

A photograph of two female scientists in a laboratory setting. They are both wearing white lab coats over blue collared shirts. The scientist on the left is a Black woman with dark curly hair, wearing glasses, and is looking towards the right. The scientist on the right is a white woman with blonde hair, looking down at a laptop computer she is holding. The background is a blurred laboratory with various pieces of equipment and a blue color scheme.

2022 — Progress Report

Revolutionizing Safety Through Science



Research
Institutes

Discoveries in Safety™

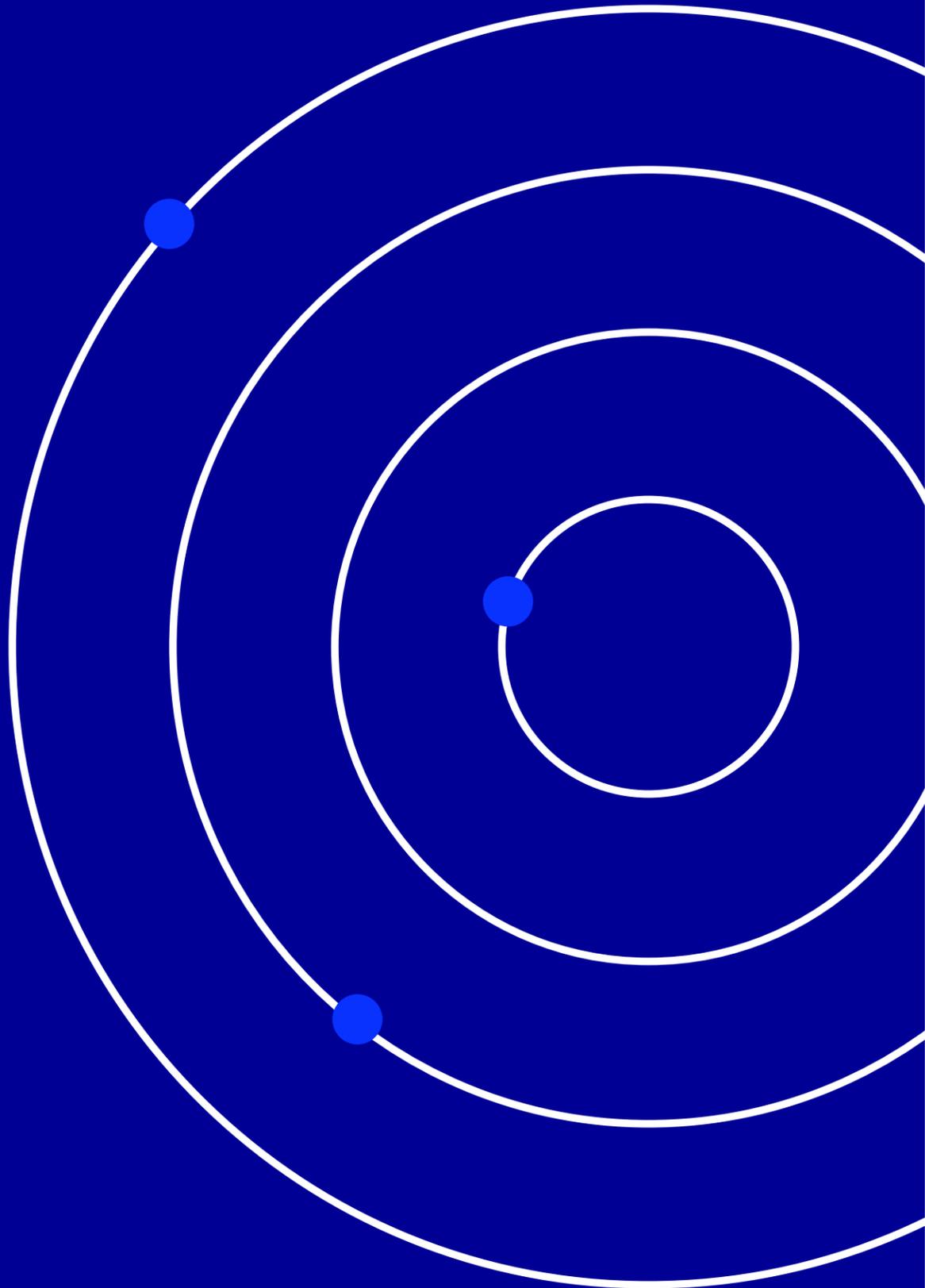
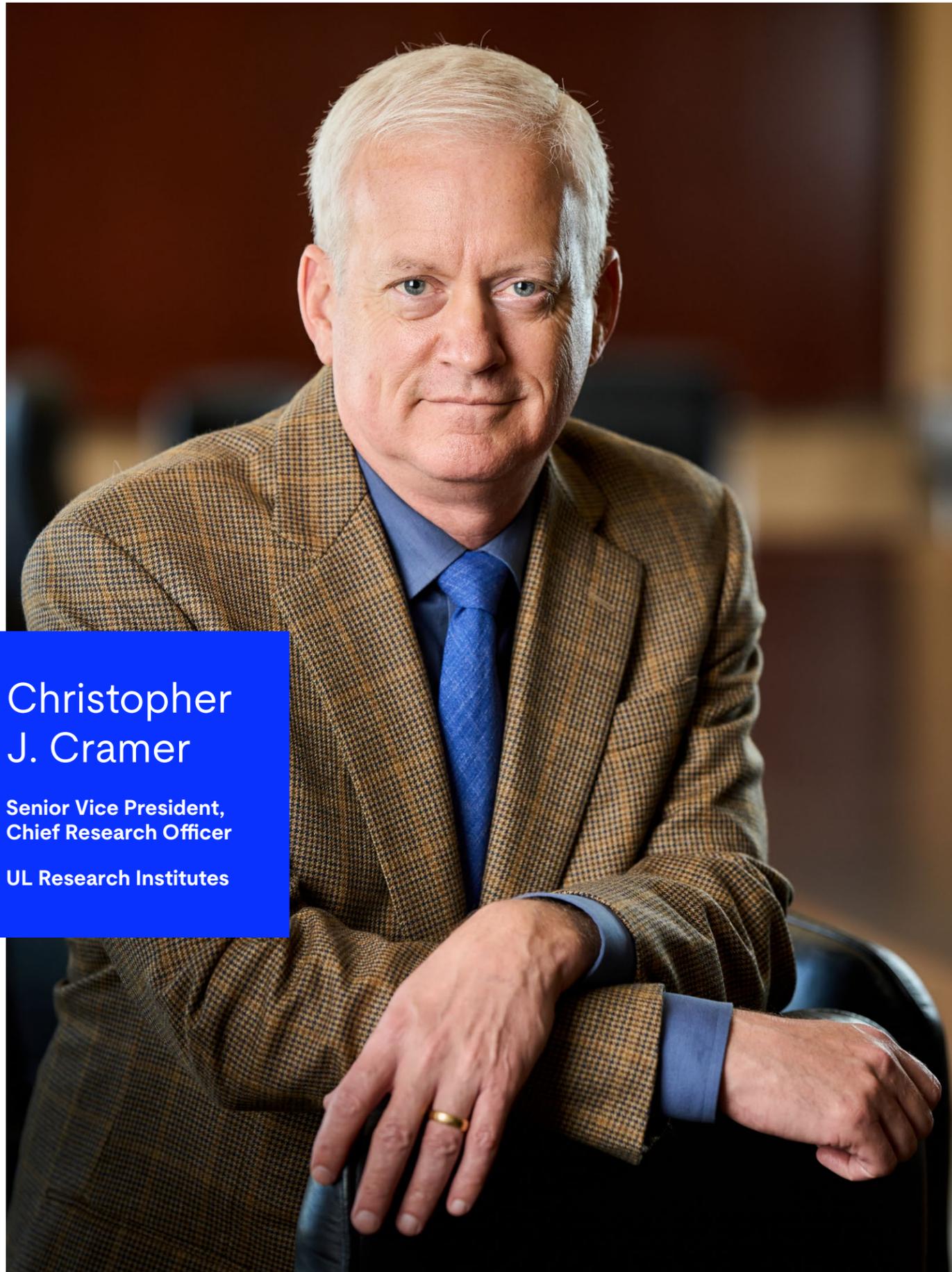


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Christopher
J. Cramer

Senior Vice President,
Chief Research Officer

UL Research Institutes

A Message From Chris Cramer

The world changes more quickly and profoundly than we can sometimes imagine. Alongside its challenges, change creates extraordinary opportunities, sparking ingenuity and motivating people to move forward in an entirely different way.

UL Research Institutes — indeed, the whole UL enterprise — is a case in point. To better address urgent safety challenges related to today's rapid pace of technological innovation, we made a historic \$1.8 billion financial commitment in early 2022 to dramatically expand the scale and scope of our safety science work.

We also restructured, launching UL Standards & Engagement as a separate standards development and public safety advocacy organization to enable each part of the UL enterprise to focus on what it does best. Our enterprise now comprises three distinct entities that independently pursue our common mission of working for a safer, more sustainable world: UL Research Institutes, UL Standards & Engagement, and UL Solutions.

Within UL Research Institutes (ULRI), our centers of research excellence are growing and changing as well. Adhering to a global strategy that calls for investing in and expanding our talent, capacity, and scope, we have expanded both the research scope and physical presence of our Chemical Insights, Electrochemical Safety, and Fire Safety research institutes and established two new research centers — the Digital Safety Research Institute and the Materials Discovery Research Institute. We also have launched a new Office of Research Experiences and Education to cultivate the next generation of safety scientists through educational and research programs designed to engage students across the educational spectrum. Guiding our expansion is a new roster of leaders and scientists across our research centers who have joined us to advance our ambitious safety science mission.

We will continue to invest in our capabilities, engaging top minds across several disciplines to build a safer and more sustainable world in which everyone can thrive.

Our experts are focusing on three of the world's grand challenges, which we'll discuss at more length throughout this report — those of producing resilience for a sustainable future, protecting individual and societal health in the 21st century, and mitigating as well as understanding the risks that digital systems pose. With our deep safety science roots and partnerships across the global public safety community, we are well positioned to lead this work.

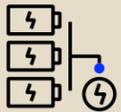
We realize that the challenges of today's world cannot be resolved by a single organization. We need a global perspective to address today's global issues effectively, and we welcome connections and collaborations with researchers from myriad disciplines and backgrounds. Our continued growth and success will be measured not just by the scientists, researchers, and professionals who join our ranks but also by something equally vital — our ability to incorporate new and diverse perspectives.

Together, we will work to harness the promise that new and changing technologies hold for a fuller, more productive future, transforming ourselves to accelerate discoveries that will weave safety science into innovation from the very start.

I am proud to be part of an organization that is uniquely suited to addressing this monumental task. And as you'll read in this first annual progress report, we have considerable achievements to share.

Science for a Safer World

As the pace of technological change accelerates, we continually reevaluate and revise what it means to live and work safely.



We strive to **BUILD SAFETY** into scientific innovations

New advances in energy, chemistry, engineering, and medicine have revolutionized the social and economic well-being of people everywhere, improving our quality of life in ways that were unimaginable when UL Research Institutes was founded in the 19th century. Technological progress enabled the human population to reach 8 billion on Nov. 15, 2022, even as scientific advances continue to transform our world at breathtaking speed.

We strive to build safety into these scientific innovations. By necessity, our definition of safety — of what it means to create a safer world — remains open to possibility and, like the world around us, continuously evolving.

Increasingly, our work reflects a growing awareness of the unintended consequences of the world's extraordinary technological progress, which manifest as troubling milestones: record temperatures, rising sea levels, collapsing ecosystems. Humanity's influence on the world has become so profound that scientists refer to our time as the Anthropocene, a geologic epoch in which people are the principal architects of our planet's future.

The endpoint of transformation during the Anthropocene is unknown. Will human activity continue to drive change much as it has, but faster, and with greater collateral damage? Or can we curb the unintended consequences of emerging technologies to ensure that their benefits flow equitably to people and places everywhere?



We can forge a **SAFER PATH** during the 21st century

Even if the answers to those questions remain to be seen, we do know that they are likely to be decided during our lifetimes — by our collective response to climate change and other environmental hazards, and by what we do to build and guide technologies like machine learning and artificial intelligence, which have nearly limitless potential to reshape our world.

We have good reason to believe that we can forge a safer path during the 21st century than we did in the 20th. For one, our tools to detect and respond to risk have become much more sophisticated. So has our collective understanding of what's at stake. As a result, experts around the world — scientists, engineers, technologists, regulators, policymakers, and more — are creating new partnerships to address the challenges we face.

UL Research Institutes is uniquely positioned to lead this work. For nearly 130 years, we have been developing the processes, partnerships, and expertise to guide innovation and advance public safety. We're scaling up our approach — and applying it to our selected grand challenges.



UL Research Institutes is **UNIQUELY POSITIONED** to lead this work



Tackling Three Grand Challenges

The world faces urgent, complex challenges. We're focusing our safety science expertise on three of those grand challenges — because scientific inquiry builds the foundation for a safer future.

By applying our expertise to today's global challenges, UL Research Institutes continues to set the agenda for safety science. We're working to ensure that the technologies that define the 21st century are designed with safety, security, and equity in mind — and advance those values around the world.

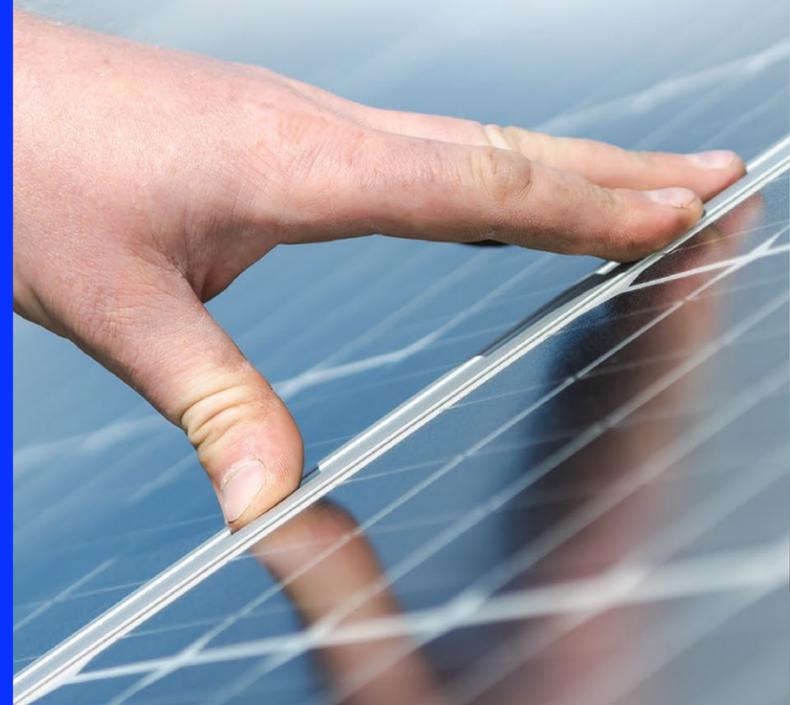
Building resilience for a sustainable future

Many solutions to climate change — among them solar panels, storage batteries, and electric vehicles — are technologies. They will play a vital role in driving down global carbon emissions.

But like most technologies, they also have the potential to create unintended consequences. For example, storage batteries are vulnerable to thermal runaway and fire; they also currently require metals like lithium and cobalt, which are often extracted through dangerous mining practices.

Left alone, these and other problems will undermine the world's transition to a clean energy future.

That is why we are working to build safety into the design, development, and deployment of renewable energy technologies.



Advancing individual and societal health in the 21st century

New manufactured products and chemicals play an important role in societal progress: They make crops more productive, medicines more effective, and structures more durable, to name just a few benefits. But in most cases, the long-term impact of these chemicals on people, other species, and ecosystems is poorly understood.

What we can say with certainty is that synthetic chemicals are ubiquitous in the world, from the ocean floor to the human bloodstream. Many persist and accumulate in living things, and some can inflict harm in subtle ways over long periods of time.

We are working to bring these chemical concerns to light — focusing in particular on air pollution, electronic cigarettes, 3D printer emissions, and flame retardants, which pose global risks to health.



Promoting safety at the human-digital interface

We are right now in the early stages of a technological revolution powered by digital intelligence. Artificial intelligence and machine learning have already begun to transform our understanding of disease and human biology; they help fly our planes, staff our companies, and enforce our laws; and experts say there is still more change to come.

We are also becoming familiar with problems in the digital ecosystem, from the erosion of privacy and the misuse of data to black box algorithms that quietly reinforce human biases. It is critical that we solve these problems while the technologies driving them are still nascent.

We aim to do just that, by developing new frameworks for digital safety in partnership with experts worldwide.



Setting the Agenda for Safety Science

As a global safety science leader, research is at the heart of our mission. We tackle the tough questions with a scientific rigor and objectivity trusted throughout the world.

Our best-in-class researchers strive to weave safety into the fabric of technological innovation through an established approach. First we collaborate with experts around the world to evaluate public safety and health concerns, then set research agendas and design methodologies based on the science required. From there, we select research parameters, conduct the research, review findings, and establish action plans.

It's a meticulous and transparent process that underscores the integrity of our scientific research. Our findings support the development of standards and best practices for the safe use of evolving technologies while paving the way for regulatory and behavior change.

We aspire to do even more. Deploying a multidisciplinary approach that engages the ingenuity of top minds across scientific disciplines, we are building on our legacy to dramatically increase both the size of our research operation and its scope. Our aim is to catalyze the field

of safety science through collaborative research so that risks are mitigated in the earliest stages of technological advancement.

Read on to learn more about the research institutes and offices comprising ULRI that take on our grand challenges in pursuit of a safer, more secure, and resilient society.

Advisory Board to the Chief Research Officer

Chief Research Officer Chris Cramer has created an advisory board to guide him as he leads the expansion of the research institutes and their collective impact on society. Board members met for the first time in October 2022 and will continue to meet semiannually.



Our **Chemical Insights Research Institute (CIRI)** helps detect, reduce, and eliminate the dangers that environmental and chemical pollutants pose to human health.



Dr. Marilyn Black leads CIRI

Our **Electrochemical Safety Research Institute (ESRI)** examines the safety and performance limits of storage batteries and other renewable energy technologies, while exploring ways to overcome those limits.



Dr. Judy Jeevarajan leads ESRI

Our **Digital Safety Research Institute (DSRI)** studies how data collection and storage, machine learning algorithms, technologies aimed at shaping human behavior, and other applications of digital intelligence can put people at risk. It also builds open-source tools to protect against that risk.



Dr. Jill Crisman leads DSRI

Our **Fire Safety Research Institute (FSRI)** investigates emerging issues in fire safety through field testing, laboratory studies, and modeling, with the goal of equipping the world's fire services with the information they need to save lives.



Dr. Steve Kerber leads FSRI

Dr. Stuart R. Miller leads MDRI



Our **Materials Discovery Research Institute (MDRI)** studies new materials at the atomic, nano, and meso scales. Its research highlights both risks and applications, including ways we might harness new materials to advance sustainability, safety, and health.

Deepa Shankar leads the partnerships office



Our **Office of Partnerships** builds out, oversees, and manages all major partnerships for UL Research Institutes, including competitive sponsored research activities, awards, prizes, the Advisory Board to the Chief Research Officer, our annual research symposium, and relationships with other key organizations.

Dr. Kelly Keena leads OREE



Our **Office of Research Experiences and Education (OREE)** creates educational materials and designs research experiences to broaden student understanding of safety science and contribute to the cultivation of the next generation of safety scientists.

Resilience for a Sustainable Future

Pursuing knowledge and technology to empower a future our planet can sustain



Teaching the public to escape a home fire

Residents have less time than ever before to escape a home fire — potentially just three minutes or even less. FSRI in 2022 expanded its Close Before You Doze® public safety campaign to stress the importance of planning ahead to save lives during a fire. New messaging and materials educate the public on three lifesaving actions: installing smoke alarms properly throughout the home, creating and practicing an escape plan, and closing doors as a protective barrier to stop the spread of smoke and flames.



Mitigating the risks of lithium-ion battery fires

FSRI has expanded its research scope to quantify the hazards associated with lithium-ion battery-powered devices and develop strategies to mitigate the risk battery fires pose for firefighters and occupants. As this safety science research progresses, FSRI is working to deepen public and firefighter understanding of the science of lithium-ion battery fire and explosion hazards through an introductory e-book and detailed online firefighter training on the topic.



Deepening our understanding of wildland-urban interface fires and how to protect against them

About one-third of U.S. homes are situated in what is known as the wildland-urban interface (WUI), where human development mixes with undeveloped wildland. As WUI fires become more frequent, FSRI is leveraging its expertise in built environment fire dynamics to examine building-to-building heat transfer, a key contributor to conflagration in WUI fires.



Pursuing safe and efficient recycling of lithium-ion batteries

ESRI is working with Rice University in Houston to develop and optimize battery recycling to supplement our limited supply of raw materials and alleviate related economic, environmental, and ethical concerns. In 2022, the ESRI-Rice University collaboration optimized two main approaches. ESRI and Rice University will next expand the project's scope, focusing on the scalability of these recycling processes, optimization of the metal recovery processes, and the characterization and optimization of regenerated batteries.



Paving the way for green hydrogen energy

In an effort to realize the promise of green hydrogen technology, ESRI and the University of Houston launched a collaborative research project in 2022 that aims to develop new materials and methods for producing hydrogen. The project also calls for characterizing the safety of hydrogen energy at all stages of production and while it is stored, transported, and used.



Developing new materials to address global safety challenges

The Materials Discovery Research Institute (MDRI) was founded in 2022 to create innovative materials for renewable energy and environmental sustainability. Led by newly appointed Dr. Stuart R. Miller, MDRI is establishing advanced computational capabilities to accelerate the targeted discovery of materials that will reduce the harmful impacts of humanity's reliance upon fossil fuel resources and enable a transition to renewable energy sources.



Cultivating the next generation of safety scientists

Building on a platform designed to counter a loss of engagement in science common to middle school students, OREE has redesigned its Xplorlabs learning module on electrical power to produce the new "Science of Thermal Runaway: Engineering Solutions." The redesign, which incorporated educator feedback, reflects contemporary best practices in science and engineering education. OREE held 10 half- and full-day workshops on using Xplorlabs in the classroom for more than 200 educators.



Building STEM career pathways

OREE has established a series of initiatives to support equity and access for post-secondary students through relevant, meaningful education and career opportunities. Among them is the Future of Safety Science webinar series, which translates ULRI research outcomes into an educational resource geared toward university students. OREE also held a series of focus group sessions on student perceptions of research experiences with college students and graduates from groups who have historically been excluded from STEM professions. OREE will continue the study throughout 2023.



Collaborating with partners to support STEM education

Several education collaborations extended OREE's reach in 2022. For example, the Interactive Research Methods Lab (IRML) at Kennesaw State University in Georgia is collaborating with OREE to evaluate the outcomes and impacts of Xplorlabs implementation in Georgia's Cobb County and Cherokee County middle schools in collaboration with area fire service and fire protection engineers. OREE also partnered with the GEM Consortium to establish ULRI as an employer partner.



Individual and Societal Health in the 21st Century

Working to shed new light on the health impacts of manufactured products and chemicals



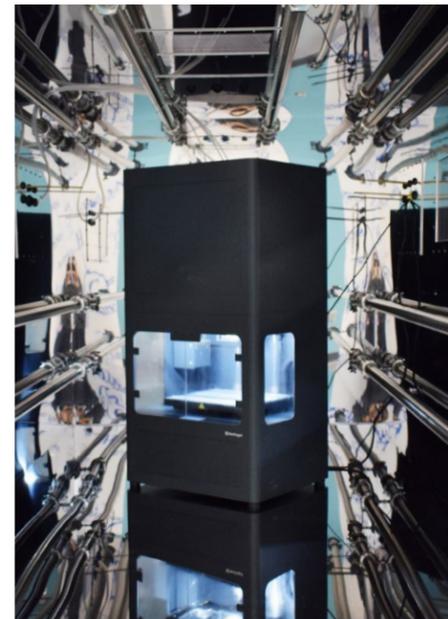
Examining the health implications of emissions when lithium-ion batteries fail catastrophically

With the use of lithium-ion batteries on the rise, ESRI is working with Texas-based Southwest Research Institute to study the particulates emitted when those batteries fail catastrophically and enter an uncontrollable, self-heating state known as thermal runaway. The goal of the project is to measure the concentration, size, and mass of particulate components at both the single-cell and module levels, adding depth to research literature that lacks data on the particulates released during thermal runaway.



Understanding and reducing the health risks of chemicals

Today, there are more than 140,000 specific chemicals used to make products utilized daily, though the health impacts of only about 5% are understood. In 2022, CIRI studied the chemicals emitted by 3D printers and worked to characterize particle and volatile organic compound (VOC) emissions from electronic cigarettes. CIRI also launched a study into the ways in which people are exposed to per- and polyfluoroalkyl substances (PFAS), known as “forever” chemicals because they do not break down in the environment or in our bodies.



CIRI research aims to identify climate change-related health risks

Some effects of climate change are closer to home than commonly believed. Seeking to close scientific knowledge gaps, CIRI is researching health risks associated with climate change-related indoor chemical pollution exposure and emissions from fires in areas where human development and undeveloped wildland meet, called the wildland-urban interface.



Safety at the Human-Digital Interface

Convening experts across sectors, disciplines, and geographies to help ensure the digital ecosystem is designed with safety, security, and equity in mind



Protecting consumers from emerging digital threats

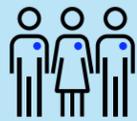
The Digital Safety Research Institute (DSRI) was launched in 2022 to address an array of safety risks and emerging threats in the digital ecosystem. Led by newly appointed Dr. Jill Crisman, DSRI aims to offer extensive outreach and education to help support safer digital environments for people everywhere.

Because the creation of a safer digital ecosystem is a task too massive and complex for a single research group, DSRI also is committed to partnering with other organizations focused on digital safety — such as Northwestern University in Illinois, which collaborated with DSRI in 2022 to form the Center for Advancing Safety of Machine Intelligence (CASMI) research hub.



Partnerships

Our public safety mission endorses broad, global cooperation so that we can advance safety science for the public good. To successfully work for a safer world, we must move forward in a way that represents both our stakeholders and the global community we seek to serve.



AN INCLUSIVE WORLD Is a Safer World

Safety science must embody the perspectives of everyone it's supposed to protect — no matter who they are, what they look like, or where they live. In short, an inclusive world is a safer world.

That's why we aim to ensure that our research — and the solutions we design — reflect the perspectives and needs of the diverse cultures on the front lines of the world's urgent safety challenges. In practice, our commitment to inclusivity means encouraging a wide range of voices. It means doing more to ensure our efforts incorporate the full diversity of our world.

And it underscores the importance of collaboration and partnerships. When we work with people of different races, genders, economic backgrounds, and more, we can examine existing safety challenges from new angles. We can solve problems more quickly, investigate, and address complex issues related

to safety and sustainability, and we can build a more resilient society.

Partnerships enable us to call upon our deep reservoir of trust and credibility to collaborate with leaders and address shared challenges.

When more people make a breakthrough discovery or build a coalition for progress, it helps advance a vision of the world in which we all want to live.

Organizationwide
partnerships

**U.S. Agency
for International
Development**

**World Economic
Forum**

CIRI

National Institutes of Health

U.S. Environmental
Protection Agency

DSRI

Center for Advancing the
Safety of Machine Intelligence,
Northwestern University

Cybersecurity and
Digital Trust,
World Economic Forum

ESRI

Purdue University

India Energy Storage
Alliance

FSRI

International
Fire Safety Consortium

Fire Department
of New York

OREE

Arizona State University's
Regional Centre for Expertise

GEM Consortium

Publications

Our researchers share their knowledge in numerous ways, from scholarly journal articles and conference presentations to public service announcements and videos. Below are the peer-reviewed journal articles and technical papers we published in 2022 that address the grand challenges on which we are focused.

Resilience for a Sustainable Future — pursuing knowledge and technology to empower a future our planet can sustain

[“A Research Agenda for the Chemistry of Fires at the Wildland-Urban Interface: A National Academies Consensus Report”](#)
Environmental Science & Technology

[“Battery Hazards for Large Energy Storage Systems”](#)
ACS Energy Letters

[“Effects of HVAC on Combustion-Gas Transport in Residential Structures”](#)
Fire Safety Journal

[“Perspective — On the Safety of Aged Lithium-Ion Batteries”](#)
Journal of The Electrochemical Society

[“State-of-Electrode \(SOE\) Analytics of Lithium-Ion Cells Under Overdischarge Extremes”](#)
Energy Storage Materials

[“Theoretical Modeling of Solid-Liquid Phase Change in a Phase Change Material Protected by a Multilayer Cartesian Wall”](#)
International Journal of Heat and Mass Transfer

[“Validation of CFD Fire Model Pressure Predictions for Modern Residential Style Structures”](#)
Fire Safety Journal

Consensus study report:

[National Academies of Sciences, Engineering, and Medicine: The Chemistry of Fires at the Wildland-Urban Interface](#)

Technical reports:

[Analysis of Search and Rescue Tactics in Single-Story Single-Family Homes Part I: Bedroom Fires](#)

[Analysis of Search and Rescue Tactics in Single-Story Single-Family Homes Part II: Kitchen and Living Room Fires](#)

[Analysis of Search and Rescue Tactics in Single-Story Single-Family Homes Part III: Tactical Considerations](#)

[Exposing Fire Service Hose in a Flashover Chamber: Report of Test](#)

[Four Firefighters Burned in Residential House Fire — Georgia](#)

[Safety in the Recycling of Lithium-Ion Batteries](#)

Individual and Societal Health in the 21st Century — working to shed new light on the health impacts of manufactured products and chemicals

[“A Pilot Study To Quantify Volatile Organic Compounds and Their Sources Inside and Outside Homes in Urban India in Summer and Winter During Normal Daily Activities”](#)
Environments

[“Airborne Contamination During Post-Fire Investigations: Hot, Warm and Cold Scenes”](#)
Firehouse Magazine

[“Characterizing Exposure to Benzene, Toluene, and Naphthalene in Firefighters Wearing Different Types of New or Laundered PPE”](#)
International Journal of Hygiene and Environmental Health

[“Effect of Live-Fire Training on Ventricular-Vascular Coupling”](#)
European Journal of Applied Physiology

[“Emissions and Chemical Exposure Potentials From Stereolithography Vat Polymerization 3D Printing and Post-Processing Units”](#)
ACS Chemical Health & Safety

[“Firefighters’ Urinary Concentrations of VOC Metabolites After Controlled-Residential and Training Fire Responses”](#)
International Journal of Hygiene and Environmental Health

[“Hemostatic Responses to Multiple Bouts of Firefighting Activity: Female vs. Male Differences in a High Demand, High Performance Occupation”](#)
International Journal of Environmental Research and Public Health

[“Hierarchy of Contamination Control in the Fire Service: Review of Exposure Control Options to Reduce Cancer Risk”](#)
Journal of Occupational and Environmental Hygiene

[“Impact of Repeated Exposure and Cleaning on Protective Properties of Structural Firefighting Turnout Gear”](#)
Fire Technology

[“Metal Compositions of Particle Emissions From Material Extrusion 3D Printing: Emission Sources and Indoor Exposure Modeling”](#)
Science of the Total Environment

[“Oral Microbiome of Electronic Cigarette Users: A Cross-Sectional Exploration”](#)
Oral Diseases

[“Testing of Liquids With the Cone Calorimeter”](#)
Fire Safety Journal

[“The Unknowns of Vaping: Oxidative Stress, Toxicity, and DNA Damage Across the Device Lifetime”](#)
The Toxicologist: Supplement to Toxicological Sciences

Technical reports:

[A Summary Report: Dosimetric and Toxicological Analysis of 3D Printer-Emitted Particles](#)

[Volatile Organic Compounds \(VOCs\) Released From Electronic Nicotine Delivery Systems \(ENDS\)](#)



Executive Leadership Team

Together with our research institute leaders, the executive leadership team carries out UL Research Institutes' mission to promote safe living and working environments throughout the world under the direction of President and CEO Terrence R. Brady and our Board of Trustees.

The leadership team's commitment to rigorous science, collaboration, education, and application of our findings ensures that everything we learn reaches the people who need it to make our communities safer.



Terrence R. Brady
President and CEO,
UL Research Institutes
Board Chair,
UL Standards & Engagement



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Senior Vice President and
Chief Financial Officer



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Senior Vice President and
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Glenn L. Martin Professor of
Aerospace Engineering



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Chief Investment Officer
University of Chicago



Elisabeth Tørstad
CEO
Asplan Viak AS



George A. Williams
CEO
PMI Energy Solutions, LLC

Governance of UL Research Institutes is directed by our distinguished board of trustees. Our board members bring their safety-science expertise and deep knowledge of global issues to their thoughtful stewardship of our organization.

With his demonstrated leadership and advocacy experience, President James M. Shannon leads the board and helps drive our goals forward, encouraging transformative change for a safer and more resilient society.

We thank the board members for their support and counsel as we advance the UL Research Institutes strategic vision to be regarded as the preeminent institution addressing our selected grand challenges and broader public safety concerns.

In Closing

This has been a historic year for UL Research Institutes (ULRI). We have transformed our organization — dramatically increasing the scale and scope of our efforts — as we focus our expertise on the three grand challenges discussed throughout this report.

We will continue to expand as we work to extend and deepen the impact of safety science in pursuit of a safer, more sustainable world. Still, we recognize that today's complex issues require collaborative, multidisciplinary solutions. As we grow to address today's complex global issues, we welcome collaboration with like-minded partners.

It's an approach embedded in our history. Since our founding in 1894, we have partnered across disciplines and sectors to help identify and mitigate public safety risks. Our collaborative research approach has always been an essential component of our effort to build a future with safety science at its core.

Today that approach is indispensable. Because the challenges we confront are global and must be met with a global response, collaborative research is vital. We must join technological progress to a far-reaching, inclusive commitment to safety and sustainability — not in the abstract, but as a modern global practice that moves in tandem with discovery.

We have ample experience to lead in this effort. Not only do our researchers already work with leaders around the world to make numerous technologies safer, but our efforts to drive progress toward global goals benefit from the very nature of our organization.

First, we are an independent organization. ULRI is one of the oldest nonprofit, nongovernmental organizations dedicated to rigorous, objective research that advances public safety.

Second, our history and our reputation give us a unique platform. We have developed a deep reservoir of trust and credibility over the years, enabling us to partner with leaders across the safety community to address shared challenges.

And finally, the UL enterprise's new structure — which includes UL Standards & Engagement, UL Solutions, as well as ULRI — multiplies our impact. Each organization independently pursues our shared mission of working for a safer world using its own lens and applying its own expertise to existing and emerging issues. We coordinate our efforts as appropriate, exponentially increasing our impact.

As the contents of this report demonstrate, our approach has yielded results unlikely to be achieved by any one group in isolation.

We will continue to accelerate discovery by cultivating networks of scientific expertise, holding forums for discussion and debate, sharing knowledge, and enabling holistic solutions to pressing issues. Even as we scale up our approach, I'd like to extend our appreciation to the community of partners — in academia, government, industry, and other sectors — who have already gone to great lengths to collaborate with us to drive research forward and help ensure it finds expression in our everyday lives.

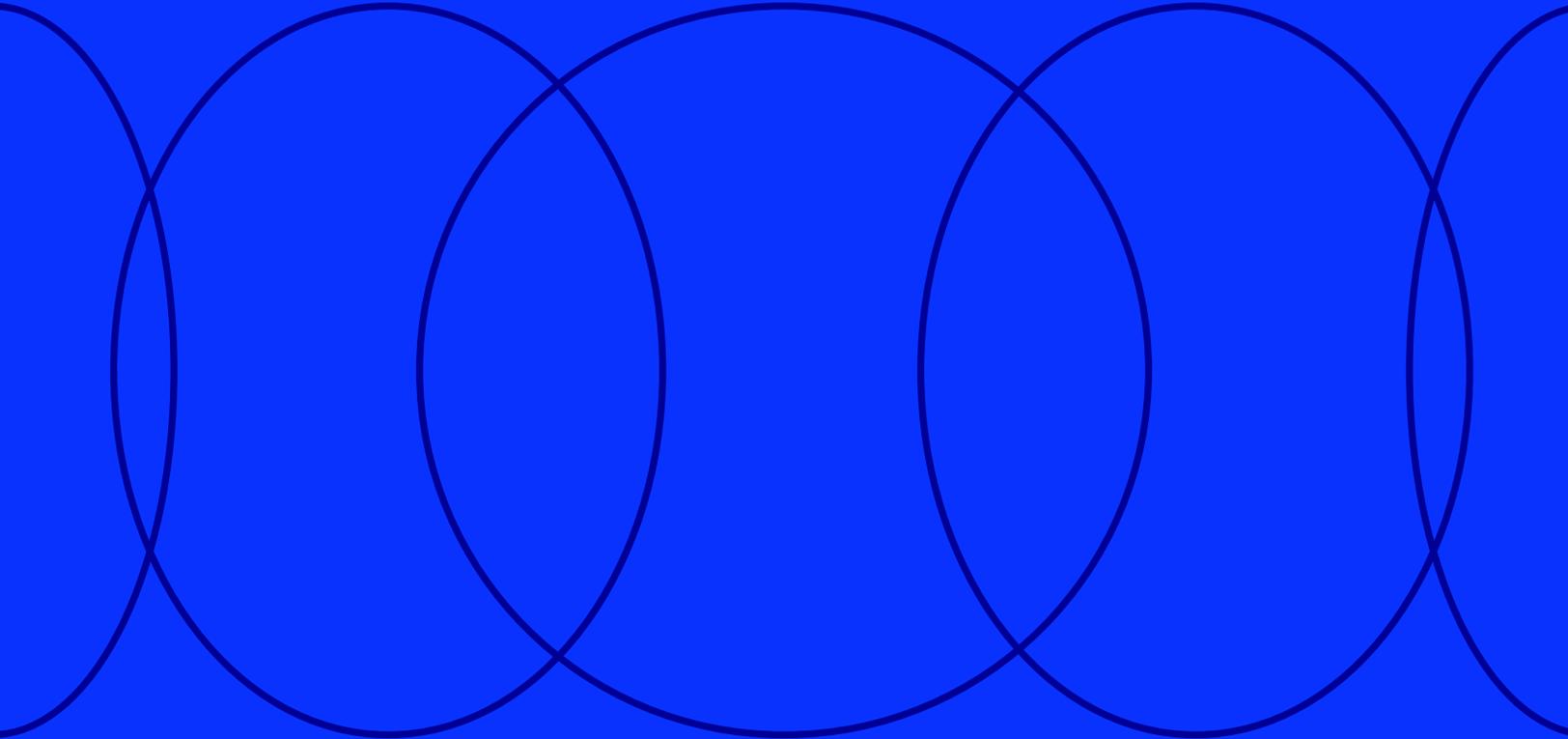
Fueled by dedication and broad-based collaboration, a safer future is not only possible but closer with each passing day.



Terrence
R. Brady

President and CEO
UL Research Institutes

Board Chair
UL Standards & Engagement



EXPERIENCE ONLINE
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