

Portland Cement Association Education Foundation Research Fellowship 2007 Call for Nominations

The Portland Cement Association Education Foundation funds a wide variety of educational activities that will increase public knowledge regarding appropriate uses of cement and concrete. Within that global purpose is a specific purpose to:

Advance general scientific understanding of cement and concrete by providing scholarships, fellowships, grants, and other support for the study of engineering and the physical sciences relating to the production and use of cement and concrete.

The support provided by the Education Foundation is used to identify and attract outstanding candidates in the field of engineering and the physical sciences and provide them with the necessary support to complete their studies. Additionally, this support is intended to provide them an opportunity for productive work in the cement and concrete industries.

The fellowships are open to any student completing studies toward a masters or doctoral degree from an institution of higher education within Canada or the United States that is accredited by a regional or national agency. The applicant must pursue graduate study in an engineering, science, material science, or architectural program. Each fellowship includes a \$20,000 stipend paid to the university to cover tuition, residence, research materials, equipment, study materials, and related educational expenses.

For this current fellowship competition, proposals in the following subject areas, with no priority, are of interest:

Cement Manufacturing

- Development of a best practices guide for use of Computational Fluid Dynamics (CFD) within the cement plant
- Development of a new laboratory grinding mill for laboratory fine grinding
- Potential CO₂ reduction methods
- Emission reduction technologies for THC and CO
- Inherent trade-offs between expert combustion control and SNCR/SCR technologies.
- Techniques to reduce burning zone temperatures within the rotary cement kiln

Concrete Technology

- Rapid/improved concrete durability tests
- Innovative tests to predict concrete performance

Residential

- Structural innovations and energy efficient technologies for residential concrete floor, wall, and roof systems
- Acoustical attenuation of residential concrete
- Determining internal pressures in insulating concrete forms during concrete placement

Public Works

- Develop test methods to predict performance of roller compacted concrete, such as frost resistance
- Optimize soil cement mixtures for frost resistance

Masonry

- Development of practical curing techniques for masonry construction
- Develop more effective methods of placing grout to achieve better performance while increasing grout lift height
- The seismic performance for new or existing structures where masonry cement is used

Engineered Structures

- Synthesis of properties of concrete used in fire resistance calculations of concrete structures.
- Synthesis of the rotation capacity of Intermediate Concrete Frame joints subject to seismic loads.
- Influence of extreme column deformation on load carrying capacity of concrete columns in statically indeterminate structures.
- Efficient methods of surveying and mapping bridge deck cracks.

Innovative projects in other areas of cement and concrete technology will also be considered.

A university professor and the candidate student must jointly submit applications. Applications must be received by **January 15, 2007**. Please follow the attached format when submitting a proposal in this competition. The proposal should not exceed four pages in length using 12 point Times font.

PCA committee members review and endorse nominations for support. The PCA Education Foundation Board of Directors makes the final determination regarding the selection of each fellowship. Final award determinations are tentatively scheduled not later than June with award notifications immediately thereafter. Awardees will be asked to attend an award ceremony at the PCA committee meeting in September. Awardees will also attend committee meetings and are asked to present their research results at PCA meetings.

Submittals with detailed descriptions of the proposed project should be sent to:
Steven H. Kosmatka, Portland Cement Association, 5420 Old Orchard Road, Skokie, IL
60077-1083, Telephone: 847-972-9164, Fax: 847-972-9165, E-mail: skosmatka@cement.org.

**PROPOSAL FORMAT
PORTLAND CEMENT ASSOCIATION EDUCATION FOUNDATION
RESEARCH FELLOWSHIP**

Please use the following format when submitting fellowship proposals to PCA. The proposal should not exceed four pages in length.

Date

Project Title

Student

Name, address, telephone number, email, area of study (civil engineering, etc.), and background.

Professor

Name, title, email, department, and a brief description of area of expertise and background.

University Information

Address, telephone, and fax.

Project Objective

Concisely state the purpose of the research. Describe what problem is to be solved or what innovation is to be developed.

Significance of the Project (optional)

Mention how this research may affect the use of cement or concrete or the manufacture of cement.

Project Description and Research Plan

The research plan shall detail the project work program, including the submission of a final report. Describe how the objectives will be achieved through a logical, innovative, and rational scientific plan. Be concise, yet include sufficient detail to describe the approach to solve a problem. Numerate tasks to illustrate the anticipated progression of the project.

Schedule

Provide a schedule for the completion of the research tasks.

Report

State when the final report or thesis will be completed. The final report must be in a format suitable for potential publication as a PCA research report in electronic format. Further publication as a paper in a refereed technical journal is encouraged. Please allow 2 months for PCA to review a draft of the report prior to publishing.

Submit the proposal to:

Steven H. Kosmatka
Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077-1083
Telephone: 847-972-9164 Fax: 847-972-9165
E-mail: skosmatka@cement.org