SRI International - *an Interdisciplinary Approach to Innovation in Nanotechnology*

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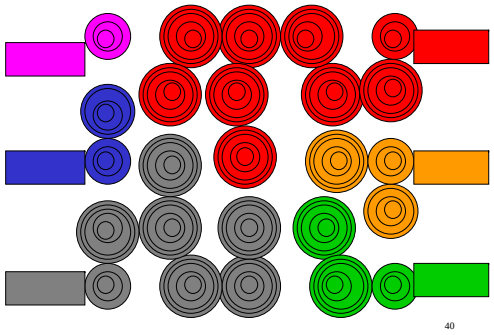
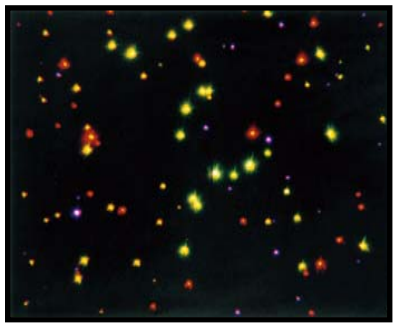
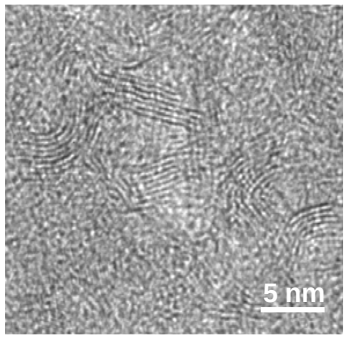
Nanotechnology . . .

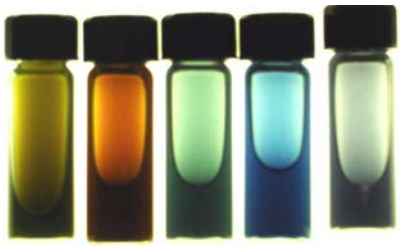
Exploiting *unique* properties at the nanoscale to revolutionize industry

- Electronics/computers
- Energy
- Biomedical
- Plastics/packaging
- Automotive
- Entertainment
- Clothing
- and many others







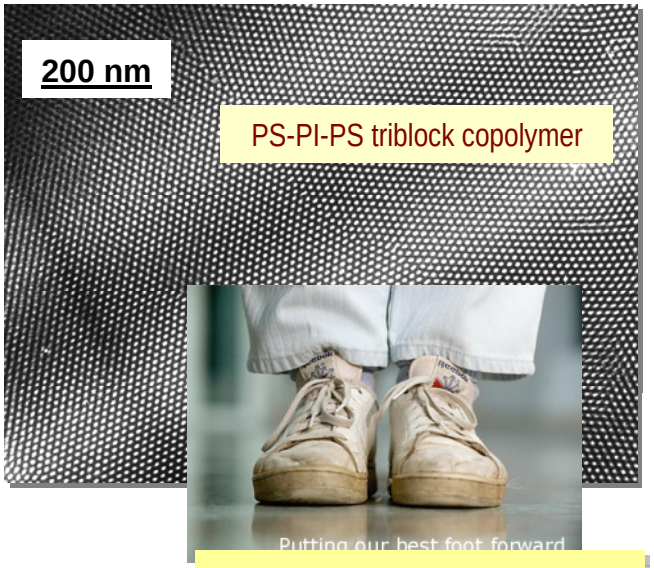


Challenges of Nanotechnology: *Multidisciplinary*

- Chemistry
- Physics
- Materials Science
- Electrical / Mechanical Engineering
- Biology / Medicine
- Computer Science
- Tools Development
- Chemical Engineering / Scale-up (they may be small, but you need a lot!)
- Safety / Environment / Toxicology

Nanotechnology is All Around Us and is Application Driven

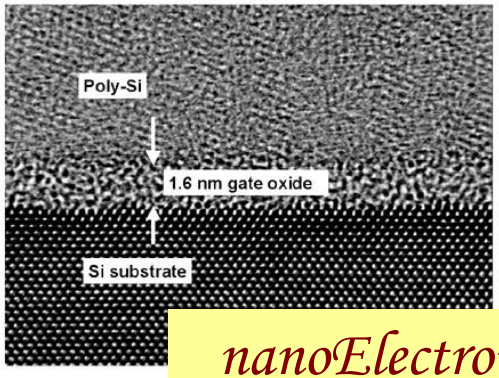
nanoDurable



nanoWalk

nanoBeauty

nanoCalligraphy



nanoElectronics

nanoVideo

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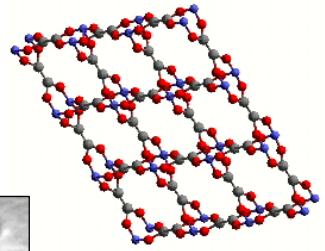
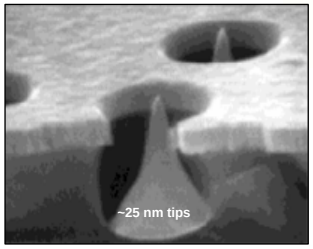
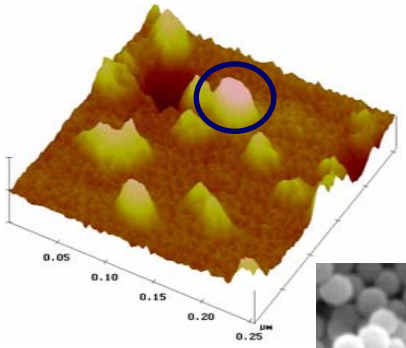
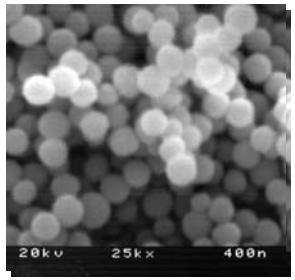
Innovation in Nanotechnology: *an Inherently Multi- / inter- / trans- disciplinary Process*

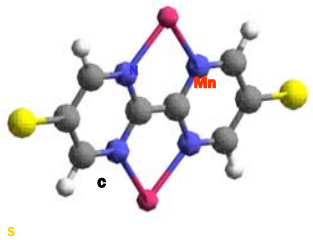
NanoTools / NanoFabrication	• Spectroscopy • Combinatorial materials synthesis • Self-assembly • Atomic force/microwave microscopy
NanoBiomedical	• MRI contrast enhancement • Engineered bio-molecular nanodevices • Single molecule detection • Molecularly imprinted polymers
NanoEnergy	• Battery and fuel cell electrodes • Bimodal catalysts • CO_2 sequestration • H_2 production, separation and storage
NanoMaterials	• Carbon nanotubes/nanoparticles • Nanoparticle synthesis • Boundary layer and surface modification • Nanoparticle composites and applications • Nanoporous materials for separation and absorption
NanoElectronics and NanoPhotonics	• Molecular electronics • Spintronics • Semiconductor nanodevice modeling • Nano-optical materials and devices • Modeling
NanoSociety	• Government policy • Education program • Technology monitoring and technology assessment • Process economics











Challenges for a Nanotechnology Education

- Because nanotechnology is inherently multidisciplinary, how does it fit into a standard curriculum?
- Given a curriculum, how do you train teachers to teach nanotechnology?
- Are there macroscopic manifestations of nanoscience / nanotechnology?
- How do you capture the excitement of nanotechnology without the hype?
- How does one answer the question “is there a downside to nanotechnology?”
- Is there is really a career for a “nanotechnologist?”