



University at Buffalo

Research and Education in eEnergy,
Environment and Water (RENEW)

Currents

News, events and more from the RENEW Institute, where faculty collaborate across disciplines to solve the world's most pressing problems

FALL / WINTER 2025

Message from the Director



This August, at the generous invitation of colleagues from the Great Lakes Center (GLC) at SUNY Buffalo State University, I spent a week aboard the EPA Research Vessel *Lake Guardian*. The experience enabled me to collect samples of water, mussels, and sediment, which my lab will use to parse the fate of fluorinated chemicals in the environment. If you'll

pardon the pun, being aboard the RV *Lake Guardian* was a watershed experience.

Living near the Great Lakes makes us generally aware of their magnitude. Nonetheless, spending days on end without seeing land brought their scale—and preciousness—into relief. Working elbow to elbow with GLC colleagues also reinvigorated my commitment to advancing collaborative, cross-institutional projects that address wicked environmental challenges. First-hand experiences are invaluable and galvanizing.

As we approach the conclusion of 2025, I ask RENEW Core Faculty and Faculty Affiliates to consider what kind of experiences would animate your interdisciplinary research activities. Reach out to me or Education and Outreach Director Lisa Lenker if you are seeking new collaborators or support with proposal development, or if you have an idea for a breakfast meetup research topic that we can host for you.

We face considerable challenges—and collectively, we have the grit, fortitude, and talent to tackle them.

Diana S. Aga, Ph.D.

SUNY Distinguished Professor
Henry M. Woodburn Professor of Chemistry
Fellow of the American Chemical Society
Director of UB RENEW Institute

News and Updates



CSEE's Ian Bradley and Earth Sciences' Kristin Poinar receive NSF CAREER awards

Bradley will use his award to study interactions between wastewater treatment and harmful algal blooms (HABs), which can lead to “dead zones” in aquatic environments. Glaciologist Poinar’s award will support her pursuit of improved modeling of ice sheet loss using AI, which offers the promise of more accurate prediction of ice loss and sea level rise. The CAREER grant is NSF's most prestigious award in support of early-career faculty who have the potential to serve as academic role models in scientific research and education.

>>> [Read more about their awards](#)



Photo: Douglas Levere

RENEW team receives SERDP grant to study plasma’s potential for PFAS remediation

The team is investigating the capacity of commercially-available plasma systems to transform PFAS trapped in water filters into harmless fluorine salts.

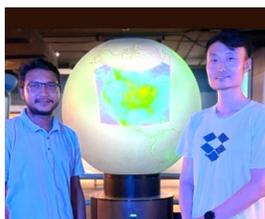
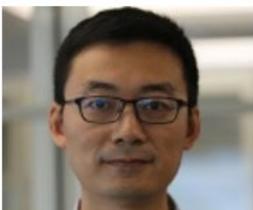
>>> [Learn more in UBNOW](#)



Lina Mu and Meng Wang receive \$500K from DEC with partner Buffalo Prenatal Perinatal Network (BPPN) to address environmental health inequities that impact pregnancy

Prior research findings of Mu and Wang associate air pollution exposure to gestational diabetes mellitus. Residents of Buffalo's East Side and West Side are subject to high levels of air pollution from diesel-exhaust PM2.5, which is exacerbated by the increasing number of days per year with wildfire smoke exposure. The team's DEC grant will enable community-based interventions, including distribution of air purification devices, to individuals served by BPPN.

>>> [Read the DEC press release](#)



Kang Sun lands NASA FINESST grant for doctoral student and "Future Investigator" Jobaer Ahmed Saju

Support for Saju's work will, in turn, advance the research agenda of PI Sun, whose NSF CAREER-supported research quantifies air pollution from space, and connects this data to public health impacts.

>>> [Read more at SEAS News](#)

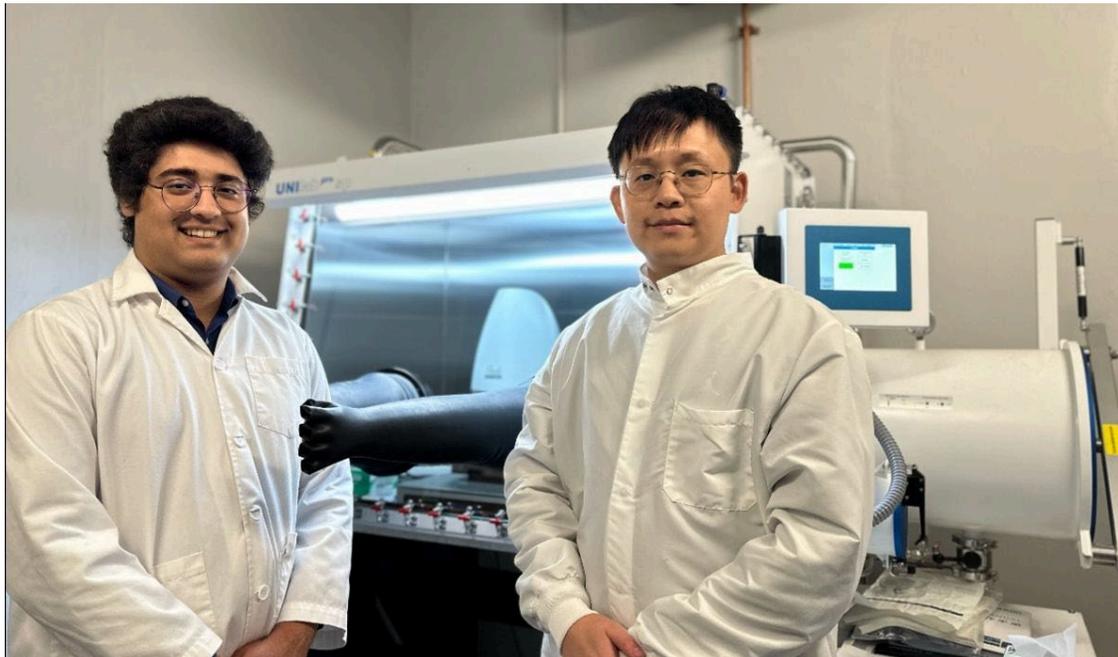


Haiqing Lin earns AIChE Award for research and educational impact

RENEW Faculty Affiliate Lin's research includes development of novel carbon capture membranes; his lab routinely hosts visiting scientists as well as WNY high school students, a team of which were recently awarded the Next Generation Excellence award at the ISSP.

>>> [Learn more about Lin's AIChE award](#)

Shared Instrumentation Spotlight



AFM is pictured with, from left: Aayush Nayar, PhD Student; Dr. Jun Liu, Assistant Professor, Department of Mechanical and Aerospace Engineering. Photo: Judith R. Cristobal

Project Highlight - Jun Liu

Understanding the fundamental relationship between chemical composition and the electrostatic behavior of glass surfaces is essential and may provide guidance for tuning functional properties of glass. However, traditional methods rely on experiments involving multiple factors, which can be time-consuming and costly to perform. Recently, Assistant Professor Jun Liu received a UB New York State Center of Excellence in Materials Informatics Faculty-Industry Applied Research (CMI-FIAR) award, with matching funds from Corning, to continue research on electrostatic properties of ultrathin glass materials using Kelvin Probe Force Microscopy. The multifunctional atomic force microscopy (AFM) system in the RENEW shared lab will be a key tool supporting this project. Combining experimental and computational approaches may significantly advance understanding of the measurements and help explain previously unanswered questions about the interaction between glass chemistry and surface charging.

>>> Contact [Dr. Jun Liu](#) to learn more about his research.

>>> [Explore RENEW's Shared Instrumentation](#)

>>> Contact RENEW Laboratories Director [Judith Cristobal](#) with questions about RENEW shared instrumentation and training opportunities.

Events and Outreach



Save the date: Richard Alley, National Academy of Sciences member and recipient of the 2024 National Medal of Science, to speak at UB on Thursday, March 19, 2026

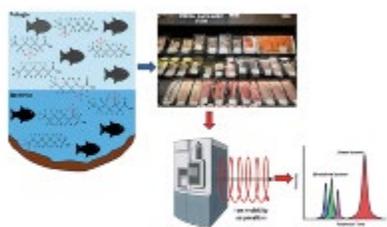
Alley will address a joint session of the Annual International Arctic Workshop and the Northeast Glaciology Meeting; his talk will be open to the UB community. Registration information will be available on RENEW's website in the new year. Stay tuned!
>>> [Learn more about Richard Alley](#)



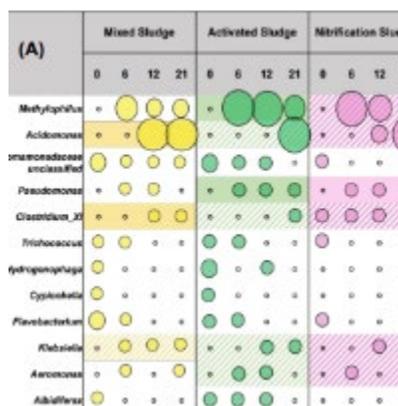
Save the date: ARI-RENEW-OGHI-CCCHE joint conference – April 9-10, 2026 with keynote speaker Leni Robredo, the former Vice President of the Philippines

This spring, RENEW will co-host a free conference: Climate Change and Emerging Contaminants: Risks and Responses in Asia and Beyond. Curated and organized with colleagues from the Asia Research Institute, the Office of Global Health Initiatives, and the Center for Climate Change and Health Equity, the conference will be free and open to the public.
>>> [See the list of invited speakers](#)
>>> [Submit a poster abstract](#)

Recent Publications

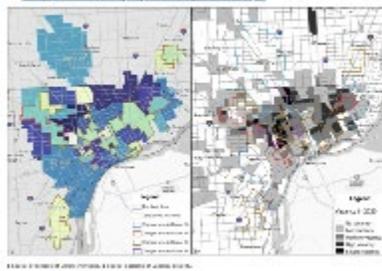


Diana Aga: [Isomer-specific analysis of PFOS in wastewater and avian eggs enabled by cyclic ion mobility spectrometry](#) and [PFAS isomers matter: Distribution patterns of linear and branched PFOS and PFOA in consumed fish revealed by cyclic ion mobility separation](#)



Ian Bradley: [Biotransformation and partitioning of structurally different PFAS by wastewater microbial consortia](#)

Fig. 3: Patterns of spillover effects of the Spatial models at the 5-Incremental spatial scales.



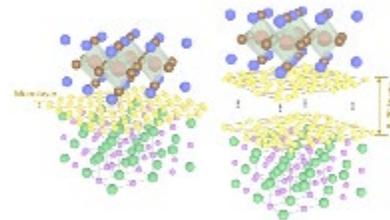
Andrew Crooks: [Examining spatial expansion and stemming strategies of urban shrinkage: Evidence from Detroit, USA](#)



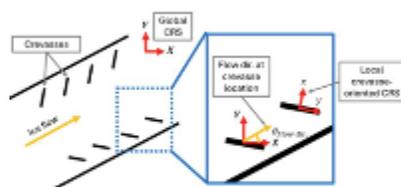
Stuart Evans [Crowdsourcing dust storms in the United States utilizing social media data](#)



Trevor Krabbenhoft: [The genome of the vining fern *Lygodium microphyllum* highlights genomic and functional differences between life phases of an invasive plant](#)

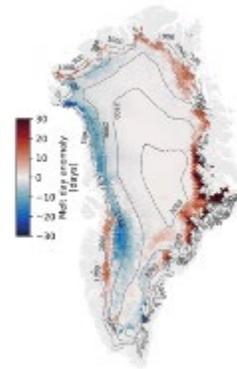


Jun Liu: [Long-distance remote epitaxy and Slip-actuated bionic tactile sensing system with dynamic DC generator integrated E-textile for dexterous robotic manipulation](#)

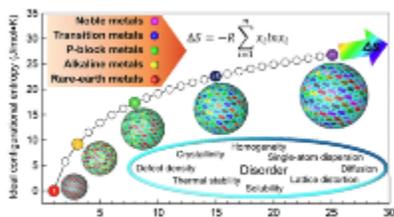


Sophie Nowicki: [Comprehensive assessment of stress calculations for crevasse depths and testing with crevasse penetration as damage and Progress and future directions in constraining](#)

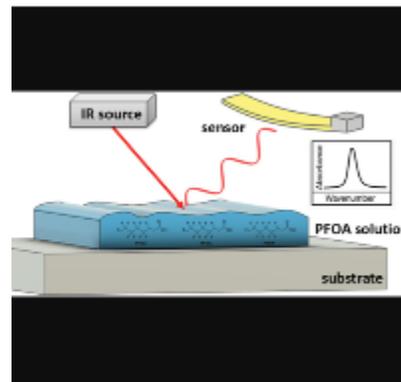
[uncertainties in sea-level projections using observations](#)



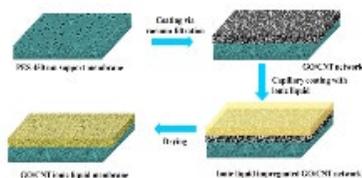
Kristin Poinar: “The Greenland ice sheet” in “The Arctic” chapter of [State of the climate in 2024](#) (published 8-01-25) and “Greenland ice sheet 2024” chapter of [NOAA Arctic report card: Update for 2024](#)



Mark Swihart: [Entropy-driven structural evolution in ceramic oxides](#)



Thomas Thundat: [Real-time standoff detection of trace levels of PFAS in water using photothermal nanomechanical spectroscopy](#)



Miao Yu: [Restricting ionic liquid in a network comprising of GO/CNT as a separation membrane for efficient CO₂ capture](#)



**Wishing you peace
in the new year!**

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