

# NNCI Education and Outreach

Dr. David Gottfried

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Goodbye and thank you:  
Dr. Quinn Spadola



Welcome:  
Dr. Mikkel Thomas



Thank you:  
Ms. Leslie O'Neill



# NNCI Education and Outreach Mission

- Offer education and training to address the growing need for a skilled workforce and informed public
- Provide resources, programs, and materials to enhance knowledge of nanotechnology and its application to real-world issues
- Support the US economy by enabling a STEM-literate workforce ready to meet the technological challenges of a nano-enabled economy as well as an informed citizenry that supports continued and safe growth of nanotechnologies

# NNCI E&O



August 2021 - July 2022

Reached over **23,000** people through in-person and virtual activities

Does not include another 78,000:

- ACCelerate Creativity and Innovation Festival (NanoEarth)
  - Museum Exhibit (NNF)
  - Online Courses (RTNN, Stanford)
- or *Nanooze* (CNF)

Improvement from 14,500 last year

# NNCI E&O

Audience		Last Year	This Year
<b>K-12 Students</b>	Remote Sessions	5,400	10,700
	Class Trips		
	Camps		
	Tours		
<b>K-12 Teachers</b>	Workshops	900	1,100
	Conferences		
	RET		
<b>General Public</b>	Festivals	1,100	1,700
	Science Days		
	NND Events		
<b>Students and Professionals</b>	Student Interns	7,000	9,500
	REU		
	Short Courses		
	Conferences		
	Seminars		

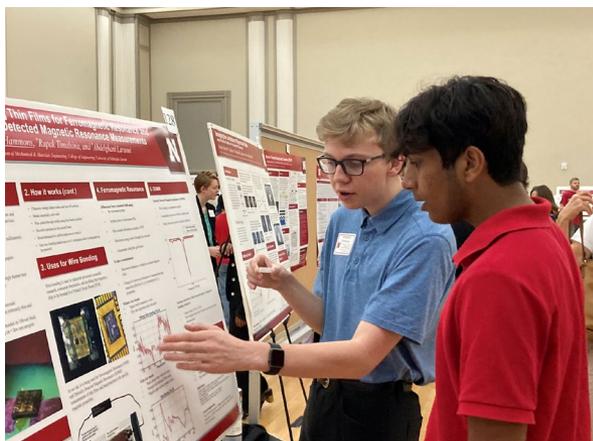
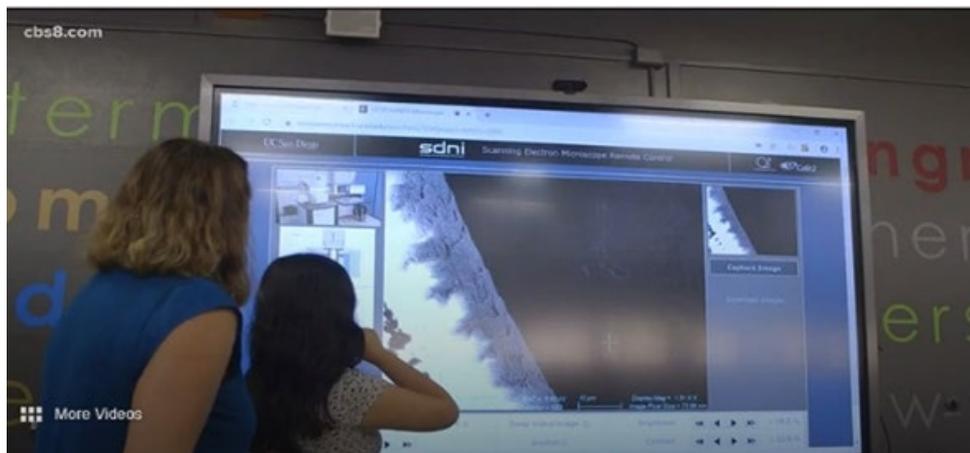
# NNCI E&O: External Collaborations



**BOYS & GIRLS CLUBS  
OF AMERICA**

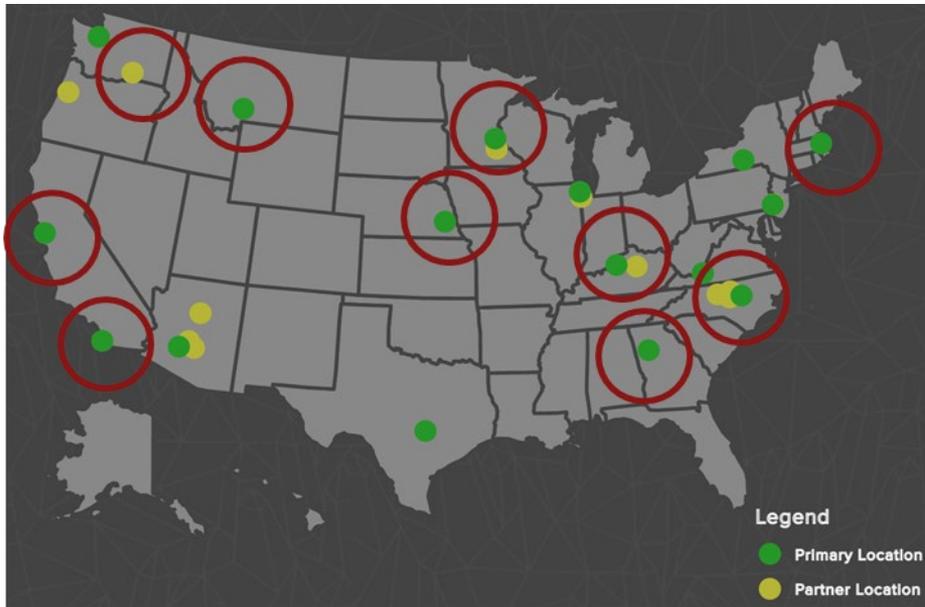


# NNCI E&O: K-12 Students



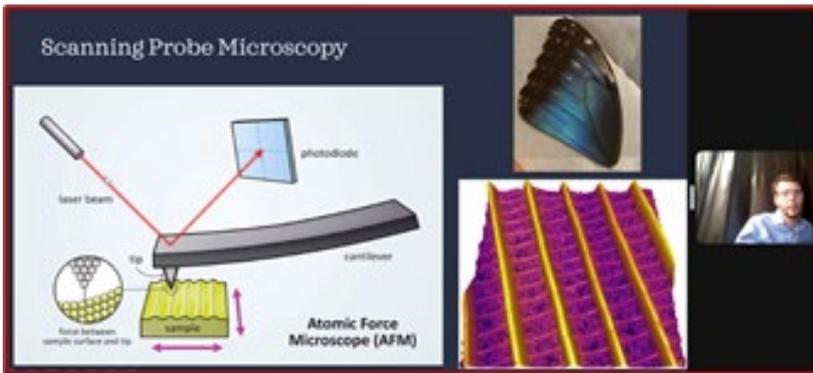
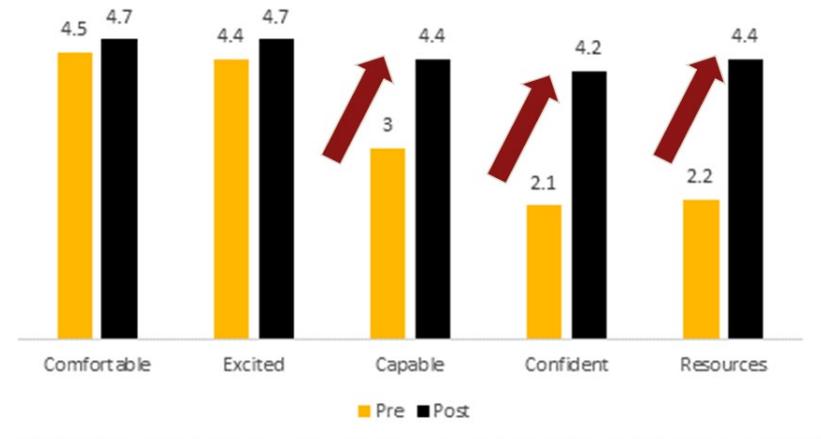
Kearny High School (San Diego, CA)

# NNCI E&O: Educators

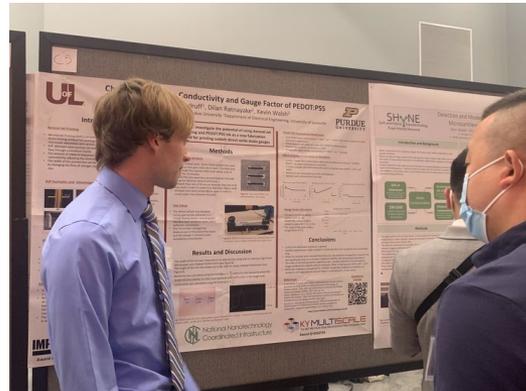
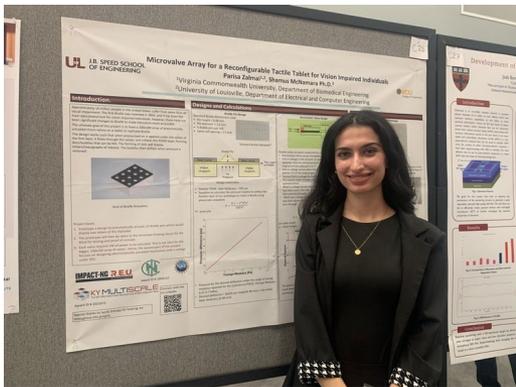


## Change in Average Agreement

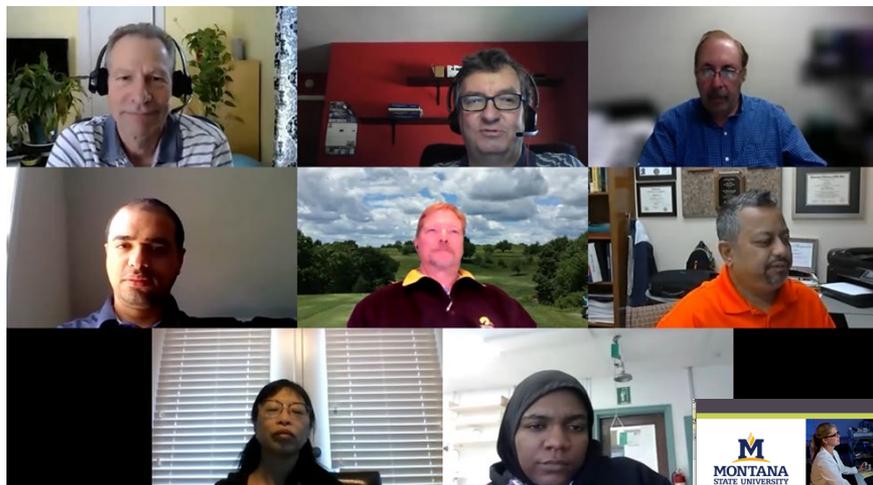
After the workshop more participants strongly agreed or agreed they are comfortable, confident, capable, excited, and have the resources they need.



# NNCI E&O: Undergraduates



# NNCI E&O: Professionals



## 2021 MNT Health and Safety Workshop



**Nanotechnology in STEM**

- Nanotechnology: an Emerging Science
- Needs and Opportunities
- An Emerging Teaching Opportunity
- Evidence-based Teaching Practices
- Background Nanoscience Resources for Instructors
- Nanoscience Literature for Earth and Environmental Science
- Instruments and Analytical Methods Common to Nano
- Registry of Analytical Equipment
- Ethics
- National Nanotechnology Coordinated Infrastructure
- Workshops and Events
- NNCI Workshop Spring 2022
- Program
- NNCI Workshop Spring 2021
- Goldschmidt Workshop 2018
- NanoEarth Workshop 2018
- Goldschmidt Workshop 2017
- MONT Activities
- Get Involved

### NNCI Nanoscience in the Earth and Environmental Sciences Research Community Virtual Workshop

May 16–17, 2022, with optional 'Office Hours with Experts' on May 18

Days begin at: 11 am Eastern (Duration: ~4.5 hours each day)

Hosted by NanoEarth (The Virginia Tech National Center for Earth and Environmental Nanotechnology Infrastructure) in coordination with MONT, NCI-SW, and nano@stanford.

*This workshop has already taken place.*

#### Workshop Overview

Nanoscience is the study of natural and artificial materials at extremely small scales where novel properties emerge. In addition to creating faster and more powerful computers, new discoveries in nanoscience research are enabling technologies that are critical to solving issues related to energy, climate, human health, and more. However, researchers in the Earth, environmental, agriculture, and water sciences, as well as related fields tend to be underrepresented in nanoscience and nanotechnology. Increased participation would lead to new solutions to important societal problems related to more sustainable food production, clean soil and water, energy production and storage, and climate change, as well as deeper understanding of Earth and planetary processes and environmental systems.

This workshop will demonstrate the practical aspects of applying the tools and knowledge of nanoscience to study planetary and environmental samples. Specifically, the focus will be on using electron imaging, spectroscopy, and x-ray diffraction methods to study natural materials at the nanoscale. The workshop content will be presented as two case studies: 1) nanoparticles in sediments collected from an active drinking water reservoir, and 2) nanoscale structures in a meteorite sample. Topics to be covered include sample collection in the field, sample preparation/preservation, and instrumental data acquisition, reduction, and representation. The workshop will include presentations and demonstrations with ample time for Q&A to explore modern advances of nanoscience as applied to the Earth and environmental sciences. This is an invitation to all scientists to learn more about the emerging research opportunities afforded by nanoscience and to identify the needs of conducting nanoscience in geosciences, environmental sciences, agriculture, water science, and related fields.

#### Workshop Goals

- The goal of Day 1 is to introduce the audience to environmental nanoscience research using a case study that will be explored through a series of demonstrations (synchronous and asynchronous videos), discussions with live polls, and Q&A sessions. There will be an emphasis on sampling from environmental systems and the advantage of integrating data

Carleton College  
Nanotechnology in  
STEM Website

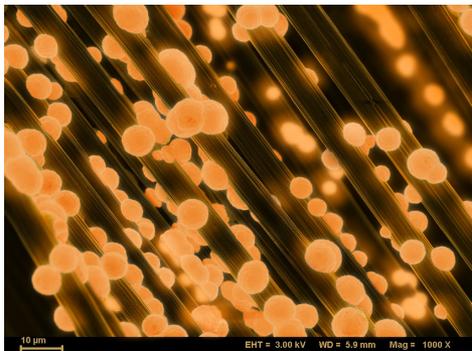
# NCCI E&O: General Public



ATLANTA **SCIENCE** FESTIVAL™  
engineered by **SCIENCE ATL**

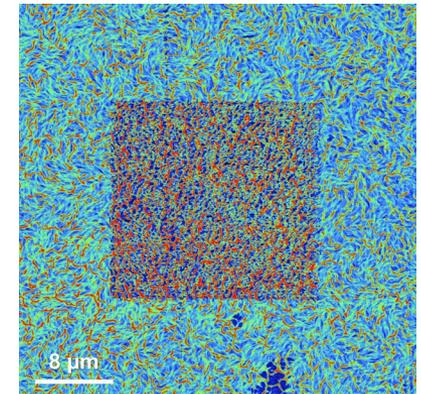
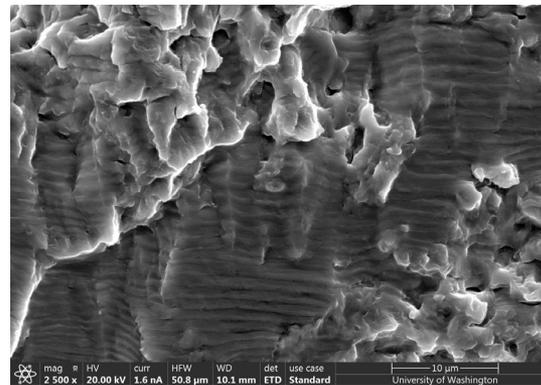
# Plenty of Beauty at the Bottom 2022

## Most Stunning Stanford/SENIC



## Most Whimsical Stanford/SENIC

## Most Unique Capability NNI/Stanford



Thank You!  
Questions?