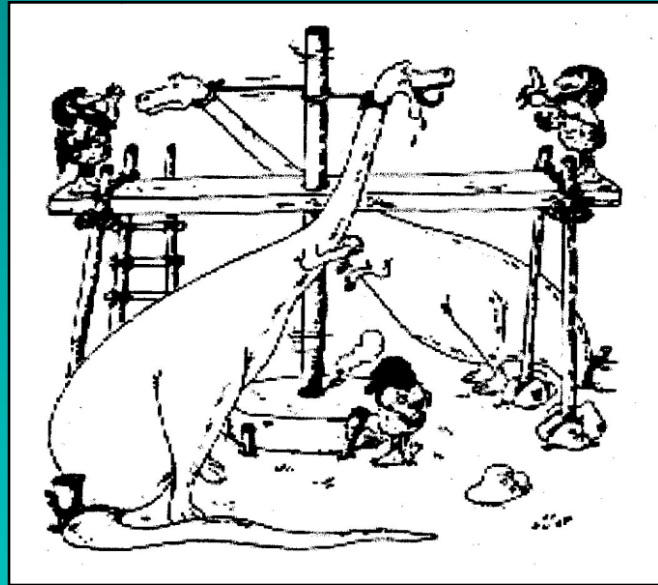




# NATIONAL SCIENCE FOUNDATION ENG-CMMI-Nanomanufacturing Program



## The Scalable Nanomanufacturing (SNM) Solicitation: A NNI Signature Initiative at NSF



*Bruce Kramer and Haris Doumanidis*

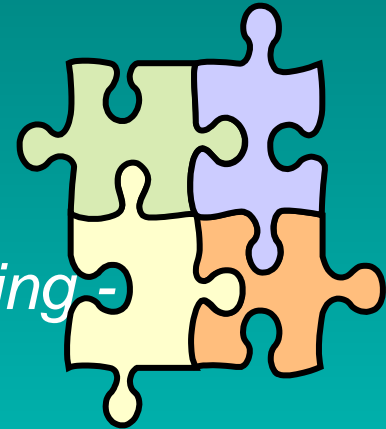
*Nanomanufacturing Program Director, NSF-ENG-CMMI Room 550  
(703) 292-7557, cdoumani@nsf.gov*



# Introduction and Context



- The Scalable Nanomanufacturing (SNM) solicitation (NSF 10-618) is in response to and a component of the National Nanotechnology Initiative Signature Initiative: *Sustainable Nanomanufacturing - Creating the Industries of the Future.*



- 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.*





# SNM Solicitation Themes



Proposals must address at least one, and preferably more than one, of the following interconnected themes:

- \* Novel processes and techniques for continuous and scalable nanomanufacturing;
- \* Directed (physical/chemical/biological) self-assembly processes leading to heterogeneous nanostructures with the potential for high-rate production;
- \* Principles and design methods to produce machines and processes to manufacture nanoscale structures, devices and systems; and/or
- \* Long-term societal and educational implications of the large-scale production and use of nanomaterials, devices and systems, including the life-cycle analysis of such nanomaterials, devices and systems.



# SNM Grant Support



## Nanoscale Interdisciplinary Research Teams (NIRT):

- \* Anticipated funding amount: \$ 10,000,000 (subject to approval)
- \* Number of awards: 5-10 standard or continuing grants
- \* Typical awards: 4-year, \$250,000-500,000 year
- \* Maximum total budget: \$ 2,000,000
  
- \* Institutions: Universities & Colleges (limit 1 proposal as lead)
- \* PI eligibility: must be at faculty level or equivalent (no # limit)
- \* Type of submission: single proposals (no collaborative scheme)
  
- \* Full proposal deadline: January 10, 2011 (proposer's local time)



# Review Criterion I: Intellectual Merit



- How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?

- How well qualified is the proposer (individual or team) to conduct the project?

- To what extent does the proposed activity suggest and explore creative and original concepts?

- How well conceived and organized is the proposed activity?

- Is there sufficient access to resources?





# Review Criterion II: Broader Impacts



- How well does the activity advance discovery & understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?



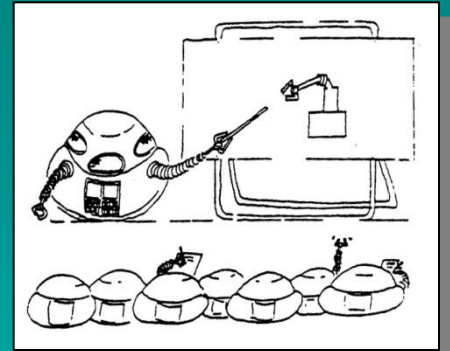
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?



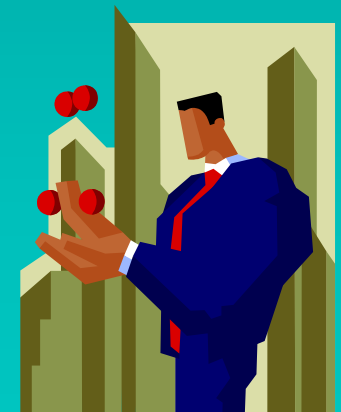
# Additional Criteria



- \* Integration of Research and Education*
- \* Integrating Diversity into NSF Programs Projects and Activities*



- Potential for significant contributions to the advancement of nanomanufacturing in one or more of the four SNM themes*
- Strength of the collaborations planned and degree of interdisciplinarity*
- Value to nanomanufacturing education*
- Appropriateness, likely effectiveness and quality of any proposed collaborations*
- Likely effectiveness of the management plan.*





# Additional Information



- *Online:* [www.nsf.gov/pubs/2010/nsf10618/nsf10618.pdf](http://www.nsf.gov/pubs/2010/nsf10618/nsf10618.pdf)
- Cognizant Program Officers:
  - Bruce Kramer (CMMI): (703) 292-5348, [bkramer@nsf.gov](mailto:bkramer@nsf.gov)
  - Daniel De Kee (EEC): (703) 292-8769, [ddekee@nsf.gov](mailto:ddekee@nsf.gov)
  - George Maracas (ECCS): (703) 292-8339, [gmaracas@nsf.gov](mailto:gmaracas@nsf.gov)
  - Gregory Rorrer (CBET): (703) 292-5356, [grorrer@nsf.gov](mailto:grorrer@nsf.gov)
  - Grace Wang (IIP): (703) 292-2214, [jiwang@nsf.gov](mailto:jiwang@nsf.gov)
  - Harris Koumanidis (CMMI): (703) 292-7557, [cdoumani@nsf.gov](mailto:cdoumani@nsf.gov)

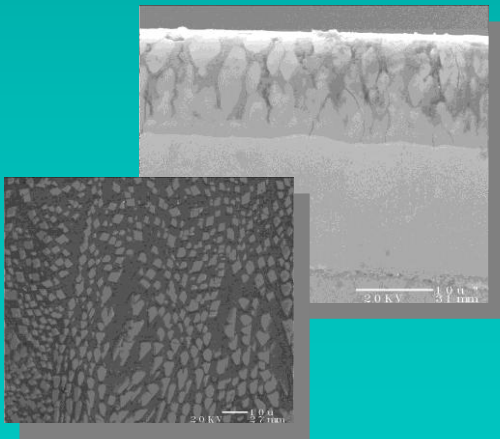
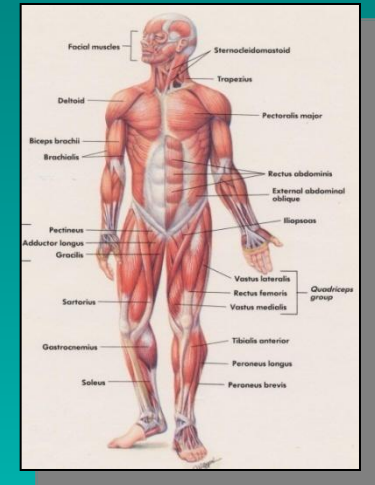




# Nanomanufacturing Program



- \* Focus on manufacturing scale-up issues for high-rate industrial production: *producibility, predictability, productivity*
- \* Emphasis on systems up-scaling design and integration across dimensional scales: *nano-structures → functional devices → system architectures → products & services*



- \* Multi-functionality across energetic domains: *mechanical, electromagnetic, biological etc.*
- \* Intelligence/information value added at nanoscale: *materials, processes, equipment*
- \* Theory, modeling simulation and controls
- \* Physical and human infrastructure, impact to education, society, economy and environment



# Epilogue



**THANK YOU!**



We really appreciate your interest in SNM