Materials Engineering and Processing (MEP)

Webinar

August 21, 2013

Materials Engineering and Processing (MEP)

SMM + MPM + MSE = MEP

Structural Materials and Mechanics

Materials Processing and Manufacturing

Materials and Surface Engineering

Materials Engineering and Processing

Effective September 1, 2013

Materials Engineering and Processing - MEP

The Materials Engineering and Processing (MEP) program supports fundamental research addressing the interrelationship of materials processing, structure, properties and/or life-cycle performance for targeted applications. Research proposals should be driven by the performance or output of the material system relative to the targeted application(s). Research plans driven by scientific hypotheses are encouraged when suitable. Materials in bulk form or focus on special zones such as surfaces or interfaces that are to be used in structural and/or functional applications are appropriate. All material systems are of interest including polymers, metals, ceramics, semiconductors, composites and hybrids thereof. Analytical, experimental, and numerical studies are supported and collaborative proposals with industry (GOALI) are encouraged.

Materials Engineering and Processing - MEP

- Fundamental research driven by application/performance
  - Process-structure-property relationships
  - Life cycle performance in the built environment
- Full range of material systems
  - Structural, Functional, Surfaces & Interfaces
  - Metals, ceramics, semiconductors, polymers (natural and synthetic), composites, hybrids
- Complementary to :
  - CMMI - mechanics, design, systems, manufacturing
  - CBET – *in situ* transport, fluid dynamics, sustainability
  - ECCS – device- and system-level , sustainability
- Vertically integrated with :
  - DMR – materials synthesis, discovery, characterization, performance

Materials Engineering and Processing - MEP

- Managed by group of 3 Program Directors
- Interdisciplinary approach
  - Flexibility in panel management
- Eliminate confusion when PIs try to identify program fit
- Nimble and dynamic, expanding the boundary of each discipline
  - Rapid responsiveness to new ideas and initiatives
- Continue to coordinate with DMR, CBET, ECCS to co-review and co-fund proposals when appropriate

Materials Engineering and Processing – Program Director focus

- Materials Processing (PD: Mary Toney)

  processes that convert material into useful form as either intermediate or final composition. These include processes such as extrusion, molding, casting, deposition, sintering, printing, etc. Proposed research should include the consideration of cost, performance, and feasibility of scale-up, as appropriate. Research that addresses multi-scale and/or multi-functional materials systems is encouraged, as is research in support of environmentally-benign manufacturing.

- Structural Materials (PD: Grace Hsuan)

  materials that, in service, bear mechanical load. Length scales from nano to meso to macro are of interest as are materials in the bulk or in special configuration such as thin film, foam, density gradient, etc. These include materials such as metals, polymers, composites, biomaterials, ceramics, hybrids, cement, etc. Research that models the mechanical behavior of materials in the built environment is also considered.

- Functional Materials (PD: Mary Toney, acting)

  materials that possess native properties and functions that can be controlled by external stimuli such as temperature, light, electric field, pH, etc. These include materials that exhibit properties such as electronic, magnetic, piezoelectric, ferroelectric, photovoltaic, chromogenic, shape memory, thermoelectric or self-healing, etc. in any type of materials system.

Submission Information

- When?
  - All CMMI programs 2X per year
    - Sept 1 – Oct 1
    - Jan 15 – Feb 15
- Budget?
  - Program budgets also merged
  - Expect same success rate
  - See award history from old programs for guidance

Will my idea be a fit for MEP?

- Resubmission?
  - If the idea has been reviewed in one of the 3 programs before, then it is likely a fit for MEP (some exceptions)
- New idea? Previously submitted to another program?
  - If unsure, email the project summary to the PD for the topic area most closely related to your research focus at least a few weeks before the submission deadline

- Please note that after submission we may recommend reassignment to a different program if there is better alignment between research topic and reviewer expertise
  - PI will be notified by email before the transfer

Do I need to identify Topic Area or PD at time of submission?

- No
  - Submit to MEP PD 13-8092
  - No need to identify *Materials Processing* or *Structural Materials* or *Functional Materials*
  - Name secondary program if idea fits MEP and another program
    - Examples:
      - Thermal Transport Processes (CBET)
      - Mechanics of Materials (CMMI)
      - Ceramics (DMR)

How will I know which PD will be managing my proposal review?

- After we set up the panels, proposals will be assigned to a PD
  - Check in Proposal Status in FastLane
  - PD will be named in email sent after review
  - Do not contact any of the PDs to discuss the proposal while it is under review
  - Arrange for telephone meeting with PD after you receive access to reviews
    - Discuss reviews, insight into panel discussion, plans for resubmission ..

Can I serve on a panel for MEP?

- Yes!
  - Please email PD with your CV and link to home page
- No!
  - Cannot serve if you have a proposal under review in MEP from same submission window
- Plan strategically
  - Be aware that we cannot guarantee a seat on a panel

Other Changes/Clarifications

- Laser processing, joining, additive manufacturing will now go to:
  - Manufacturing Machines and Equipment (MME)
  - PD: ZJ Pei
- Civil infrastructure materials with emphasis on the properties of structural components → MEP
  - If the focus is on the structure itself submit to:
    - Hazard Mitigation and Structural Engineering (HMSE)
    - PD: Kishor Mehta
- Pavement performance (asphalt or concrete) is not in line with the goals of MEP/Structural Materials or NSF

Old Programs: SMM, MPM, MSE

- No longer accepting new proposals
  - CAREER proposals are currently under review in each program
- Active awards
  - Supplements, no cost extensions etc. still accepted
  - Reports will still be required

Materials Engineering and Processing Recap

- Merger of MPM, SMM, MSE
- Effective 9/1/2013
- Same budget, same success rates
- Three PDs
- Easier to identify program fit
- Any questions? Email cognizant PD

Questions from the session

- Will the MEP program accept EAGER proposals? Which of the three program directors listed on the MEP program announcement should prospective proposers contact?

Contact the PD for the topic area most closely related to your research focus. EAGER funds are limited; each PD has some freedom to manage these funds as they see fit. In general, a regular submission is needed before an EAGER proposal would be considered.

- Does this program consider GOALI proposals? If so, are they only accepted during the unsolicited windows or are they accepted anytime during the year?

GOALI proposals are encouraged in the MEP program, as they were in the three old programs. GOALI proposals must be submitted to the program during open submission windows, they will not be accepted outside these times.

- Is there a limit to the number of proposals a PI can submit to the MEP program per submission window? Can proposals be submitted by a particular researcher in both submission windows?

There is no limit to the number of proposals a PI can have under review at any time in the MEP program, provided there is no significant overlap in content between any of them.

Questions from the session

- I am a current awardee to the Materials Processing and Manufacturing. What do the effective merger of these programs and the creation of the MEP program mean to me? Does my managing program change?

Each of the old programs will continue to be available for active awards but they will not be accepting any new proposals. An active grantee will still be expected to submit reports and will still be able to request supplements, submit notifications, etc. to their old program.

- I would like to volunteer to help review submitted proposals to the MEP program. How do I do so? Can I submit a proposal to the program and serve on a panel?

Please email your CV and a link to your homepage to the PD for the topic area most closely related to your research focus as a means to indicate your interest in serving on a panel. If you have a proposal pending in the MEP program, you cannot serve on a panel for the program.

- What is the typical award size of a MEP award? Will the program consider proposals with larger budgets (>$500,000) with two or more co-principle investigators during the regular unsolicited windows?

We do not have an upper limit for a budget, as such. We encourage PIs to submit a plan that they feel will allow them to address the scientific objectives of the proposed work. There are links at the bottom of each of the "old" program pages where one can see typical budgets for awards made in those programs as a guide for the new MEP program.

Questions from the session

- The "targeted application" phrase in the MEP program description is new. Could you expand on the changes in expectations in the content and/or type of projects for future proposals?

We have included this phrase to help describe proposals that would likely be better aligned with the interests of the Engineering directorate as compared to the Division of Materials Research, for example. There is no change in terms of expectations, the phrase was included merely for clarification.

- With the creation of the MEP program, support for additive manufacturing processes has been shifted to another program. Which program in CMMI will support research in this area? If the research goal of a proposal is to understand how additive manufacturing processes affect material properties, where should it be submitted?

We have decided to review proposals related to additive manufacturing in the Manufacturing Machines and Equipment program. If the focus of the proposed work is on the interaction of the process with the material, it should be submitted to MME. The PD will seat panels with the appropriate expertise to review these proposals.

Questions from the session

- Does the MEP program consider research in all material systems and classes? For example, is research in biocomposites or electronic materials appropriate for the program?

At the present time, we are accepting proposals related to Materials Engineering and Processing for all material systems. If, in the future, we find that there are other more appropriate homes for some material systems, we may change the scope of the program.

- Is the study of structural performance of pavement materials appropriate for the MEP program? If not, to what program should such a proposal be submitted?

Pavement development work is not in the purview of NSF research programs.

- Does this program consider proposals with a strong or primary focus in computational approaches to materials?

While many proposals submitted to CMMI have a balance of computational and experimental tasks, we do not require that a proposal do so. Proposals can have a solely experimental approach, a solely computational approach or a balance of the two.

- How does this program interface with the Design of Engineering Material Systems (DEMS) program or other NSF-wide materials research initiatives such as Designing Materials to Revolutionize and Engineer our Future (DMREF)?

The focus of each program and initiative is distinct. We have sometimes transferred proposals that were submitted to one but was better aligned with another, and we will continue to do so. Please see the program descriptions for each to better understand their special focus.