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Upcoming Webinar: Buildings Research at ORNL



Join us **Dec 9 at 1 pm CT / 2 pm ET** for the next session in our 2025 Webinar Series! Our speaker, **Dr. Brian Fricke**, Group Leader of Building Equipment Research at [Oak Ridge National Lab](#) (ORNL), will share an inside look at cutting-edge research shaping the future of energy efficient buildings and HVACR technologies. *Registration is required to attend the event.*

[Register](#)

Don't have time to attend? Our [webinars](#) are recorded and can be watched on demand.

Convergent Research

New Publications

**Corresponding author(s); ASAP: As Soon As Publishable*

VENUSpy: A Chemical Dynamics Simulation Program in the Era of Machine Learning and Exascale Computing

Kazuumi Fujioka*, Ryan Richard, Jonathan Waldrop, Yuheng Luo, Theresa L. Windus, and Rui Sun*

J. Chem. Theory Comput. **Article ASAP**
DOI: 10.1021/acs.jctc.5c01408



[Read the Article](#)

Click [here](#) to see a list of all EARTH peer-reviewed publications.

Member Achievements



Congratulations to Dr. Md Omarsany Bappy (Yanliang Zhang group) for successfully defending his thesis titled *“Printed Multifunctional Devices for Energy Harvesting, Cooling, and Sensing.”* His final day at the University of Notre Dame was November 15. He will now join the Bangladesh University of Engineering and Technology (BUET) as a faculty member. BUET is widely recognized as one of the top universities in Bangladesh.



University of Kansas graduate student Julia Espinoza (Mark Shiflett group) has been nominated for full membership in Sigma Xi, The Scientific Research Honor Society. She’s also presenting in the Student Research Competition at IFoRE 2025, sharing her work with a global community of researchers. Check out her [project pitch](#)!



Professor Christopher Depcik, Mechanical Engineering faculty member at the University of Kansas, has received the 2025 [HOPE Award](#) (Honor for the Outstanding Progressive Educator). Selected by the senior class and presented during KU’s Homecoming football game, the award recognizes his exceptional teaching, mentorship, and commitment to student success.

Crosscut 3 Resources

Creating GitHub Repos to Accompany Papers

In October, **Notre Dame graduate student Fathya Salih** (Yamil Colón group) presented the reasons for publishing code (for reproducibility and for usability); common tips for both applications (environment management, local version control and documentation, and public version control and documentation); what to include in a repo for reproducibility and for usability; and concluded with a demonstration.



[Learn More](#)

New EARTH Faculty



Professor Yoonjung Ahn joins us from the Department of Geography & Atmospheric Science at the University of Kansas. Trained as a health and medical geographer and geospatial information scientist, she uses spatial modeling and big data to study the disproportionate impacts of environmental hazards. Her research focuses on health inequity, the built environment, and extreme weather events. Yoonjung is joining Thrust 1 Project 1.4.

[KU Profile](#)

[Website](#)

[Google Scholar](#)



Professor Anthony DeFilippo joins us from the Department of Mechanical Engineering at the University of Kansas. A licensed Professional Engineer, he earned his Ph.D. in Mechanical Engineering from the University of California-Berkeley and spent over a decade in private industry working globally on research, consulting, and commercialization for energy, chemicals, and industrial technologies. His research uses experimental and numerical approaches to characterize and de-risk novel thermal systems, focusing on reactivity, phase transitions, and multiphase flow behavior.

[KU Profile](#)

[Google Scholar](#)

Funding Opportunities

ASHRAE Research Projects Open for Proposal

ASHRAE is now accepting proposals for **nine new research projects**, including six traditional RFPs and three special projects sponsored by the Center of Excellence for Building Decarbonization. Topics range from refrigerant chemistry and sound control to carbon tracking and data center cooling. Proposals are due **by 8 am ET on Friday, December 15, 2025**. Projects are expected to begin April 1, 2026, or later.

Potential Projects of Interest:

- Refrigerant Leakage Rate Emissions Tracking

- Kinetic and Mechanistic Study of the Breakdown and Interactions of HFO Refrigerants
 - Data Center Direct-to-Chip Liquid Cooling Resiliency – Failure Modes and IT Throttling Impacts; Liquid Cooling Energy Use Metrics and Modeling
 - See the full list [here](#)
-

ASHRAE Society Scholarships, Due Dec 1

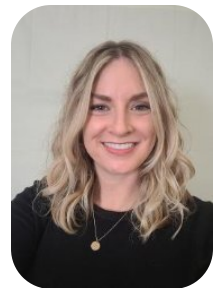
Presidents Scholarship • Engineering Technology Scholarships

Undergraduate Engineering Scholarships • University-Specific Scholarships

ASHRAE Society Chapter Scholarships • Regional Scholarships

New Pillar Leadership Members

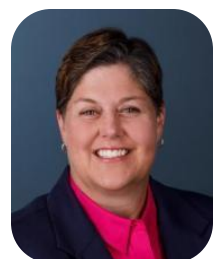
Jennifer Sprague serves as the Education and Outreach Director for EARTH, where she leads education and workforce development initiatives across partner institutions. With more than a decade of experience in higher education, program design, and industry collaboration, she is focused on expanding mentoring networks, developing innovative and inclusive curricula, and strengthening academic–industry partnerships as EARTH's work redesigns the HVACR landscape.



Professor Elaina Sutley serves as the Impact and Belonging Pillar Lead, where she will work to develop and implement onboarding processes to welcome new members to EARTH and enhance connections and growth for all. As the Associate Dean for Impact and Belonging at KU, Dr. Sutley will leverage and expand existing programs, including co-curricular learning opportunities and tiered mentoring programs across partner institutions.



Professor Susan Williams has been teaching at KU for 26 years and is excited to serve as the Engineering Workforce Development Lead for EARTH. She is passionate about education and has spent much of her career focused on innovative ways to increase student learning and retention. Susan is eager to bring her experience in curriculum design, transformative teaching, and community engagement to help the EARTH team meet the workforce development needs of the HVACR industry.



Dr. Casey Williams serves as the Industry Liaison Officer for EARTH, leading partnerships across the HVACR value chain. With experience consulting for edtech and tech startups and working at the intersection of academia and industry, Casey specializes in translating research into real-world innovation. He has advised early-stage teams on strategy, product development, and data-driven decision-making while facilitating collaborations that accelerate commercialization. At EARTH, Casey is the primary point of contact for industry members, ensuring clear communication, aligned priorities, and strong integration between research and industry needs.



Engineering Workforce Development

KU ERC EARTH Team Visits JCCC's HVAC Program

The ERC EARTH team from the University of Kansas recently visited Johnson County Community College (JCCC) to reconnect with former HEART RET teachers, **Jhonatan Vallejo** and **Mike Steinmetz**, and tour JCCC's HVAC program labs. Students were observed working in hands-on environments focused on furnaces, basic refrigeration, sheet metal, electrical systems, and outdoor HVAC units.

Professor Mark Shiflett delivered a seminar on the history of refrigeration, which led to engaging discussions. The visit also included conversations between KU and JCCC education directors about future collaboration, including K–12 outreach and potential summer programs in HVAC and refrigeration. The visit was a valuable opportunity to strengthen partnerships and explore new avenues for educational engagement.





The Adventures of EARTH Man

Visit our [website](#) to explore this month's comic and catch up on past adventures that bring sustainability and engineering to life!

Innovation Ecosystem

Upcoming Conference Presentation



Dr. Casey Williams, our Industry Liaison Officer, will present at the 2026 ASEE Annual Conference & Exposition in Charlotte, NC, held June 21–24. His talk, *Building Engineering Self-Efficacy Across the Pipeline*, will highlight outcomes from our three NSF-funded summer programs (REU, RET, Summer Venture) in sustainable refrigerant technology.

Guidance for Communicating with Industry

If you are communicating with *prospective and/or current* industry members on behalf of ERC EARTH, please CC our Industry Liaison Officer, [Dr. Casey Williams](#).

Announcements and Reminders

Please use the following statement in your publication acknowledgements:

"This research is based upon work supported by the National Science Foundation under award number **EEC-2330175** for the Engineering Research Center EARTH."

Did you know that an EARTH Convergent Research (CR) Meeting Calendar is maintained in the shared Google folder? You can view the entire 2025 calendar [here](#)!

Upcoming meetings

November 20: Convergent Research Leadership Meeting (3 pm ET)

November 21: Thrust 3, Project 3.1 Meeting (3 pm ET)

November 25: Thrust 2, Project 2.1 Meeting (3:30 pm ET)

December 4: Thrust 1 Meeting (3 pm ET) & Crosscut 2 (4:30 pm ET)

December 5: Thrust 3, Project 3.1 Meeting (3 pm ET)

December 11: Thrust 2 Meeting (3 pm ET)

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The Environmentally Applied Refrigerant Technology Hub (EARTH) is working to create sustainable, accessible refrigeration and air conditioning innovations that will improve the quality of life for all Americans and secure U.S. leadership in workforce development and manufacturing.

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