

## July 11, 2024 (Day – 1)

09:00 – 09:10	Room 202A	<b>Stephen Streiffer (ORNL Director)</b>	Lab Director's address and Welcome Remarks
09:10 – 09:20	Room 202A	<b>Aniket Pramanik and George Yumnam</b>	Research Symposium Plan and Welcome Remarks
09:30 – 10:15	Room 202A	<b>David Sholl (Keynote 1)</b>	Net-zero by 2050: Can we get there?
10:15 – 10:30	BREAK		

	<b>Oral Session 1 (Biological Sciences) Room 202A</b>	<b>Oral Session 2 (Materials Science - 1) Room 202B</b>	<b>Oral Session 3 (Materials Science - 2) Room 202C</b>
10:30 – 10:45	<b>Biruk Fevissa</b> <i>Microbial DNA fragments (MDF) integration into the host Populus trichocarpa nuclear genome alters plant traits</i>	<b>Tanvir Sohail</b> <i>Tuning Skyrmion Physics for Next-Generation Spintronics</i>	<b>Puspa Upreti</b> <i>Impact of phonon coupling to electric field on thermal transport in a relaxor ferroelectrics</i>
10:45 – 11:00	<b>Celestin Bourgery</b> <i>Discovery and engineering of nylon hydrolase for nylon recycling</i>	<b>Yuchen Jiang</b> <i>Magnetohydrodynamic pressure drop in nuclear fusion blanket</i>	<b>George Yumnam</b> <i>Enhanced magnetic-disorder driven magnon softening of TbSb via Y-doping</i>
11:00 – 11:15	<b>April Armes</b> <i>Deciphering Microbial Communication in Microbial Community Assembly</i>	<b>Ernesto Camilo Z. Suarez</b> <i>Electrochemical characterization of sulfur catholytes used in redox flow batteries</i>	<b>Yueh-Chun Wu</b> <i>Nanoscale magnetic ordering dynamics in a high Curie-temperature ferromagnet</i>
11:15 – 11:30	<b>Elise Phillips</b> <i>Layered regulation of the Cas9 nuclease significantly reduces leaky, incidental expression</i>	<b>Achutha Tamraparni</b> <i>Experimental Investigation and Performance Characterization of PCM Integrated Finned Tube Heat Exchanger for Building Heating and Cooling Applications</i>	<b>Jane Chen</b> <i>Te-vacancy enhanced superconductivity in hybrid interface FeTe<sub>1-x</sub>Se<sub>x</sub>/Bi<sub>2</sub>Te<sub>3</sub> grown by molecular beam epitaxy</i>
11:30 – 11:45	<b>Kewei Chen</b> <i>Linking hydrologic exchange flow and biogeochemical modeling to quantify methane emission from rivers</i>	<b>Lynda Amichi</b> <i>Resolving Heterogeneous Hydrogen Fuel Cell Catalyst Degradation at the Nanoscale via Automated 3D Electron Tomography</i>	<b>Thomas Ruland</b> <i>Improving Reactor Decay Heat Data</i>
11:45 – 12:00	<b>Lynnica Massenburg</b> <i>Cryo-EM, SANS and SAXS reveal structural insights on subunit-subunit and lobe-lobe interactions from Physcomitrium patens cellulose synthase 5</i>	<b>Jordan Stanberry</b> <i>MicroExtraction-ICP-MS for the Direct Analysis of Nanoparticles Loaded on a Solid Surface</i>	<b>Bogdan Dryzhakov</b> <i>Enhancing aluminum nitride's ferroelectric switch through irradiation-engineered defects</i>

12:00 – 12:30	LUNCH RECESS		
12:30 – 13:15	Room 202 A	<b>Vittorio Badalassi (Keynote 2)</b>	Designing Fusion Reactors with Supercomputing
13:15 – 13:30	BREAK		

	<b>Oral Session 4 (Chemistry) Room 202A</b>	<b>Oral Session 5 (AI / ML) Room 202B</b>	<b>Oral Session 6 (Manufacturing 1) Room 202C</b>
13:30 - 13:45	<b>Subhamay Pramanik</b> <i>Capturing Promethium in Solution</i>	<b>Malgorzata Makos</b> <i>Reaction Pathways Search using Adaptive-Learning Global Optimization and Generative Adversarial Networks</i>	<b>Pavan K Ajjarapu</b> <i>Convergent Manufacturing of 316L Stainless Steel Hot Isostatically Pressed (HIP) Canisters</i>
13:45 – 14:00	<b>Jopaul Mathew</b> <i>Revolutionizing Uranium Recovery: Monoamides for enhanced U/Pu Separation</i>	<b>Ganesh Narasimha</b> <i>Automated structure discovery via active learning in STM.</i>	<b>Gyan Shankar</b> <i>Effect of laser melt schedule on the microstructure of additively manufactured IN718</i>
14:00 - 14:15	<b>Nicholas Gregorich</b> <i>A Membrane Contactor Enabling Energy-Efficient CO2 Capture from Point Sources with Physical Solvent</i>	<b>Maria Mahbub</b> <i>AI-Powered Insights: Streamlining Injection Drug Use Detection in Clinical Notes</i>	<b>Jeff Brookins</b> <i>Precipitation Behavior in an FCC Multi-Component Alloy Using Single Laser Tracks</i>
14:15 - 14:30	<b>Ana Belen Cueva</b> <i>SMART Lixivants for the Selective Leaching of Rare Earth Metals</i>	<b>Aniket Pramanik</b> <i>A Learnt Half-Quadratic Splitting-Based Algorithm for Fast and High-Quality Industrial Cone-beam CT Reconstruction</i>	<b>Geeta Kumari</b> <i>Stress Relief Optimization for Laser Powder Bed Fusion Printed 316H Stainless Steel</i>
14:30 - 14:45	<b>Huixin Jiang</b> <i>Quaternary Ammonium Salt Coated Air Filter for Bioaerosol Removal from Building Indoor Air</i>	<b>Anthony Hong Cheol Lim</b> <i>In Silico Investigation on the Effects of Sub-Cellular Ac-225 Spatial Distribution on Tumor Cells and Biological Outcomes</i>	<b>Komal Chawla</b> <i>3D-printed car bumper with design and material optimized through AI-based inverse optimization framework</i>
14:45 - 15:00	<b>Harisree Krishnamoorthy</b> <i>Pulse shape discrimination techniques for the LEGEND experiment</i>		<b>Bhagya Prabhune</b> <i>Employing Machine Learning for Predicting Melt-pool Geometry in Additive Manufacturing</i>

15:00 – 15:15	BREAK		
15:15 – 16:00	Room 202 A	<b>Leah Broussard (Keynote 3)</b>	Understanding the beta-decay (and other strange disappearances) of the neutron
16:00	ADJOURN		

## July 12, 2024 (Day – 2)

09:00 – 09:10	Room 202A	<b>Moody Altamimi</b> <b>Director ORNL ORE</b>	Welcome Remarks
09:10 – 09:20	Room 202A	<b>Aniket Pramanik and George Yumnam</b>	Research Symposium Agenda and Announcement
09:30 – 10:15	Room 202A	<b>Bronson Messer - II</b> <i>(Keynote 4)</i>	Understanding Stellar Explosions: A Problem for the World's Most Powerful Computers and for Team Science
10:15 – 10:30	BREAK		

	<b>Oral Session 7</b> <b>(Building &amp; Transportation)</b> <b>Room 202A</b>	<b>Oral Session 8</b> <b>(Health / Medicine)</b> <b>Room 202B</b>	<b>Oral Session 9</b> <b>(Manufacturing - 2)</b> <b>Room 202C</b>
10:30 – 10:45	<b>Hevar Palani</b> <i>Evaluating the Impact of Window Replacement on Air Infiltration of Residential Buildings</i>	<b>Jordan Tschida</b> <i>Evaluating Algorithmic Bias on Biomarkers of Breast Cancer Pathology Reports in Six SEER Registries</i>	<b>Ritin Mathews</b> <i>Control of machining-induced residual stress via tool geometry and process parameter modification</i>
10:45 – 11:00	<b>Md Masudur Rahman</b> <i>Net-zero carbon fuel reactivity on commercial oxidation catalysts for emissions control</i>	<b>Jayasai Rajagopal</b> <i>Development of a workflow to calculate organ-at-risk dosimetry for targeted radiopharmaceutical therapy applications</i>	<b>Jordan Wright</b> <i>Advanced Manufacturing of PIP-Based SiC-SiC CMCs</i>
11:00 – 11:15	<b>Zhenlei Liu</b> <i>Balancing Health and Efficiency: Indoor Air Quality and Energy Efficient Homes</i>	<b>Abhishek Shivanna</b> <i>Ensuring Equity in AI Healthcare: A Study on Racial Bias in Cancer Site Classification Models</i>	<b>Nadim S. Hmeidat</b> <i>Rapid Energy-Efficient Manufacturing of High-performance Thermoset Polymer Composites via Self-Energized Frontal Polymerization Chemistry</i>
11:15 – 11:30	<b>Mengjia Tang</b> <i>Algorithms for increasing automation in installing prefabricated components for building envelopes</i>	<b>Avishek Bose</b> <i>Predicting drug effects from high-degree asymmetric drug data sets</i>	<b>Wenbo Wang</b> <i>Marine Turbine Lubrication Additives: Ionic Liquids with High Lubricity and Eco-Friendliness</i>
11:30 – 11:45		<b>John Wyatt Vant</b> <i>Cellular Interactions at Scale: GPU-Accelerated Simulations for Cancer Therapy Optimization</i>	<b>Daniel Suarez</b> <i>Liquid Metal MHD modelling for fusion applications</i>

11:45 – 12:30	LUNCH RECESS		
12:30 – 13:15	Room 202 A	<b>Prasanna Balaprakash</b> <i>(Keynote 5)</i>	ORNL's AI Initiative: Advancing Secure, Trustworthy, and Energy-Efficient AI for Science
13:15 – 15:15	Lobby	POSTER SESSION	
15:15 – 16:00	Room 202 A	<b>Melanie Mayes</b> <i>(Keynote 6)</i>	Experiences and Lessons from Career in the Environmental Sciences
16:00 – 16:30	Room 202 A	Closing Ceremony	

**INDUSTRY  
BOOTHS  
(Lobby)**

## POSTER PRESENTATION LISTS

Sl. No.	Presenter	Poster Title
1	Bharat Sharma	Simulating CO <sub>2</sub> Responses of Secondary-Succession Forests at Duke and Oak Ridge FACE Experiments with ELM-FATES-CNP
2	Bailey Murphy	Ground Truthing Land Surface Models: A Multi-Data Approach for Validation
3	Stephen Zambrzycki	Furthering Capabilities in Single Cell Metabolomics Using Single Cell Printing-Liquid Vortex Capture-Mass Spectrometry
4	Matthias Maiterth	Building Blocks of a Digital Twin for an Exascale Supercomputer
5	Eric Lee	Comparing Machine Learning and Deep Learning Models for Pediatric Anxiety Classification using Temporal, Structured, and Environmental Data from Electronic Health Records
6	Steven Hespeler	Temporal Analysis of ML/DL Techniques for Fault Detection in Cyber-Physical Systems Using Controller Area Network Data
7	Shiwanka V. Wanasinghe	Opacifiers to improve thermal performance of polyisocyanurate (PIR) foams
8	Latif Patwary	Estimating Gasoline Consumption for the Recreational Boating Sector in the U.S.
9	Ginu R. George	Insights into packed bed reactors by multi-scale reactor simulation approach
10	Soyoung Kang	Deformation mechanisms of Additive Manufacturing 316SS using in-situ mechanical test with SEM-EBSD
11	Daniel Felton	Reproducible Surface-Enhanced Raman Spectroscopy of Nanodiamonds
12	Jordan Roach	Optical Vibrational Spectroscopic Signatures Related to U <sub>3</sub> O <sub>8</sub> Production Processes
13	Huixin Jiang	Ultra-conductive Copper-Carbon Nanomaterial Composites through Brush Coating
14	Isaiah Dishner	Sequence-property relationships of periodically structured copolyamides
15	Mary Danielson	CO <sub>2</sub> Capture from Seawater via a Novel Hollow Fiber Contactor
16	Janet Meier	Evaluation of a proposed Low melting point Element-Assisted Nucleation (LEAN) mechanism in dilute Al-Zr alloys micro-alloyed with Sn, Si, In, and Sb
17	Qiangsheng (Johnson) Lu	Direct Observation of an Interfacial Topological Superconducting States in FeTeSe-Bi <sub>2</sub> Te <sub>3</sub> Heterostructure
18	Arvind Ganesan	Porous Liquids as Precursor for Mixed-Matrix Membrane (MMM) Synthesis