



NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 18-081

Dear Colleague Letter: Discoveries to Revolutionize Engineering and Architectural Materials for Buildings (DREAM-B)

June 1, 2018

Dear Colleagues:

The vast U.S. building stock has been constructed primarily of conventional materials, such as concrete, masonry, steel, and wood. New waves in building design approaches, such as performance/resilient-based design, as well as rapid evolutions in robotics, additive manufacturing, and computation, create stunning new opportunities to revolutionize engineering and architectural materials for high performance buildings.

With this Dear Colleague Letter (DCL), Discoveries to Revolutionize Engineering and Architectural Materials for Buildings, the National Science Foundation (NSF) invites proposals to the Engineering for Civil Infrastructure (ECI) program for EARly-concept Grants for Exploratory Research (EAGER) for high risk/high reward fundamental research to investigate wholly new materials and radical changes in the design of conventional materials, through the adaptation and integration of advanced technologies, to enable high performance buildings (structural systems, foundation systems, and building envelopes). Building material designs should be guided by a “closed loop” iterative engineering design process to achieve an optimum balance of building cost, function, performance and constructability that might be attainable within the next few decades. Investigators are urged to begin by imagining materials that can enable buildings to be adaptable to various levels of service and extreme loadings and environmental stresses while balancing occupant health and comfort and other beneficial attributes (such as energy and cost). Investigators should seize opportunities that leverage convergence of knowledge across engineering, computational, and materials science disciplines, especially those outside traditional civil engineering.

EAGER proposals with budgets of up to \$300,000 will be considered; proposed budgets must be justified by the project scope. EAGER proposals must follow NSF's [Proposal & Award Policies & Procedures Guide \(PAPPG\)](#). Proposals should be submitted to the ECI program in the Civil, Mechanical and Manufacturing Innovation (CMMI) Division of the Engineering Directorate by December 3, 2018. Titles for proposals responding to this DCL should be

prefixed with "EAGER: DREAM-B." Proposals must clearly indicate the reason why the proposed work is appropriate for EAGER support. External reviews will be obtained for proposals submitted to this DCL.

Interested PIs are required to contact one of the cognizant NSF Program Officers listed below before submission of the EAGER proposal. Often, a one-page abstract is helpful when contacting the Program Officer to establish the appropriateness for an EAGER proposal submission.

Y. Grace Hsuan, ENG/CMMI, yhsuan@nsf.gov, (703) 292-2241

Joy Pauschke, ENG/CMMI, jpauschk@nsf.gov, (703) 292-7024

Richard Fragaszy, ENG/CMMI, rfragaszy@nsf.gov, (703)-292-7011

Sincerely,

Dawn M. Tilbury

Assistant Director, Engineering Directorate