



AGENDA

Research Symposium

April 15 and 16, 2024

Goal: To showcase UT and Oak Ridge National Laboratory's joint research efforts that are being advanced through funding by the UT-Oak Ridge Innovation Institute and/or the Science Alliance.

DAY ONE

Monday, April 15, 2024

Student Union, Room 262C

Welcome/Opening Remarks

8:15 a.m. Shawn Campagna, Director of Scientific Programs and the Science Alliance, UT-ORII

CLEAN MANUFACTURING & ADVANCED MATERIALS

8:30a.m. – 5:00 p.m. – Presentations will be 25 minutes each.

- 8:30-8:55 ***Molecular Design of Polymeric Materials for Energy, Sustainability, and Additive Manufacturing***
UT-ORII Seed Grant Recipient, 2021-2023
Mike Kilbey UTK Professor, Chemistry and Biomolecular Engineering
- 8:55-9:20 ***AI-Informed Machining***
UT-ORII Seed Grant Recipient, 2021-2023
Jaydeep Karandikar ORNL Senior R&D, Intelligent Machine Tool Research
Tony Schmitz UTK Professor, Mechanical, Aerospace and Biomedical Engineering
Anahita Khojandi UTK Associate Professor, Industrial and Systems Engineering
Chris Tyler ORNL Senior R&D, Intelligent Machine Tools Group
Greg Corson UTK Graduate Research Assistant
Aaron Cornelius UTK Graduate Research Assistant
- 9:20-9:45 ***Tuning Compositional Complexity in Layered High Entropy Oxides and Heterostructure Derivatives***
UT-ORII Seed Grant Recipient, 2023
Kate Page UTK Assistant Professor, Materials Science and Engineering
Craig Bridges ORNL Researcher, Nanomaterials Chemistry, Chemical Sciences
Valentino Cooper ORNL Distinguished R&D Staff Member and Section Head; Materials Theory, Modeling and Simulation, Materials Sciences and Technology
Dustin Gilbert UTK Assistant Professor, Materials Science and Engineering
William Meier UTK Postdoctoral Researcher, Material Science
Xin Wang UTK Graduate Research Assistant
Cameron Jorgensen UTK Graduate Research Assistant
- 9:45-10:10 ***Innovative Low-Cost Carbon Fiber-Based Carbon-Carbon Composites for Extreme Environments***
PACT Recipient, 2023
Dayakar Penumadu UTK Fred N. Peebles Professor, UT Institute for Advanced Materials and Manufacturing Chair of Excellence
Uday Vaidya UT-ORNL Governor's Chair in Advanced Composites Manufacturing; Chief Technology Officer, IACMI
Merlin Theodore ORNL Group Leader, Advanced Fibers Manufacturing
James Klett ORNL Senior Research Staff
Dustin Gilmer UT-ORII Postdoctoral Research Associate
- 10:10-10:35 ***Additive Manufacturing of Composite and Hybrid Materials***
StART Recipient, 2021-2022

CLEAN MANUFACTURING & ADVANCED MATERIALS CONTINUES**Monday, April 15**

10:35-10:45 BREAK

10:45-11:10 *High Throughput Automated Synthesis and Characterization of Materials for Solar Cells and Other Optoelectronic Applications*

StART Recipient, 2020-2022

Mashid Ahmadi	UTK Assistant Professor, Materials Science and Engineering
Benjamin Lawrie	ORNL Research Scientist, Interdisciplinary Materials Science
Sergei V. Kalinin	ORNL Corporate Fellow, Center for Nanophase Materials Science
Maxim Ziatdinov	ORNL Researcher, Synergy of Machine Learning, Physical Sciences
Jonghee Yang	UTK Post-Doctoral Research Fellow, Materials Science and Engineering
Sheryl L. Sanchez	UTK Graduate Research Assistant, Materials Science and Engineering
Elham Foadian	UTK Graduate Research Assistant, Materials Science and Engineering
Bin Hu	UTK Professor, Materials Science and Engineering
Juan-Pablo Correa-Baena	Georgia Tech Assistant Professor, Materials Science and Engineering

11:10-11:35 *Enhancing Ionic Conductivity in Block Copolymer Electrolytes*

StART Recipient, 2023-2024

Gila Stein	UTK Prados Professor, Associate Head; Chemical & Biomolecular Engineering
Samuel Adotey	UTK Graduate Research Assistant, Chemical Engineering
Yangyang Wang	ORNL R&D Staff Scientist, Center for Nanophase Materials Sciences

11:35-12:00 *Topological Quantum Materials Prepared by Epitaxy*

StART Recipient, 2022-2023

Joon Sue Lee	UTK Assistant Professor, Physics
Matthew Brahlek	ORNL Staff Scientist, Physical Sciences

12:00-12:25 *Materials Research Science and Engineering Center (MRSEC)*

Alan Tennant	UTK-MRSEC Director
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12:25-12:50 *IACMI: Developing Clean Energy Solutions and Catalyzing Manufacturing Competitiveness Across the U.S. Advanced Composite Ecosystem*

Chad Duty	IACMI Chief Executive Officer
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12:50 – 2:50 p.m.***TRANSPORTATION, BIOMEDICAL, GENERAL POSTERS*** – Student Union, Rooms 262 A/B- All UT-ORII/Science Alliance-funded students

CIRCULAR BIOECONOMY AND DECARBONIZATION**Student Union, Room 262C****2:50-3:15 *Hybrid Catalytic and Biocatalytic Processing Platform for Valorizing Mixed Plastic Wastes***

UT-ORII Seed Grant Recipient, 2023

Cong T. Trinh	UTK Professor, Chemical and Biomolecular Engineering
Bamin Khomami	UTK Distinguished Professor, Chemical Engineering
Arthur Ragauskas	UT-ORNL Governor's Chair
Richard Giannone	ORNL R&D Staff Scientist, Bioanalytical Mass Spectrometry
Adam Guss	ORNL Genetic and Metabolic Engineer

3:15-3:40 *Protecting Power Grids From Extreme Disruptive Events*

StART Recipient, 2019-2021

Hugh Medal	UTK Assistant Professor, Industrial and Systems Engineering
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3:40-4:05 *Single Electron Editing Strategies for Polymer Modification*

StART Recipient, 2021-2023

John Brantley	UTK Assistant Professor, Chemistry
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Brian Long UTK Professor, Chemistry
Tomonori Saito ORNL Research Scientist, Synthetic Polymer Chemistry

DAY 2 Tuesday, April 16, 2024

Welcome/Opening Remarks – Student Union, Room 262 C

9:15 a.m. Shawn Campagna, Director of Scientific Programs & the Science Alliance, UT-ORII

9:15 a.m. – 5:00 p.m. Presentations will be 25 minutes each

TRANSPORTATION

- 9:20-9:45 ***Behind Closed Doors: Exploring Privacy Vulnerabilities in Federated Learning***
StART Recipient, 2020-2023
Jian Liu UTK Assistant Professor, Electrical Engineering and Computer Science
- 9:45-10:10 ***Enabling Safe and Efficient Traffic Control with Connected Vehicles***
StART Recipient, 2020-2022
Zhenbo Wang UTK Assistant Professor, Mechanical, Aerospace and Biomedical Engineering
- 10:10-10:35 ***Noise-Resilient and Resource-Optimized Quantum Computing***
StART Recipient, 2022-2023
Himanshu Thapliyal UTK Associate Professor, Electrical Engineering and Computer Science
- 10:35-10:50 BREAK
- 10:50-11:15 ***Enhancing the Security of Connected and Automated Vehicle (CAV) Ecosystem***
StART Recipient, 2022-2023
Doowon Kim UTK Assistant Professor, Electrical Engineering & Computer Science
- 11:15-11:40 ***Smart City: Connectivity and Automation***
UT-ORII Seed Grant Recipient, 2021-2023
Mina Sartipi UT Chattanooga-ORNL Joint Faculty, Gerry Professor of Computer Science and Engineering
- 11:40-12:05 ***Driver Distraction Detection and Safety Enhancement Through Unified Analysis of Driver, Vehicle and Traffic Volatilities***
StART Recipient, 2021-2023
Subhadeep Chakraborty UTK Associate Professor; Mechanical, Aerospace & Biomedical Engineering
Riley Tavassoli UTK Research Specialist; Mechanical, Aerospace & Biomedical Engineering
Sheikh Muhammad Usman UTK Graduate Research Assistant, Civil & Environmental Engineering
Asad J. Khattak UTK Professor, Civil & Environmental Engineering
Iman Mahdinia Berkeley University Postdoctoral Researcher (Received PhD in Transportation Engineering from UTK)

POSTER SESSION – 12:05 – 2:10 p.m.

POSTERS – Student Union, 272 B

Clean Manufacturing & Advanced Manufacturing Posters

Circular Bioeconomy and Decarbonization Posters

- *All UT-ORII/Science Alliance-funded students*

Tuesday, April 16, 2024 – Continued

GENERAL

2:10-2:35

Using 3D Chromosome Folding to Predict and Modify Cellular Sensitivity to Radiation

StART Recipient, 2023-2024

Rachel Patton McCord UTK Associate Professor; Biochemistry & Cellular and Molecular Biology

2:35-3:00

Integrated Multilayered Spatial Analysis of Age, Sex and Alzheimer's Induced Changes In Brain Biochemistry

StART Recipient, 2022-2023

Colleen Crouch UTK Assistant Professor; Mechanical, Aerospace and Biomedical Engineering

Daniel Jacobson ORNL Distinguished Research Scientist and Computational Systems Biologist

Rebecca Prosser UTK Professor; Biochemistry & Cellular Molecular Biology

Thanh Do UTK Assistant Professor, Chemistry

Kalynn Schulz UTK Assistant Professor, Psychology

Allison Jones UTK Graduate Research Assistant, Biomedical Engineering

Amin Jarrahi UTK Graduate Research Assistant

3:00-3:25

Collaborative AI and Robotics to Empower Persons with Dementia (CARE4PwD)

Xiaopeng Zhao UTK Emerging and Collaborative Studies

3:25-3:50

Coupling Extreme Environments at the Tennessee Ion Beam Materials Laboratory

PACT Recipients, 2023-2025

Khalid Hattar Director, Tennessee Ion Beam Materials Laboratory

J. Wesley Hines UTK Postelle Professor, Chancellor's Professor and Nuclear Engineering
Department Head