

# **2021 National Nanotechnology Coordinated Infrastructure REU Convocation**

**Hosted by the Southeastern Nanotechnology  
Infrastructure Corridor at Georgia Institute of  
Technology**

**August 3-5, 2021**



# August 3, 2021

## STAGE 1 Part 1

### [Link to Stage 1-Part 1 talks](#)

#### Opening Remarks

2:01-3:24

Dr. Larry Goldberg, Senior Engineering Advisor in the Division of Electrical, Communications and Cyber Systems, Directorate for Engineering, National Science Foundation (NSF)

3:24-9:36

Dr. Oliver Brand, Director, National Nanotechnology Coordinated Infrastructure (NNCI)

#### Student Presentations

9:36-19:41

Charlie Hall, Program Site: Montana State University

*Characterizing Nanobubbles at the Copper-Graphene Interface*

19:41-31:05

Emily Currie, Program Site: Montana State University

*Characterization of Wire Grid Polarizers*

31:05-42:25

Adam Eichhorn, Program Site: Montana State University

*Vacuum-Sealed MEMS Micromirrors for Lidar*

42:25-53:18

Zhenghao Zhou, Program Site: Virginia Tech

*The Mineralogy of Rare Earth Elements in Coal Refuse Investigated Using SEM-EDS*

1:04:51-1:13:00

Kareena Dash, Program Site: Cornell University

*A New Generation of Small Molecules for EUV Photolithography*

1:13:00-1:22:53

Jackie Zheng, Program Site: Cornell University

*Growing and Patterning ALD Metal Actuators for Microscopic Robots*

1:22:53-1:32:00

Elisabeth Wang, Program Site: Cornell University

*Generating Microfluidic Devices to Study Confined Migration of Cancer Cells*

1:32:00-1:42:24

Niaa Jenkins-Johnston, Program Site: Cornell University

*Investigating Metabolic Regulation of Cancer Stem-like Cells in the Perivascular Niche*

1:42:24-1:53:20

David Kieke, Program Site: University of Nebraska-Lincoln

*Exploring Magnetoresistance in Pt| $\text{h}$ -LuFeO<sub>3</sub> Thin Films*

1:53:20

Ryan Trice, Program Site: University of Nebraska-Lincoln

*The Effect of LSP on Intergranular and Pitting Corrosion of Sensitized 316 SS*

## **STAGE 2 Part 1**

### [Link to Stage 2-Part 1 talks](#)

#### *Student Presentations*

0:31-8:16

Tarek Zaki, Program Site: Northwestern University

*Revealing the Effects of Enamel Dissolution with 3D FIB-SEM Tomography*

8:16-16:12

Temiloluwa Akande, Program Site: Northwestern University

*Synthetization and Characterization of nanocomposite sponges for environmental remediation*

16:12-24:03

Emily Clinkscales, Program Site: Northwestern University

*Interface Couples Dissolution and Reprecipitation Mechanisms in K Feldspar Replacements Produced by Low T K-Metasomatism*

24:03-34:50

Ryan O'Connor, Program Site: Northwestern University

*Fabrication of Nanostructures via Combination of Electron and Laser Beam Lithography*

34:50

Jeffrey Gao, Program Site: Northwestern University

*Creation of Control Software for a Thin-Film Deposition Tool*

## **STAGE 1 Part 2**

### [Link to Stage 1-Part 2 talks](#)

#### *Student Presentations*

19:50-28:14

Francesca Bard, Program Site: Cornell University

*Direct Patterning of Polymer Brushes by Electron-Beam Lithography*

28:14-38:26

Sara Morice, Program Site: University of Louisville

*Characterizing PICO Pulse and Auger Valve Deposition*

38:26-47:37

Cole Dwiggins, Program Site: University of Louisville

*Silicon Microreactor for Analysis of Trace VOCs in Exhaled Breath*

47:37

Rohit Narayanan, Program Site: University of Louisville

*Physiological Signal Analysis during Human-Robot Interaction for Children with Autism*

## August 4, 20201

### STAGE 1 Part 1

[Link to Stage 1-Part 1 talks](#)

#### *Student Presentations*

1:12-10:38

DeShea Chasko, Program Site: Georgia Institute of Technology

*Enhancing Spheroid Development with Microfluidic Pulsatile Pressure*

10:38-18:47

Madison Miller, Program Site: Georgia Institute of Technology

*Thermoelectric Textiles for Body Heat Regulation and Energy Harvesting*

18:47-29:05

Marlene Mendez, Program Site: Georgia Institute of Technology

*Characterization Mixed Conducting Materials for Bioelectronics*

29:05-39:43

John Mark Page, Program Site: Georgia Institute of Technology

*Bottom-Up Electronic Devices*

39:43-50:00

Anthony Perez Pinon, Program Site: Georgia Institute of Technology

*Low-Impedance High-Density Multi-Electrode Arrays*

50:00-59:05

Gabriel Medina, Program Site: Georgia Institute of Technology

*Piezoresistive Sensors for Measuring Blood Platelet Contraction Forces*

1:00:11-1:09:59

Andrew Belec, Program Site: University of Louisville

*Simulation of Glancing Angle Deposition (GLAD)*

1:09:59-1:18:50

Mariana Vinseiro Figue, Program Site: University of Louisville

*Assessing Molecular Delivery in a Flow Focused Acoustofluidic Device*

*Applying for Graduate Fellowships Presentation*

1:18:50-2:08:10

Dr. Lynn Rathbun, Cornell University

## **STAGE 2 Part 1**

[Link to Stage 2-Part 1 talks](#)

*Student Presentations*

2:11-12:29

Jeremy Barrios, Program Site: Arizona State University

*Quantum Simulation Tools Applied to the Modeling of Bio-Photonic Quantum Materials*

12:29-19:05

Teresa Nehls, Program Site: Arizona State University

*Development of Photoactive Silk Films for Laser Activated Tissue Sealing*

19:05-29:35

Stephanie Polk, Program Site: Arizona State University

*Tuning Energy Transfer in Polymer-Alginate Composites*

29:35-40:40

Irena Lizier-Zmudzinski, Program Site: Arizona State University

*Silver Nanowires as SERS Substrates to Differentiate E. Coli and Klebsiella Bacteria for Biotesting Applications*

40:40

Nathan Zhang, Program Site: Arizona State University

*Characterizing Airborne Nanoparticles to Study Neurotoxic Risk*

## **STAGE 1-Part 2**

[Link to Stage 1-Part 2 talks](#)

*Student Presentations*

0:16-8:05

Alexandra Cabrera, Program Site: Georgia Institute of Technology

*Grain-Size Imaging of Ferroelectric Materials*

8:05-17:10

Angelica Helton, Program Site: Georgia Institute of Technology

*Whole-animal, Single-cell Transcriptomics*

17:10-26:30

Matthew Po, Program Site: Georgia Institute of Technology

*Effect of Nanocellulose Materials on Cement Hydration*

26:30-35:48

Rebecca Mosier, Program Site: Georgia Institute of Technology

*Microfluidic Assays for Measurement of Sickle Cell Biophysics*

35:48-44:55

Breyson Davis, Program Site: Georgia Institute of Technology

*Ionic and Lattice Contributions to Thermal Conductivity of Liquid Phase Electrolytes*

44:55

Sarah Spalding, Program Site: Georgia Institute of Technology

*Silica Nanobottles for Controlled Release and Potential Applications to Vascular Injury*

## **STAGE 2-Part 2**

[Link to Stage 2-Part 2 talks](#)

*Student Presentations*

0:46-10:43

Colin Warn, Program Site: University of Louisville

*Characterization of a Solid Articulated Four Axis Microrobot (sAFAM)*

10:43-24:50

Chloe Henson, Program Site: University of Louisville

*Electrokinetic Self-Assembly of Colloids*

24:50-34:19

Hannah Weaver, Program Site: University of Louisville

*Bioceramic-Based Biomaterial Products for 3D-Printed Orthopedics*

34:19-43:21

Jack Spieker, Program Site: University of Louisville

*FEA Modeling of a Novel MEMS Bistable Thermal Actuator*

43:21

Mohammad Yassin, Program Site: University of Louisville

*Textile Integrated MEMS*

## **August 5, 20201**

**STAGE 1 Part 1**

[Link to Stage 1-Part 1 talks](#)

*Career Panel*

*2021 NNCI REU Convocation*

0:00-1:03

Dr. Sherine Obare	Dean, Joint School of Nanoscience and Nanoengineering, Greensboro, NC
Dr. Steven Crawford	Equipment Manager, Gateway Research Park, Greensboro, NC
Johnathan O'Neil	Graduate Student, Georgia Institute of Technology, Atlanta, GA
Thomas Beck	Program Manager, Novelis, Atlanta, GA

*Student Presentations*

1:04-1:13:23

John Ting, Program Site: University of Pennsylvania  
Using Ferrodiodes to Build In-Memory Computing and Neuromorphic Computing Technologies

1:13:23-1:21:41

Sejal Suri, Program Site: University of Pennsylvania  
*Transparent Ti3C2 MXene Microelectrodes for Multimodal Neural Recording*

1:21:41-1:29:41

Nyvia Lyles, Program Site: University of Pennsylvania  
*The Effects of Geometry and Voltage on the Temperature of the Microheater*

1:29:41

Sarah Ziegler, Program Site: University of Pennsylvania  
*Understanding Nanoparticle Absorption on Layer by Layer Films using AFM to Measure Interaction Forces*

**STAGE 2-Part 2**

**[Link to Stage 1-Part 2 talks](#)**

*Student Presentations*

0:48-10:58

Katherine Xie, Program Site: University of Louisville  
*Simulating a Buckled Beam MEMS Memory Cell*

10:58-21:05

Connor Ferris, Program Site: University of Louisville  
*Optimizing Aerosol Jet Printed Silver Traces using Intense Pulse Light (IPL)*

21:05-28:28

Jonathan Lane, Arturo Baza, Program Site: University of California-San Diego  
*Optimizing the Catalytic Breakdown of Organophosphorous Nerve Agents Using Porous Silicon Loaded with Zirconium*

28:28-38:00

Kyle Hunady, Leia Davillier, Program Site: University of California-San Diego

*Novel Targeting and Delivery Approach Using In Vivo Click Chemistry to Treat Traumatic Brain Injury*

38:00-47:20

Bolarin Lawrence, Program Site: University of California-San Diego

*Quantifying Peptide Binding to Microglia after In Vivo Delivery*

47:20-56:50

Danielsen Moreno, Alexander Boakye, Freddy Garcia, Program Site: University of California-San Diego

*Handling the Thinnest Material: How to Transfer Graphene from a Cu Foil to a Silicon Chip*