

# NATIONAL NANOTECHNOLOGY INITIATIVE

Lisa E. Friedersdorf, PhD

Director, National Nanotechnology Coordination Office

November 29, 2021

President's Council of Advisors on Science and Technology  
Washington, DC

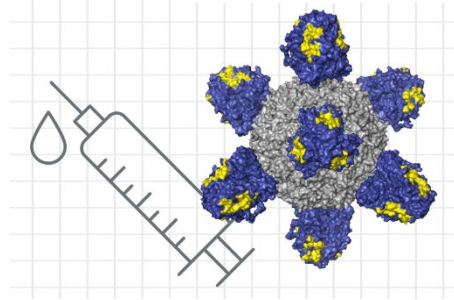




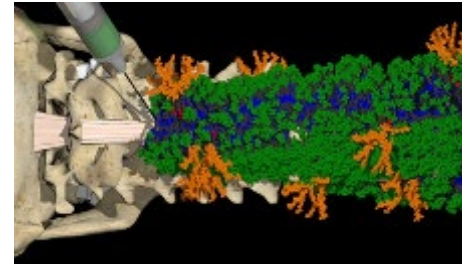
# JUST A FEW EXAMPLES OF NANOTECHNOLOGY R&D



Credit: NASA



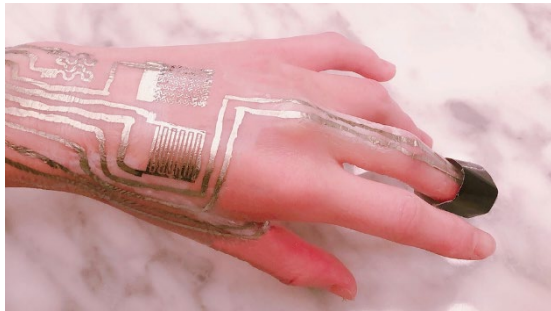
Credit: MIT



Credit: Mark Seniw,  
Northwestern University



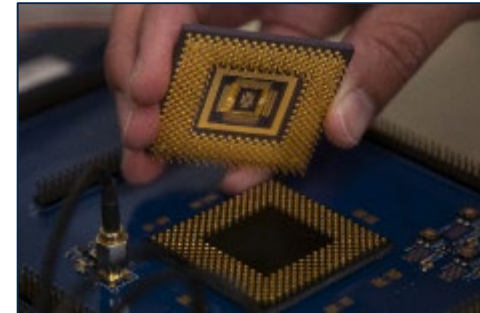
Credit: Northwestern University



Credit: Penn State



Credit: NC State



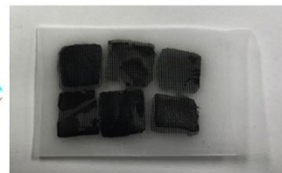
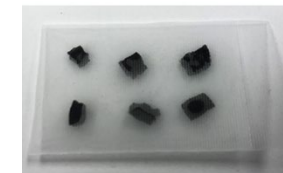
Credit: U Michigan



Water capturing



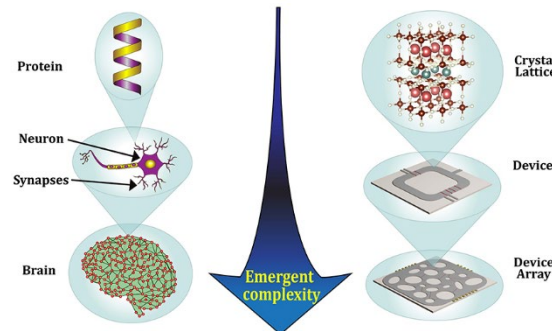
Water releasing



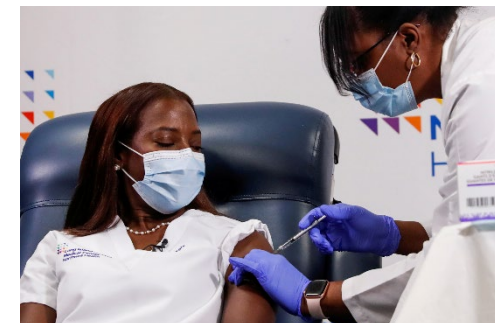
Credit: UT Austin



Credit: John Hopkins University Applied Physics Lab



Credit: UC San Diego



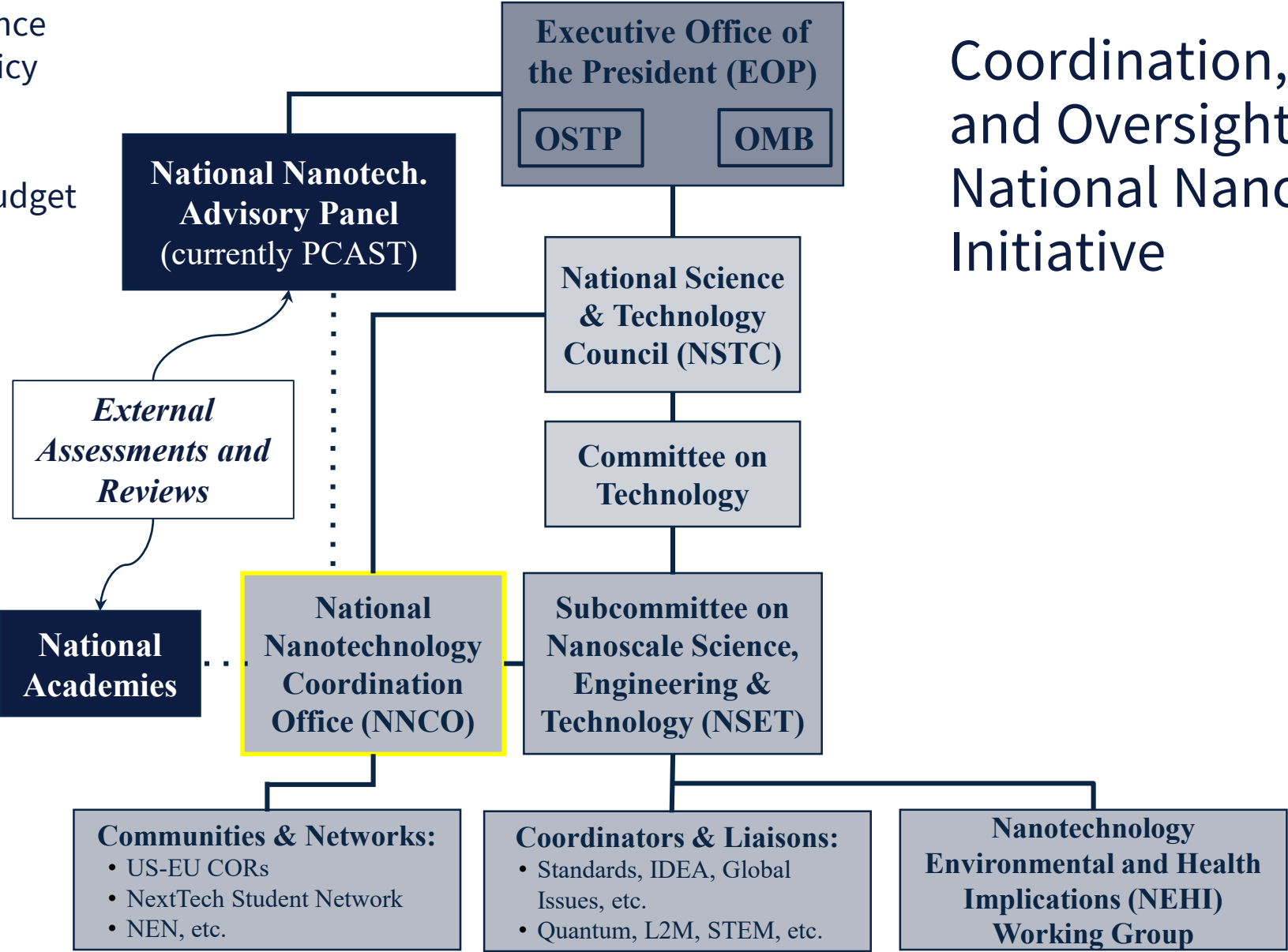
Credit: Northwell Health



OSTP: Office of Science  
and Technology Policy

OMB: Office of  
Management and Budget

# Coordination, Reporting, and Oversight of the National Nanotechnology Initiative



# NATIONAL NANOTECHNOLOGY COORDINATION OFFICE

Facilitate  
collaboration  
among agencies



Provide Technical  
& Admin Support



Promote  
Commercialization



Public Outreach & Engagement



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



@NNInanonews



National Nanotechnology Initiative



NanoTube - The National Nanotechnology Initiative

Credit: NNCO (all images)



2021-10-06 PM 02:00

## Biden-Harris Administration Releases Strategic Plan To Ensure U.S. Nanotechnology Competitiveness

OCTOBER 06, 2021 • 3,000-500 PAGES

*New plan aims to accelerate research translation, advance equity*

Today, on National Nanotechnology Day, the White House Office of Science and Technology Policy (OSTP) and the National Nanotechnology Coordination Office (NNCO) unveiled the 2021 National Nanotechnology Initiative (NNI) Strategic Plan. "This strategy details a new framework to ensure that the United States continues to lead the world not only in nanoscience discoveries, but in translating and manufacturing its products to benefit all of America. In addition to identifying priorities for the NNI to best support the research community in the United States, the plan prioritizes efforts to expand sustainable infrastructure and advance equity in the nanotechnology workforce."

"The role of nanotechnology in our response to the pandemic—from vaccine delivery to protective clothing to testing kits—emphasizes the potential for small science to have big impacts," said National Nanotechnology Coordination Office Director Dr. Lisa E. Friedersdorf. "This strategic plan clears an exciting path forward for the National Nanotechnology Initiative to ensure continued progress in nanotechnology research and development, and



## NATIONAL NANOTECHNOLOGY INITIATIVE STRATEGIC PLAN

A Report by the  
SUBCOMMITTEE ON NANOSCALE SCIENCE, ENGINEERING,  
AND TECHNOLOGY  
COMMITTEE ON TECHNOLOGY  
of the  
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

October 2021



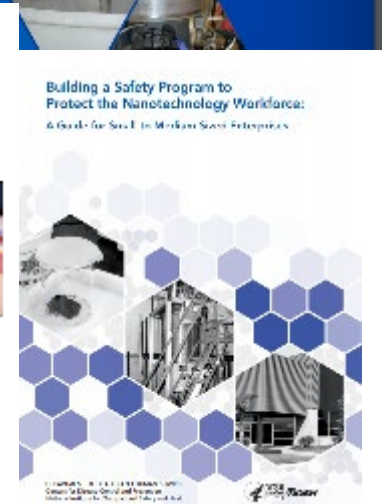
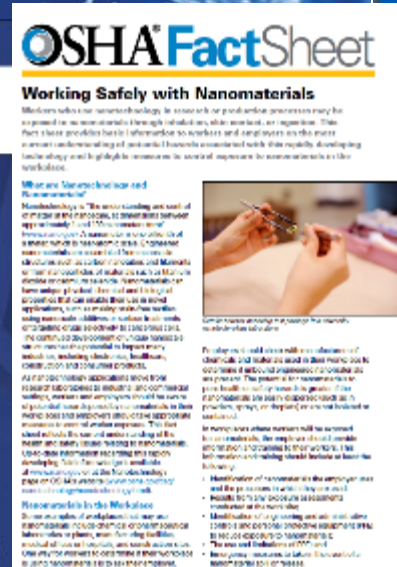
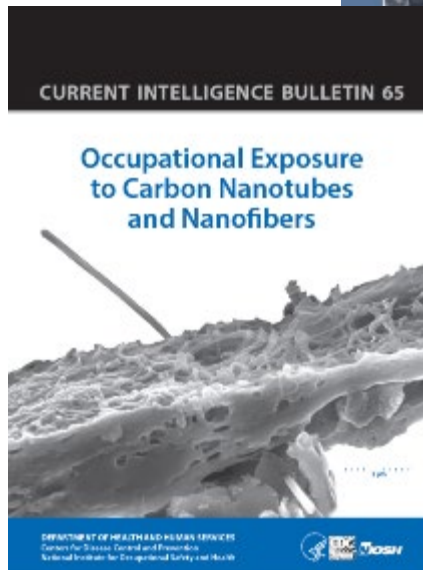
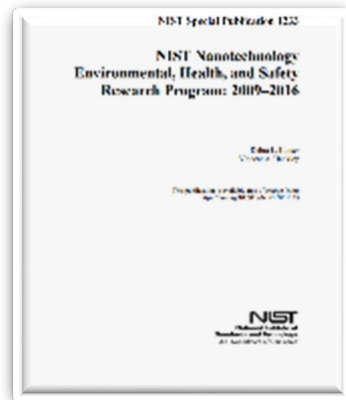
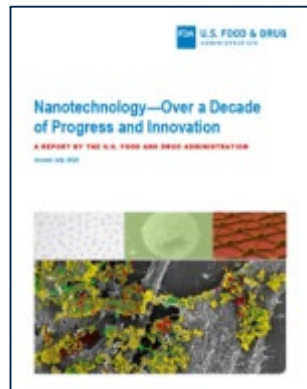
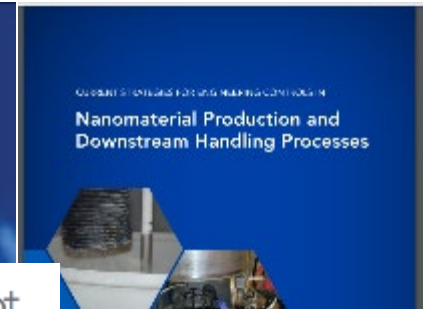
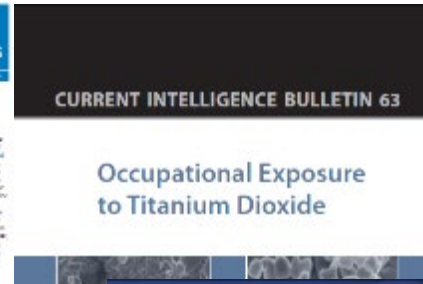
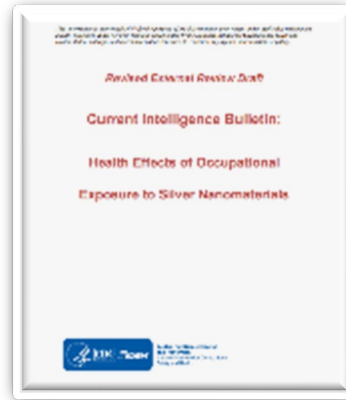
# 2021 NNI STRATEGIC PLAN GOALS

- Goal 1: Ensure that the United States remains a world leader in nanotechnology research and development.
- Goal 2: Promote commercialization of nanotechnology R&D.
- Goal 3: Provide the infrastructure to sustainably support nanotechnology research, development, and deployment.
- Goal 4: Engage the public and expand the nanotechnology workforce.
- Goal 5: Ensure the responsible development of nanotechnology.





# GUIDANCE DOCUMENTS ON THE SAFE USE OF NANOTECHNOLOGIES



Examples of Guidance Documents Developed by NNI Agencies



# RESEARCH INFRASTRUCTURE – USER FACILITIES

NSF National Nanotechnology  
Coordinated Infrastructure



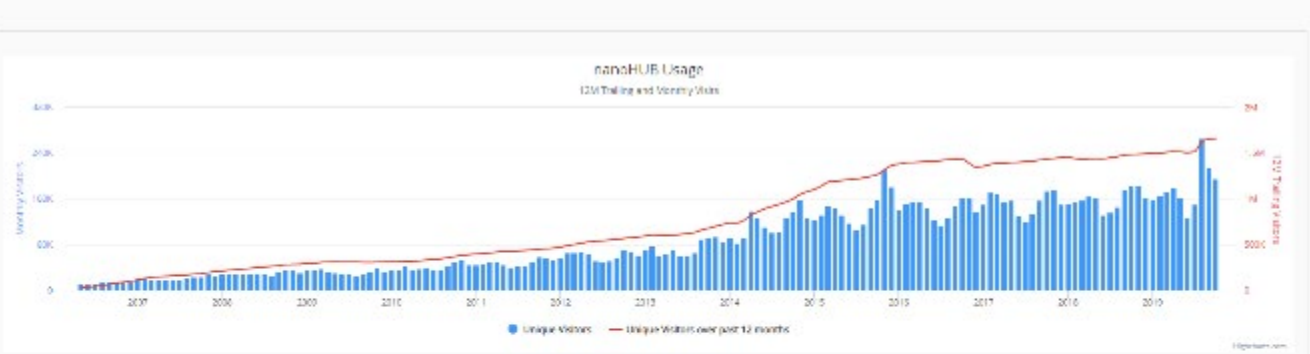
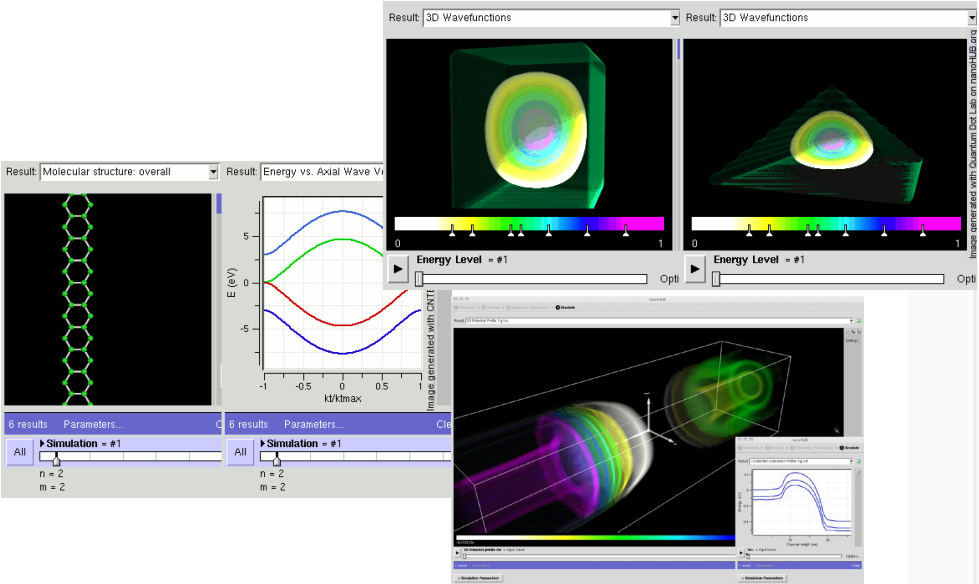
DOE Nanoscale Science Research Centers



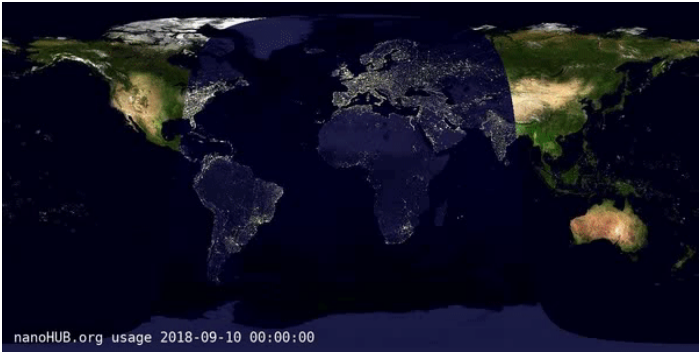
NIST Center for Nanoscale Science and Technology



# CYBER INFRASTRUCTURE



1,661,235 Unique Visitors	184,776 Registered Users	6,605 Resources	629 Published Tools
2,368 Citations	16,716 Simulation User Count		







SHyNE



# NNCI



SENIC



CNF

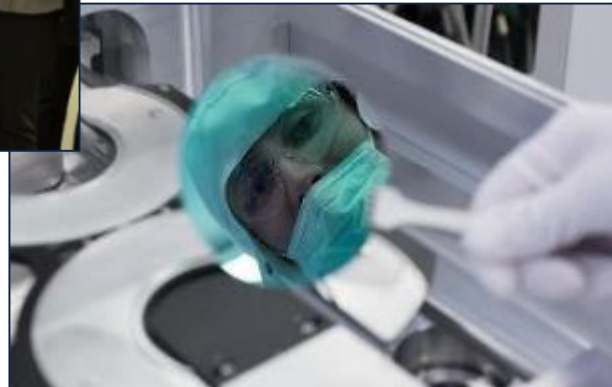
NCI-SW



CNF JEOL9500



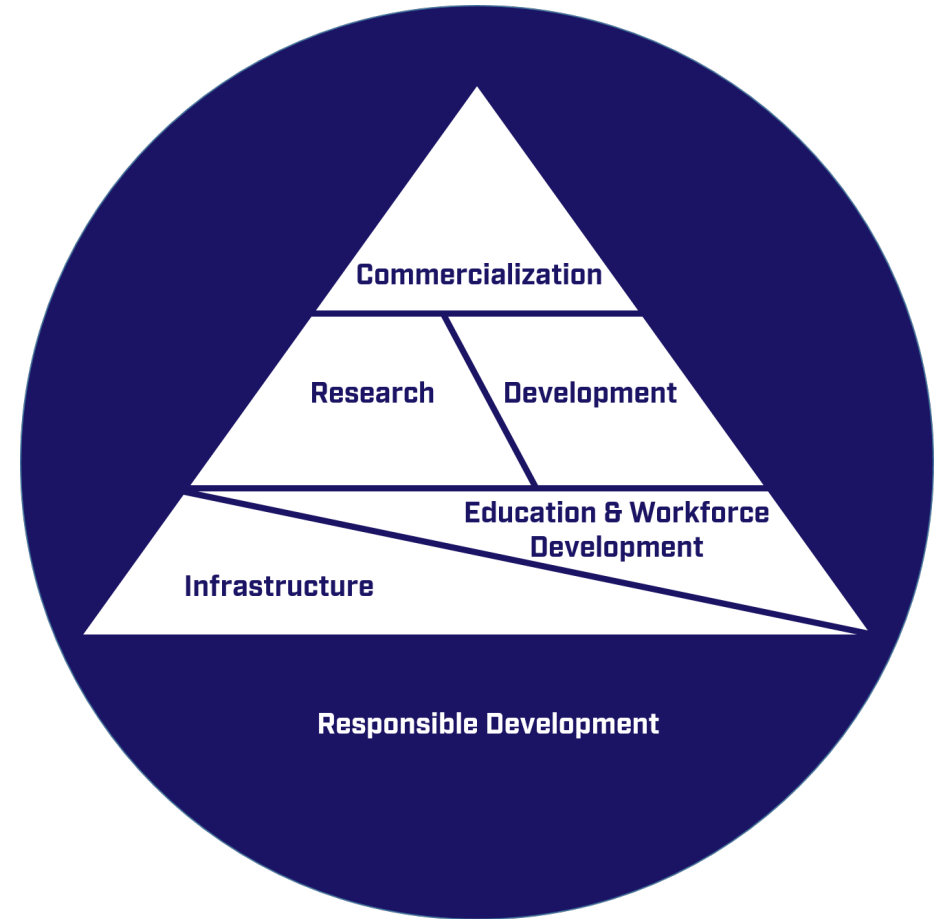
MINIC HPCVD





# 2021 NNI STRATEGIC PLAN

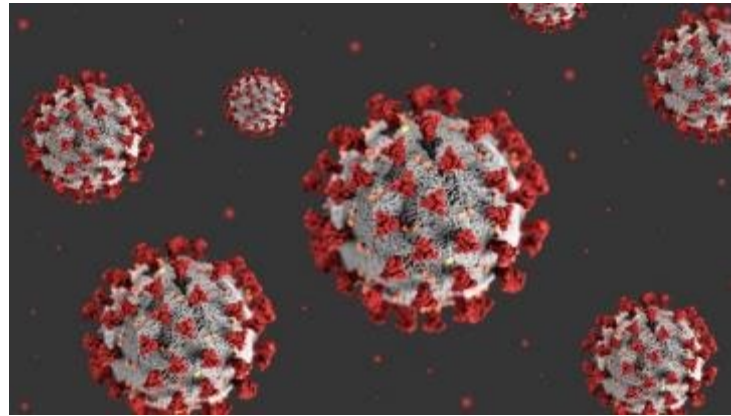
- Support & connect the entire nanotechnology innovation ecosystem
- Develop & disseminate resources
- Seamlessly connect across the technology development pathway
- Launch of new mechanisms- National Nanotechnology Challenges



# NANOTECHNOLOGY AND PANDEMIC RESPONSE



*Credit: Northwell Health*



*Credit: CDC*

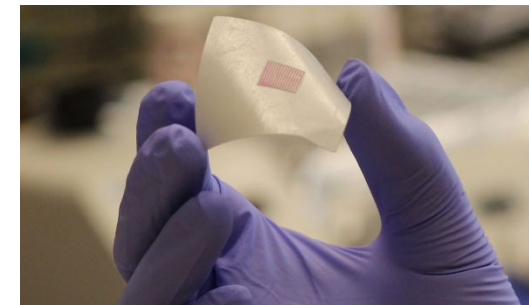
**~20% of COVID  
tests are  
nanotechnology  
enabled**



*Credit: DOE/ORNL*



*Credit: UCF*



*Credit: University of Connecticut*



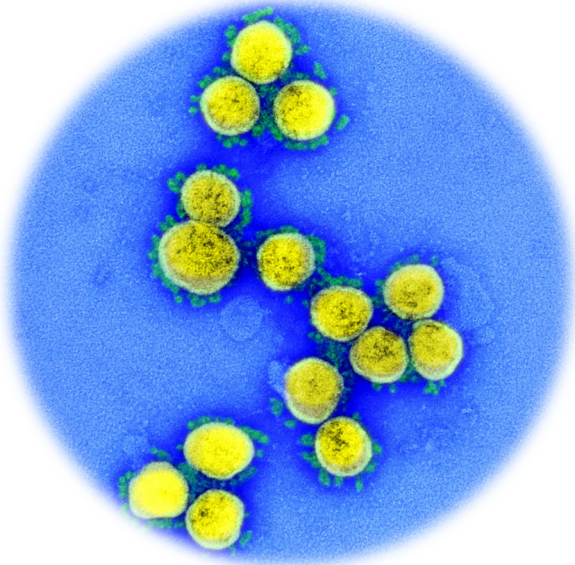
*Credit: Ellume*



# NATIONAL NANOTECHNOLOGY CHALLENGES

*Addressing critical issues with nanotechnology*

Pandemic Preparedness



*Credit: NIAID*

Food Security



*Credit: Iowa State University*

Climate Change



*Credit: Northwestern University*

Water Security



*Credit: Argonne National Laboratory*





# NANOTECHNOLOGY NOW



*Credit: U.S. Dept. of Veterans Affairs*



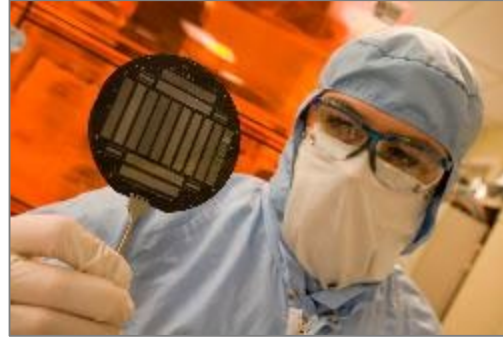
*Credit: Pexels*



*Credit: Pexels*



*Credit: Canva*



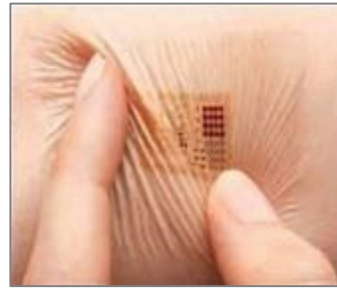
*Credit: NSF*



*Credit: Pexels*



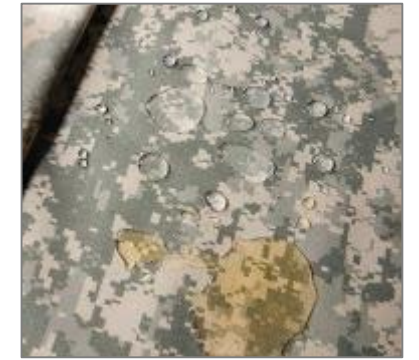
*Credit: L. Friedersdorf*



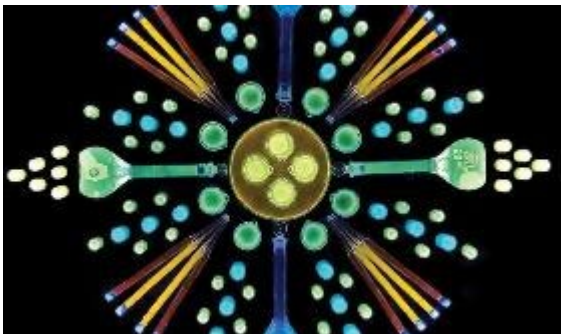
*Credit: J. Rogers, Univ. of Illinois*



*Credit: NSF*



*Credit: DOD*



*Credit: NSF*



*Credit: Pexels*



*Credit: Canva*



*Credit: NSF*



*Credit: Pexels*



*Credit: Pexels*

# THANK YOU.

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