in person with the MI Steering Committee to answer such questions regarding the research outcomes.

b. Final Report

A written final report (in PDF format and in Microsoft Word or other editing software) shall be prepared by the PI by the end of the grant Agreement term, containing complete details of all research carried out including a summary of the project outcomes. Tabulated values for all measurements if relevant shall be provided as an appendix to the final report.

Following approval by the MI Steering Committee, final copies of the Final Report will be disseminated in the form of an executive summary that is suitable for wide distribution to the relevant industry and to the public.

c. Publication of Research Results

One or more peer-reviewed papers are expected to be published from the project containing generalized results of long-term archival value. Acknowledgment of the Masri Institute Funding is expected.

d. Project Synopsis

A written synopsis totaling approximately 100 words in length and written for a broad technical audience shall be submitted to the MI by the end of the project. It shall include the following:

- Main findings of research project.
- Why findings are significant.
- How the findings benefit the society or project stakeholders in general

e. Project Milestones:

Milestone	Deadline Month
Task 1:	9
Task 2:	15
Task 3:	21
Task 4:	24
Final Report	27

f. Proposal Evaluation Criteria

No.	Proposal Review Criterion	Weighting Factor
1	PI's understanding of Work Statement as revealed in the proposal	20%
2	Qualification of personnel for this project	20%
3	Quality of proposal methodology for conducting research	40%
4	Probability of the proposal meeting objectives a. Detailed work plan with major tasks and key milestones b. All technical and logistic factors considered c. Rationality of the project schedule	20%

