

NNCI Education and Outreach

Dr. Mikkel A. Thomas

Georgia Institute of Technology

Associate Director of Education and Outreach,
NNCI Coordinating Office

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 2022 - July 2023
Reached over **32,000** people
through in-person and virtual
activities

Does not include another 118,000:

- Museum Exhibit (NNF)
- Online Courses (RTNN, Stanford)
or *Nanooze* (CNF)

Improvement from 9,000 last year

NNCI E&O

Audience		Last Year	This Year
K-12 Students	Remote Sessions	10,700	19,900
	Class Trips		
	Camps		
	Tours		
K-12 Teachers	Workshops	1,100	2,200
	Conferences		
	RET		
General Public	Festivals	1,700	8,200
	Science Days		
	NND Events		
Students and Professionals	Student Interns	9,500	10,300
	REU		
	Short Courses		
	Conferences		
	Seminars		

NNCI E&O: External Collaborations



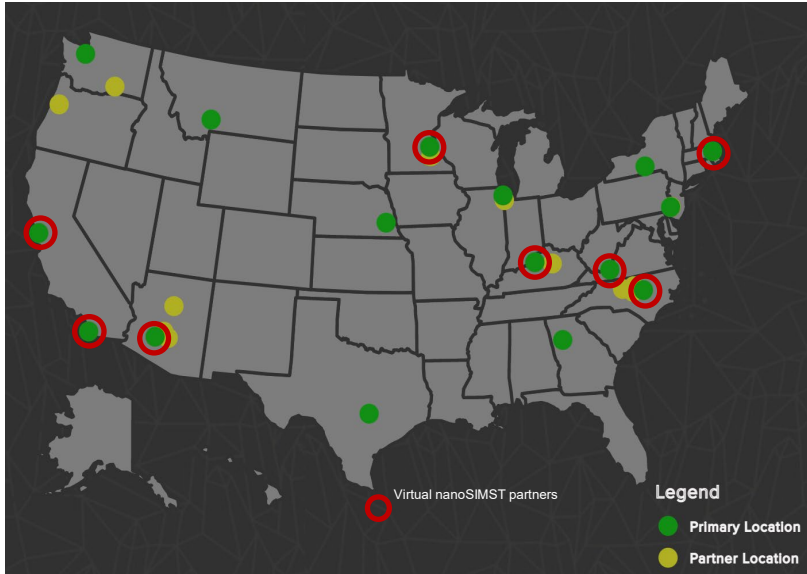
**BOYS & GIRLS CLUBS
OF AMERICA**



NNCI E&O: K-12 Students



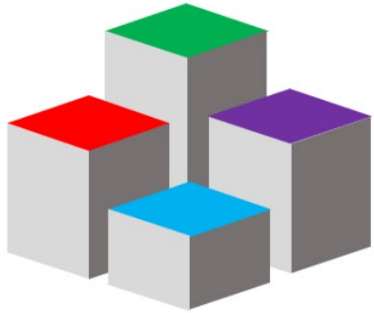
NNCI E&O: Educators



NNCI E&O: Undergraduates



NNCI E&O: Professionals



Annual NNCI Nano + Additive Manufacturing SUMMIT



NUANCE
Welcome Speakers About Us Career/Networking

NUANCE CENTER & MSA STUDENT COUNCIL PRESENTS
**Women In Microscopy
Conference**
VIEW 2023 SCHEDULE

WELCOME!
**The 3rd Annual Women In
Microscopy Conference**
March 8, 2023
Thank you to everyone who attended the conference! It was a joy to be surrounded by such amazing and inspiring speakers, panelists, and attendees from around the world. The Committee is already planning for 2024.
[Read about the 2023 conference on the NUANCE website!](#)

2023 CONFERENCE VIDEO
Check out the conference video on the [NUANCE YouTube Channel!](#)
While there, browse our other workshop, educational and demonstration videos!

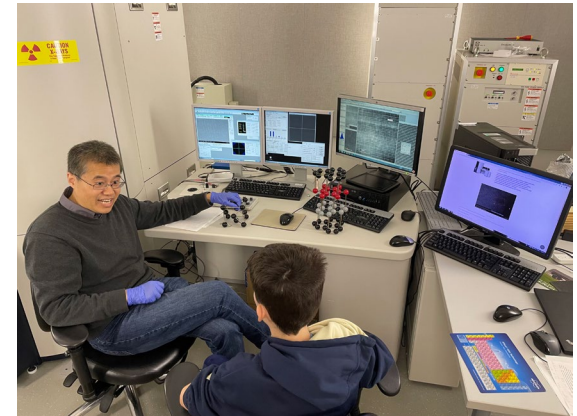


Welcome to the third annual Women in Microscopy conference hosted by the NUANCE Center and Microscopy Society of America Student Council.

Women in Microscopy Conference

NNCI E&O: General Public

NANO JOURNALISM



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



NNCI E&O: General Public

- Partnership between MONT and the Science Education Resource Center (SERC)
- Added new K-12 resources over the past year
- Website saw a 40,000 increase in visits from the previous year
- Teaching pages saw an 11% growth in page visits.



Montana State University
Montana Nanotechnology Facility

Nanotechnology in STEM - NNCI Workshop Spring 2022

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

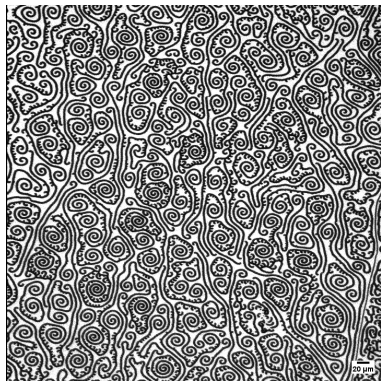
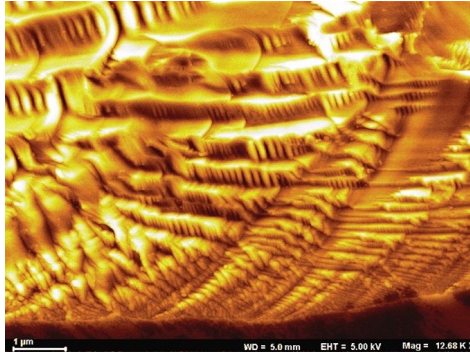
Carleton College
Nanotechnology in
STEM Website

Lessons From COVID-19

- Multiple sites have made workshops virtual.
 - Sites have seen an increase in attendance and an increase in their service area
- Multiple sites have added remote training for their tool sets
 - Prepares users prior to their arrival in the lab and smooth their transition to the facility.
- Conferences and seminars are offered virtually and have been archived for viewing at a later time on sites' social media.
- Sites improved their delivery and became more efficient in their teaching methods
 - Feedback during the pandemic allowed sites to make these improvements

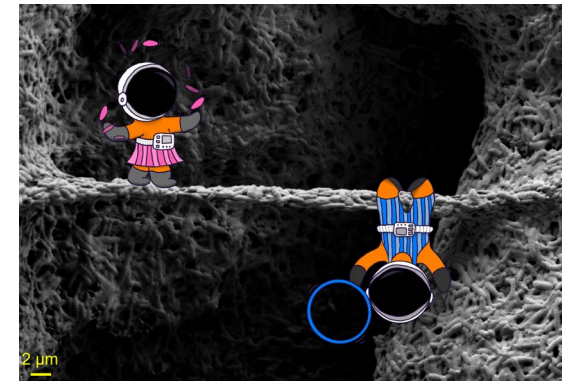
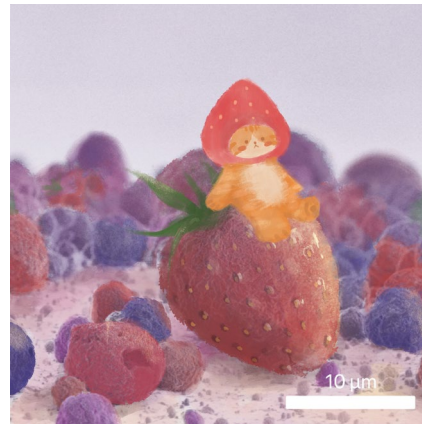
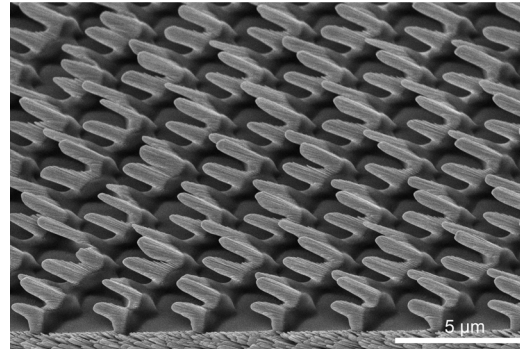
Plenty of Beauty at the Bottom 2023

Most Stunning SENIC/MiNIC



Most Whimsical Stanford/MONT

Most Unique Capability KY Multiscale/Stanford



Thank You!
Questions?