SEI
Societal and Ethical Implications

Jamey Wetmore

Associate Director for SEI

National Nanotechnology Coordinated Infrastructure Coordinating Office

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"

SEI in the NNCI

LeeAnn Kahlor
TNF

Jan Youtie
SENIC

David Berube
RTTN

Jamey Wetmore
NCI-SW

This team develops independent research and training programs and works to support the rest of the NNCI sites that want to work SEI programs into their sites.

TNF-SEI team is lead by Dr. Lee Ann Kahlor

Publication

Kahlor et al., (2019). "Development & pilot testing of an evidence-based training module for integrating social & ethical implications into the lab." *NanoEthics,* 13(1), 37-51.

Training

To date, TNF-SEI has trained 227 individuals

- Biomedical Technologists, PhD Candidates, CEOs, Chief Engineers, visiting Scholars, Materials Engineering Interns, etc.

Future Direction

Qualitative paper focused on ethical leadership among nano scientists

- Abstract submitted to "Science in Society" at AAAS Annual Meeting, "Being an Ethical Leader in Science: The Case of Nano Scientists"

Collaboration underway to track training synergies across NNCI network.

The University of Texas at Austin
Moody College of Communication

MRC Microelectronics Research Center
THE UNIVERSITY OF TEXAS AT AUSTIN

RTNN SEI 2019-2020

Assessment

– User satisfaction data collected from all three institutions on three dimensions: overall satisfaction, staff/technical support, & facilities. Added incentives.

– New grant applications: AR for rural high school and community colleges; willingness to pay for nanoproducts; & convergence studies.

– New social media: Instagram, QQ (IM, PRC, & VK (Russia).

– Investigating the utility of a risk communication component for Coursera.

SENIC SEI Program

- Focus: nanotechnology commercialization
  while still attending to social and ethical implications

- "I-Corps Plus SEI"
  - Tool development—presentation, interactive exercise
    based on I-Corps and Business Model Canvas
  - Dissemination
    - NNCI Winter School, AZ, January 2019
    - Southeastern Undergraduate Internships in Nanotechnology, July, 2019

- Nanoinformatics
  - Text mining of nanotechnology publication, patent title & abstract records
    - Identify emergent nanotechnology topics (JNR, 2019, 10.1007/s11051-019-4627-x)
    - Broadening SENIC outreach

- Training video: "8 things you need to know about social implications of nanotechnology research in the cleanroom"
  https://senic.gatech.edu/senic-ethics-video/
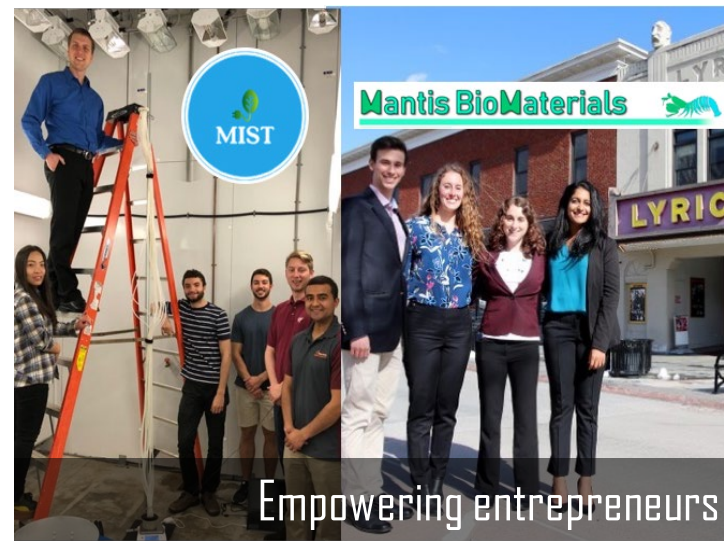
SEI Activities at NanoEarth

Studying environmental challenges

Engaging underserved users

Investing in our future

Empowering entrepreneurs

Connecting globally

National Nanotechnology Coordinated Infrastructure
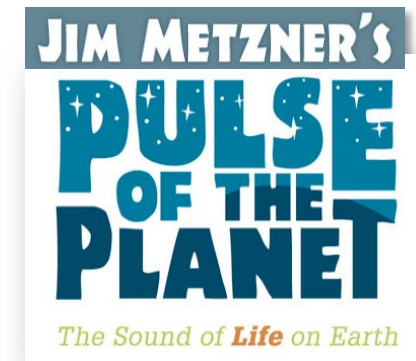
SEI - SHγNE Nano-Journalism

- Experiential learning for Medill journalism students
  - Interact with nanoscience researchers
  - Visit and embed with SHyNE facility staff

- Communications training for scientists
  - Medill faculty lead Science Writing Workshops

- Nano-Journalism Intern – Mohammad Behroozian (2019-20)
  - NU PhD candidate - research focus: Educational Media for Wartime
    - Experienced independent documentary producer, Afghanistan
    - learns the basics of nanoscience, technology, and expertise that made the OHM sponge possible
    - Incorporates a interviews, hands-on demonstrations with a narrative structure and predefined learning objectives including promoting growth mindset and critical thinking

Mohammad Behroozian, PhD Student
Media, Technology & Society
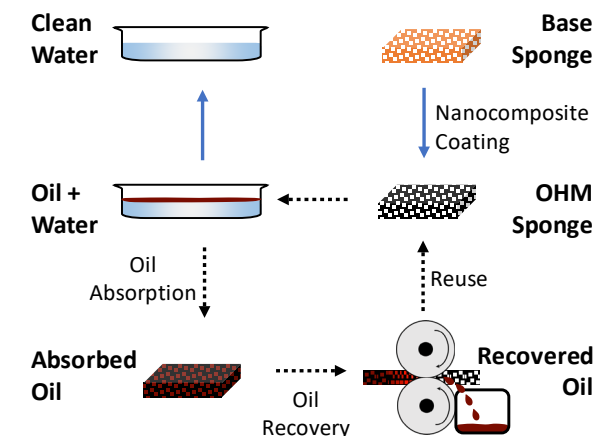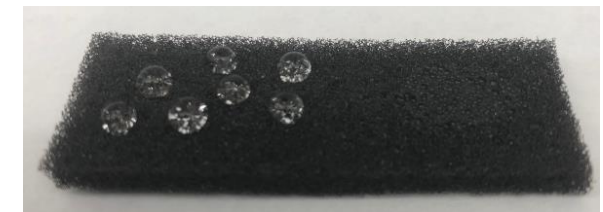
NCI-SW / NNCI Network Activities
Winter School on Responsible Innovation and Emerging Technologies

Training the next generation of social scientists in how to study emerging technologies

January 3-10, 2019
at Saguaro Lake Ranch

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NCI-SW Science Outside the Lab 2019

Half of NNCI sites were represented:

Northwestern (3)
UPenn (2)
Stanford (2)
Georgia Tech (2)
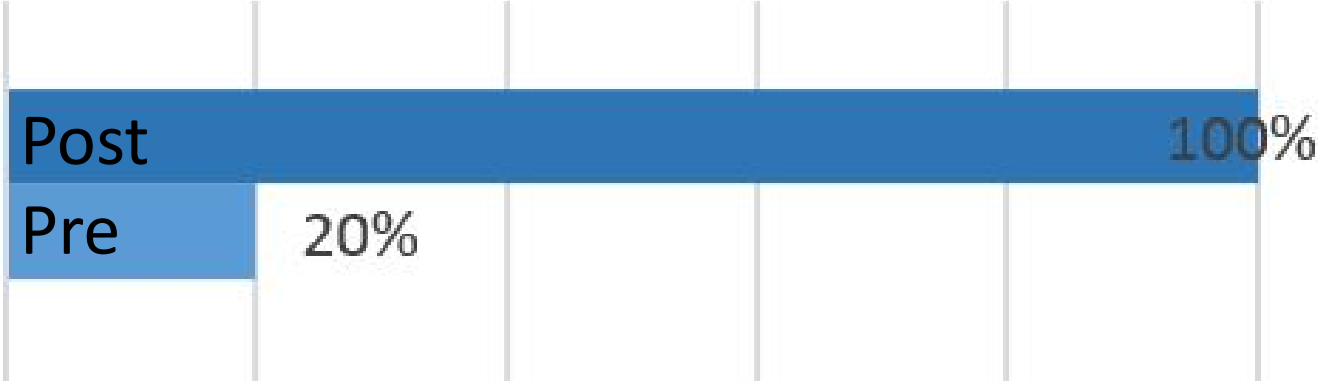U Washington (2)
ASU (1)
NC State (1)
Nebraska (1)

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Measuring the Impacts of Science Outside the Lab

Post — 100%

Pre — 20%

The knowledge I provide should be used to help solve societal challenges.

(agree or strongly agree)

Moriah Locklear
University of Nebraska – Lincoln
Intern for Sen. Carole Blood
Nebraska Legislature

National Nanotechnology Coordinated Infrastructure

NSF

SEI next steps…

- Jan Youtie: Develop metrics and gather data on the social and economic impacts of NNCI and NNCI institutions.

- LeeAnn Kahlor: Lead an NNCI-wide discussion of integrating SEI into lab training programs

- David Berube: Weird ass assessment and social media work

- Jamey Wetmore: Revise DC program to turn participants into SEI ambassadors who work with NNCI sites to facilitate policy and social implication discussions.

Nanosystems Engineers:

"People who design, develop, or supervise the production of materials, devices, or systems of unique molecular or macromolecular composition by applying principles of nanoscale physics or electrical, chemical, or biological engineering."

Not to be confused with *Nanotechnology Engineering Technologists* or *Nanotechnology Engineering Technicians*.
Difference? Nanosystems Engineers are **not supervised**.

Looking for 10-15 names from each site in next two weeks