Societal and Ethical Implications across the NNCI

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National Nanotechnology Coordinated Infrastructure

NSF

SEI in the NNCI

Working toward the daunting goal outlined in the

21st Century Nanotechnology R&D Act:

"integrating research on societal, ethical, and environmental concerns with nanotechnology research and development, and ensuring that advances in nanotechnology bring about improvements in quality of life for all Americans"

Three primary areas of work in SEI:

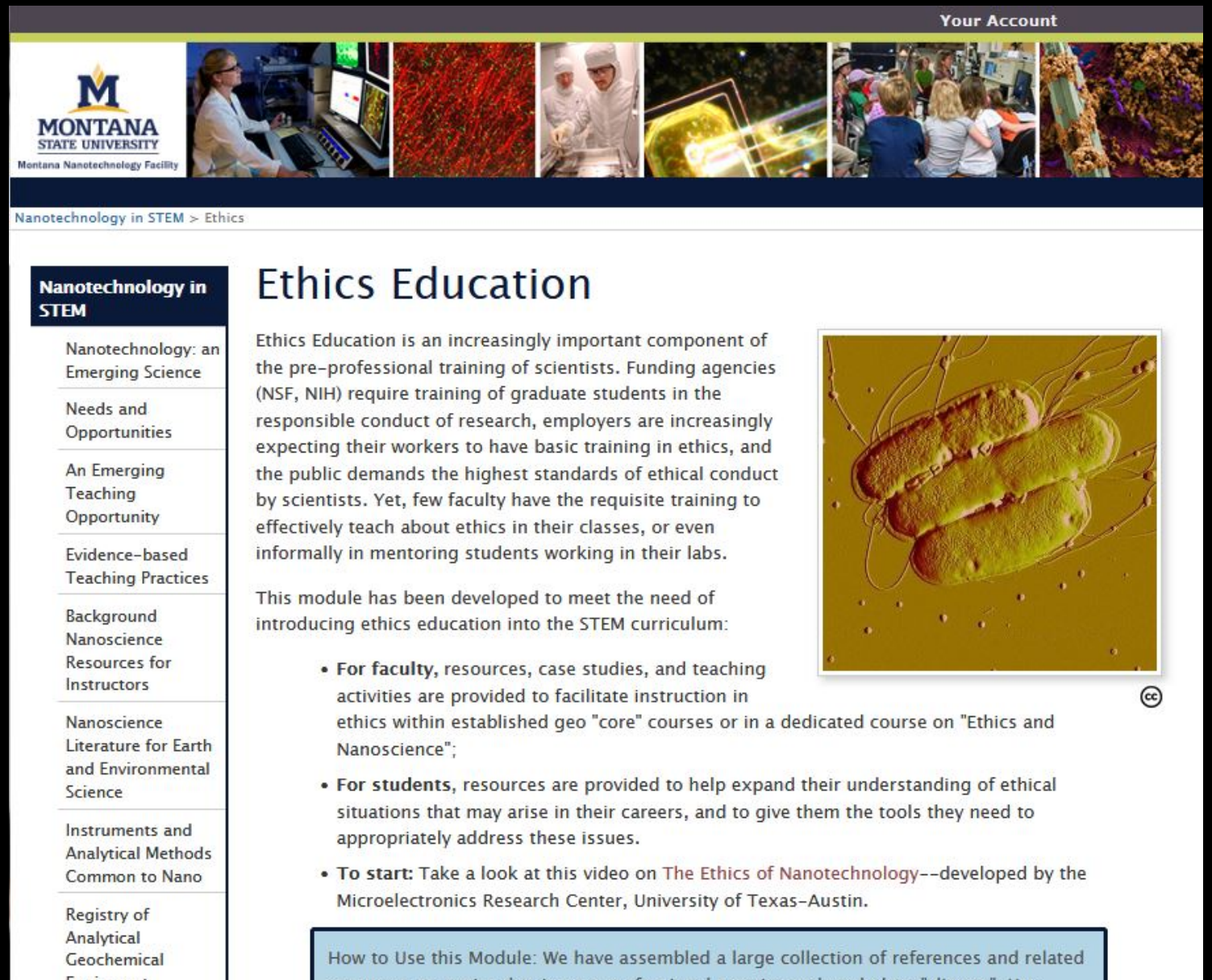
Instruments
Engagement
Training

SENIC: Instruments for SEI research

*Identification of publications using grant number = 444 SENIC papers
*1427 authors, 3446 citations, 14,810 downloads, traditional + nontraditional fields, 3 major community networks
*Replication through partners, publication identification, software, analyses, communications

*Interview guide to identify Type 1 companies that would not exist but for the NNCI facility
*19 company users at SENIC/GT = $24m direct impacts, $51m total impacts
*Replication through partners, companies, interview guide, type of company, analysis and results

MONT: Instruments for SEI education



https://serc.carleton.edu/msu_nanotech/ethics.html

Or just search:

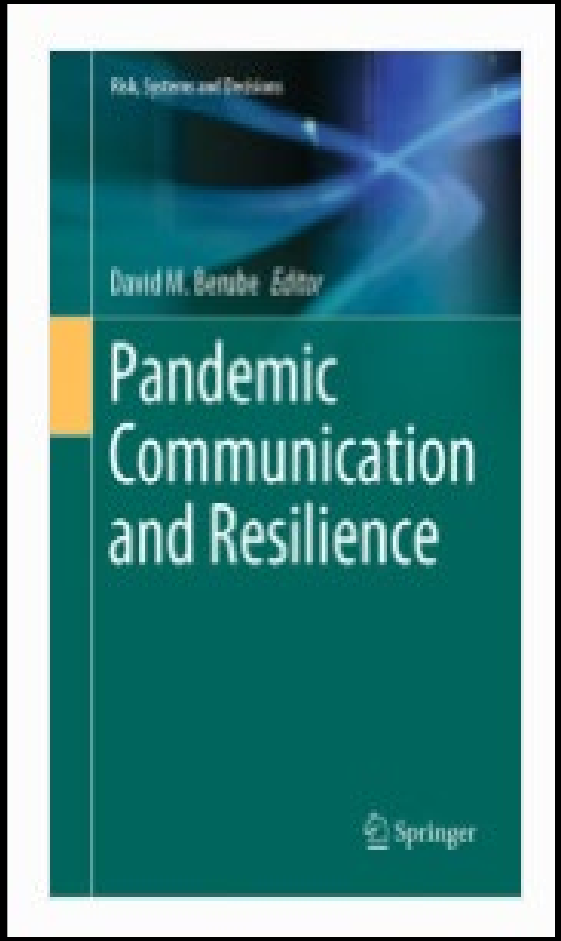
MONT

Nanotech

Ethics

RTNN: Instruments and Engagement

- Public Report on future nanotechnology infrastructure needs for food security
- Book Projects:
  - Pandemic Communication and Resilience (2021)
  - COVID: Vaccination Hesitancy
  - Nanohype: Then and Now
- "Youtie Project" – Review SENIC instrument and conduct similar examination of RTNN commercialization

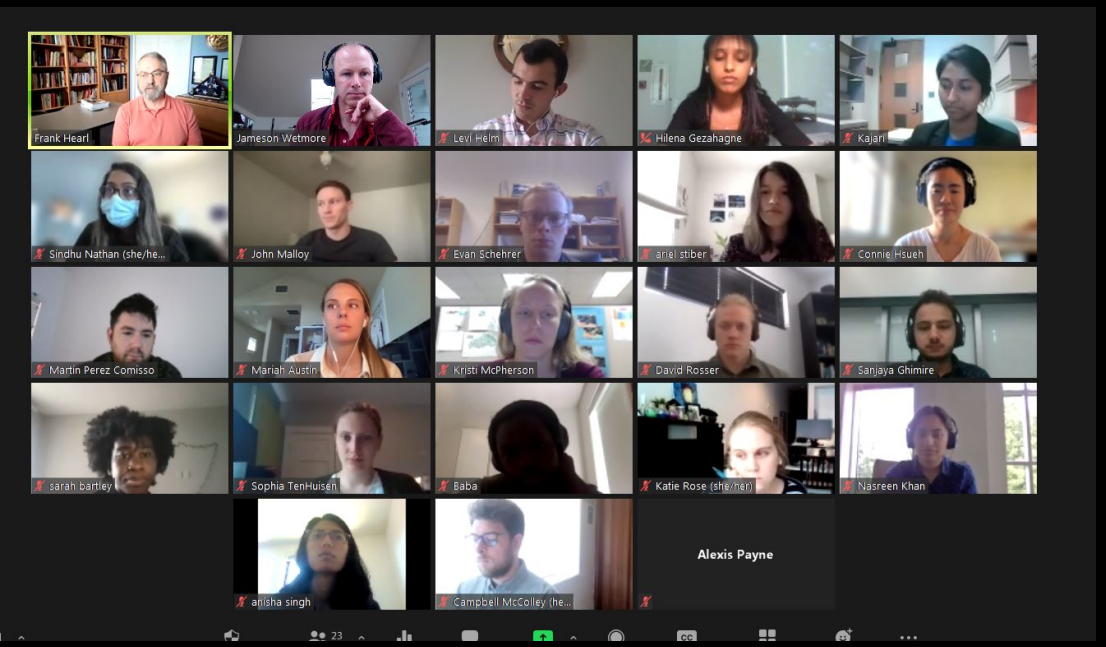


TNF: Engagement and Training

- SEI Training materials as part of lab training protocol
- Piloting the development of online resources for integrating SEI into K-12 education

The University of Texas at Austin
Moody College of Communication

Science Outside the Lab: Training in SEI



Stanford
Washington
Texas
ASU
Georgia Tech
North Carolina A&T
U Pennsylvania
Oregon State
NC State
Harvard
Montana State
Minnesota
Univ. of Cambridge

June 1-11, 2021

How do we work to ensure that science and engineering make the world better for everyone?

EPA: How do they choose what to regulate and not regulate?

NIOSH: How does a federal agency respond to changes in administrations?

National Air and Space Museum: How do we present science that generates controversies to the public?

NSF: What makes for a successful funding proposal?

Sloan Foundation: How do foundations approach funding differently?

Slate.com: How can grad students get their ideas out to a broad audience?

American Institute of Physics: How can scientists provide input into the policy process?

In my field, we are encouraged to 'do research that matters'. Participating in SoTL showed me what that looks like, by showing how research is used to impact decisions. This knowledge is incredibly valuable to me as a scientist.

-Levi Helm, SOTL 2021

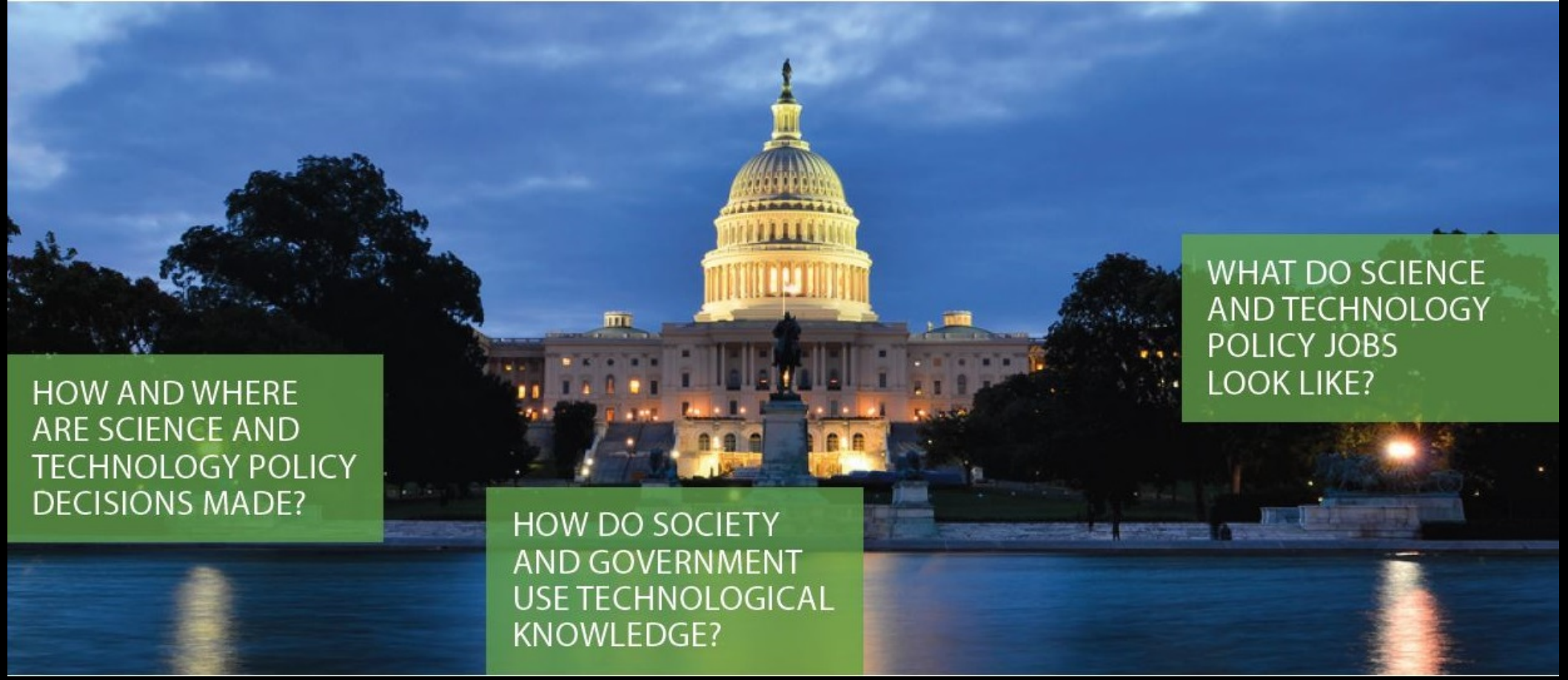
Moriah Locklear
SOtL class of 2018 – Nebraska
SOtL TA 2019
Research Fellow
Potomac Institute for Policy Studies

Michelle Solomon
SOtL class of 2019 – Stanford
SIPE Congressional Fellow /
AAAS S&T Policy Fellow
Sen. Markey's Office

SOtL Ambassador Program: SEI Engagement

Sample Projects:

- Series of podcasts about how to increase research funding at HBCUs (currently engaging in a 6-week business incubator to refine concept)
- Bringing SOtL like policy speakers to engineering/science grad student forums for presentations and discussions
- Development of online modules on respectful conduct in the lab and responsible communication for use in training programs
- Working with local science museum as an area expert/public speaker
- Engaging with and Presenting to REU programs



Next Nano SOtL will be held in June 2022

Requests for Applications announced January 2022

Ninth Annual Winter School on Emerging Technologies: Accelerating Impactful Scholarship

SEI Training

- January 3-10, 2022
- Bring together PhD candidate Social Scientists, Natural Scientists and Engineers
- Explore variety of ways to make scholarship more impactful
- Concludes with Sandpit exercise to craft proposals (for possible funding) for projects that extend beyond winter school.

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Applications being accepted until November 8th!

Current Trends and Near Futures in Federal Science Funding

Mitch Ambrose
American Institute of Physics

TOMORROW
Wednesday 3
2:00-3:00pm CDT
Breakout Session 2

Contact me if you're interested in getting more involved in Instruments, Engagement and Training in SEI

For instance maybe you'd like to…

- Add an SEI component to an REU program
- Help give K-12 teachers tools to teach SEI
- Create an SEI engagement program
- Discuss the Ambassador Program/Winter School/Science Outside the Lab
- Create SEI grad student programs/clubs

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Societal and Ethical Implications

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