

August 15, 2024

NEx Request for Proposals Notice

NEx encourages you to submit proposals focused on the research topic described below:

NEx RFP Id: RD25.04

Proposal Title: Experimental Investigation and Research Comparison of Thermoset and Thermoplastic Resins in Cryogenic Environments

Background

As industries explore new energy sources like liquefied natural gas (LNG) and hydrogen, materials used in infrastructure and storage solutions must withstand extreme conditions, including cryogenic temperatures. The adoption of these energy sources will demand an increase in effective and sustainable storage capacity and infrastructure. Polymer based composite materials, including thermoplastic and thermoset resins, have been successfully used in cryogenic applications in aerospace and automotive environments with a natural potential to expand to larger applications in Building & Construction. Recent developments in polyolefin thermoset resins have demonstrated potential for their superior strength properties, but their performance under cryogenic conditions needs further investigation. The foreseen growth of this sector along with requirements for effective and sustainable materials creates a need to expand the use of nonmetallics while ensuring safety, reliability, and longevity in applications ranging from energy storage to transportation infrastructure.

Proposal Request

There is a need to evaluate, qualify, and expand the use of polymer-based materials (thermoplastic and thermosets) in building & construction infrastructure. Moreover, the understanding of how polyolefin thermoset resin systems perform under cryogenic temperatures is limited. This research aims to fill this gap by capturing the current polymers used in cryogenic applications plus emerging technologies (e.g. thermoplastic polyolefins), establishing application-based test protocols, and performing an experimental evaluation comparison. The study is expected to provide valuable data to optimize the use of nonmetallics in structural concrete applications exposed to such conditions. This will directly benefit industries facing cryogenic environments, particularly those involved in LNG and hydrogen technologies, such as LNG tank, LNG spill and potential cryogenic reinforcement applications.

NEx Mission Statement

Collaborate globally to expand and accelerate the use of nonmetallics in the built environment to drive innovation, research, education, awareness, adoption, and deployment.

Research and Development within NEx are among its core missions, and it supports and facilitates the development of new nonmetallic technologies to address challenges with effective solutions.

Funding Policy

NEx will impose a limit of 15% on indirect costs (overhead) by research organizations for any research it funds. The organization must waive the remainder of the indirect costs.

Award Amount

NEx does not impose any limit on the overall funding request; however, the anticipated budget for this project is to be around \$50,000 to \$80,000. Proposals with higher budget estimate will be accepted with information on budget spending relevant to the value added to the project scope. Co-funding and co-sponsoring proposals with other organizations are welcomed.

Proposal Evaluation

NEx research proposals will be evaluated by the NEx Steering Committee. A winning proposal will be forwarded to the NEx Board of Directors with recommendations for funding.

Proposal evaluation criteria will include technical content, methodology, PI's relevant experience, potential impact/ industry adoption, budget and time, proposed deliverables, and outcome. Typically, NEx funded project duration ranges from 6 to 24 months.

Awarded Proposals

The awarded proposal is expected to commence within the first quarter of 2025

- NEx will enter into a contract with the researching entity. As part of the contract, it is mandated that the overhead or indirect return be set at no more than 15% of the direct cost of the research funding requested from NEx. Any overhead over the maximum allowed 15% that is waived by the researching entity shall be considered as cost sharing and shall be indicated on the budget table as waived overhead, separate from other co-funding. Non-compliant proposals in this regard shall be returned without review.
- The schedule of payments contingent upon milestone deliverables will be contained in the contract and will include, at a minimum, a final report deliverable to NEx. Quarterly progress reports will be identified in the final contract.
- If principal investigators (PI) from two organizations are collaborating on the research, the award must be to a single organization, which will then subcontract with the second organization.
- NEx will only consider funding projects that involves the use of proprietary products if the goal of the project is to advance knowledge in a particular area of study and not solely on a proprietary product.
- In case of any co-funding arrangement with other organization(s), commitment letter(s) from co-funding organization(s) is required before funds are dispersed from NEx.
- The results of NEx-funded research will be owned by NEx, and possibly by other co-founding organization(s). PI should notify NEx before publishing any results.

Where and How to Submit Proposals

Submitted proposals will be evaluated by the NEx Steering Committee and subject matter experts. Anyone who evaluates a proposal is required to agree and abide by NEx policies on confidentiality and conflict of interest.

Please email the proposal and supporting information to info@nonmetallic.org, by end of the day, **October 7, 2024**. The email subject line and file name shall include project ID (see top of page 1) and the name of the proposing organization (For example: "RD24.xx University of xyz").

If you have any questions regarding the proposal requirements or process, please contact NEx Technical Director, Aparna Deshmukh (aparna.deshmukh@nonmetallic.org).

Proposals submitted to NEx shall be provided in **one unprotected PDF** using [NEx provided template](#).