CLE AIChE The Global Home of Chemical Engineers

ACS Chemistry for Life®

American Institute of Chemical Engineers, Cleveland Section

National Historic Chemical Landmarks
Chemists and Chemistry that Transformed Our Lives

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Tuesday, November 14, 2023, 6:00 PM

AIChE Membership Not Required to attend any meetings
https://www.acs.org/education/whatischemistry/landmarks.html

The Importance of Cleveland in the History of Chemistry

The Sanctuary Restaurant, DoubleTree Hilton Hotel by Rockside Road & I-77

6200 Quarry Lane, Independence, OH 44131, 216-901-7852

ABSTRACT: Cleveland has been a center in the development of industrial chemistry with crucial advances in the petroleum, metals, paint, lighting, and battery industries. The importance of Cleveland in the history of the chemical industry will be traced using the seven American Chemical Society National Historical Chemical Landmarks in our area. In fact, the Cleveland section of the American Chemical Society is tied with the New York City section for the greatest number of landmarks! The Cleveland landmarks include the Hall process for the production of aluminum, Morley's determination of the atomic weight of oxygen at Western Reserve University, Eveready's Columbia dry cell battery, Sherwin-Williams' water-based paint, SOHIO's acrylonitrile production process, GrafTech's high performance carbon fibers, and Day-Glo's fluorescent pigments. The interconnectivity of Cleveland's seven Chemical Historical Landmarks as well as the several important scientific achievements in Cleveland that did not get selected as landmarks will be presented.

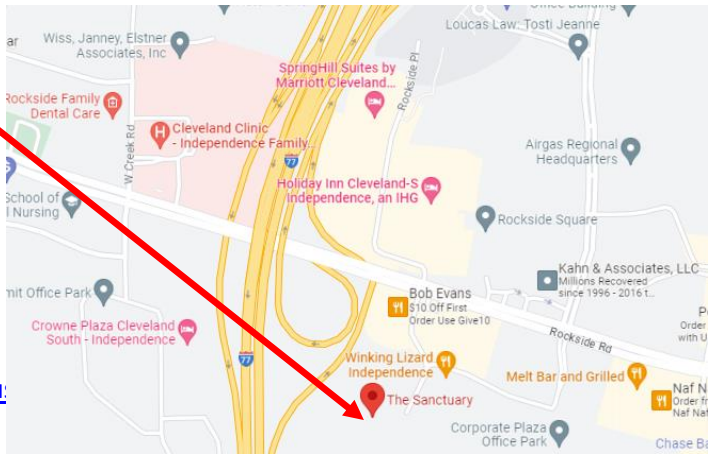
BIOGRAPHY: Dr. Helen Mayer earned her BS from the University of Dayton and a PhD from Michigan State University, both in chemistry. She worked at GrafTech (formerly Union Carbide) for 26 years as a manager in testing, R&D, and innovation. She has worked on projects involving graphite for the electronics, military, nuclear, semiconductor, and lithium-ion battery industries. One of her projects won a coveted R&D100 Award. Currently, she is a consultant and grant writer for the graphite industry. Formerly the Chair of the Cleveland Section of the American Chemical Society, Helen is currently a member of the National Chemistry Week Committee and serves as the Archive Committee Chair. She has written two of the applications for the ACS National Historical Landmarks (GrafTech and Day-Glo) and has presented mini-courses on the history of the chemical industry in Cleveland for the Encore program at Cuyahoga Community College and the Institute for Learning in Retirement at Baldwin Wallace University.

For those attending this event, a Professional Development Hour Certificate (1 PDH) will be sent to you in the following days by Joe Yurko.

Meeting Location: ***The Sanctuary Restaurant*** *(see map below)*

6200 Quarry Lane
Independence, OH 44131
216-901-7852

6:00 – 7:00 pm: Social Gathering
7:00 – 8:00 pm: Dinner
8:00 – 9:00 pm: Presentation with Q & A



Dinner: Non-Students: All ordering from menu
Students: $5 each

Menu:
http://places.singleplatform.com/shulas-steak-hou

RSVP Required with Joseph Yurko and AIChE at: yurkojoe5@gmail.com

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ACS Local Section Cleveland

Interested in Exciting Children about Chemistry?

NATIONAL CHEMISTRY WEEK

Each year our Section attempts to excite children in grades 2-6 about chemistry by creating a fun, hands-on, age-appropriate Program for them. It's our contribution to National ACS' celebration of National Chemistry Week (NCW) each October. Our Section's NCW Planning Committee selects a set of 4-6 of fun "experiments" for our Program which is presented by volunteer Demonstrators during NCW in October.

It's a lot of fun creating the Program and presenting it each year. If this might be something you might like to contribute your knowledge and time to, please consider volunteering for either the Planning Committee or as a Demonstrator. The time commitments are minimal: our Planning Committee meets twice each month between April and August for about an hour first via Zoom and later in person. Our Demonstrators commit to a couple of hours in October.

If interested in joining us or if you'd just like to learn more about us, please contact Bob Fowler at jrfowler@cox.net or at 216-403-9448.

ARTICLE, SEE October 13, 2023

On Hydrogen Economy: "H2TECH, Defining Technology for the Hydrogen Economy", https://h2-tech.com/news/2023/10-2023/the-u-s-doe-announces-7-b-to-launch-seven-regional-clean-h-sub-2-sub-hubs/?oly_enc_id=5023B1652690C5Y

The U.S. DOE announces $7 B to launch seven regional clean H_2 hubs

As part of President Biden's Investing in America agenda, a key pillar of Bidenomics, the U.S. Department of Energy (DOE) announced $7 B to launch seven regional clean H_2 hubs (H_2Hubs) across the nation and accelerate the commercial-scale deployment of low-cost, clean H_2—a valuable energy product that can be produced with zero or near-zero carbon emissions and is crucial to meeting the president's climate and energy security goals. This historic milestone is part of the third installment of the Investing in America tour, during which President Biden and Secretary Granholm will travel to Philadelphia, Pennsylvania to announce this unprecedented investment in American manufacturing and jobs.

Funded by President Biden's Bipartisan Infrastructure Law, the seven H_2Hubs will kickstart a national network of clean H_2 producers, consumers, and connective infrastructure while supporting the production, storage, delivery and end-use of clean H_2. The H_2Hubs are expected to collectively produce 3 MM metric tpy of H_2, reaching nearly a third of the 2030 U.S. production target and lowering emissions from hard-to-decarbonize industrial sectors that represent 30 of total U.S. carbon emissions. Together, they will also reduce 25 MM metric tpy of carbon dioxide (CO_2) emissions from end-uses—an amount roughly equivalent to combined annual emissions of 5.5-MM gasoline-powered cars—and create and retain tens of thousands of good-paying jobs across the country while supporting healthier communities.

The announcement is one of the largest investments in clean manufacturing and jobs in history. This transformative Federal investment will be matched by recipients to leverage a total of nearly $50 B to strengthen local economies, create and maintain high-quality jobs—especially those that support worker organizing and collective bargaining—and slash harmful emissions that jeopardize public health and pollute local ecosystems. In addition to positioning America to be a global leader in emerging clean energy industries, the H_2Hubs will implement comprehensive local benefits and workforce proposals to support the President's vision of an equitable and inclusive clean energy future.

"Unlocking the full potential of H_2—a versatile fuel that can be made from almost any energy resource in virtually every part of the country—is crucial to achieving President Biden's goal of American industry powered by American clean energy, ensuring less volatility and more affordable energy options for American families and businesses," said U.S. Secretary of Energy Jennifer M. Granholm. "With this historic investment, the Biden-Harris Administration is laying the foundation for a new, American-led industry that will propel the global clean energy transition while creating high quality jobs and delivering healthier communities in every pocket of the nation."

Clean H_2 is a flexible energy carrier that can be produced from a diverse mix of domestic clean energy resources, including renewables, nuclear and fossil resources with safe and responsible carbon capture. Its unique characteristics will allow the H_2Hubs to substantially reduce harmful emissions from some of the most energy-intensive sectors of the economy, such as chemical and industrial processes and heavy-duty transportation, while creating new economic opportunities across the country. It could also be used as a form of long-duration energy storage to support the expansion of renewable power. By enabling the development of diverse, domestic clean energy pathways across multiple sectors of the economy, clean H_2 will strengthen American energy independence and accelerate the American manufacturing boom that has already created more than 815,000 jobs since President Biden took office. **Selected projects for negotiation include:**

Appalachian H_2 hub (Appalachian regional clean H_2 Hub (ARCH2); West Virginia, **Ohio**, Pennsylvania) — The Appalachian H_2 Hub will leverage the region's ample access to low-cost natural gas to produce low-cost clean H_2 and permanently store the associated carbon emissions. The strategic location of this H_2Hub and the development of H_2 pipelines, multiple H_2 fueling stations, and permanent CO_2 storage also have the potential to drive down the cost of H_2 distribution and storage. The Appalachian H_2 Hub is anticipated to bring quality job opportunities to workers in coal communities and create more than 21,000 direct jobs—including more than 18,000 in construction and more than 3,000 permanent jobs, helping ensure the Appalachian community benefits from the development and operation of the Hub. (Amount: up to $925 MM)…

ARTICLE, SEE August 2023 ISSUE

On The Energy Transition: "CEP, Chemical Engineering Progress",

https://www.aiche.org/resources/publications/cep/2023/august/apply-inherently-safer-design-concepts-existing-facilities

BY: **RICHARD SANTO, JR., MARTIN ROSE, ALYSE KELLER, DAVID MOORE, P.E.**

Apply Inherently Safer Design Concepts to Existing Facilities

Inherently safer design concepts are not just for the design phase. These concepts can be applied to plants throughout their entire lifecycle.

The concepts of inherent safety, where hazards are preferably eliminated rather than accepted and managed, have existed far longer than the chemical process industries (CPI). In fact, these concepts date back to prehistoric times. For example, building villages near a river on high ground rather than managing flood risk with dikes and walls is an inherently safer design (ISD) concept *(1).* The invention of dynamite by Alfred Nobel in 1867 involved the application of ISD concepts to improve the safety of handling nitroglycerine, *i.e.,* by absorbing nitroglycerine in an inert carrier *(2).*

ISD concepts include substitution, simplification, moderation, and minimization. The 1974 Flixborough explosion inspired Trevor Kletz's 1978 lecture entitled "What You Don't Have Can't Leak," which was the first clear and concise discussion of the concept of inherently safer chemical processes and plants *(3–5).*

Additionally, what you don't have also doesn't cost anything. A common phrase from the U.S. automotive industry in the 1950s, paraphrased as "parts left out don't cost anything and don't cause any service problems," refers to the practice of value engineering, where unnecessary parts, fasteners, processing steps, systems, etc. were eliminated during the construction of an automobile to drive down manufacturing costs *(6).* Viewed from the lens of inherent safety, this is an application of the ISD concepts of minimization, simplification, and possibly substitution.

Applying the concepts of ISD to chemical processes has been shown to reduce not only the risk of process safety incidents but also the costs of manufacturing, while improving operability. These concepts can be, and have been, applied successfully to existing plants and processes. This article reviews some real-world examples and discusses ISD strategies…

ARTICLE, SEE September 2023 ISSUE

On Food Engineering: "CEP, Chemical Engineering Progress",
https://www.aiche.org/resources/publications/cep/2023/september/special-section-on-food-engineering-improving-safety-and-sustainability-food-industry

BY: Evan Pfab, Associate Editor, CEP & Melanie Mesropian, Assistant Editor, CEP

Special Section on Food Engineering: Improving Safety and Sustainability in the Food Industry

How a product will taste and its nutritional value are arguably some of the top priorities in the food industry, in addition to food safety and sustainability. Process safety is another crucial priority to consider, especially since the food industry is no stranger to incident. Several major accidents have occurred in food facilities over the years, including the 1992 Senegal ammonia incident at a peanut processing facility, the 2008 Imperial Sugar refinery explosion, and the 2021 Georgia poultry plant nitrogen release, to name a few. Many opportunities exist to improve process safety and prevent incidents in the food industry.

This special section discusses emerging technologies in food engineering and strategies to improve sustainability, in addition to process safety in the food industry. Inspired by the 5th Food Innovation and Engineering (FOODIE) conference that took place in 2022, the articles in this special section highlight the work of companies that are improving safety and sustainability in the food industry.

In the first article, "Apply Process Safety Principles to Food Processing" (pp. 31–35), author Edward Gaither describes how process safety concepts like inherently safer design (ISD) can be applied to food processing facilities to improve safety and operability. ISD is a process safety approach that aims to substitute, minimize, moderate, and simplify hazardous aspects of a process. "Put differently, ingredients you don't use can't be hazards," says Gaither, referencing process safety expert Trevor Kletz.

The goal is to reduce risk by minimizing common hazards in the food industry, such as combustible dusts, flammable ingredients, or toxic materials that can lead to exposure incidents. "Professionals working in the food industry should familiarize themselves with process safety elements and consider implementing measures appropriate to their process," says Gaither.

Just like process safety can't be ignored in the food industry, neither can sustainability. The second article, "Extracting Sustainable Food Sources" (pp. 36–39), describes how liquid-liquid extraction (LLE) techniques are being used to remove undesirable compounds for better-tasting, more-sustainable foods. Author Tom Schafer provides an overview of various process technologies used for food production, including extraction, and how it is being used to produce pongamia oil from pongamia beans, which have long been considered inedible due to their overpowering bitter taste. However, LLE technology can remove the flavonoids responsible for the bitter taste of pongamia, making pongamia oil a sustainable alternative to palm oil. This discovery paves the way for other similar food sources that may not have been considered due to unwanted components contributing to flavor, odor, and color, among others.

The final article, "AI-Driven Protein Discovery for Functional Ingredients" (pp. 40–43), brings the world of artificial intelligence (AI) and machine learning (ML) to the food production industry. Author Ranjani Varadan discusses a breakthrough technology by Shiru, an ingredient company, in their search for alternative proteins.

Proteins play an important role not only in nutrition, but also in providing the appearance, texture, and taste for many foods. However, a limited range of proteins is available for use in the plant-based food

industry, and these proteins do not accurately mimic their traditional counterparts. To close this gap, Shiru's innovative platform searches through protein databases to map protein sequences to a desired target functionality, with the selected proteins then tested for commercial viability. This AI and ML technology brings us one step closer to having alternative foods that are indistinguishable from the real thing.

The food industry is constantly evolving and facing new challenges. AIChE aims to foster innovation and bring together the many chemical engineers working to overcome some of these challenges. For those looking to get involved, the Food, Pharmaceutical & Bioengineering Div. and the Food Engineering, Expansion and Development (FEED) Institute are good places to start. The FEED Institute consists of a diverse community of food technologists and engineers that are working to support the application of chemical engineering to the food industry. Along with these technical communities, various upcoming conferences are continuing the discussion. Join sessions discussing developments in sustainable food production at the 2023 International Congress on Sustainability Science & Engineering (ICOSSE '23) conference this month (Sept. 19–21) or the 2023 Annual Meeting taking place later this year (Nov. 5–10).

ARTICLE, SEE October 9, 2023 ISSUE

On 2023 Nobel Prize for Medicine: "C&EN, Chemical & Engineering News", https://cen.acs.org/people/nobel-prize/Two-share-prize-Nobel-Prize-in-Medicine-for-mRNA-vaccine-research/101/web/2023/09

BY ***Laurel Oldach with reporting by Laura Howes***

Two share prize for Nobel Prize in Medicine for mRNA vaccine research

Katalin Karikó and Drew Weissman receive prize for discoveries regarding nucleoside base modifications that made it possible to develop effective vaccines for COVID-19

The 2023 Nobel Prize in Physiology or Medicine has been awarded to Katalin Karikó of Szeged University and Drew Weissman of the University of Pennsylvania for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19.

Historically, vaccines have used portions of molecules such as proteins or glycans from the surface of viruses or bacteria to train the immune system. Researchers hoped for decades to be able to use DNA and RNA, which encode proteins and can be adapted more easily than proteins, to make vaccines.

However, it was difficult to use mRNA produced in the lab to generate effective long-lasting immune responses, even after challenges in delivering the mRNA were resolved. This is because of the two-part nature of the human immune system; the generalist part of the immune system detects and degrades foreign mRNA, launching an inflammatory response.

Karikó and Weissman who met at the University of Pennsylvania in 1997, collaborated to try to use RNA to produce vaccines that could be adapted more quickly. They combined Karikó's expertise in RNA biochemistry with Weissman's in immunology. In a landmark paper published in 2005 in *Immunity,* the pair proved that it was the lack of base modifications in synthetic RNA that made it immunogenic. They

showed that converting the RNA base uridine to pseudouridine in mRNA produced in vitro could reduce the inflammatory response (DOI: 10.1016/j.immuni.2005.06.008).

It was, according to Stanford RNA biologist Jin Billy Li, "the first important attempt to try multiple RNA modifications and see how that would activate the immune system." Later, Weissman and Karikó also showed that this modification produced a more stable RNA construct and better more protein yields (*Mol. Ther.* 2008, DOI: 10.1038/mt.2008.200).

"Their early discovery that RNA could be modified to avoid detection of the innate immune system now underpins the successful future of RNA vaccine and therapeutics," writes Robin Shattock, a professor of infection and immunity at Imperial College London, in an email to C&EN...

ARTICLE, SEE Spring 2023 ISSUE

On Reaching Tomorrows Innovators: "PE Magazine", https://www.nspe.org/resources/pe-magazine/spring-2023/reaching-tomorrow-s-innovators

BY **KRISTINE KLAVERS**

Reaching Tomorrow's Innovators

A new DiscoverE report offers messaging and action plans to inspire a new generation of engineers.

DiscoverE (link is external) has released its latest research on the views of high school students and parents on engineering and engineering careers. The *Messages Matter* results reveal that targeted messages and profiles of engineers can spur interest in engineering among the very groups that will ensure a more diverse future for the field. The research project also identified areas where improvements can be made through targeted messaging and offered guidance on how to educate students and their parents about the engineering profession.

The *Messages Matter(link is external)* research was conducted in partnership with the Global Strategies Group. It expands upon two research projects conducted by DiscoverE in the early 2000s, *Changing the Conversation* (CTC) and *Engineer Your Life* (EYL). This research led to a change in the way the engineering community presented itself with messages that emphasized the creativity of the field, the teamwork aspect, and how engineering shapes the world. The NSPE Education Foundation provided support for this research that will be disseminated and adopted over several years in the wider engineering community, in academia (K-12 schools, colleges, and universities), and by public officials and policy makers.
As the world continues to evolve, it's time to shift once again. DiscoverE wanted to know how the messages and themes identified in the CTC and EYL initiatives were holding up. Are they still relevant and meaningful? What is important to today's students? How do teens view engineering and a potential career in the field? What resonates and motivates them to consider engineering?...

ARTICLE, SEE October 9, 2023 ISSUE

On 2023 Nobel Prize for Medicine: "C&EN, Chemical & Engineering News",
https://cen.acs.org/environment/water/deep-sea-mining-dilemma/101/i33

BY ***Priyanka Runwal***

The deep-sea mining dilemma

The seafloor is rich in minerals vital for a clean energy future, but extracting them could have long-lasting environmental impacts

The seabed is a potentially promising source of critical minerals that are in heavy demand for clean energy technologies. But retrieving those resources comes with long-term environmental consequences. Proponents argue that extracting minerals from the deep sea has fewer impacts on nature and human lives than land-based mining does. A handful of companies and state agencies have recently conducted exploratory tests with the aim of eventually commercializing these underwater reserves. But because we lack international regulations and knowledge of the full environmental effects, many countries are calling for a ban or pause on seabed mining. Whether the International Seabed Authority will allow such a moratorium remains to be seen, but some scientists think it's only a matter of time until mining commences.

Nearly 150 years ago, scientists and sailors set out aboard the HMS*Challenger* to explore the world's oceans. Hauling up a dredge it had dragged along the North Atlantic seafloor, the team found a number of peculiar rocks the size of potatoes. Black, bumpy, and surprisingly lightweight for their size, they were among the first so-called polymetallic nodules to be recovered from the deep sea.

Rich in manganese and iron oxides, such rocks can also contain smaller amounts of valuable metals, including copper, cobalt, and nickel, as well as traces of molybdenum and tellurium.

At the time, the team didn't recognize the commercial potential of these deep-sea mineral reserves. But in the past few decades, nodules have attracted significant mining interest. Proponents of deep-sea mining claim that these underwater deposits could help meet growing demand for critical minerals, particularly those needed for clean energy technologies such as electric vehicle batteries, wind turbines, and solar panels.

"We think nodules are quite marketable right now," says Charles Morgan, a Hawaii-based environmental scientist who has consulted on exploratory seabed mining projects. "There's real excitement about it; there's a lot of investment going on."

On land, mining cobalt and nickel, for example, typically requires slashing large areas of tropical forest and creating open pits to dig out the ore. Such destruction causes pollution, the loss of biodiversity, and the release of carbon stored in trees and soil, thereby contributing to climate change. Mining also harms the health and traditional livelihoods of people living nearby. Some mines are accused of human rights violations, including the use of child labor, in the case of Democratic Republic of Congo's cobalt mines.

Gerard Barron, CEO of the Metals Company, which is at the forefront of the deep-sea mining rush, insists that getting such minerals from the deep ocean will be less environmentally damaging than extracting the land reserves. Retrieving critical minerals from the seabed could also skirt significant social damages.

But experts argue that deep-sea mining is unlikely to halt or reduce terrestrial mining. The process could also severely disturb the marine environment and eradicate unique biodiversity. "It will be a long-term impact," Morgan says. "Anybody who says differently is not telling you the truth."...

ARTICLE, SEE September 11, 2023 ISSUE

On Small Modular Reactors: "C&EN, Chemical & Engineering News", https://cen.acs.org/energy/nuclear-power/Can-small-modular-reactors-chemical-plants-save-nuclear-energy/101/i30

BY ***Craig Bettenhausen***

Can small modular reactors at chemical plants save nuclear energy?

New technologies could be a good fit for large chemical plants, if anyone manages to start building them

Nuclear power has inspired hope and apprehension since the early 20th century. But nuclear's high cost and safety concerns have kept fossil fuels dominant in the global energy economy. Now a new breed of start-up company says its fission-powered small modular reactors (SMRs) will sidestep the woes that have long bedeviled the nuclear industry. Chemical makers such as Dow are interested in being early adopters as they look to decarbonize their factories—if anyone is actually able to start delivering on the promise of SMRs.

The US Nuclear Regulatory Commission (NRC) made history early this year when it gave its first approval to a new type of nuclear power plant: the small modular reactor (SMR).

Conventional nuclear power plants are huge, producing 1–3 GW of electricity, enough to power a medium city. The SMR approved by the NRC, NuScale Power's Voygr, would produce 50 MW of electricity. The reactors are about the size of grain silos, and NuScale is marketing them in packs of 4, 6, and 12.

Voygr is one of several SMR designs that are attracting attention and investment as potential sources of reliable, steady power with minimal associated greenhouse gas emissions.

Nuclear power has plenty of critics and, especially in the US and Europe, a history of massive construction projects that come in way over budget. Proponents of SMRs say the technology lends itself to more modest, reproducible projects that can deliver low-carbon energy at a reasonable price. If the technology's backers are right, the US and other countries will be one step closer to meeting ambitious goals for reducing carbon dioxide emissions.

Go Green by Going Nuclear

Supplying electricity to the power grid is likely the biggest market for new nuclear installations. But

industrial companies like Dow, the largest US chemical maker, also see emerging nuclear technology as a perfect fit for their manufacturing plants, both to replace aging fossil-powered heat sources and to power the production of hydrogen and other clean fuels. The size of SMRs, generally 300 MW or smaller, is a good match for the energy needs of heavy industry, and their road through regulation and construction may be smoother than that of their grid-scale counterparts.

Dow plans to repower its massive complex in Seadrift, Texas, with a set of four SMRs from the nuclear technology firm X-Energy. The Seadrift plant makes polyethylene, ethylene oxide, ethylene glycol, ethanolamines, and glycol ethers for many end markets. Each reactor has an output that is adjustable between 80 MW of electricity and 200 MW of heat.

Kreshka Young, Dow's North America business director for energy and climate, says the SMR quartet will be the sole power source for the Seadrift plant, where it will replace a boiler fueled by natural gas. The boiler system, which Young says emits 440,000 metric tons of CO_2 per year, is scheduled for retirement in the early 2030s…

ARTICLE, SEE September 18, 2023 ISSUE

On Ethical AI: "C&EN, Chemical & Engineering News", https://cen.acs.org/business/informatics/tricky-ethics-AI-lab/101/i31

The tricky ethics of AI in the lab

ChatGPT has sparked safe-use concerns amid researcher resistance to restrictions on experimentation

by Rick Mullin

The science research community is known for its enthusiastic engagement with breakthrough technologies. It also has a history of confronting ethical concerns posed by these technologies well after they are in common use. This history is repeating itself this year after the rise of generative AI models that people without coding expertise can use. Some scientists are calling for a pause in activity to weigh risks and establish guidelines. Others, however, are resisting not only the pause in deployment but also any restrictions on the use of a fast-morphing tool that they say will benefit from unimpeded experimentation.

This year may well go down as the year of ChatGPT. The generative artificial intelligence program, and others like it, made news as the public dived into using AI platforms with no more than common, conversational language. People created mash-up images, passable sonnets, and term papers that might just fly with the professor. The barometer tilted from fear of doom to enthusiasm for AI.

The backlash made the news as well. Geoffrey Hinton, whose laboratory at the University of Toronto invented the technological foundation for generative AI, came out among the technology's critics in May, warning of the dangers in moving full throttle to develop platforms like ChatGPT. Critics are concerned

that by eliminating the need to code to deploy AI, the technology provides a handy tool to the worst bad actors.

After-the-fact reckoning is nothing new in science. The rush to put breakthrough technology to use in laboratories has more than once led to a kind of armistice between enthusiasts and those concerned with consequences that should have been imagined before the technology came out of the box. DNA modification and gene editing are prominent examples of fields where research leaders called for a temporary slowdown in activity to arrive at a set of agreed-on ethical guidelines.

A similar call can now be heard with generative AI. People in research labs, professional organizations, and the social sciences say now is the time to weigh the ethical implications of generative AI in science research.

But AI is a tool that changes much more rapidly than recombinant DNA and gene editing did. And this time, advocates for a science ethics summit are determined to convene a broadly interdisciplinary meeting. They want to gather not only chemists and biologists but also social scientists, science historians, ethicists, and others with a perspective on the impact of new technology in the lab.

The problem is that chemists and biologists are not entirely on board. Many reject the idea of a cooling-off period at a time when experimentation is a necessary aspect of directing the evolution of AI. The stakes are high, given the dystopian future that critics say could result from unbridled AI.

CLE AIChE: Cleveland Chapter

Fall 2023 – Spring 2024 Program Planning

(Preliminary as of 26Sep2023)

Month	Topic, Speaker	Location	AIChE Officer Responsible
September 8, 2023 (Friday 6 PM)	Oktoberfest Social Event	German Central Farm, Parma	Joe Yurko, $7/guest admission + $ food & beverage? https://germancentralfoundation.com/oktoberfest
October 11, 2023 (Wednesday 6 PM)	Brewery Tasting Tour	Market Garden Brewery, OH City	Mike Galgoczy, $20/guest with 20 guests. Dinner: 7 PM Market Garden Brewpub & Restaurant.
November 14, 2023 (Tuesday 6 PM)	History of ACS 7-National Chemical Landmarks Sites in Cleveland, Helen Mayer Speaking	The Sanctuary, Rockside Road Independence	Joe Yurko, Dinner menu ordering for professional members, Students cost: $5 http://places.singleplatform.com/shulas-steak-house-8/menu#menu_5599999
December 2023	Nuclear Power and Decarbonization Update for Ohio, Andrew Ohrablo Speaking	Red Lobster, Parma, Day Drive	Joe Yurko, Dinner menu ordering for professional members, Students cost $5 https://www.redlobster.com/menu
January 2024	NASA Glenn Center Vertical Take Off & Landing (eVTOL) Electric Aircraft, JOBY, Dayton, OH	Donte's Restaurant & Pizza (NASA Area) 2085 Sheldon Road Brook Park, OH 44142	Joe Yurko, Dinner menu ordering for professional members, Students cost: $5 440-243-0342, https://www.dontesrestaurantpizzashop.com
February	Process Hazard Analysis, Gurmukh Bhatia Speaking	Burntwood Tavern, 8188 Brecksville Rd Brecksville, OH 44141	Joe Yurko, Dinner menu ordering for professional members, Students cost $5 Burntwood Tavern: 440-546-7680 Menu: https://www.burntwoodtavern.com/menu
March	Engineering in Oil Refining, Petroleum Midstream, Chemicals, Energy, and Renewables; Marianne Corrao Speaking	NEXUS Engineering Group, 1422 Euclid Ave., Cleveland, OH 44115 or CLE Hofbräuhaus ?	Mike Galgoczy NEXUS: 216-404-7867 Hofbräuhaus: 216-621-2337

Cleveland Section 017 of THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS Steering Committee 2023 - 2024

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