SANDIA LABNEWS
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Celebrating Keith Matzen's 51-year career **Page 9**

Researchers develop rapid PFAS detector

A TINY SOLUTION — Postdoctoral researcher Nathan Bays adds a tiny adsorbent particle to a solution containing an analyte of interest, such as PFAS, for analysis using their developed ISA-DESI technique.
Photo by Craig Fritz

Can identify presence in 5 minutes

By **Kim Vallez Quintana**

When Sandia scientists Ryan Davis and Nathan Bays set out to find a better way to absorb and degrade PFAS in water sources, they kept running into the same issue: Detecting the chemicals in samples took too long.

So, they came up with their own solution.

They've developed a faster, cheaper way to test for PFAS.

The problem of PFAS and solving it

PFAS, or per- and polyfluoroalkyl substances, are commonly called forever

— CONTINUED ON PAGE 4

Cyber Residency Program

Medically inspired rotation program trains, retains Sandia cyber experts

By **Mollie Rappe**

The American Medical Association describes residency as a bridge between medical school and independent practice, giving residents an immersive experience to apply what they have learned while building expertise.

Swap medicine for cybersecurity and you get a good sense of Sandia's cyber residency program. The program offers a tailored, hands-on learning experience for cyber

— CONTINUED ON PAGE 5

PROBLEM SOLVERS — Sandia cybersecurity experts Kinsleigh Wong, left, and Matthew Trotter work through a problem regarding a scenario that is part of the general forensics rotation of Sandia's cyber residency program.
Photo by Craig Fritz

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Sandia National Laboratories

Albuquerque, New Mexico 87185-1468
Livermore, California 94550-0969
Tonopah, Nevada | Kauai, Hawaii
Amarillo, Texas | Carlsbad, New Mexico | Washington, D.C.

Katherine Beherec, Editor kgbeher@sandia.gov
Ray Johnson, Production rbjohns@sandia.gov
Craig Fritz, Photographer cvfritz@sandia.gov
Michael Langley, California Contact mlangle@sandia.gov

CONTRIBUTORS

Michelle Fleming (milepost photos, 505-844-4902), **Kristen Meub** (505-845-7215), **Troy Rummler** (505-284-1056), **Meagan Brace** (505-844-0499), **Mollie Rappe** (505-288-6123), **Skyler Swezy** (505-850-2063), **Lea Blevins** (lsblevi@sandia.gov), **Kenneth Vigil** (505-537-1528), **Luke Frank** (505-844-2020), **Michael Baker** (505-284-1085), **Valerie Yarberry** (vnalba@sandia.gov), **Magdalena Krajewski** (mkrajew@sandia.gov)

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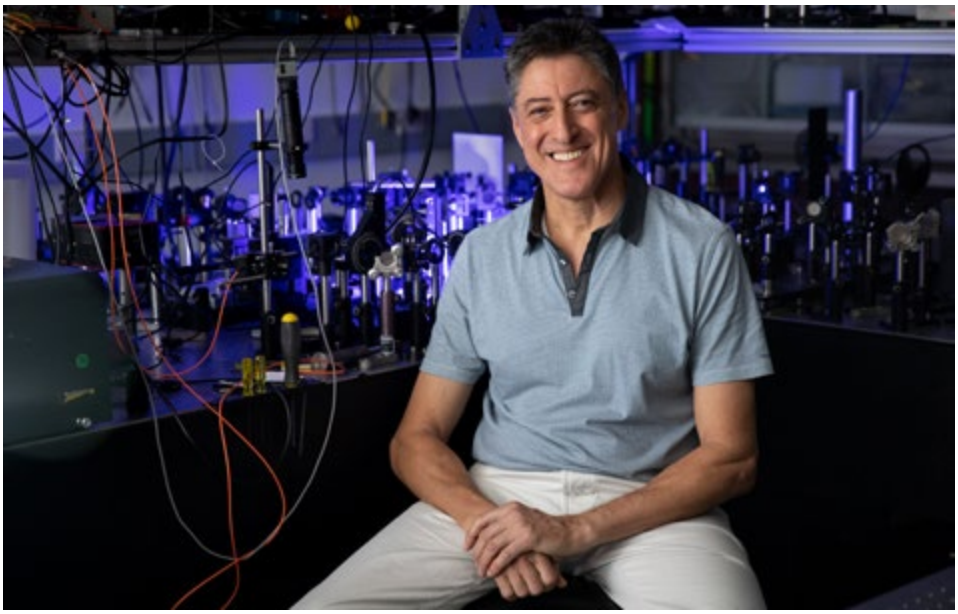
TABLE of CONTENTS

EDITOR'S NOTE: Please send your comments and suggestions for stories or for improving the paper. If you have a column (500-800 words) or an idea to submit, contact the Lab News editor at labnews@sandia.gov.

At a fork in the lab



DISCOVERY-DRIVEN — Igal Brener, an expert in ultrafast lasers and manipulating light with advanced materials at Sandia, began his career as a chip designer. **Photo by Craig Fritz**

Honored inventors reveal pivotal choices that gave their work deeper meaning

By **Troy Rummler**

Career paths rarely follow straight lines. But for two recently honored inventors, a professional zigzag became a catalyst to finding greater purpose.

The pair of Sandia scientists were elected fellows of the National Academy of Inventors in December. Each is a prolific innovator in his respective field. Yet each also made a deliberate career change that deviated from what might seem the obvious road to success.

The honor of being named a National Academy of Inventors fellow reflects not

only their impressive portfolios of patents and publications but also their unique journeys, driven by a passion for research, discovery and leadership.

Igal Brener is a senior scientist in the Microsystems Engineering, Science and Applications center and co-leader of the nanophotonics thrust at the Center for Integrated Nanotechnologies, a DOE Office of Science user facility jointly operated by Sandia and Los Alamos national laboratories.

Hongyou Fan is a manager at Sandia and the program manager for the labs' DOE Basic Energy Sciences-funded geoscience and critical minerals portfolios. He was the recipient of the 2025 R&D 100 Researcher of the Year award.

They each shared stories of how significant changes in their careers helped them find greater personal well-being without sacrificing professional success.

Igal Brener: An engineer who yearned for discovery

Igal Brener's path to invention launched quickly in the bustling world of industry. He grew up in Uruguay, moved to Israel for college and found work there as a chip designer, where he made an early impact.

"I had a career in engineering where the CPU I designed was in thousands of machines. I think it still shows up as part of Texas Instruments' catalog — some 20th generation of my initial work."

Yet despite his success, Igal chose to advance his education.

"I craved the research path," he said. His hunger led him first to graduate school for a doctoral degree. Afterward, he worked for several companies, including Bell Labs, before landing at Sandia, which enabled him to pursue discoveries in optoelectronics and photonics in a collaborative environment.

"The cool thing at Sandia is that there are always experts for something, so you can always reach out and get help. In a way, that's very similar to the environment I experienced at Bell Labs and the reason why I came here."

At Sandia, Igal has made pioneering contributions to semiconductor physics, terahertz science and nanophotonics. With 30 patents to his name, he has had a tangible impact on industries. His early developments in terahertz detectors enabled imaging instruments that were used by NASA to inspect foam panels on space shuttle missions and by auto companies to look for defects buried deep inside materials.

For more than 10 years, Igal has led a large team for a DOE Office of Science project. Collaboration has been a cornerstone of the work.

"Collaboration doesn't mean everybody works on everything, but having a collaborative community is, in my opinion, incredibly important. It's all about having critical mass because then you're always bouncing off ideas with people in that community," he said.

One of the projects he's most excited about involves developing new lighting technologies. They are ultrathin and tunable, and he hopes someday they will change the way people interact with their environment, from LEDs that follow a person around instead of illuminating everywhere to compact augmented reality or heads-up displays.

Generally reluctant to give broad advice, Igal encourages young scientists and engineers to follow their passion.

"It sounds corny, right? But honestly, I could have been successful if I had stayed in chip design, but you have to figure out what excites you and find a way to make that happen, even if it means your path takes some turns."

As a fellow of the National Academy of Inventors, Igal said the recognition reflects the value of curiosity and collaboration in building impactful science and technology careers.

PROTÉGÉ PROMOTER — Hongyou Fan, a decorated Sandia scientist in nanotechnology, mentors young scientists on the importance of publicizing their work. **Photo courtesy of Hongyou Fan**

Hongyou Fan: A scientist who discovered a new calling as a leader

With more than 20 patents and two startups under his belt, Hongyou Fan has made major strides in materials science and nanotechnology.

His journey has included pioneering inventions such as nanoparticle disinfectants capable of killing harmful microbes, including SARS-CoV-2, and initiating technology transfer processes for extracting critical minerals from coal and coal ash, boosting U.S. supply.

Yet when an opportunity came to take a management role, it became clear to him that his greatest passion lies not just in serving the national interest but in mentoring the next generation of scientists.

"For 25 years I have benefited from all the people around me that support me and coach me and offer me opportunities. I think this is a time I'm able to do something to help others," Hongyou said.

He has focused much of his mentorship on empowering researchers to achieve recognition for their innovations.

Hongyou is something of an expert at awards. His considerable list includes seven R&D 100 Awards for various inventions, six Federal Laboratory Consortium awards lauding his technology transfer prowess, four professional recognitions by the global Materials Research Society and even a formal commendation from the New Mexico state Legislature for his distinguished contributions as a serial innovator.

However, he emphasizes: "It's not just about winning the award, but helping make them visible at the national level."

For example, he described the R&D 100 Award for his microbe-killing nanoparticles as free advertising. Investors approached him after seeing Sandia social media posts, which resulted in the formation of a new business to commercialize the technology, Lunano LLC.

Now he teaches young researchers how to use the same path to commercialize their inventions.

"They have very fancy technologies, but they just don't know what to do to build their visibility or how to sell their innovations to the market," Hongyou said.

An early step in this process is often an introduction to Sandia's patent and technology transfer offices. This gives researchers an opportunity to pitch their work while educating people with connections in the business community about the importance of their research.

"When I was a researcher and I completed a project or published a paper or filed a patent, I felt accomplished. But now I have a different level of happiness," Hongyou said. "Now I measure accomplishment by how many people I have helped."

PFAS detector

CONTINUED FROM PAGE 1

chemicals because they don't break down naturally in the environment. They can move through soil and water and build up in wildlife and humans.

Ryan, a chemist, has spent years developing technologies that can eliminate PFAS on both large and small scales. But that research has been time-consuming. Depending on the concentration, it can take hours to days to detect PFAS in a single sample.

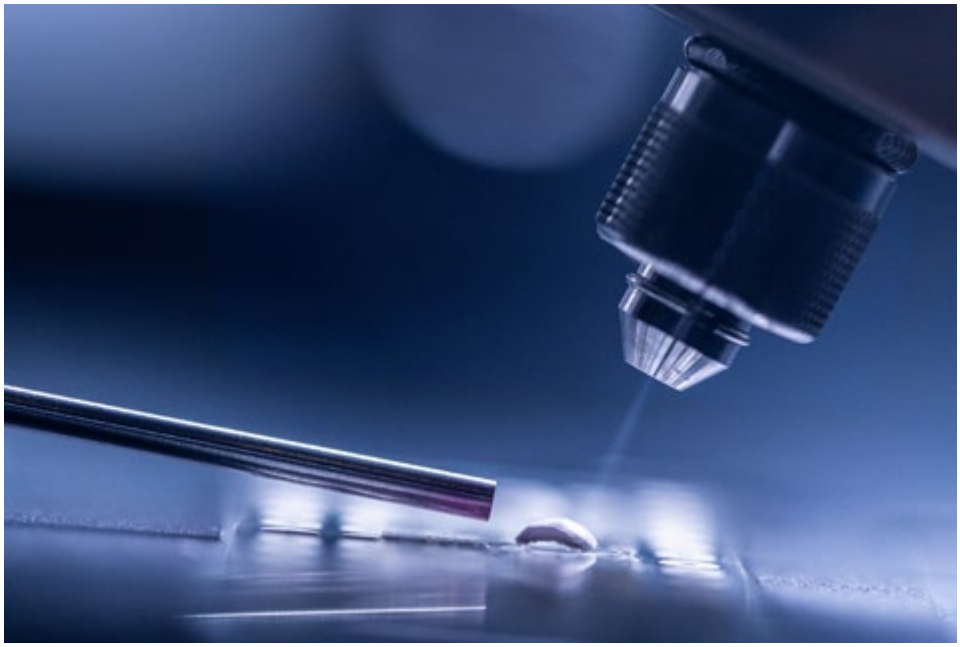
"A common complaint of ours and others who are doing PFAS analysis is that it's slow and can be costly depending on the technology," Ryan said.

Traditional testing processes requires repetitive extraction, concentration and processing.

It starts with a liter or more of liquid, suspected to contain PFAS. The liquid is forced through a cartridge to extract the PFAS. The collected PFAS is then added to a smaller volume of water, and the process is repeated with new cartridges until enough PFAS concentrated for detection.

Additionally, cartridges can cost several hundred dollars apiece. The process not only slows research and development but puts testing out of reach for the average person.

"We want a technology that can be broadly accessible, not only for researchers but for the broader public and government," Ryan said. "It will allow regulators to track PFAS in the environment, and for people to test their own tap water."



CAPTURING IONS — An adsorbent particle containing the analyte of interest is sprayed with charged droplets which splash off the surface and are captured by a metal tube and carried into a mass spectrometer for analysis. This process is known as desorption electrospray ionization. **Photo by Craig Fritz**

A new way to detect PFAS

Ryan and Sandia postdoctoral researcher Nathan Bays have developed that technology as part of a Laboratory Directed Research and Development project.

The pair stumbled onto the approach while experimenting with a mass spectrometer and a technique called desorption electrospray ionization, or DESI. The process uses electrically charged droplets sprayed at the surface of an adsorbent that ionizes only the target chemical, not the adsorbent itself.

Nathan and Ryan said the results were unexpected.

"We had toyed with the idea of using DESI to confirm the presence of PFAS on adsorbent materials," Ryan said. "When we did some preliminary testing, not only did we confirm the presence of PFAS, but we noticed that we got results well beyond our standard analysis."

"At this point, it became very clear we had an opportunity to push further on this work," Nathan said. "One step at a time,

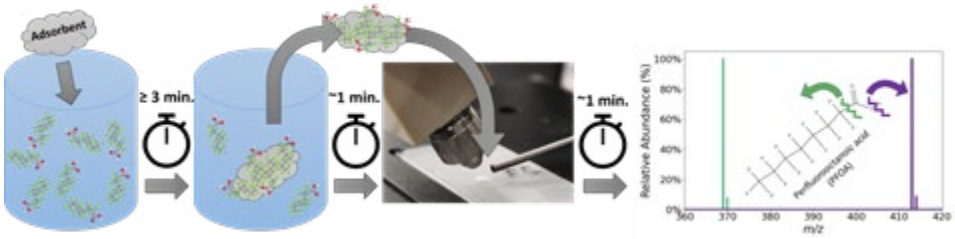
we went from just being able to see PFAS at parts-per-million to levels at parts-per-billion and finally, low parts-per-trillion."

Their technique starts with an adsorbent about the size of a Rice Krispy. The adsorbent is placed in a solution for testing. Three minutes later, it is removed and placed in front of a mass spectrometer where it is sprayed with electrically charged droplets. The droplets remove PFAS from the adsorbent and carry it into the mass spectrometer, where it is analyzed for PFAS concentration and type.

The entire process can take as little as five minutes.

"It's one of those outcomes that wasn't exactly planned as we had initially envisioned it," Ryan said. "It was surprising to see the concentration of PFAS so clearly. That may be why it hadn't been done before. It was just unexpected."

The pair has published details of the process in hopes it can be commercialized for widespread use. They also hope it can be developed to tackle other environmental pollutants besides PFAS and used for environmental analytics and testing such as off-gassing measurements tied to Sandia's nuclear deterrence work.



FINISHED IN FIVE — ISA-DESI analysis procedure. **Graphic by Ryan Davis and Nathan Bays**

"It could help researchers understand the system's environment and the off-gassing of chemicals in certain work," Ryan said. "While our first phase worked with liquid, our more recent work has delved into the gas phase."

Why they do it

Both Ryan and Nathan are passionate about this technology and PFAS remediation. Developing the new test is just a small part of the broader work they do aimed at reducing PFAS pollution.

"I've been working on this specific project since I joined Sandia two and a half years ago," Nathan said. "My whole career has evolved around environmental remediation, so this was a natural fit. I'm a big outdoors person. My wife and I like to go out in nature, and we don't like to see our world be polluted like this."

One of the biggest focuses of PFAS remediation has been at U.S. Air Force bases, where soil and groundwater have been impacted by the long-term use of fire-fighting foam.

Ryan's big goal, however, is to give people more power over their health. "More and more research shows that PFAS can have negative outcomes at even low concentrations, so detecting at those low concentrations is key," Ryan said. "We don't want families to worry about whether they can afford groceries this week or test their water for safety."

Cyber experts

CONTINUED FROM PAGE 1

defenders right out of college, as well as Sandia employees with other expertise who want to transition into cybersecurity.

"We observed that most of the cybersecurity defenders took about 18 months to become proficient," said Han Lin, a Sandia manager who founded and oversees the program. "Our initial motivation for creating the program was to fast-track their learning so they would be contributing and being impactful in six months instead."

The program has been running about five years and roughly 75 employees have completed the residency. About 20% of residents are Sandia employees with related expertise who wanted to explore cybersecurity, while the rest were recent graduates.

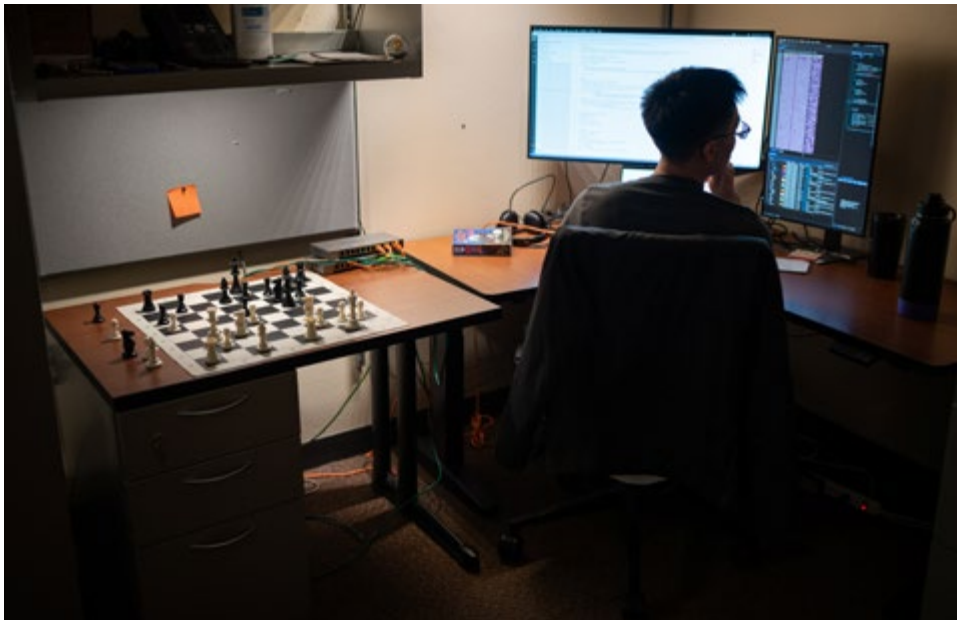
Residents rotate through as many as five cybersecurity focus areas, with each rotation lasting as long as needed for the resident to gain the necessary skills, Han said. All residents gain experience in computer forensics, while rotations in incident response, red teaming, information assurance and secure software depend on a resident's interests.

RESIDENT MENTORS — Sandia cybersecurity experts Matthew Trotter, left, Kinsleigh Wong, right, and manager Han Lin discuss logistics of Sandia's cyber residency program and the Forensic and Incident Response Exercise also known as Tracer FIRE. **Photo by Craig Fritz**

Introduction to computer forensics

Much like crime scene investigation, computer forensics involves examining the data and clues left behind after an attack or breach to identify the culprit and determine whether they accomplished their objective. The work can include network forensics, application forensics and memory forensics. Each area requires specialized tools to avoid disturbing any evidence, Han said.

The computer forensics rotation includes lectures and active-learning assignments,



PAWN TO D4 — Sandia cybersecurity expert Kinsleigh Wong keeps a chess board in his office when he needs to take mental break. Kinsleigh, a past resident, now serves as a mentor for Sandia's cyber residency program. **Photo by Craig Fritz**

said Kinsleigh Wong, a Sandia cybersecurity expert and former resident who helps run the rotation. Depending on whether a resident is an established employee exploring a new career or a recent graduate, the rotation can be part time while the employee continues normal work or a full-time commitment, Han said.

One lecture focuses on memory forensics, said Matthew Trotter, a Sandia cybersecurity expert who teaches the session and supports the rotation. He described memory forensics as conducting an "autopsy" on computer memory to capture clues before they disappear when a device loses power. The work requires specific tools and technical expertise, he said.

"People are generally pretty receptive and say it's very interesting because it's not something you learn about in a traditional educational course," Matthew said. "It's been memorable sharing knowledge that I gained from diving into it and learning how to tailor the talk to share my knowledge in an accessible manner."

To help residents remember the process workflow, Matthew created an exercise built around a mock cyberattack, including a list of tools and steps he would use to extract forensic data from memory.

Creating a practical exercise

As part of the general forensics rotation, residents use what they learn to create a new Tracer FIRE scenario. Tracer FIRE, short for Forensic and Incident Response Exercise, is a three-day cyber workshop. Sandia partners with universities to offer the exercise and provide students with a realistic experience. Kinsleigh added that Tracer FIRE also gives current cybersecurity staff an opportunity to practice and maintain their skills.

Each summer's scenario is different and has ranged from protecting an electric scooter company from ransomware and corporate espionage to defending a municipal water supply's operational technology from hackers and a rogue CEO, Kinsleigh said. Each resident, Tracer FIRE intern and staff member involved in the exercise is responsible for building part of the scenario, whether that is setting up an element of the attack or preparing digital "clues" tied to a segment of the narrative.

Han said Tracer FIRE also serves as a recruiting tool. Students who thrive in the exercise can apply for summer internships at Sandia, and top interns are often hired as staff after graduation, helping create a talent pipeline.

Once residents complete the program, they mentor the next group of residents, Han said. Spreading mentorship across alumni reduces the burden on any one person and gives former residents a chance to deepen their expertise and build leadership skills.

Kinsleigh said he started at Sandia as an intern in 2018 and was hired in 2021. Since completing the residency, he has mentored about 10 residents. He said his favorite rotation was incident response, where residents learn the practical steps of responding to a cyberattack instead of analyzing evidence afterward.

"I especially liked the incident response rotation because I liked seeing the tools and processes that are used by our incident response teams," Kinsleigh said. "It really fleshed out my whole view of enterprise cybersecurity at Sandia."

Building a network

Beyond technical training, Han said the program is designed to help new employees build a professional network across the organization.

"If they need a network forensics expert, they know who to call because they worked with one during a rotation," Han said. "They find people they enjoy working with and learning from, so they stay. Retention is not always about money. It's about the people you work with too."

Kinsleigh said networking is a vital part of the residency.

"It feels like I'm a connector," he said. "As a mentor, I'm focused on letting them know what's here and connecting them with their interests. If they're really good at software development, I might have them explore malware development."

Matthew, who joined Sandia before the residency program began, said the structure would have helped him early in his career.

"I remember when I started, I was inundated with all these different tools and processes that I had to learn on the go," he said. "It was overwhelming. With the residency program, it gives you time to learn without having expectations on you. It really helps. We've gotten some really great hires out of the program."

NNSA nonproliferation leader tours Labs

TECH VISIT — Chad Monthan, senior manager of Sandia Transportation Safeguards and Surety, presents various delayed access devices to NNSA Defense Nuclear Nonproliferation Deputy Administrator Matthew Napoli during his tour of Sandia Feb. 25. Hosted by leadership in Global Security, Napoli toured the Mobile Vault Staging Area, Counterfeit Detection Center and the Unmanned Aircraft Systems Lab, and received briefings on Sandia's work in space, microelectronics and more.

Photo by Craig Fritz

Kirtland Air Force leadership tours Sandia

NEIGHBOR BRIEFING — From left, Associate Labs Director Jeff Heath briefs Col. Justin Secrest, commander of the 377th Air Base Wing Kirtland Air Force Base, and NNSA Sandia Field Office Deputy Manager David Pugh, during a tour of the Labs on Feb. 27. They toured facilities such as the Emergency Operations Center, Z machine, the Neutron Generator Enterprise and the Weapons Display Area. They also received briefings on hypersonics, the Center for Advanced Manufacturing and Innovations and more.

Photo by Craig Fritz

Quick on the buzzer, strong on science

NM Regional science bowl winners decided

By **Kim Vallez Quintana**

After months of studying, quizzing and memorizing facts and formulas, winners have emerged from this year's DOE Regional Science Bowl competitions in New Mexico.

For the third time in four years, a team from Los Alamos High School was the victor in the high school competition on March 7.

Last year's winner, La Cueva High School, placed second this year. The team from Albuquerque Academy finished out the top three.

Middle school winners

In the middle school competition, held Feb. 7, Los Alamos also took home the trophy, narrowly defeating Desert Ridge Middle School. A second Los Alamos Middle School team came in third.

Both first-place teams will now head to the DOE National Science Bowl on April 30, in Washington, D.C., to face off against top teams from across the country.

It's about more than winning

While holding the trophy and earning the opportunity to show their skills on the national stage is no doubt a highlight of Science Bowl, it's about more than winning.

"What I love about this competition is that students really think critically," said Deb Menke, Sandia's STEM education outreach program manager. "They collaborate, they have teamwork and they learn about real-world problems, preparing them to be our future scientists."

Deb helps bring the science bowl to life each year and recruits nearly two dozen Sandia volunteers who serve as judges, timekeepers, scorekeepers and organizers — all of whom get a front-row seat to the excitement and challenge it brings to students.

"It takes a lot of caffeine," La Cueva Team 2 member Alicia Peng said. "If someone pulled me off the street and asked me one of the questions we have to answer, I would look at them funny."

Peng and her teammates said preparing for Science Bowl takes hundreds of hours of learning formulas, terminology, roots, prefixes, chemical compounds, scientific elements and more.

WHAT A QUESTION — Roran Hensley, left, and Hiro Jau from La Cueva High School Team 1, discuss their possible answer during the 2026 Regional Science Bowl competition on March 7.

Photo by Craig Fritz

"On top of that, you have to be confident in your answers," La Cueva teammate Inler Lu said.

This year, Lu and Peng's team did not place in the top three, but their classmates, who make up La Cueva Team 1 did, including senior Hiro Jau.

"For me I don't necessarily learn just for science bowl," Jau said. "I try to learn everything I can about things I find interesting and a lot of times that transfers over."

Jau is both a participant and mentor to students from Desert Ridge Middle School, the team that placed second in the competition this year.

"It was really hard for me in middle school because I didn't have the exposure to all these areas of science," Jau said. "I want to help these middle schoolers be better prepared when they transition to the high school competition."

He gets help from teammate Aiden Kim, a junior at La Cueva High School, who aspires to become an engineer.

"We spent time with these kids every week before school. We practice with them, even run practice sets with them." Kim said. "I think this helps you get interested in certain things and see how science can be fun."

SANDIA VOLUNTEERS — The annual DOE Regional Science Bowl would not be possible without the help of Sandia volunteers who serve as organizers, judges, and score and timekeepers.

Photo courtesy of Deb Menke

Although Kim and Jau will not be making the trip to Washington this year to compete in the National Science Bowl, they said they still gained a lot through the experience.

"I find a lot of fulfillment in helping other people. I also just think it's fun," Kim said.

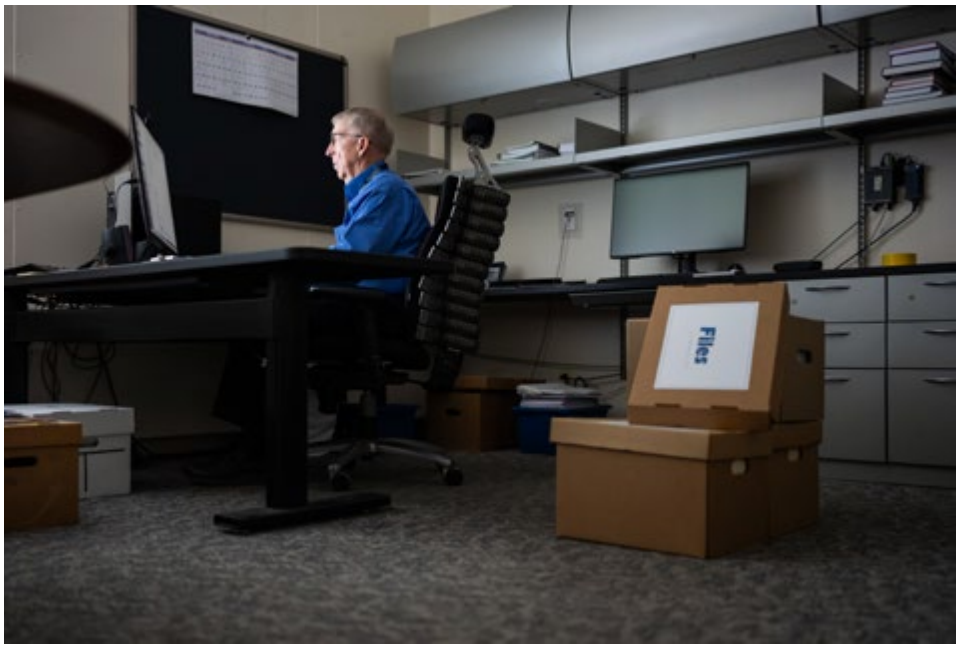
That Science Bowl experience may even be shaping Kim's future."I think after I retire, I might like to be a teacher," he said. "I do like teaching other people about science and everything that is interesting about it."

A legacy of innovation

Reflections on Keith Matzen's journey

By **Krystal Romero-Martinez**

After 51 years of dedicated service to the Labs, Sandia Fellow Keith Matzen, will retire on March 17, 2026. Over the past five decades, Keith has become a nationally recognized scientist and leader, instrumental in shaping the future of pulsed power capabilities, high-energy density science, and inertial confinement fusion, as well as shaping strategic planning for Sandia and the NNSA.



RETIREMENT AWAITS — Sandia Fellow Keith Matzen will retire on March 17 after 51 years of service to the Labs. **Photo by Craig Fritz**

Foundations of excellence

Keith, born and raised in Nebraska, earned his bachelor's degree in physics and chemistry from Hastings College and completed his doctorate in theoretical physical chemistry from Iowa State University. After a year as an instructor there, he joined Sandia in July 1974.

After interviewing for both pulsed power and laser science groups at Sandia, Keith accepted a position in the laser science group to develop efficient lasers for lab-based fusion, now known as stockpile stewardship. Although he enjoyed his time in the laser group, Keith said, "It was becoming clear that Lawrence Livermore National Laboratory was going to dominate the path to laser fusion."

In 1980, he transferred to the Pulsed Power Sciences Center, where he has held various leadership roles, overseeing projects that developed Z-pinch implosion sources, established experimental capabilities at the Saturn facility and transformed the Particle Beam Fusion Accelerator II into the Z facility.

Keith became director of the Pulsed Power Sciences Center in January 2005, where he directed the successful completion of the Z refurbishment project, advancements in radiation effects and dynamic material property research, growth of research in high-energy density science and fundamental astrophysics, and the expansion of the pulsed power inertial confinement fusion program into magnetic direct-drive concepts. This research has been crucial for validating models used in nuclear weapon stockpile design and for studying fundamental scientific questions.

Vision for the future

Looking ahead, Keith envisions the continued evolution of the Z facility, emphasizing the importance of sustaining and advancing its pulsed power architecture to explore new physics related to nuclear weapons and fundamental science.

"Since converting PBFA II to the Z Facility 30 years ago, Z has evolved significantly, notably with the 2007 Z Refurbishment Project. Today, 90% of Z's experiments were not envisioned three decades ago, and this evolution will continue as the team develops the fundamental pulsed power architecture and explores new ways to study high-energy density and inertial confinement fusion physics. I believe pulsed power provides the most promising path to achieving high-yield fusion in the laboratory, allowing for more effective study of nuclear weapon physics and qualification issues than underground testing."

Keith's accomplishments have been recognized with multiple Sandia, Lockheed-Martin and professional society awards. He has co-authored nearly 80 publications in refereed journals.

Guiding the next generation

In his time as a center director and as a fellow, Keith has continued Sandia's mentoring tradition. One memorable moment was realizing that four of the six directors in Division 1000 had worked for him in the Pulsed Power Sciences Center. He is very proud of all the

accomplishments these individuals have achieved.

Keith offered advice for early-career scientists entering the field. "Develop strong relationships. The research and work that we do require large teams, and developing and maintaining good relationships pays off in multiple ways, at work and in life," he said.

Doug Kothe, associate Labs director for Advanced Science and Technology and chief research officer, said, "When I first started, Keith approached me, recognizing that I could use some guidance and mentorship. And boy, did I need it … He displays the behaviors and values of what every Sandian should strive for: selflessness, deep care for the institution and its mission, genuine concern for what lies ahead, and, most importantly, a deep love for all Sandians."

In a final note to the Labs, Keith said, "My hope is that the work of my team to create the Z facility and other pulsed power capabilities leaves behind a foundation and tools on which the next generation can build."

New adventures await

When asked about retirement plans, Keith said, "Explore this new adventure. Every time I started a new job at Sandia, I found that it took a year to understand the new role and then a couple more years to really make a difference. I plan to approach retirement in the same way. The focus areas are clear: family, friends, community, personal, professional. I'm hoping that many friends and colleagues will want to get together to chat over a breakfast burrito or lunch as I start this new journey."

At one point, Keith competed in bicycling but paused due to job and family commitments. He now looks forward to "a leisurely bike ride in the mountains when the morning temperature is perfect and there is no wind."

The power of connection and a fond farewell

Reflecting on his 51 years at Sandia, Keith emphasizes the importance of having the right people in the right jobs. "Relationships are critical: trust and respect. Find people to work with who are more skilled than you and dedicated to the task at hand. Have fun."

Although stepping away from his role at Sandia, Keith leaves a remarkable legacy for future generations. "We are fortunate to have benefited from Keith's dedication, commitment, expertise and love for Sandia," Doug said.

Engineers borrow lessons from past to anticipate future

PANEL REFLECTIONS — From left, engineers Phil Huffman, Kelsey Forsberg, Derek Black and moderator Elizabeth Roll reflect on the challenges and wins of their careers, and the evolution of engineering at Sandia during National Engineers Week on Feb. 24. Staff can watch the recording in the Digital Media Library. **Photo by Craig Fritz**

ENGINEERING OF YORE — Government Relations analyst Nick Maestas reads the unclassified engineering design package for the Vela satellite program from the late 1960s. Vela engineering artifacts were on display during a panel discussion about the evolution of engineering at Sandia. **Photo by Craig Fritz**

Recent Patents

October-December 2025

Note: Patents listed here include the names of active Sandians only; former Sandians and non-Sandia inventors are not included.
Following the listing for each patent is a patent number, searchable at the U.S. Patent and Trademark Office website (uspto.gov).

- **Todd Andrew Barrick, Jeffrey David Hunker, Ryan Law, Brian McFarland, Bradley Christian Salzbrenner and Jonathan David Sterk:** Compact convertible universal single pass/double pass optical system. Patent #12436024
- **Michael Joseph Kim Abere, Jeffrey Daniel Engerer and Kimberly D. Wakefield:** Solar thermal testing of ablators and composites. Patent #12436073
- **Travis Forbes:** Complementary current reuse even harmonic frequency multiplier. Patent #12438506
- **Elliot James Fuller and Albert Alec Talin:** Electrochemical random access memory device with contact layer as a heat source. Patent #12446479
- **David Jerome Bossert, Kyle H. Fuerschbach, Aaron Meade Ison, Jongmin Lee and Peter Schwindt:** Compact grating magneto-optical trap sensor head for inertial navigation in dynamic environments. Patent #12449256
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- **Andrew Charles Biller and Israel Jacob Owens:** Magneto-optical sensor for magnetic field measurement. Patent #12498432
- **Timothy James Donnelly, Steven F. Glover, Ronald Craig Matthews Jr., Lee Joshua Rashkin and David Gerald Wilson:** Solid-state transformer for mitigation for common mode insults. Patent #12500415

Mileposts

John Bauer 20

Sarah Gabaldon 15

Jessica Villareal 15

Retirees

John Ball 27

Chris Romero 23