



Upcoming Webinars



Our next webinar will take place on **September 1** and feature **Professor Edward Colgate** of Northwestern University, who also serves as Center Director of the NSF Human Augmentation via Dexterity (HAND) Engineering Research Center. This event will be offered in a **hybrid format**, with both Zoom and in-person attendance available at the University of Kansas. *Additional details will be announced in August.*

Can't attend live? Our [webinars](#) are recorded and available on demand.

Publications

Limitations to Air Free Cooling in Data Centers Under Rising Heat and Humidity
Science Reports

Christina Karamperidou, Jake W. Casselman, Sean B. Cleveland, Damena Agonafer, Vivek V. Manepalli, Roshith Mittakolu, Lingnan Lin, and Gerardo A. Rivera Tello



**Prof. Christina
Karamperidou**
U. Hawai'i, Mānoa



**Dr. Jake W.
Casselman**
U. Hawai'i, Mānoa



**Prof. Damena
Agonafer**
U. Maryland



**Prof. Lingnan
Lin**
U. Maryland

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*News article content courtesy of University of Hawai'i at Mānoa – SOEST
School of Ocean and Earth Science and Technology*

Determining Binding Energies of Key Fluorinated Refrigerants 1,1,1,2-Tetrafluoroethane, 2,3,3,3-Tetrafluoropropene, and 3,3,3-Trifluoropropene
The Journal of Physical Chemistry A

Koushik Mondal, Mason McAnally, Nils Melbourne, Andrew M. Turner,
Alexandre Bergantini, Rui Sun, and Ralf I. Kaiser



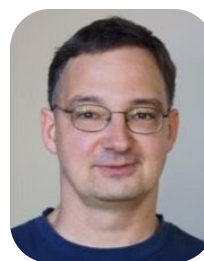
**Dr. Koushik
Mondal**
U. Hawai'i, Mānoa



**Nils
Melbourne**
U. Hawai'i, Mānoa



**Prof. Rui
Sun**
U. Hawai'i, Mānoa



**Prof. Ralf
Kaiser**
U. Hawai'i, Mānoa

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State-Selective Rate Constants of the Self-Reaction $\text{NH}_3^+ + \text{NH}_3$:
A Combined Experimental and Theoretical Study
Physical Chemistry Chemical Physics

Dominik Plamper, Nils Melbourne, Rui Sun, and Karl-Michael Weitzel



**Nils
Melbourne**
U. Hawai'i, Mānoa



**Prof. Rui
Sun**
U. Hawai'i, Mānoa

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**Efficiency-Weighted Cooling Degree Days Reveal Opposing Temperature
and Humidity Effects on Energy Demand**
Nature Communications

Jake W. Casselman and Christina Karamperidou



**Dr. Jake W.
Casselman**
U. Hawai'i, Mānoa



**Prof. Christina
Karamperidou**
U. Hawai'i, Mānoa

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Member Achievements and Updates



Congratulations, Dr. Kriti Chitrakar! Kriti successfully defended her PhD thesis, *"Hierarchical Porosities in Metal-Organic Supercontainers."* She has been an invaluable contributor to the NSF ERC EARTH community, particularly through her work on the Webinar Committee, where her dedication and organization strengthened programming and engagement. Kriti will continue her work as a **Postdoctoral Researcher** in **Professor Zhenqiang (Rick) Wang's** group at the **University of South Dakota**. Kriti thanks her committee members for their guidance throughout her PhD journey. We look forward to following her continued success!



Precious recently earned her **Master of Science degree from the University of Notre Dame**, where she was **jointly advised by Professor Yamil Colón and Professor Edward Maginn**. This achievement marks an important milestone in her academic journey. She is currently exploring opportunities in process and chemical engineering as she plans the next step in her career. We congratulate Precious on this outstanding accomplishment and look forward to following her future success!



Nils Melbourne recently earned his **Master of Science degree** from the **University of Hawai'i at Mānoa**, where he conducted research in **Professor Rui Sun's group**. This achievement represents an exciting milestone in his academic journey. In August, Nils will join the **University of California, Berkeley to pursue a Ph.D. in theoretical chemistry**. We congratulate Nils on this accomplishment and wish him continued success as he begins this next chapter in his research career.



Professor Alexander Dowling of the University of Notre Dame was selected by the **National Academy of Engineering** to participate in the prestigious **2026 Grainger Foundation Frontiers of Engineering Symposium**.

Chosen as one of just 74 early-career engineers nationwide, Dowling was recognized for his research integrating chemical engineering, computational optimization, and machine learning to advance sustainable energy systems, carbon capture, clean hydrogen, and advanced separation technologies. Congratulations, Alex, on this outstanding achievement.



Barbara Villarosa, Research Project Manager at the University of Notre Dame and NSF ERC EARTH Staff Member, has **received the globally recognized Project Management Professional® (PMP) certification** issued by Project Management Institute (PMI), the leading authority in project management. This certification acknowledges **mastery of project management concepts, tasks, and techniques, and the skills** required to manage people, processes, and business priorities of professional projects. Please congratulate Barbara on this outstanding achievement.



Graduate researchers **Lillie Chudacoff** (University of Iowa, Bess Vlasisavljevich Group) and **Yan Saltar** (University of Notre Dame, Yamil Colón Group) attended the [2026 USA RASPA School/Workshop](#) at the University of Massachusetts Amherst. The workshop provided hands-on training in molecular simulation techniques, adsorption modeling, molecular dynamics, Monte Carlo methods, and machine learning approaches for porous materials. The event also featured Scientific Advisory Board member Professor Randall Q. Snurr as one of the workshop organizers.

New Faculty Member



NSF ERC EARTH is pleased to welcome **Dr. Hongwei Sun**, Tenure-Track Assistant Professor of **Atmospheric Sciences** at the **University of Hawai'i at Mānoa**, to Thrust 2, Project 2.1. Dr. Sun's research focuses on multiscale atmospheric modeling, including large-scale stratospheric transport and dynamics, aerosol processes, and aerosol-cloud interactions within the marine boundary layer. His work also explores applications to climate intervention and climate mitigation strategies. Welcome to our Center!

[Github](#)

[Google Scholar](#)

[ResearchGate](#)

Scholar Leadership Council

Inspiring Young Scientists at Palmer Elementary

Members of the **Lehigh Scholar Leadership Council (SLC)** recently participated in Palmer Elementary School's annual Science Fair, where they shared hands-on STEM activities and introduced students and their families to the exciting world of research. The event was a tremendous success, with more than **100 students and parents** visiting the NSF ERC EARTH outreach table throughout the evening. Special thanks to SLC members **Luc Mauro, Anthony Paolo, Cherry Mae Ravidas, and Isabelle Herlinger** for volunteering their time and helping inspire the next generation of scientists and engineers.





Education and Workforce Development

The Adventures of EARTH Man



Follow EARTH Man as he navigates real-world safety and refrigeration challenges in a monthly comic series.

Read the latest issue and catch up on past [comics](#)!

Innovation Ecosystem

NSF ERC EARTH Members Partner to Commercialize Breakthrough Refrigerant Separation Technology

The U.S. National Science Foundation (NSF) Engineering Research Center for Environmentally Applied Refrigerant Technology Hub (EARTH) proudly congratulates NSF ERC EARTH industry members **Icorium** and **Hudson Technologies** on announcing a

preliminary agreement to commercialize Icorium's patented extractive distillation technology for refrigerant reclamation. This partnership marks an important step in bringing innovative, sustainable HVACR technologies from research to commercial deployment and has the potential to strengthen the circular refrigerant economy by increasing refrigerant recovery and reuse, reducing waste and greenhouse gas emissions, and helping ensure a reliable supply of reclaimed refrigerants. Partnerships like this support NSF ERC EARTH's mission to accelerate the development and deployment of environmentally responsible refrigerant technologies through collaboration among universities, industry, government agencies, and national laboratories.



Funding Opportunities Snapshot

- **ACS-CES Sustainability Education Award** (July 31) — Recognizes educators advancing sustainability and green chemistry in chemical education.
- **PI Development in Sustainability Grant** (Sept. 18) — Up to \$50,000 for faculty sabbaticals that build sustainability-focused interdisciplinary collaborations.
- **CMO Excellence in Green Chemistry Award** (Dec. 1) — \$5,000 for CMOs implementing impactful green chemistry in pharmaceutical manufacturing.
- **Data Science & Modeling for Green Chemistry Award** (Dec. 1) — \$5,000 for AI, modeling, or computational tools that advance sustainable chemistry.
- **Green Discovery Chemistry Award** (Dec. 1) — \$5,000 for industry-led innovations in greener drug discovery chemistry.

[Learn More](#)

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 NSF ERC EARTH Convergent Research (CR) Meeting Calendar is maintained in the shared Google folder? View the [2026 calendar](#).

Upcoming Meetings

July 16: Thrust 2 (3:00 p.m. ET)

July 23: Thrust 3 (3:00 p.m. ET)

August 6: Thrust Reviews

August 13: Thrust 1 — Testbed Education (3:00 p.m. ET)

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The NSF ERC for 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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