



# National Science Foundation

(NSF)

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Charles Ying and Lynnette Madsen

*Program Directors*

Division of Materials Research

AVS Symposium

Nashville, Tennessee, October 31, 2011



# NSF Funding Opportunities

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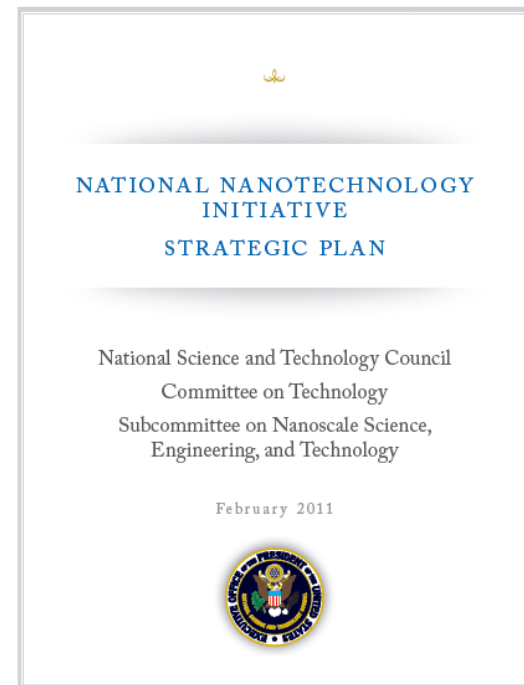
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- Your best idea!
- Read the funding opportunities (program descriptions and solicitations) carefully and, if needed, ask an NSF Program Director for clarification.
  - Funding opportunities:  
[www.nsf.gov/funding](http://www.nsf.gov/funding)
  - Award information, including abstracts:  
[www.nsf.gov/awardsearch](http://www.nsf.gov/awardsearch)



# National Nanotechnology Initiative (NNI)

- NSF supports fundamental nanoscale science and engineering in and across all disciplines mainly through core programs.
- NSF also supports newly identified **Nanotechnology Signature Initiatives:**
  - Nanotechnology for solar energy collection and conversion
  - Sustainable nanomanufacturing: creating the industries of the future
  - Nanoelectronics for 2020 and beyondvia solicitations of inter- & multidisciplinary, collaborative research proposals.



[www.nano.gov](http://www.nano.gov)



# Nanoelectronics for 2020 and Beyond (NEB)

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- Support interdisciplinary collaboration of 3+ investigators
  - A joint activity between NSF and Nanoelectronics Research Initiative (NRI), Semiconductor Research Corporation (SRC)
  - Participation of 3 NSF Directorates: ENG, MPS, and CISE
- Address one or more of the following themes:
  - Exploring new chemistries and materials for nanoelectronics
  - Exploring alternative state variables and heterogeneous integration for nanoelectronic devices and systems
  - Exploring novel paradigms of computing
- 124 proposals received, 113 reviewed by ENG, MPS and CISE panels together with NRI/SRC
- 12 four-year awards in 2011 (total: \$18M NSF + \$2M NRI)



# Solar Energy Collection and Conversion

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- CHE-DMR-DMS Solar Energy Initiative (SOLAR)
  - Support multidisciplinary collaboration of 3+ investigators, involving chemistry, materials, and mathematical sciences
  - 8, 9, and 4 three-year awards made in 2009 (\$13M), 2010 (\$13M), and 2011 (\$5M)
  
- Foundational Program to Advance Cell Efficiency (FPACE)
  - A component of DOE SunShot Initiative
  - DOE/EERE and NSF/ENG collaboration
  - 18 three-year awards made in 2011 (total: \$39M) to universities (12), National Labs (4), and companies (2)



# Scalable Nanomanufacturing (SNM)

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- Although many nanofabrication techniques have demonstrated ability to produce small quantities of materials and devices, the emphasis of SNM is research that supports identification and demonstration of nanomanufacturing processes with high potential to scale to economically and industrially relevant production levels
- Scalability for Industry is an emphasis:
  - Proposals to this topic area should target nanomanufacturing processes with a clear path to eventual commercial viability.
  - Collaborative activities with industrial companies are strongly encouraged.



# Scalable Nanomanufacturing (SNM)

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- Address one or more of the signature themes plus societal/ educational implications
  - Novel processes & techniques for continuous & scalable nanomanufacturing
  - Directed (physical/chemical/biological) self-assembly processes leading to heterogeneous nanostructures with the potential for high-rate production
  - Principles & design methods to produce machines & processes to manufacture nanoscale structures, devices and systems
  - Long-term societal & educational implications of large-scale production and use of nanomaterials, devices and systems, including life-cycle analysis of such nanomaterials, devices and systems
- 74 proposals received in 2011, 71 reviewed by ENG and MPS panels
- NSF made 9 four-year awards in 2011 (total: \$11M)



# www.nsf.gov/awardsearch

## Award Search

Send

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Enter a key word (e.g., scalable, SNM, NEB)

**Hint:** The text field below 'Search Award For' searches the title, abstract, and award number fields.

[Search Award For:](#)

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If needed, check this box

### Awardee Information

#### Principal Investigator

[First Name:](#)

[Last Name:](#)

[PI Lookup](#)

**Hint:** Including CO-PI will result in slower searches.

[Include CO-PI:](#)

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### Program Information

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[Program Officer:](#)

[Element Code:](#)   All  Any

[Element Code Lookup](#)

[Reference Code:](#)   All  Any

[Ref Code Lookup](#)



# Nanomanufacturing Focus Topic at AVS

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- Monday a.m. ALD
- Monday p.m. Challenges (all invited session)
  
- Tuesday a.m. Lithography
- Tuesday p.m. Devices and Processes
- Tuesday evening: posters
- Wednesday a.m. Metrology & Environmental Concerns

Plans are in place for the 2012 AVS Symposium  
to hold this focus topic again.



# **NSF and International**



Office of International Science and Engineering (OISE)



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## Office of International Science and Engineering (OISE)

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### Introducing Science Across Virtual Institutes

Dear Colleague Letter [NSF 11-087](#) introduces Science Across Virtual Institutes (**SAVI**). Excellence in STEM (science, technology, engineering and mathematics) research and education exists in many parts of the world. Scientific advances can be accelerated by working across international borders. SAVI will facilitate such research collaboration, providing a platform for teams of U.S. investigators to network with their partners abroad. Proposals to support SAVI activities are to be submitted to existing, active NSF programs that best fit the proposed subject matter. Potential proposers should contact the appropriate Directorate or Office representative listed on the SAVI website prior to proposal submission. See details at [www.nsf.gov/savi](http://www.nsf.gov/savi).

### OISE Program Update

OISE is revising the program solicitation for **International Research Experiences for Students (IRES)**. We anticipate that the solicitation will be published in early 2012 with a proposal deadline in late summer. Questions about the IRES program should be directed to Cassandra Dudka, OISE Program Manager at [cdudka@nsf.gov](mailto:cdudka@nsf.gov). Questions about support for enhancing doctoral dissertations through international engagements



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NSF Science Across Virtual Institutes

[SAVI Home](#)

[Program Information](#)

Science Across Virtual Institutes (SAVI) is an innovative concept to foster interaction among scientists, engineers and educators around the globe. It is based on the knowledge that excellence in STEM (science, technology, engineering and mathematics) research and education exists in many parts of the world, and that scientific advances can be accelerated by scientists and engineers working together across international borders. Virtual institutes that connect researchers with common interests and goals will have a great impact on solving important societal challenges.



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## Partnerships for Enhanced Engagement in Research (PEER)

**Proposal Deadline: November 30, 2011, 11:59 PM (U.S. Eastern Standard Time)**

### Program Background and Objective

The United States Agency for International Development (USAID) is exploring new opportunities to use science and technology to meet the world's development challenges. As part of its science and technology strategy, USAID is developing mechanisms to leverage the investments that other U.S. government agencies make in scientific research and training. Following the signing of a memorandum of understanding between USAID and the National Science Foundation (NSF), the two agencies implemented a [pilot program](#) to assess the potential for USAID-funded collaborative research projects. Based on the program's success, USAID and NSF are now pleased to announce the launching of a new and broader program called Partnerships for Enhanced Engagement in Research (PEER). This competition seeks

**Apply Now!**

- [Download Application Form \(Word Document\)](#)
- [Instructions](#)
- [FAQs](#)
- [List of Eligible Countries](#)

Please contact [peer@nas.edu](mailto:peer@nas.edu) if you have questions after reviewing all program documents.



[Division of Materials Research](#)

## Materials World Network: Cooperative Activity in Materials Research between US Investigators and their Counterparts Abroad (MWN)

### CONTACTS

Name	Email	Phone	Room
<a href="#">Michael J. Scott</a>	<a href="mailto:mjscott@nsf.gov">mjscott@nsf.gov</a>	(703) 292-4771	

Contacts at other organizations:

Contact information in participating countries or regions is provided for the convenience of researchers in those countries or regions. Questions from US investigators should be directed to NSF.

- Solicitation 11-568      Deadline: Nov. 10, 2011
- Covers all areas in the Division of Materials Research
- Partnership with researchers abroad:
  - » foreign partners paid through foreign organization
  - » NSF pays for US-based researchers



# **Division of Materials Research**

Timelines



# DMR Timelines

Jan.



Feb.

Mar.

Apr.



May

June

Jul.



Aug.

Sept.



Oct.

Nov.

Dec.



## **CAREER** (Asst. Prof.)

- Final Recommendations
- 1. Solicitation issued 3 mos. in advance
- **Proposal Submission**
- Compliance check, Start review process
- Reminders to reviewers; Panels
- Recommendations

## **Topical Programs**

*(unsolicited proposals)*

- Reminders, Panels
- Recommendations
- Programs spend-out
- **Submission window opens**
- Window closes
- Compliance check
- Review process starts



# Upcoming “DMR” Deadlines

**Anytime:** Science Across Virtual Institutes (SAVI)

- **Anytime:** Career-Life-Balance
- **Anytime:** other supplemental requests
- **Nov. 10:** Materials World Network (MWN)
- **Nov. 14-18:** Grad. Res. Fellows
- **Nov. 30:** PEER w/**USAID**
- **Dec. 5:** SEES Fellows: post-docs.
- **Dec. 15** closes: (every 4 mos.): Innovation Corps: training & seed \$
- **Jan. 15** opens: (1 mo. window) DMREF (Materials Genome Initiative): DCL re. FRG
- **Jan. 26:** Major Res. Instrumentation (MRI)

- **Feb. 1:** Sustainable Energy Pathways (SEP): teams
- **Soon:** Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) 
- **Soon:** The Interface of the Biological, Mathematical, and Physical Sciences (BioMaPS)
- **Soon:** Cultural Heritage Science (previously SCIART)
- **May 1:** IGERT
- **May 14:** PIRE
- **July 23+:** CAREER 
- **Aug. 22:** REU Sites
- **Sept 1** opens: (2 mos. window) DMR Unsolicited Proposals (incl. GOALI, RUI, FRG)