



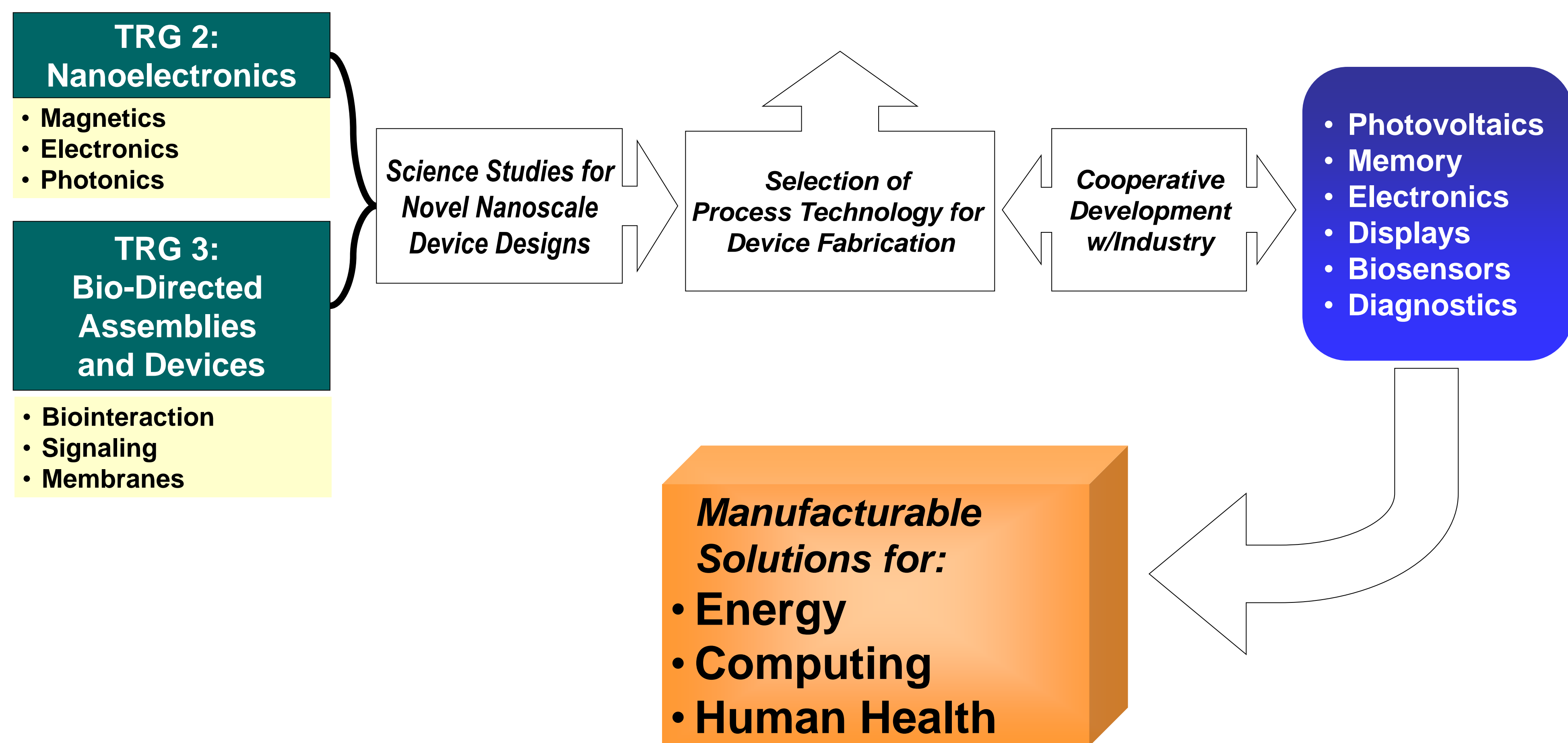
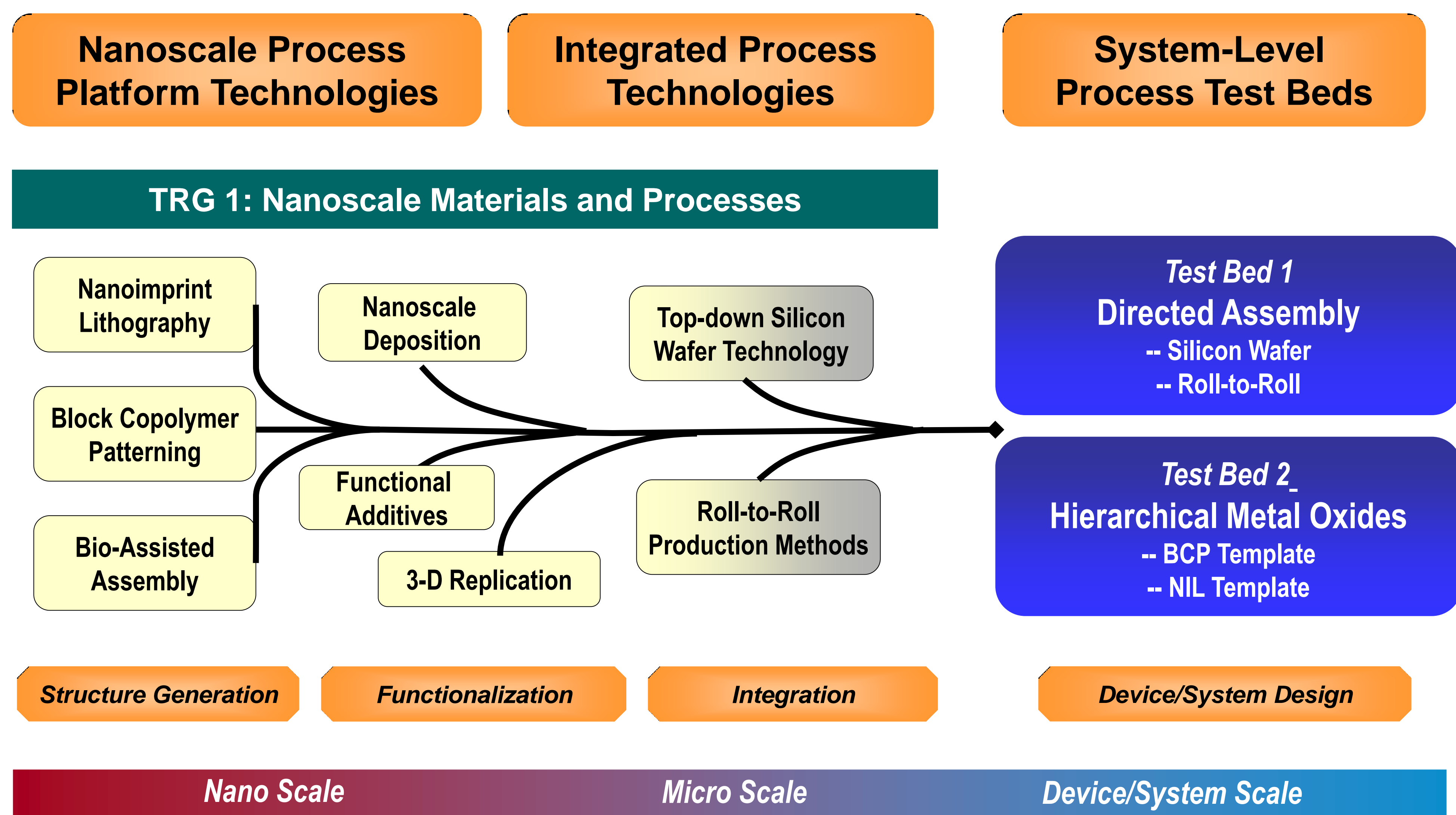
Center for Hierarchical Manufacturing

University of Massachusetts Amherst

James J. Watkins, Director
Mark T. Tuominen, Co-Director

Nanomanufacturing Process Research

The mission of the CHM is to be a leading nanotechnology research and education center for the development of efficient process platforms and versatile tools for 2- and 3-dimensional integration of components and systems across multiple length scales.

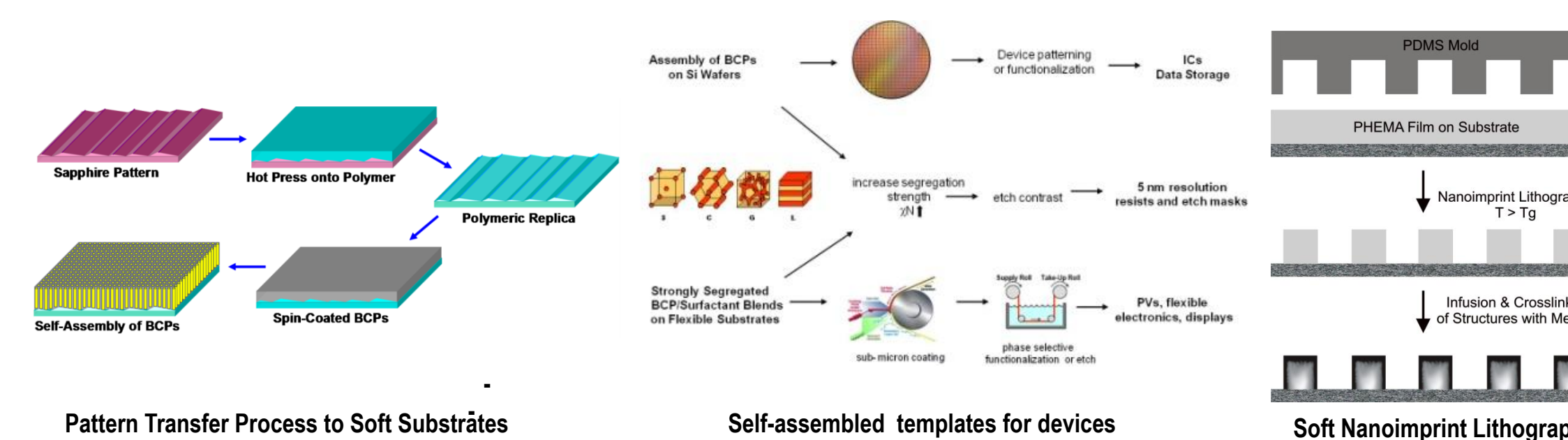


Nanoscale Materials and Processes

Technical Research Group 1

Co-Leaders: James J. Watkins, Thomas P. Russell
Participating Faculty: F. Aliev (UPR), A. Briseno, C. Cabrera (UPR), K. Carter, A. Crosby, T. Emrick, D. Maroudas, T. McCarthy, J. Rothstein, S. Thayumanavan, D. Venkataraman, G. Grason

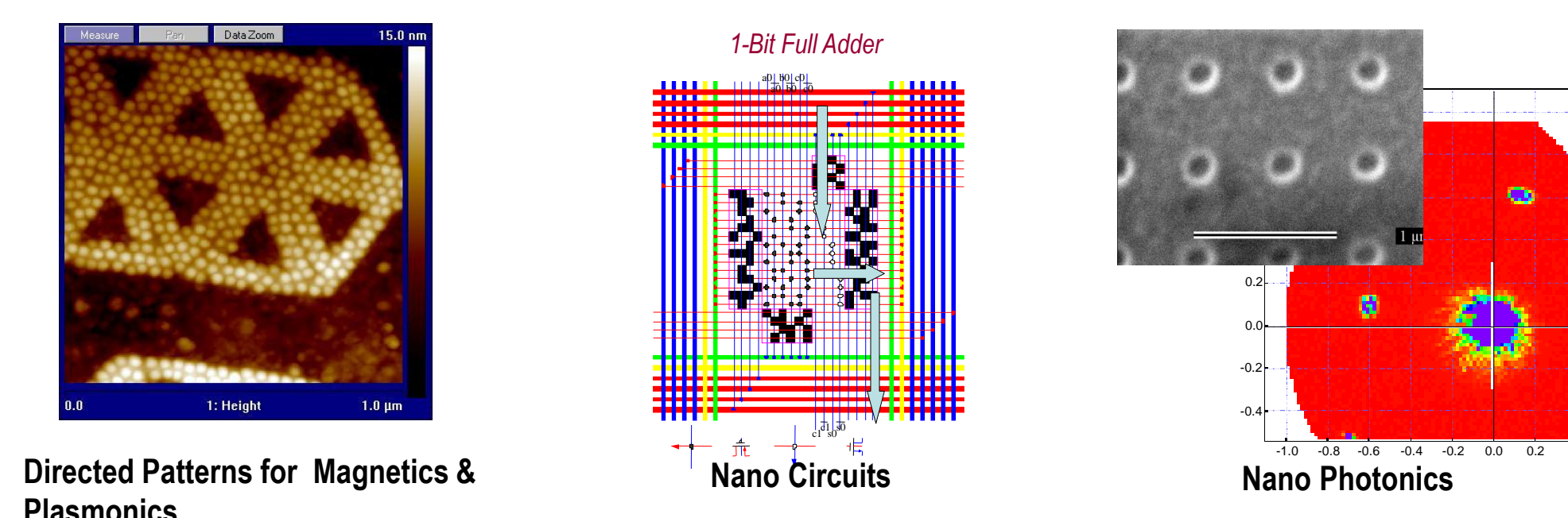
Goal: Focus on **fundamental processes** that underpin techniques for the fabrication of nanostructured materials that can be **integrated** with existing large scale manufacturing processes.



Nanoelectronics

Technical Research Group 2

Co-Leaders: Csaba Andras Moritz, Mark T. Tuominen
Participating Faculty: M. Achermann, M. Barnes, K. Carter, J. Hudgings (Mount Holyoke College), K. Aidala (Mount Holyoke College), V. Rotello, T. Russell
Goal: Hierarchical nanoelectronics (**magnetic, electronic, photonic**) for future high performance data storage and processing systems, energy conversion devices and sensors.

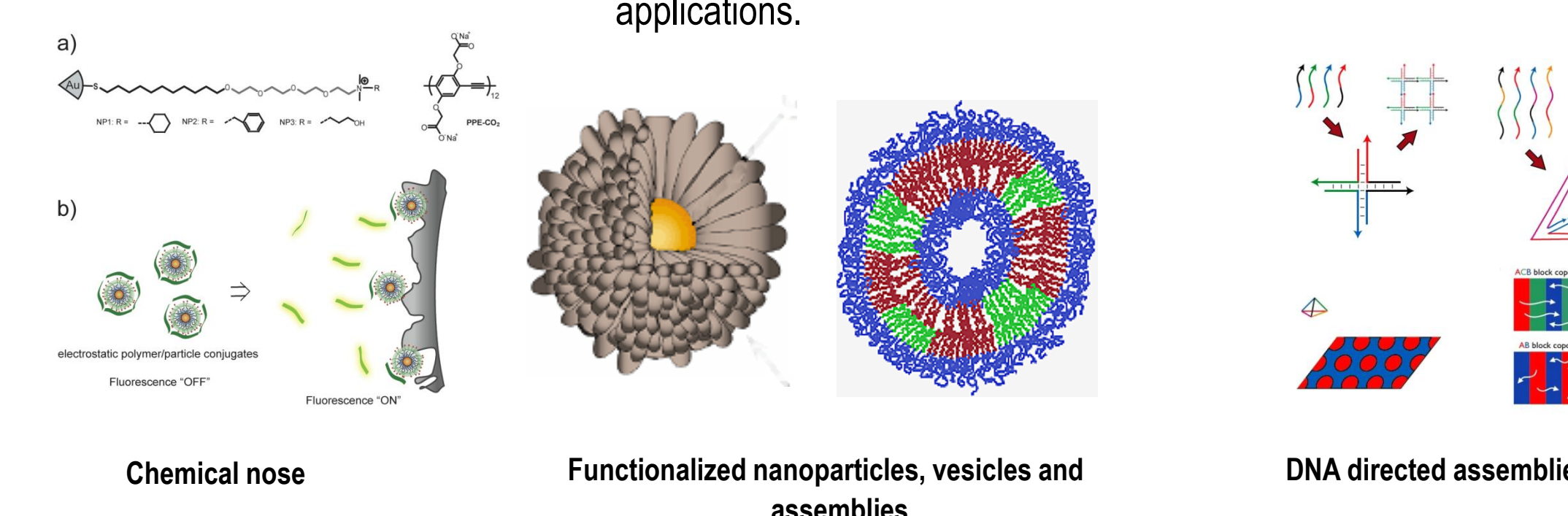


Bio-Directed Assemblies and Devices

Technical Research Group 3

Co-Leaders: Surita Bhatia and Vincent Rotello
Participating Faculty: H. Bermudez, B. Dragnea, T. Emrick, T. Mountziaris, C. Ozkan, M. Ozkan, G. Tew, S. Thayumanavan
Partners and Collaborators: U. California - Riverside, Indiana University, UPR Rio Pedras

Goal: Use **biomolecular assembly** to create new nanostructured materials and use **nanomaterials** to create **sensors** for biomedical applications.

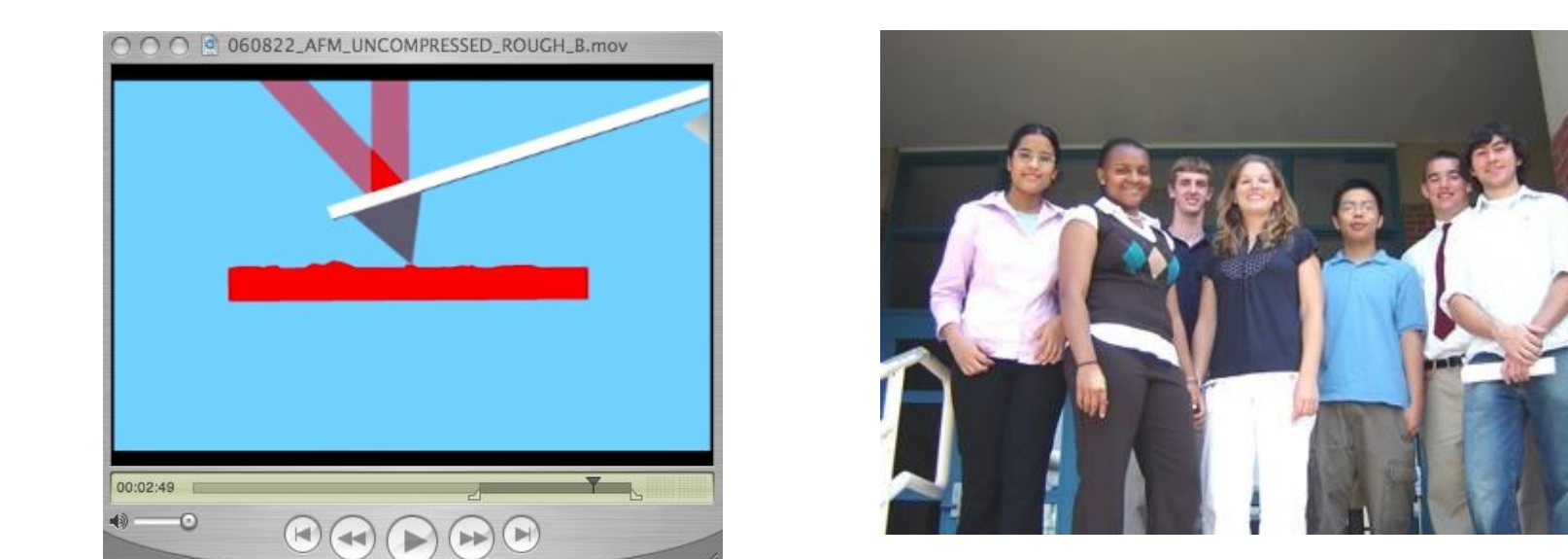


National Nanomanufacturing Network



Education and Outreach

- Linkage to IGERT Program in Nanotechnology Innovation
- Summer Undergraduate Research Experiences (SURE) Program in Nanotechnology
- Production of re-purposeable multimedia learning content on nanotechnology topics for multiple audiences and levels
- Development of instructional video modules for K12 science education on nanotechnology topics
- K12 summer teacher workshops
- Development of course modules for community colleges
- Center-wide Diversity Strategic Plan



Societal Implications of Nanotechnology

Research Projects

- Survey Study: Social Organization and Societal Implications of Nanotechnology Research, Development and Manufacturing Collaborations
- From Lab to Market: Technical Diffusion, Intellectual Property and Commercialization of Nanotechnology
- Nanotechnological Innovation and Dispute Resolution
- Public Opinion Formation and Public Policy
- Visual Perception of Nanoscale Phenomena

Workshop Series

- 2007: Nanotechnology and Society: The Organization and Policy of Innovation
- 2008: Environmental, Health and Safety Dimensions of Nanomanufacturing
- 2009: Frontiers of Public Policy in Nanotechnology