



# Nanoelectronics for 2020 and Beyond

## NNI Signature Initiative at NSF

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*at NSF Grantees Conference on NSE, Dec. 6-8, 2010*





# NSF Support of Nanoelectronics Research

## ➤ Mechanisms:

- Individual investigators
- Teams
- Centers

## ➤ NSF-NRI Supplement Awards in 2010:

- Columbia NSEC: Graphene Hybrid Device
- Princeton MRSEC: Quantum coherence in graphene bilayers
- Nebraska MRSEC: magnetoelectric material
- Penn State MRSEC: Very Low Energy Dissipation Computing
- Stanford NSEC: Neuromorphic Electronic Synapses
- UIUC NSEC: Thermal Conduction in Flexible Nanotube Arrays





# Nanoelectronics for 2020 and Beyond: *A New Solicitation*

- **Objective:** Discover and use novel nanoscale fabrication processes and innovative concepts to produce revolutionary materials, devices, systems, and architectures to advance the field of nanoelectronics beyond the scaling limits of Moore's Law
  - NSF: Science and Engineering Beyond Moore's Law
  - A critical component of NNI Signature Initiative at NSF
  
- **Mechanism:** Interdisciplinary research team awards
  - Three or more PIs each team, \$1-2M over four years
  - 10-15 awards
  
- **Solicitation:** NSF 10-614 (January 19, 2011 deadline)





# Nanoelectronics for 2020 and Beyond: *A New Solicitation*

- Proposals must address at least 2 aspects of research 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
  
- Participating organizations:
  - NSF: ENG/ECCS & EEC; MPS/DMR & CHE; CISE/CCF
  - SRC: Nanoelectronics Research Initiative (NRI)







# Nanoelectronics for 2020 and Beyond: *A New Solicitation*

## ➤ Additional Review Criteria:

- Clear benefits of the multi-investigator approach to address a main topic of nanoelectronics and appropriateness of the interdisciplinary expertise
- Effectiveness of proposed team-work, including plans for management and for self-evaluation in order to maintain a flexible and innovative program

## ➤ Proposal Deadline: January 19, 2011 (NSF 10-614)

- *NSF Grant Proposal Guide, Version 11-1*, applies
- Need data management plan

