

# NIST Visiting Committee on Advanced Technology (VCAT)

Dr. Laurie Locascio  
Under Secretary of Commerce  
for Standards and Technology  
and Director of NIST

**October 24, 2023**

- Session I:** Programmatic Updates: NIST Director's Overview, Safety, and DEIA
- Session II:** Programmatic Updates: Standards Subcommittee and CHIPS R&D
- Session III:** Discussion with VCAT on CETs: Biotechnology
- Session IV:** Discussion on New CETs for NIST
- Session V:** VCAT Progress and Planning

# NIST Leadership Changes



Credit: B. Hoyes/NIST

**Ms. Janelle Johnson**

Director, NIST Diversity, Equity, and  
Inclusivity Office



Credit: <https://www.linkedin.com/in/james-adams-03417716/>

**Dr. James Adams**

Director, NIST Center for Neutron  
Research

# Leadership Changes – Standards\*

**\*Pending DOC Approval**

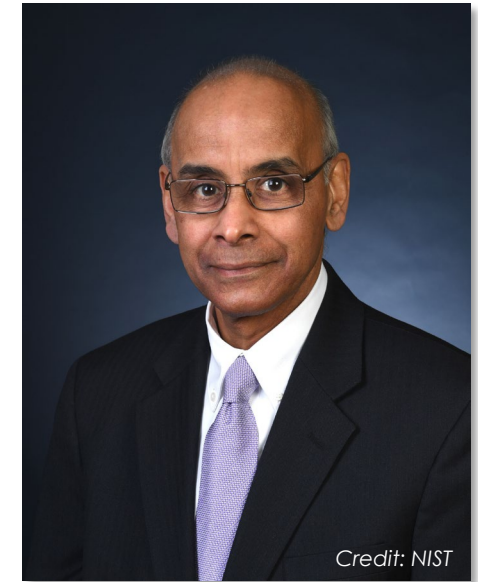


**Dr. Jayne Morrow**  
Sr. Advisor, Standards Policy

Interim Standards Executive



**Mr. Gordon Gillerman**  
Advisor, Standards &  
Conformity Assessment  
Capability Planning  
Associate Director for Laboratory  
Programs



**Dr. S. Shyam Sunder**  
Acting Director  
Standards Coordination Office

# CHIPS Leadership Changes



Credit: <https://www.linkedin.com/in/jay-lewis-1108361/>

## **Dr. Jay Lewis**

Director of the National  
Semiconductor  
Technology Center  
(NSTC)



Credit: UCLA

## **Dr. Subramanian S. Iyer**

Director of the National  
Advanced Packaging  
Manufacturing Program  
(APMP)



Credit: <https://www.linkedin.com/in/briana-petyo-frisone-109338183/>

## **Ms. Briana Frisone**

Senior Advisor for CHIPS  
for America

# I. NIST Programmatic Updates

# Updates



**Artificial Intelligence**



Climate and Environment



Selected NIST Highlights

# Artificial Intelligence



Fundamental and Applied AI Research



Guidance, Tools, and Frameworks



Measurement, Evaluation, and Standards



Lead and Convene Domestically and Internationally



# Generative AI Public Working Group

A diagram consisting of four hexagons arranged in a diamond shape. The top-left hexagon is light blue and contains the text "Governance". The top-right hexagon is a darker blue and contains the text "Digital Content Provenance". The bottom-left hexagon is light green and contains the text "Pre-Deployment Verification and Validation". The bottom-right hexagon is a darker green and contains the text "Incident Disclosure".

**Governance**

**Digital  
Content  
Provenance**

**Pre-  
Deployment  
Verification  
and  
Validation**

**Incident  
Disclosure**

- **Announced in July 2023 by Secretary Raimondo and led by NIST.**
- Nearly 1,000 public and private sector volunteers have joined the group to:
  - Create a cross-sectoral AI RMF profile focusing on four program areas
  - Support NIST's testing, evaluation, and measurement efforts
  - Explore opportunities to use AI for good
- Drafts of four sets of guidelines are anticipated for release for public comment later this year

AI Futures: Sustaining Innovation in Next Gen AI

AI in Work and the Workforce

AI Regulation and Executive Action

Engagement, Education and Inclusion

Generative and NextGen AI: Safety and Assurance

Rights-Respecting AI

AI and the Economy

Procurement of AI Systems

International Arena: Collaboration on AI Policy and AI-Enabled Solutions

## New Focus Areas Working Groups

- Realigned focus areas to explore impacts of AI

## Meetings

- Public meetings informing the Committee on their Year 2 work

## Reports, Recommendations, and Non-Decisional Documents

- Recommendation for International Emerging Economies
- Three instructive explainer documents on topics including the NIST AI RMF, generative AI, and AI regulation



Credit: Time Magazine

## International Engagement

- October 12: Published a crosswalk between NIST AI RMF and Singapore AI Verify as part of Singapore CET Dialogue

## Standards Development

- September 28: Hosted a Joint Workshop on Risk Management for AI Systems with ANSI

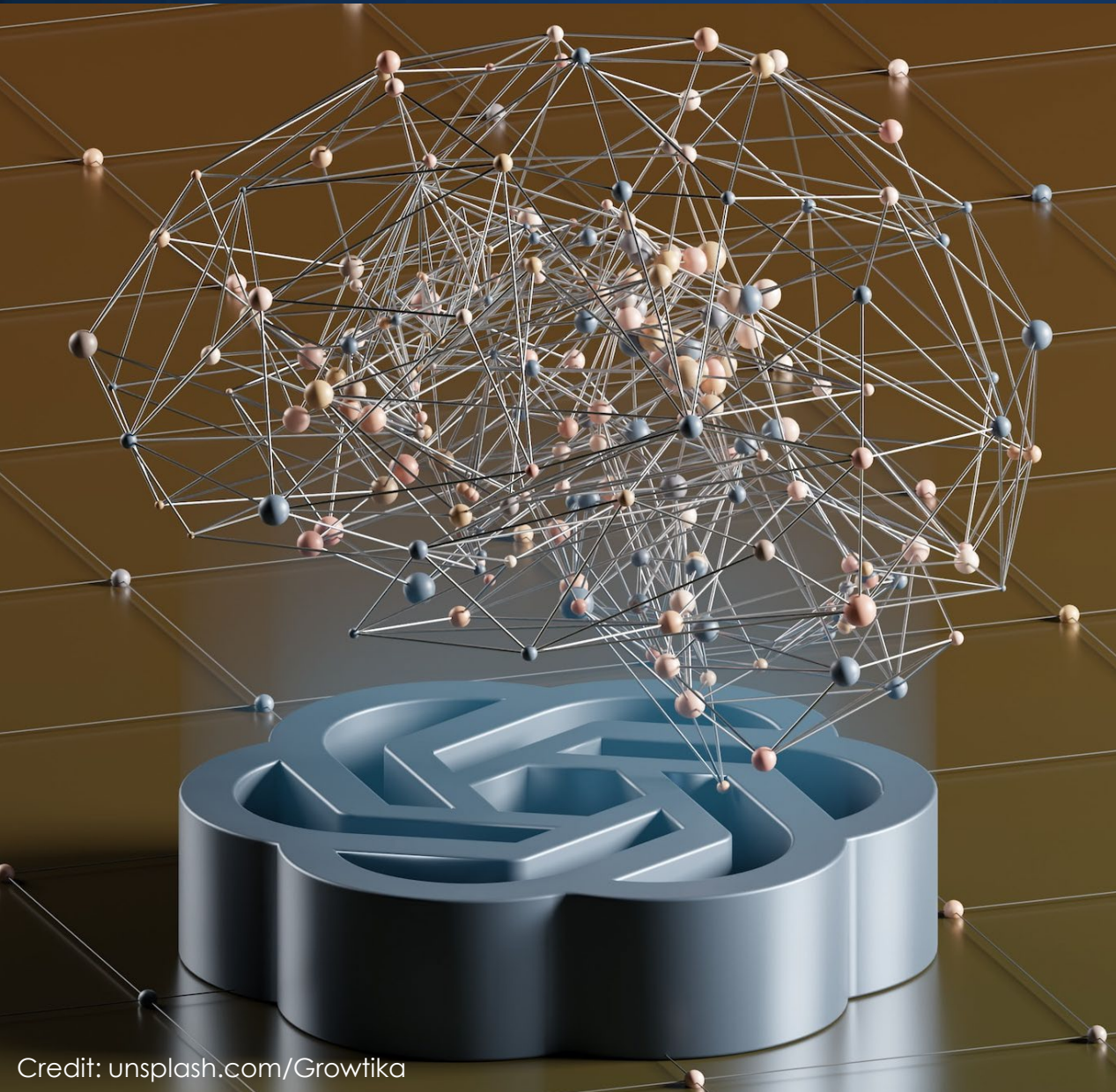
## AI Governance Forum

- August 21: Participated at the Forum in Seattle, Washington, hosted by Senator Cantwell to discuss AI

## Leadership in AI

- September 7: NIST's Elham Tabassi was included on Time Magazine's list of 100 most influential people in AI

# What's Next for NIST



## Further International Engagement

- Upcoming joint webinar on AI risk and safety with the United Kingdom collaborators
- Continue engagement in fora to further standards development

## Advance AI R&D and Measurement

- Including expansion of testing and evaluation, standards, and guidelines
- Strengthen engagement and joint R&D with stakeholders and community

## Lead Domestically

- Upcoming executive action on AI potentially coming in the fall

# Updates



Artificial Intelligence



**Climate and Environment**



Selected NIST Highlights

# NIST Prepares Industry for the Future



**Climate Monitoring  
and Measurements**



**Decarbonization of  
the Economy**



**Adaptation and  
Resilience**



# Climate Monitoring and Measurements



- US Greenhouse Gas Center
- Expansion of the Urban Dome NE Corridor
- Low GWP refrigerants developed and evaluated

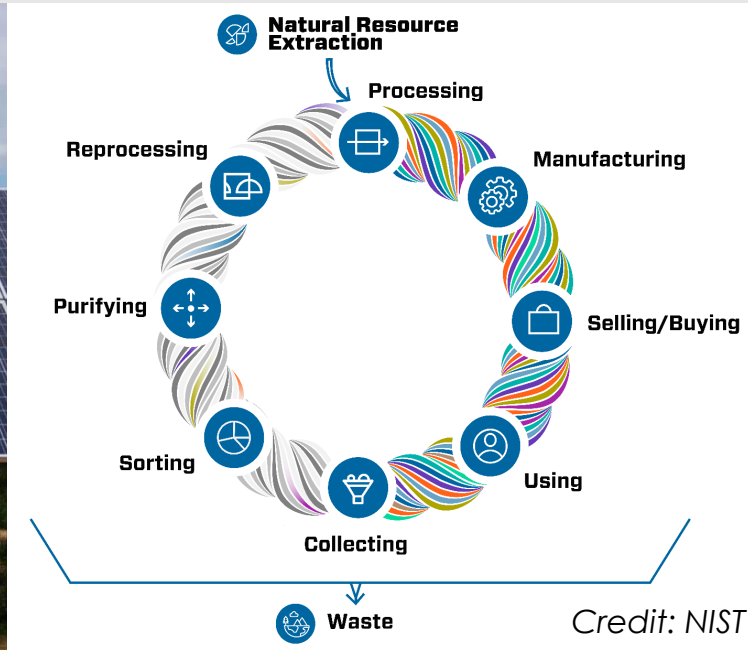


*Credit: Pixabay*

# Decarbonization of the Economy



Reduce



Recycle



Repurpose



# Ongoing NIST Wildfire Efforts



## NIST study of Camp Fire in Paradise, CA in 2018

- Event timeline published in February 2021
- Notification, Evacuation, Traffic, and Temporary Refuge Areas (NETTRA) published July 2023
- Wildland-Urban Interface (WUI) Fire Evacuation and Sheltering Considerations: Assessment, Planning, and Execution (ESCAPE) published August 2023
- Hazard Mitigation Methodology website launched on August 23, 2023 (report published in March 2022)

Protect your community from **Wildfire**



**Hazard  
Mitigation  
Methodology**

HMM is a comprehensive, science-based community wildfire protection approach



Credit: CAL FIRE

# NIST Disaster Investigations Update



Credit: NIST

## Maui Reconnaissance Team

- August 2023: deployed preliminary reconnaissance team to gather information about the event, timeline, and evacuation and emergency response
- No NCST investigation planned; options open for research study

## Hurricane Maria

- September 2023: NCST data collection complete; data analysis well underway
- Target completion of data analysis and draft reports in Fall 2024

## Champlain Towers South

- September 2023: Preliminary evaluation revealed how construction of pool deck deviated from design
- More than 300 concrete cores and rebar samples extracted and materials testing underway
- Computer models extended to represent entire Champlain Towers South building

# Updates



Artificial Intelligence

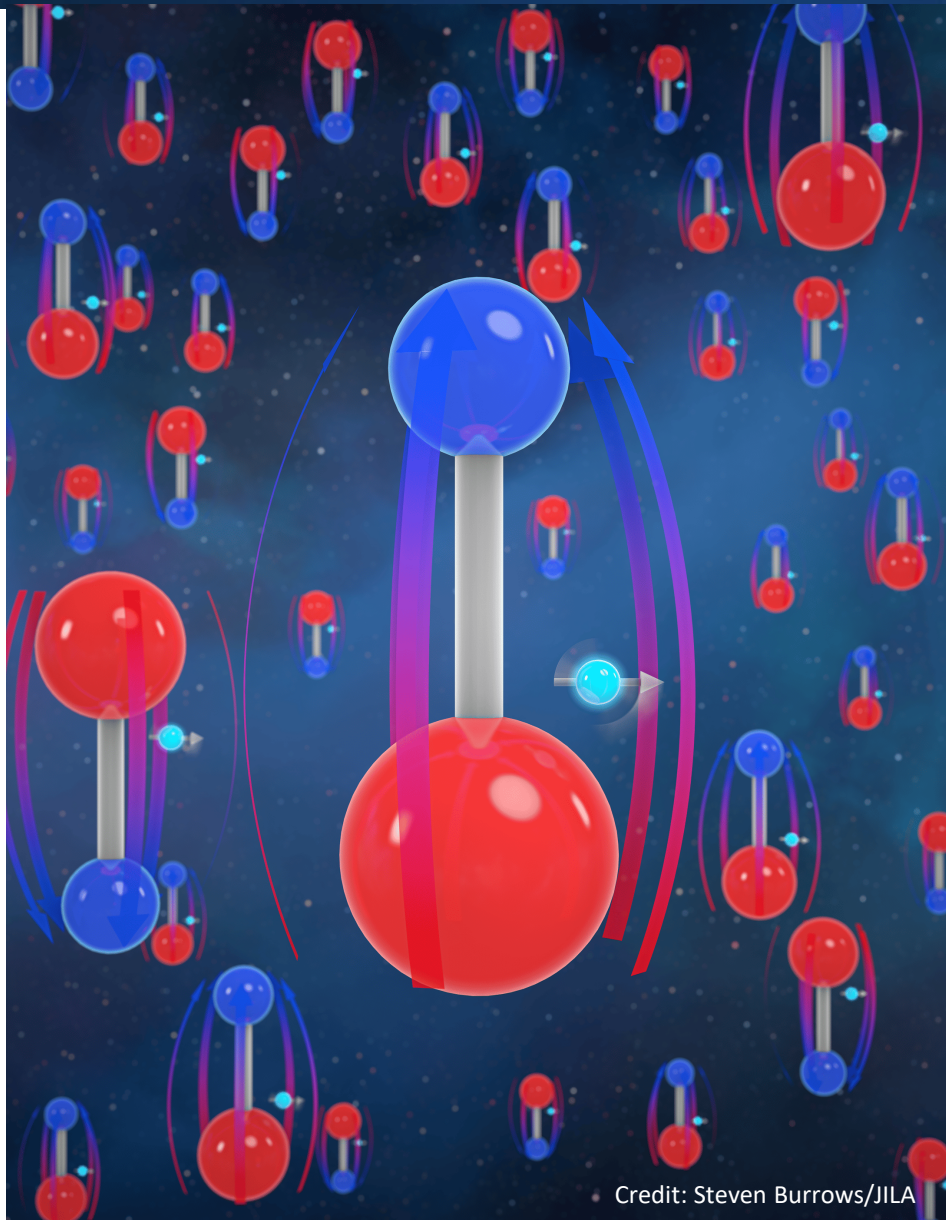


Climate and Environment



**Selected NIST Highlights**

# A New Limit on the Creation of Matter



## Asymmetry of the Universe

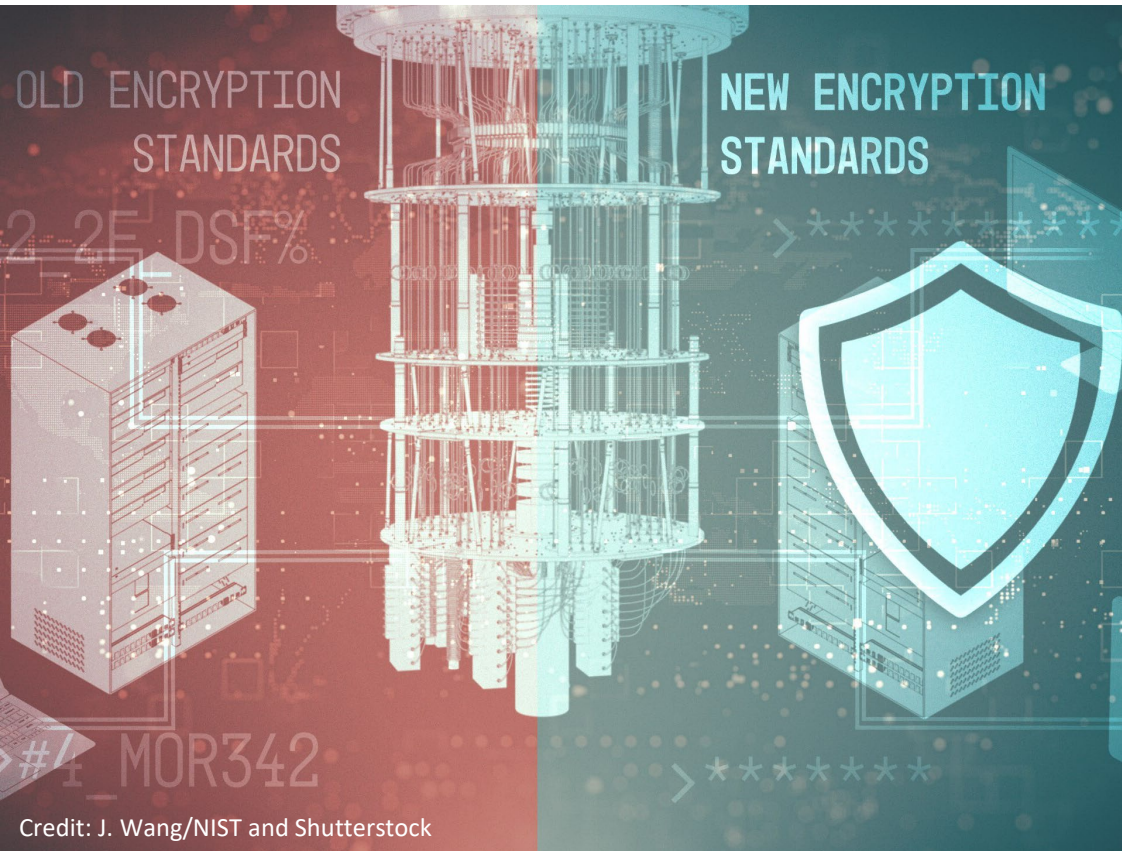
If the universe were perfectly symmetrical, with equal amounts of matter and anti-matter, we would not exist. The search for an explanation to the asymmetry of our universe is one of the fundamental physics question of our time.

## The Perfection of the Electron

The JILA research group set an upper bound on the electron's electric dipole moment with a 2.4-fold reduction in uncertainty, using tabletop equipment.

An improved bound on the electron's electric dipole moment  
Roussy T.S., L. Caldwell, T. Wright, W. Cairncross, Y. Shagam, K.B. Ng, N. Schlossberger, S.Y. Park, A. Wang, J. Ye, and E.A. Cornell, Science 381, 46-50 (2023). <https://www.science.org/doi/10.1126/science.adg4084>

Credit: Steven Burrows/JILA



## Cybersecurity Framework 2.0

- Draft released August 2023 for public comment.
- Workshops held in September 2023.
- Updated framework anticipated in early 2024.

## Internet of Things Labeling Launch

- The White House launched the Cyber Trust Mark in July 2023.

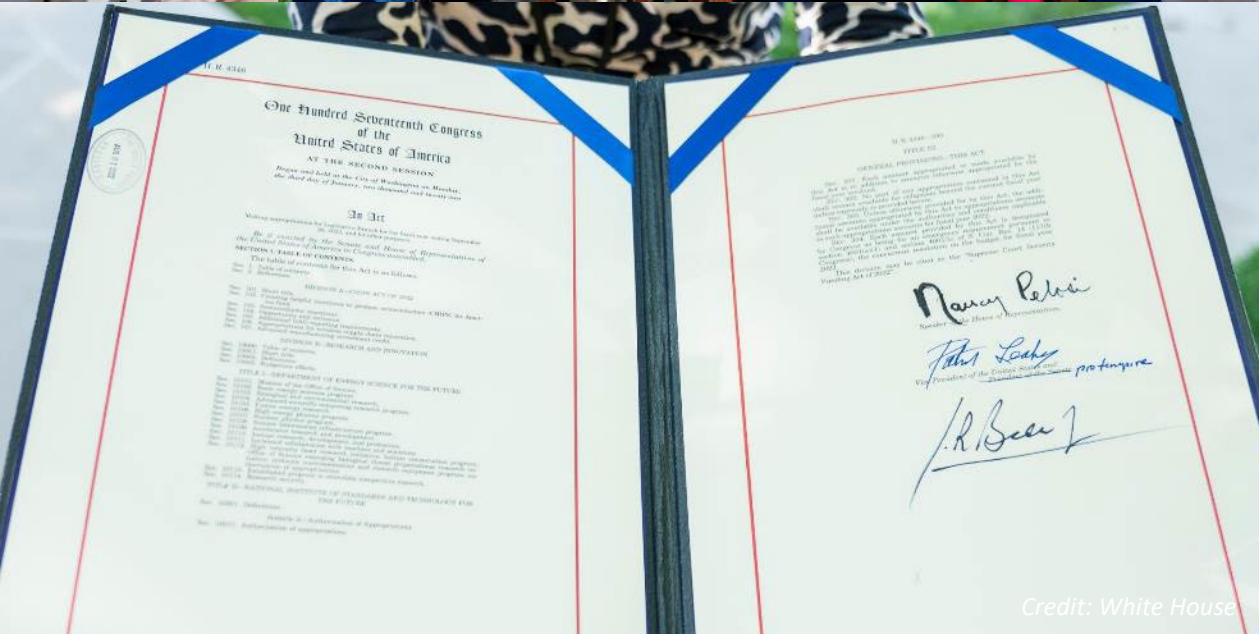
## Draft Post Quantum Cryptography Standards

- In August 2023, NIST released a draft of standardized encryption algorithms designed to resist quantum computer attacks.

# CHIPS Incentives Program Highlights



Credit: White House



Credit: White House

## Large Supply Chain Projects Funding Opportunity

- Released June 23, 2023
- For large semiconductor materials and equipment facility projects (\$300M+)

## Memorandum of Agreement with DoD

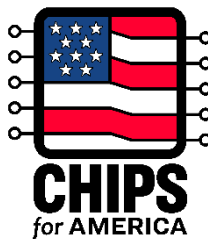
- Signed July 26, 2023
- Expand collaboration to strengthen the U.S. semiconductor defense industrial base

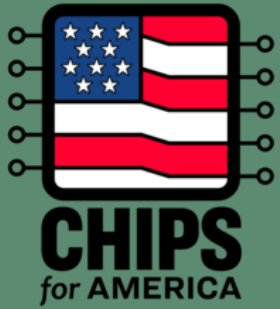
## Rule on National Security Guardrails

- Published September 22, 2023

## Smaller Supply Chain Projects Funding Opportunity

- Released September 29, 2023
- For smaller semiconductor materials and equipment facility projects (< \$300M)





## CHIPS Funding Requirements

Companies seeking CHIPS funding are required to submit workforce development plans



## National Initiative for Cybersecurity Education (NICE)

Cybersecurity Career Week promoted the discovery of cybersecurity careers



## MEP National Network Workforce Programs, Services and Trainings

New interactive workforce map launched



## Manufacturing USA

- Issued a WEAVE NOFO
- NIIMBL Awarded \$370K for 5 programs

# Facilities Updates

## Boulder Wing 5 Renovation Ribbon Cutting

August 17, 2023

- 16 laboratory spaces
- 154 seats for staff members
- Nanofabrication infrastructure
- Indoor & outdoor team spaces

## Robot Test Facility Ground Breaking

October 27, 2023

- urban search and rescue
- bomb-disposal
- manufacturing

## NCNR Updates

- Reactor Operator Exams (July, awaiting results from NRC)
- Unplanned power outage initiated automatic shutdown Aug. 9
- Continuing to mitigate radioactivity in the primary cooling system for low power testing



Credit: NIST



New Neutron Spin Echo instrument nearing completion

Credit: D. Neumann/NIST



# Highlights At-a-Glance

NIST Internal Report  
NIST IR 8486

## Single-Photon Sources and Detectors Dictionary

Joshua C. Bienfang  
Alan Migdall  
Sergey Polyakov  
Physical Measurement Laboratory

Thomas Gerrits  
Paulina S. Kuo  
Oliver Slattery  
Information Technology Laboratory

This publication is available free of charge from:  
<https://doi.org/10.6028/NIST.IR.8486>

September 2023



U.S. Department of Commerce  
Gina M. Raimondo, Secretary

National Institute of Standards and Technology  
Laurie E. Locascio, NIST Director and Under Secretary of Commerce for Standards and Technology

Leading in Quantum  
Standards



Finding new solutions to  
pinpointing exact location and  
elevation during rescue missions



Credit: Gage Skidmore,  
[https://commons.wikimedia.org/wiki/File:Adam\\_Savage](https://commons.wikimedia.org/wiki/File:Adam_Savage)

Adam Savage will present  
NIST colloquium "Talking  
about Precision", Oct. 26



MEP program celebrated  
its 35<sup>th</sup> anniversary



New, flexible-topic MFG  
USA institute competition  
launching Q4

Thank you!