



### A Message from our Directors

The EARTH Spring Summit, held at the University of Notre Dame, was a great success. Thursday's daytime sessions showcased EARTH's technology-focused research, while the Thursday evening and Friday program centered on Regulatory Affairs across the HVACR Industry. The Summit featured speakers and panelists from industry, national laboratories, professional organizations such as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), as well as regulatory agencies including the California Air Resources Board (CARB). We thank all participants for contributing to an engaging and productive meeting.

We look forward to seeing you this fall at the **EARTH NSF Site Visit**, to be held at the **University of Maryland**, College Park, on **October 19–21**.



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## Upcoming Webinar

### Community-Driven Technology Innovation for Energy-Efficient and Grid-Interactive Building Systems



Join us on **Tuesday, March 24 at 2:00 p.m. CT** for our monthly EARTH webinar featuring **Professor Huijeong Kim** from the University of Kansas.

This seminar will explore the need for community-driven, energy-efficient, grid-interactive building systems. Prof. Kim will outline approaches for supporting smart, resilient energy communities through behavioral interventions and socio-technical design. She will also present a streamlined framework integrating modeling, field studies, community engagement, and techno-economic analysis to advance next-gen building energy solutions.

[Register](#)

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

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## Convergent Research

## New Publications

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

### Refractive Indices and Infrared Band Strengths of Amorphous Ices of Key Fluorinated Refrigerants 1,1,1,2-Tetrafluoroethane, 2,3,3,3-Tetrafluoropropene, and 3,3,3-Trifluoropropene

Koushik Mondal, Mason McAnally, Souvick Biswas, Nils W. Melbourne, Andrew M. Turner, Alexandre Bergantini, Rui Sun,\* and Ralf I. Kaiser\*

*ChemPhysChem* **2026**, *27*, e202500680.

DOI: [10.1002/cphc.202500680](https://doi.org/10.1002/cphc.202500680)



[Read the Article](#)

### Membrane Technology for Hydrofluorocarbon Refrigerant Separation

Yuniva Mendoza-Apodaca, Sarah Walsh, Anna Rosu, and Mark B. Shiflett\*

*Ind. Eng. Chem. Res.* **Article ASAP**.

DOI: [10.1021/acs.iecr.5c04781](https://doi.org/10.1021/acs.iecr.5c04781)



[Read the Article](#)

[View all EARTH \*peer-reviewed publications\*.](#)

## Member Achievements

Finalists of the inaugural ERC EARTH Perfect Pitch Competition were selected through a rigorous, multi-stage process designed to elevate clear, high-impact research communication. Researchers first competed in a virtual preliminary round in February, where **18 participants** from five universities delivered a 90-second pitch on their research, supported by a single slide. From this round, **five finalists** advanced to live pitches at the ERC EARTH Spring Summit in March at Notre Dame, where ERC EARTH **industry partners served as judges**, evaluating clarity, solution strength, broader impact, call to action, and visual design. Top performers distinguished themselves by translating complex research for diverse audiences while clearly articulating real-world relevance. **From these finalists, one winner was selected to represent ERC EARTH at the NSF Biennial Meeting in September—congratulations to Kevin Turner!**

**Congratulations to our Top 3 speakers!**

- **1st place: Kevin Turner, KU**
- 2nd place: James Magas, ND
- 3rd place: Yuniva Mendoza-Apodaca, KU



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Several EARTH awards were presented at the Spring Summit. **Montana Carlozo** (*below, left*), a Ph.D. student at the University of Notre Dame in the Maginn Group, was honored with an **EARTH Outstanding Leadership Award** for her exemplary service as Student Leadership Council President. **Julia Espinoza Mejia** (*below, center*), a Ph.D. student at the University of Kansas in the Shiflett Group, received an **EARTH Outstanding Service Award** in recognition of her dedicated service as Student Leadership Council Treasurer. **Elizabeth Young** (*below, right*), Professor of Chemistry at Lehigh University, was honored with an **Outstanding Dedication to Outreach Award** for her sustained commitment to science outreach. Dr. Young and her graduate students regularly engage preschool audiences through hands-on Earth science activities



**Gopala Krishna Murthy Kalapala**, a Ph.D. student in Chaoyang (CY) Jiang's group at the University of South Dakota, earned second place in the USD Graduate School's 9th Annual Three Minute Thesis Competition on February 18. Congratulations, Gopala, on this outstanding achievement!



**Dr. Barnabas Agbodekhe** (Maginn Group, University of Notre Dame), who successfully defended his dissertation last month, will soon take the next step in his research career by joining the Department of Chemical and Biological Engineering at the University of Wisconsin–Madison as a Postdoctoral Researcher. We wish him the very best in this exciting next chapter.

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## EARTH in the News



University of Maryland engineers are pioneering safer, more efficient two-phase cooling technologies to cut the massive energy and water demands of AI data centers. Check out **Professor Damena Agonafer** in the [full article](#) to see how these innovations could reshape the future of sustainable computing.

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## Participate in EARTH-Relevant Symposia

Abstract submissions are open for the symposium ***Advancing the Chemistry of Circular Refrigerant Economies***. This joint session is organized by the PMSE, FLUO, and INOR divisions at the [American Chemical Society \(ACS\) Fall 2026 National Meeting](#), taking place in Chicago, IL, **August 23–27, 2026**. Abstract submission closes on **March 30**.

**Symposium topics include:**

- Fabrication of membranes for separations, electrochemical systems, sensing, and dehumidification
- Advances in fluorine chemistry for refrigerant repurposing technologies

- Materials for refrigerant separation and sensing, solid-state cooling, and water adsorption

Submit an Abstract to  
PMSE

Submit an Abstract to  
FLUO

Submit an Abstract to  
INOR

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Abstract submissions are open for the topical conference *Advancements in the Development of Novel Refrigerant Separation Processes, Design of New Refrigerants, and Energy-Efficient Cooling Systems* at the [2026 AIChE - American Institute of Chemical Engineers Annual Meeting](#) in Minneapolis, MN, **November 8-12, 2026**.

Abstracts are due on **April 8**. **Submissions should be focused on:**

- Energy-Efficient Refrigeration Systems
- Novel and Safe Refrigerants
- Thermophysical Properties and Phase Equilibria
- Refrigerant Reclamation and Repurposing

Submit an Abstract

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## Funding Opportunities

The [Geospace Environment Modeling \(GEM\)](#) program supports research on the physics of Earth's magnetosphere and its coupling with the atmosphere and solar wind, aiming to improve predictions of the geospace environment through observations, theory, and advanced modeling. Proposals investigate large-scale geospace dynamics and contribute to community-driven modeling efforts. **Full proposals are due on September 30.**

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## Education and Outreach

### The Adventures of EARTH Man

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

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## Announcements and Reminders

Please Update EARTH Core

To ensure we accurately capture the full impact of ERC EARTH, all faculty, students, and staff are asked to update their **Activities and Accomplishments in EARTH Core once per month**. This includes publications, presentations, awards, student milestones, outreach, workforce development, and other achievements.

Need help? Contact [erc-earth@ku.edu](mailto:erc-earth@ku.edu) for account support or guidance.

Update EARTH CORE

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**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."

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Did you know that an EARTH Convergent Research (CR) Meeting Calendar is maintained in the shared Google folder? View the [2026 calendar](#).

### Upcoming Meetings

*March 19:* Convergent Research Leadership Meeting (3 pm ET)  
*March 26:* Thrust 1 Meeting (3 pm ET); Crosscut 2 Meeting (4:30 pm ET)  
*April 9:* Thrust 2 Meeting (3 pm ET)  
*April 16:* Thrust 3 Meeting (3 pm ET)  
*April 23:* Convergent Research Leadership Meeting (3 pm ET)

## Connect with EARTH on Social Media



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ENVIRONMENTALLY APPLIED REFRIGERANT TECHNOLOGY HUB

*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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