



THE RACE FOR THE 'AULD MUG'

LIAM SHANAHAN '18
COMBINES ENGINEERING
AND SAILING SKILLS
TO ELEVATE THE 37th
AMERICA'S CUP CHALLENGE.





THE RACE FOR THE 'AULD MUG'

Liam Shanahan '18 combines engineering and sailing skills to elevate the 37th America's Cup challenge.

BY SCOTT WHITNEY | PHOTOGRAPHY BY TY BAIRD

ON THE COVER: AMERICAN MAGIC FLIES ON ITS HYDROFOILS DURING TRAINING FOR THE 37TH AMERICA'S CUP IN BARCELONA, SPAIN. COPYRIGHTED PHOTO COURTESY OF AMERICAN MAGIC.

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LETTER *from the Editor*

THE 17TH LINK

A presidential inauguration is a significant milestone in the life of any institution of higher education. President Grace Wang’s inauguration on March 22 certainly met this historic moment. As was done for the 16 presidents before her, President Wang received two symbols during the ceremony: WPI’s original charter from 1865, and the Presidential Medallion, a large metal circle engraved with the WPI seal that hangs from a silver chain of 17 links, each link engraved with the name of a WPI president.

At the reception following the ceremony, President Wang told a group of us that she felt the weight of her responsibilities at that moment, and it will inspire her to boldly lead WPI into the future. See page 8 for a full story about the event.

Board of Trustees Chair William Fitzgerald’s charge to President Wang at the end of the ceremony appropriately touched on WPI’s past and future. The charge ended: “What our university has achieved is only a bright promise of that which we have yet to accomplish.”

ANOTHER WORLD

One of my favorite parts of this job is when I can attend photo shoots at out-of-my-comfort-zone locations to capture our feature subjects in their element. We are grateful to Radius Recycling for allowing us to photograph **Emily Molstad ’19, MS ’19**, **Caleb Ralphs ’20, MS ’21**, and **Ben Longo ’20** at the company’s Everett, Mass., location. Radius is piloting the software created by VALIS Insights, Inc., and has been a great partner to the VALIS team. (Read more starting on page 30.)

If you’ve never been to a scrap metal recycling facility of this size, believe me when I tell you it’s eye opening. On this day, a steady stream of huge 18-wheel trucks filled with the detritus of our daily lives rumbled through the gated, waterfront property, lining up to dump their contents near multiple claw excavators scooping the scrap onto a conveyor belt leading into a fortress-like tower. Fortunately, we were blessed with a mild end-of-February day for the shoot, and after donning our safety equipment, we were patiently guided around the facility by Radius Recycling’s Chris Cooney. In the opening photo, you’ll see our little tour group dwarfed by the enormous piles of processed metal. I was heartened by the industriousness of the recycling effort, as well as mildly discouraged at this small representation of the waste created by our society.

ON LOCATION WITH PHOTOGRAPHER TONY RINALDO, LEFT, AND DESIGNER JIM CASEY WITH THE VALIS TEAM AT RADIUS RECYCLING IN EVERETT, MASS. SEE THE PHOTOS AND READ THE STORY ON PAGE 30.

If only I had the budget to travel to Barcelona, Spain, to capture American Magic engineer **Liam Shanahan ’18** in his environment. Many thanks to the American Magic team for helping with those photos, including the dramatic cover shot of the modern AC75 monohull yacht that seems to magically rise out of the water on its hydrofoils. The America’s Cup competition can be confusing to non-sailors, and this land lubber is looking forward to watching the televised coverage this fall with a bit more insight. Hopefully you will too after reading Liam’s story, which starts on page 24.

A LITTLE HORN TOOTING

I’m proud to report that the *WPI Journal* recently received a Counsel for the Advancement and Support of Education (CASE) Best of Division 1 Award for alumni/general interest magazines published three or more times a year. At the risk of using a clichéd humblebrag, the quality of our fellow winners makes this award even more special: Boston University, Yale University, Boston College, Northeastern, and Bowdoin. All are well-resourced and distinguished institutions with magazines I admire. It takes a village to put out the *WPI Journal*, so my thanks to the team that makes this publication happen—see the full list in the staff box on the previous page.

—Kris O’Reilly, Editor



DEAR WPI COMMUNITY,

As spring returns to The Hill, our vibrant campus is abuzz with activities, whether in classrooms, labs, Rubin Campus Center, Innovation Studio, or on the Rooftop Field and the Quad as students revel in the nicer weather.

As you well know, WPI is more than just a renowned technological university and leader in project-based learning. We are also a caring, supportive community of people. Together we cultivate a dynamic environment where students and colleagues connect with each other, forge lasting friendships, pursue their passions, and live their purpose.

As technologies continue to change how we interact, communicate, and collaborate, in-person connections become ever more critical. The college years are a time of tremendous personal and intellectual growth and learning. WPI will continue to adapt, creating a campus atmosphere where individuals feel welcomed, connected, and heard.

Today WPI weaves wellness into every aspect of our community. We prioritize self-care and create programs and classes to help everyone feel support—and a sense of belonging—from day one.

Recognizing the importance of building both body and mind, WPI allows students to take for-credit wellness classes alongside their STEM classes and projects. Our Center for Well-Being has been open for a year now, becoming a campus hub for health and self-care for students, faculty, and staff. Our quarterly Wellness Days are one way

“WPI will continue to adapt, creating a campus atmosphere where individuals feel welcomed, connected, and heard.”

for members of the campus community to de-stress, reflect, and connect with those around us.

We are proud of our student-athletes who practice and compete with such heart and determination while juggling WPI’s rigorous academics. Of particular note are graduate student Grace Hadley and her fellow members of the Distance Medley Relay team who brought home WPI’s third and fourth Division III national championships this spring. [Read more on page 7.] Whether competing athletically at the varsity or club levels, or having fun with like-minded members of the many clubs on campus, students are discovering ways to grow personally as well as academically.

As we continue to invest in our community’s well-being and cultivate an environment of belonging, we thank you for your dedication to WPI and your role in nurturing a community where everyone can flourish.

Warm regards,
Grace

WPI

The latest in university news, research, and commendations

Pulling Hydrogen from Water Polluted by Urea

WPI researchers have developed a material to efficiently remove urea from polluted water and potentially convert it into hydrogen gas. By building these materials of nickel and cobalt atoms with carefully tailored electronic structures, the group believes it has unlocked the secret to upcycling the common organic compound. The study, led by **Xiaowei Teng**, the James H. Manning Professor of Chemical Engineering, was recently published in the *Journal of Physical Chemistry Letters*.

Urea is a low-cost nitrogen agriculture fertilizer and a natural product from human metabolism. Urea-rich agricultural runoff and municipal wastewater discharge cause eutrophication—harmful algal blooms and hypoxic dead zones that adversely impact the aquatic environment and human health.

At the same time, the unique characteristics of urea make it a potential hydrogen storage medium that could offer viable on-demand hydrogen production. For instance, urea is nontoxic, has high water solubility, and has high hydrogen content (6.7% by weight). Thus, urea electrolysis for hydrogen production is more energy efficient and economical than water electrolysis.

The weakness of urea electrolysis has always been the lack of low-cost and highly efficient electrocatalysts that selectively oxidize urea instead of water, but Teng and his team have found a solution: making electrocatalysts consisting of synergistically interacted nickel and cobalt atoms with unique electronic structures for selective urea electro-oxidation.

The WPI team found that the key to enhancing its electrochemical activity and selectivity to urea oxidation lies in tailoring the unique electronic structures with dominant Ni²⁺ and Co³⁺ species.

“This electronic configuration is a pivotal factor to improve the selectivity of urea oxidation because we observe that higher nickel valence, such as Ni³⁺, indeed helps produce a fast reaction with strong electric current output; however, a large portion of current was from unwanted water oxidation,” Teng says.

A major nitrogen fertilizer and feed additive, urea was commercially produced as early as the 1920s; around 180 million metric tons were produced in 2021. Urea can be derived from natural sources; an adult human produces 1.5 liters of urine daily, equivalent to 11 kg of urea and 0.77 kg of hydrogen gas yearly.

The team’s findings could help use urea in waste streams to efficiently produce hydrogen fuel through the electrolysis process, and could be used to sequester urea from water, maintaining the long-term sustainability of ecological systems, and revolutionizing the water-energy nexus.

ILLUSTRATION BY CINTIA FOSCH

GAPONTSEV GRANTS PROVIDE EARLY SUPPORT IN PHOTONICS RESEARCH

A total of \$230,000 has been awarded to faculty members for eight one-year research projects focused on topics ranging from tonsillectomies to data visualization. The seed grants will enable researchers to plan or launch new interdisciplinary projects and support research that should lead to external collaborations or funding, says **Bogdan Vernescu**, vice provost for research.

“We know that seed grants can provide much-needed support for bold, early-stage scholarly inquiry, and it’s a pleasure to congratulate all the recipients,” Vernescu says.

Five projects were each awarded \$4,000 from the Office of the Vice Provost for Research to pursue early-stage, cross-disciplinary activities that relate to diversity, equity, inclusion, and justice at WPI.

Three photonics projects were each awarded \$70,000 from the Gapontsev Family Collaborative Venture Fund to pursue interdisciplinary collaborations that focus on lasers and laser applications. The fund was established by the family of Valentin Gapontsev, founder of IPG Photonics, who received an honorary Doctor of Engineering degree from WPI in 2001 in recognition of his contributions to the field of photonics and the photonics industry. This year’s grants represent the second of three years of funding from the Gapontsev family. Their gift of \$645,000 supports *Beyond These Towers*, the university’s fundraising effort, which includes a commitment to faculty research.

Gapontsev Family Collaborative Venture Fund Awards

- “Laser Tonsil Ablation: A New Incision-less Procedure for Tonsil Removal,” **Loris Fichera**, assistant professor in the Department of Robotics Engineering, principal investigator; **Haichong Zhang**, assistant professor of robotics engineering; and **Andrea Arnold**, assistant professor in the Department of Mathematical Sciences
- “Development of High-Temperature In-Situ Fiber Optical Raman Spectroscopy for Understanding Catalyst Deactivation During Methane Decomposition Toward Clean Hydrogen Production and Carbon Nanotube Synthesis,” **Pratap Rao**, associate professor in the Department of Mechanical & Materials Engineering; **Andrew Teixeira**, associate professor in the Department of Chemical Engineering; and Department of Mechanical & Materials Engineering faculty members **Ceren Yilmaz Akkaya**, postdoctoral fellow, and **Yuxiang Liu**, associate professor
- “Laser-Excited NV Diamond Magnetic Microscopy and Laser Voltage Probing for Security Analysis of Integrated Circuits,” **Raisa Trubko**, assistant professor in the Department of Physics; and **Shahin Tajik**, assistant professor in the Department of Electrical and Computer Engineering

—Lisa Eckelbecker



Degrees in AI Emphasize Societal and Ethical Implications

To help meet the demand for professionals with expertise in the rapidly evolving field of artificial intelligence, WPI has launched a new degree program in AI that will offer students the opportunity to earn a master's degree, a combined bachelor's/master's degree, or a graduate certificate through courses, projects, and thesis work. The program will leverage the university's extensive experience in research and project-based education in AI to provide students with the technical skills and ethical understanding needed for careers in industry, government, and academia.

WPI will offer students flexible, yet highly rigorous, areas of specialization with courses on subjects ranging from deep learning to generative AI. The program will combine theory and practice to train students in the understanding, development, deployment, and innovation of AI techniques and systems. Students also will study AI in an interdisciplinary way, with options to take courses offered by the School of Arts and Sciences, the School of Engineering, and The Business School. An important distinction of WPI's program is a strong emphasis on the societal and ethical implications of AI.

"WPI has long led higher education as a place where students and faculty have used AI and project-based learning to tackle big challenges in healthcare, justice, manufacturing, the environment, and other fields," says **Jean King**, Peterson Family Dean of WPI's School of Arts and Sciences. "We are excited to focus our AI strengths into this new program, which will prepare students for leadership roles in a transformational field that faces a critical shortage of qualified professionals."

"The university is committed to continuing its leadership in a breadth of application areas for artificial intelligence technology," says **John McNeill**, the Bernard M. Gordon Dean of WPI's School of Engineering. "With the flexible nature of these AI offerings, students can tailor their program to the needs of many different career paths."

—Steve Foscett

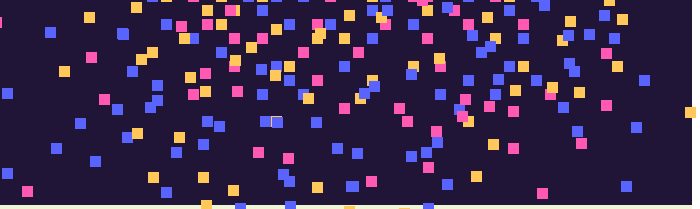
New MS in Global Health Leverages Technical Innovations

Recognizing that the future of global health lies at the intersection of technology, science, and humanity, WPI is introducing a Master of Science in Global Health. The degree program will prepare students for leadership roles in this growing field by equipping them to turn technical knowledge into innovative solutions that will improve people's health and increase equitable access to health care globally.

"Technology is transforming global health in multiple ways, from drug discovery to disease detection," says **Mimi Sheller**, dean of The Global School, which is administering the program. "WPI's master's in Global Health will provide students with skills to create new technologies and bring these innovations to the places they are needed most with a central focus on the social, human, and ethical ramifications of technology in health care."

Starting in fall 2024, this new program will help students learn how to develop socially responsible technology that can help improve health—with greater equity—for people around the world. Such complex goals require an interdisciplinary approach, and this program is designed to allow students to learn from faculty with expertise in areas such as biology, biomedical engineering, computer science, data analysis, global studies, interactive media, and social science. Such focused, yet varied, expertise will guide students to use data-driven research to help create advancements in areas such as digital healthcare technologies, artificial intelligence, virtual reality/augmented reality, 3D-printing, robotics, wearable sensors, electronic health records, and telemedicine.

—Jon Cain



MBA in Analytics Offered in Fall 2024

In response to the growing demand for business professionals who can make data-driven decisions, The Business School is introducing a new STEM-designated MBA in Analytics. The program will equip students with the essential analytics knowledge, tools, and techniques that are needed in today's workforce. In fact, the Bureau of Labor Statistics reports data-related occupations are projected to have the fastest employment growth over the next decade.

The program, which is enrolling students now to start in Fall 2024, offers a full-time, on-campus MBA that focuses on the analytical and strategic skills needed to make decisions across various business functions, such as marketing, operations, and management. Students can choose to concentrate in applied business analytics, data-driven strategic management, marketing analytics, and/or operations analytics. The skills gained in the program will prepare students for early- to mid-career leadership roles.

"The volume of digital data available for business decision-making has grown significantly over the past decade, and businesses are increasingly relying on data to make better decisions," says **Debora Jackson**, the Harry G. Stoddard Professor of Management and dean of The Business School. "This has led to a surge in the demand for professionals proficient in analytics, making our program a valuable addition to our offerings. With our industry-savvy faculty and focus on STEM, we are positioned to prepare graduates to lead in strategic data-informed decision-making."

The launch of the MBA in Analytics also aligns with a global trend of employers seeking professionals who can develop and implement new technologies and strategies. International students can take advantage of the extended Optional Practical Training (OPT) benefits with this STEM-designated degree, which provides a unique opportunity for students to work in the United States upon graduation, benefiting both students and employers.



FROM LEFT, AMELIA KOKERNAK, ISABEL HALLAL, ELISE DESHUSSES, AND GRACE HADLEY.

TWO NATIONAL CHAMPIONSHIPS, ONE WEEKEND

Grace Hadley '23, MS '24, won two national championships at the NCAA Division III Indoor Track and Field competition, one individually and one as the anchor leg of the Distance Medley Relay (DMR) team. These wins, plus Hadley's fourth-place finish in the 3,000 meter race, helped WPI's track and field team finish the meet in seventh place, the best in school history.

Hadley set a meet and school record in the mile, winning virtually wire-to-wire in a time of 4:42:36 (second best all-time in NCAA Division III history) at the championships, which was held in Virginia Beach, Va., in March. Her come-from-behind, 1,600-meter leg for the DMR team complemented performances by teammates **Isabel Hallal '24** and graduate students **Elise Deshusses** and **Amelia Kokernak**. On the same weekend, sophomore pole vaulter **Gavin Fleck** earned his first career All-America citation by clearing a school record height of 16-4.

This was Hadley's second indoor NCAA Division III championship meet, the first being in 2020 as a member of the DMR team. She broke several school records this season and claimed five individual event titles, starting

with the mile at the Lyon Invitational, followed by the 800 meter at the Springfield Triangle Classic, and a pair of New England DIII crowns in the mile and the 3,000 meter. Hadley, the 2023 USTFCCCA NCAA DIII East Region Women's Cross Country Athlete of the Year, was named the 2024 USTFCCCA NCAA DIII East Region Women's Indoor Track & Field Athlete of the Year as well.

Director of Track & Field and Cross Country **Brian Chabot** was named USTFCCCA East Region Women's Assistant Coach of the Year, assisting Track and Field Head Coach **Emily Mauro**.

Prior to the 2024 NCAA Division III Indoor Track and Field meet, WPI had earned just two national championships in over 100 years of varsity athletics and in 50 years of Division III. **Eric Meerbach '87** captured the 1986 NCAA Division III Men's Golf championship and, in May of 2022, the Women's Rowing Varsity won the NCAA Division III National Championship race at Nathan Benderson Park in Sarasota, Fla.

A New Prescription for Pain: AI and Mindfulness

WPI will lead a five-year study to determine whether artificial intelligence can help doctors steer people dealing with chronic pain away from potentially addictive opioids and toward mindfulness-based approaches. The new National Institutes of Health (NIH) HEAL (Helping to End Addiction Long-term) initiative-funded study will employ machine learning, a form of artificial intelligence, to look for clues in patient data that could help doctors better determine who is likely to benefit the most from mindfulness-based stress reduction, or MBSR, in managing their pain.

"For physicians, it will be a new day," says **Jean King**, Peterson Family Dean of Arts and Sciences at WPI. "To be able to predict who would respond well to non-pharmacological interventions will truly save lives."

WPI has received \$1.6 million in NIH funding to start designing the trial; if the team's defined benchmarks are met, the university could receive a total of nearly \$9 million over the course of the next five years.

The findings of the study could give healthcare providers powerful tools to help people avoid taking opioids that can lead to lifelong struggles with addiction. Over-reliance on opioids for pain management can have devastating consequences; in 2021, more than 16,000 people died from prescription-opioid-related overdoses, and more than 80,000 people died from overall opioid-related overdoses, one death every 6 minutes. There have been concerning increases in opioid-related

deaths in Black and Native American populations.

Previous studies have found MBSR is effective in helping people deal with pain, but the mindfulness-based approach does not work for everyone, and doctors and clinicians don't know exactly who it would work for and why.

Focusing specifically on chronic lower back pain in diverse populations, the study will glean physiological data such as sleep patterns, heart rate, and general physical activity collected via fitness sensors worn by 350 participants during a six-month trial. Combined with self-reported information on depression, anxiety, pain, and levels of social support, the data will be analyzed by custom-designed machine learning models to detect patterns that might be impossible for a doctor to notice. The information will allow the model to predict whether a patient would beneficially respond to mindfulness, helping doctors better tailor treatments for individual patients.

That predictive power could be incredibly useful for physicians who previously may have been wary of prescribing mindfulness-based stress reduction, says **Carolina Ruiz**, a WPI computer science professor who has been involved in researching and teaching machine learning for more than two decades. She added that the machine learning model used in the study will be interpretable, which means doctors and researchers will be able to pinpoint exactly why a patient may or may not respond well to mindfulness methods.

—Steve Foscett

Grace J. Wang, PhD, Formally Installed as WPI President



At a formal inauguration ceremony attended by hundreds of faculty, staff, and students, delegates from more than 30 colleges, universities, and learned societies, political dignitaries, and other special guests, **Grace J. Wang, PhD**, was formally installed on Friday, March 22, as the 17th president of WPI.

“WPI is an innovative, learning community. Here, our students, faculty, and staff find their people, pursue their passion, and live their purpose,” Wang said in her address. “With focus, determination, and collective effort, we will achieve a new level of excellence right here at WPI beyond our imagination.”

An accomplished materials scientist and esteemed leader in higher education, government, and industry, Wang outlined her vision for the university and celebrated the achievements of the campus community. Her comments reflected the theme of her inauguration, “Impact Driven: Honoring Tradition, Innovating the Future.” She encouraged the WPI community to build upon the university’s proud 159-year history by focusing on providing a transformative STEM education; expanding high-impact research, innovation, and entrepreneurship; and creating an immersive campus experience for students, with an emphasis on well-being and belonging. She said with this focus, WPI will become “an even more empowering, leading-edge, and inclusive STEM institution where our faculty, students, staff, and alumni across the world push boundaries, explore solutions, and blaze trails in the future.”

Wang also announced \$18.6 million in philanthropic commitments made to WPI in the last two months. The gifts, from generous alumni and friends of the university, include the fourth largest to the university to date and are in support of *Beyond These Towers: The Campaign for Worcester Polytechnic Institute*.

The commitments support facilities, WPI’s distinctive global projects program, an endowed professorship, faculty research, and undergraduate scholarships:

- **Mike Abrams ’77** and his wife, Nancy, have made a seven-figure commitment, and the fourth largest gift to the university to date, to support future capital projects.
- **Diran Apelian**, WPI Provost Emeritus (1990-1996) and the founding director of the Metal Processing Institute at WPI, and his wife, Seta, have established the Apelian Family Armenian Project Center Endowment with a seven-figure gift.
- **Steve Vassallo ’93** and his wife, Trae, have made a seven-figure commitment that lays the foundation for the Helen G. Vassallo Distinguished Presidential Professorship, named in memory of Steve’s mother, a longtime WPI faculty member.

- The remaining gifts will support undergraduate scholarships and a faculty research fund.

Before formally installing Wang, Board of Trustees Chair **William Fitzgerald ’83** addressed the president and expressed that the WPI community is looking to her leadership with confidence and optimism. “The global need for WPI’s distinctive STEM education has never been greater. Our immersive student experience, project-based learning, and purpose-driven research provide a strong foundation for you to shepherd WPI into a new era of excellence.”

Terrence Sejnowski, a pioneering and award-winning computational neuroscientist, delivered the keynote address. The Francis Crick Chair at the Salk Institute for Biological Studies, Distinguished Professor of Neurobiology at the University of California, San Diego, and winner of The Brain Prize 2024 (the world’s largest brain research prize), spoke of the potential of artificial intelligence, a field in which WPI has spearheaded research and innovation for more than 50 years. “We are in the midst of a cognitive revolution that is enhancing human cognitive power in the same way that human physical power was enhanced by the steam engine in the Industrial Revolution 250 years ago.”

During the inauguration, President Wang awarded the Presidential Medal to **Diran Apelian** and **Judith Nitsch ’75**. The Presidential Medal, established in 2001, recognizes individuals who exemplify the “technological humanist,” an ideal at the core of WPI’s educational approach. Apelian was honored for his innovative research and entrepreneurship in materials science and engineering. Nitsch, founder of Nitsch Engineering, Inc. and the first alumna elected to WPI’s Board of Trustees, was recognized for her impactful career and significant role in WPI’s sustainable infrastructure.

The inauguration featured an investiture ceremony in which Wang was presented with two symbols: WPI’s original charter from 1865, and the Presidential Medallion that features WPI’s seal, designed in 1885. Board of Trustees Chair Fitzgerald read a charge formally empowering Wang with the responsibility of leading the institution as its chief executive. While today’s inauguration represents a formal installation, Wang assumed her role as president of WPI on April 3, 2023, bringing with her a wealth of experience in academia and industry.

WPI students contributed significantly to the pomp and circumstance of today’s event. Featured were a mosaic of Rubik’s cubes created by WPI’s Rubik’s Cube Club, an original music piece composed by a student and performed by WPI’s Brass Ensemble, and a podium floral arrangement made of LEGO pieces that was produced by WPI’s LEGO Club.

—Colleen Bamford Wamback





FROM LEFT, JONATHAN CHANG, MS '24,
WILSON GRAMER '26, AND KENZA BEZZAT '24

Students Participate in UN Climate Change Conference

Three WPI students were firsthand participants in history at the United Nations Climate Change Conference, also known as COP 28, in Dubai, United Arab Emirates. **Jonathan Chang, MS '24**, **Kenza Bezzat '24**, and **Wilson Gramer '26** attended as student delegates for two days of the annual global summit in December 2023. The gathering of more than 70,000 people gave world leaders a chance to make multilateral decisions on steps to address the climate crisis.

The students' attendance at COP 28 was the result of an educational partnership focused on sustainability between WPI and American University of Sharjah (AUS) in the United Arab Emirates. **Sarah Stanlick**, assistant professor in the Department of Integrative & Global Studies in The Global School, led the effort to establish the yearlong virtual exchange.

The three students brought diverse interests and academic backgrounds to the conference. Chang is a master's student in the Community Climate Adaptation program. Bezzat is a biomedical engineering senior and Gramer is a computer science sophomore in the Teacher Preparation Program.

"It's exciting that we had a biomedical engineer, an environmental scientist, and a computer scientist at the conference exploring how they can nudge the world in a more sustainable and just manner," Stanlick says. "Climate change is a complex global challenge. The opportunity to influence policy and practices to address climate change isn't just for political scientists and historians. It's something people from every discipline have the capacity to advance."

At the conference, Chang, Bezzat, and Gramer attended presentations and panel talks on technology, innovation, green energy transitions, artificial intelligence, youth engagement, and art and climate change. They also toured historic sites and participated in discussions about sustainability with students

from AUS and other institutions in the partnership, including Dickinson College and Haverford College.

Chang, a Fulbright Scholar from Moto'otua, Samoa, says sea level rise poses a direct threat to livelihoods in his home country, where he's worked as an environmental scientist studying water quality. He said the conference highlighted to him the need for the world to recognize how developing nations are being affected by climate change, the need for countries in the global south to be empowered in these global decision-making talks, and the need to address disparities in access to green energy between poor and wealthy nations.

Bezzat, from Woburn, Mass., attended the conference after having just completed a project on cultural differences in viewpoints on the United Nations Sustainable Development Goals, particularly related to life below water. She said she was inspired at the conference by a student from the Philippines who shared that he was moved to climate action by seeing his hometown destroyed by flooding. She said she was impressed by the technological climate innovations displayed at COP 28, but felt a disconnect between who can afford them and a need for unified action.

Gramer, an aspiring computer science teacher from Tyngsborough, Mass., who is interested in the environmental impact of coding, said he left the conference feeling the need to educate the next generation about the urgency of the climate crisis so future leaders can contribute to solutions using their passion and skills.

—Jon Cain

FIRST TEACHING FACULTY AWARDED TENURE

Starting in the fall of 2021, in a move to recognize and reward excellence in teaching, WPI created options for pursuing tenure for full-time faculty members whose primary responsibility is teaching. Nine faculty members were the first to be awarded tenure on this innovative teaching track:

Marcel Blais, professor of teaching in the Department of Mathematical Sciences; **Esther Boucher-Yip**, professor of teaching in the Department of Humanities and Arts; **Farley Chery**, associate professor of teaching in the Interactive Media and Game Development program; **Destin Heilman**, professor of teaching in the Department of Chemistry and Biochemistry; **Ryan Madan**, associate professor of teaching in the Department of Humanities and Arts; **Buddika Peiris**, associate professor of teaching in the Department of Mathematical Sciences; **Geoffrey Pfeifer**, associate professor of teaching

in the Department of Integrative and Global Studies; **Elisabeth Stoddard**, associate professor of teaching in the Department of Integrative and Global Studies; and **Sarah Wodin-Schwartz**, associate professor of teaching in the Department of Mechanical and Materials Engineering.

"Five years after a group of dual-mission and teaching-mission faculty members first conceived of the idea, today's announcements bring to life with real examples the power and promise of a teaching path to tenure," says **Mark Richman**, WPI's secretary of the faculty. "At this historic moment, we should congratulate our newly tenured colleagues for their outstanding achievements; we should be proud of the WPI faculty, administration, and board of trustees for their forward thinking; and we should redouble our efforts to share our institutional model with all colleges and universities looking to properly value the contributions of their teaching faculty."

—Lisa Eckelbecker

AWARDS, HONORS, AND RECOGNITIONS

New Leadership at Office of Technology Commercialization

Terry Lopaka Adams, an accomplished leader in intellectual property protection, management, and marketing in both the commercial and academic sectors, has been named director of the Office of Technology Commercialization. Adams was most recently head of technology transfer at Howard University, where he secured multiyear funding to establish business pitch and accelerator initiatives, built a program to identify technology partnerships and spur start-up businesses, and implemented an intellectual property management system. Adams will work with WPI faculty researchers, staff members, and students to identify, protect, and commercialize intellectual property while also encouraging innovation and entrepreneurship at the university, which had research expenditures of more than \$60 million in 2023. Adams also will manage a growing portfolio of more than 60 active intellectual property licenses plus relationships with nearly two dozen start-up companies that have spun out of WPI.



TERRY LOPAKA ADAMS

President Wang Named to State AI Task Force

Massachusetts Gov. Maura Healey named President **Grace Wang** to a newly created task force to study AI and its impact on the state's residents, businesses, colleges, and universities. Wang and 24 other task force members representing corporations, education, and government will begin working this month and will make recommendations in a report later this year. The governor created the task force by executive order to develop recommendations to leverage AI in large economic sectors in Massachusetts, including education, healthcare, life sciences, robotics, and financial services.



GRACE WANG

Award Recognizes WPI's Strength in Undergraduate Research

WPI received the prestigious Council of Undergraduate Research (CUR) 2023 Award for Undergraduate Research Accomplishments (AURA), underscoring the university's commitment to fostering a culture of innovation, inquiry, and academic excellence. CUR is a leading advocate for high-quality undergraduate student-faculty collaborative research and scholarship. The AURA acknowledges institutions that demonstrate exceptional support for undergraduate research and creative inquiry experiences in classrooms, teaching laboratories, and faculty-led research groups, highlighting dedication to empowering students to engage in meaningful research experiences.

New Director of Business Development Lab

Ardian Preci has been named inaugural director of The Business School's Business Development Lab. A seasoned entrepreneur and a leader known for his innovative mindset, he has expertise in software as a service, FinTech, and blockchain applications expanded companies both in the United States and abroad. His career is marked by skill in leading diverse teams across various regions, including the United States, Europe, and Asia, demonstrating his global outlook and adaptable leadership approach. Preci says he is eager to enhance the entrepreneurial community within the university and the broader Worcester region.



ARDIAN PRECI



K-9 JEWEL, LEFT, WITH OFFICER BRIAN LAVALLEE AND K-9 BELLA.



K-9 Bella Retires After Long Career of Keeping Campus Safe

Ordinarily, when a member of the WPI Police Department retires, they don't keep coming to campus several days a week. They also don't often get the chance to help train their successor. And they never, ever play tug of war with the new hire.

K-9 Bella, though, isn't an ordinary member of the police squad. In fact, this 9-year-old black Labrador Retriever—and what she's given the WPI community over the years—is pretty extraordinary.

A certified explosive-sniffing dog, Bella works in the background before, during, and after large events to make sure the area is safe. She has been at the side of her handler, Officer **Brian Lavallee**, since June 2016, when WPI became the first college in Massachusetts to have an explosive-detection K-9 unit.

When Bella retires this spring, K-9 Jewel—who began her explosive-detection training earlier this month—is poised to take the reins. Or leash, if you will. But Lavallee plans to continue bringing Bella to campus when he can.

"I'll still do training with her and keep her active because I don't want Bella to fall into a depression," Lavallee says. "She's been working hard for almost eight years and she enjoys it. To her, the work is a game of hide and seek."

Both Bella and Jewel came to WPI via Guiding Eyes for the Blind. They spent the first year and a half of their lives in a household setting with puppy raisers who socialized them and provided basic obedience training. Dogs who are especially curious and highly motivated by food, like Bella and Jewel are, become candidates for police work instead of finishing the service dog program.

Prior to 2016, WPI relied on Massachusetts State Police dogs to work at large campus events such as Commencement, Move-in Day, and national robotics competitions. There was no guarantee that other dogs would be

available when WPI needed them, though, so Sgt. **Michael Jacobs** talked to university leadership about starting a K-9 unit here.

Since Bella first earned her New England State Police Administrators Conference (NESPAC) certification, she and Lavallee have conducted security sweeps at more than 750 campus events and responded to about 30 suspicious package reports. "With Bella's explosive-detection abilities, we can very quickly get a sense of whether there's a real concern in an area," says Chief **Steve Marsh**.

Of course, you can't identify every potential safety threat with a dog, Jacobs notes. "But having Bella has been the easiest way that we can help render this campus safe. What a bomb-detection canine can bring to the university is unmatched by anything else," he says. "Plus, Bella has done a great job humanizing us and making our officers a little more approachable."

In fact, community outreach has been a central part of Bella's duties. She and Lavallee have participated in nearly 900 small-scale campus events, including student safety talks and meet-and-greet sessions with prospective students. Over the years she has also been called dozens of times to help other law enforcement agencies with security sweeps and investigations. She and Lavallee have patrolled at large public events like the Boston Marathon and the Fourth of July celebration at Boston's Esplanade.

But the WPI campus is Bella's happy place. Likewise, she sheds a trail of smiles wherever she goes on Boynton Hill.

WPI's Commencement on May 10 will be Bella's last event on active duty. "At the end of the day, just like I do now," Lavallee says, "I'll take the leash off and release her into the backyard so she can be a regular dog."

—**Mia Lumsden**

LIVING WITH FRACKING IN ALBANIA

See how WPI students put theory into practice through projects.

PROJECT

▫ **THE STUDENTS:** **Samuel Darer '24**, **Sara Frunzi '24**, and **Alexandria Sheehan '24**, who won first place in the 2024 President's Interactive Qualifying Project Awards for their project "Living with Fracking: Women's Narratives from Zharrëz, Albania."

▫ **THE ADVISORS:** Instructor **Robert Hersh** and Assistant Professor **Leslie Dodson**

▫ BACKGROUND:

From the final report's executive summary: "Zharrëz, Albania, is home to Europe's largest onshore oil fields. Bankers Petroleum has invested heavily in the modernization of existing oil infrastructure, introducing fracking to the oil field in 2006. Fracking is an underground drilling process to extract hydrocarbons, such as crude oil and natural gas. Its process begins with vertical or angled drilling of a well more than 5,000 feet underground to the layer of gas-rich shale. Once the well reaches the hard shale rock where hydrocarbons are trapped, horizontal drilling begins and can extend for miles. When this is complete, a perforated gun loaded with explosive charge is sent into the horizontal portion of the well to create small holes in the casing (Denchak, 2022). Fracking fluid—a mixture of water, sand, and other chemicals including methanol, ethylene glycol, and propargyl alcohol—is then injected into the well under extremely high pressure to create fractures in the shale rock formations. The chemicals in fracking fluid are considered hazardous to human health (Denchak, 2022)."

▫ THE METHODOLOGY:

For this IQP, which was sponsored by the United Nations Development Programme in Albania, economic science major Sheehan, chemistry major Darer, and mechanical engineering major Frunzi interviewed women who live near the largest onshore oil field in Europe. The students, who worked out of the Tirana, Albania, project center, focused on the women's own experiences to help describe the impact of oil fracking on the quality of life in the region. The women painted a bleak picture of a region where water is unusable, air pollution makes residents feel sick, the land is visibly contaminated from oil deposit wells, agriculture has been hindered, and compensation for damage to homes caused by fracking-induced seismic activity has been inadequate.

Sheehan says she and her teammates were focused on their research and the women who entrusted them to share their stories. "We felt it was our duty to put ourselves as close to 'in their shoes' as possible," Sheehan says. "We were greeted with grace, warmth, and welcoming. Our part was to amplify their voices."

▫ THE OUTCOME:

Given this powerful experience and the compelling narratives of the women, the students wanted others to have the same research tools to apply to future disaster risk management planning. They created a narrative elicitation guidebook detailing the activities they developed and produced a synopsis of the frameworks they utilized. The IQP team also produced a multimedia exhibition of the women's stories including photos, quotes, and narratives.

"The sponsor was very impressed with the participatory methods the students used to obtain life stories from the women of Zharrëz," Hersh says. "The sponsor will use some of these methods going forward. Also, the students established a wonderful rapport with the women they interviewed, and this was clear during the final presentation in Albania, which the women attended."

—**Jon Cain**

SOL GIESSO EDUCATES AND EMPOWERS TO FIGHT CLIMATE CHANGE

It's easy to get discouraged these days by news of climate change and the environment. But **Sol Gieso '23, MS '24**, isn't one to take the easy route.

In fact, after finishing her bachelor's degree in environmental and sustainability studies a semester early, she immediately—and literally—dove into coursework for a master's in community climate adaptation. Gieso spent C- and D-Terms doing fieldwork for her Graduate Qualifying Project (GQP) in the U.S. Virgin Islands.

While she was there, she took Open Water Scientific Diving at the University of the Virgin Islands and earned her scuba certificate, which she hopes to use as a volunteer on coral restoration projects in the future. "Plus, I love seeing the sea turtles and squid and rays," she says.

A native of Argentina, Gieso grew up in Buenos Aires until she was 12, when her family moved to Miami. "In Miami it clicked for me that I wanted to do something having to do with the environment," she says, noting that she was fascinated by the natural world in her new home. "The ocean is such a big part of the landscape there, and seeing sea turtles and mangrove restoration and seagrass made me really interested in ecology."

The more enamored she became by the South Florida environment, the more she understood how precarious it was. The 2017 hurricane season snapped this into focus for Gieso, who was 15 when Hurricanes Irma and Maria tore through the Caribbean just two weeks apart.

"I remember how clear the ocean was after. Usually, it looks dark blue due to the seagrass and algae and sea life. But the water looked dead because the marine life had been washed ashore," she says. "We were not allowed to go into the water because the sewage plant leaked due to the hurricane. It really made me think about the far-reaching consequences of natural disasters."

She later took an environmental science class and loved the way her teacher incorporated hands-on projects into the coursework. When Gieso began looking at colleges, she was drawn to WPI's focus on project-based learning.

Here her interest in ecology has blossomed into a passion for environmental education. She hasn't been deterred, though, by the fact that WPI doesn't have a formal program in the field. "I've always tried to channel it through my other classes. Whenever I have a final project, I make it something related to environmental education so that I get to build on the stuff that I really care about," she says.

For the final project for her Sustainable Cities class, for example, Gieso wrote and illustrated a children's book *The Journey of Trash*, which chronicles the path of a plastic toy that gets tossed in the garbage. And during her junior year, she designed an independent study on environmental education with Robert Traver, a (now retired) teaching professor in the Department of Integrative and Global Studies.

Ready for Challenge

But Gieso isn't only passionate about environmental education. She also likes a challenge. So when Stephen McCauley, co-director of the Global Lab, encouraged her to apply to Projects for Peace—a not-for-credit program that awards students \$10,000 to create and execute a project that promotes peace and understanding anywhere in the world—Gieso was all in.

Her project, "Empowering Immigrant Voices in the Fight for the Environment," was one of 100 winning proposals from undergraduates across the United States in 2023. She designed it to address both "the global environmental crisis and the need for diverse individuals to solve it," drawing heavily on her personal experiences as an immigrant in Miami.

"Those kinds of classes aren't usually offered in public schools in South Florida, so if you have an interest in the environment, it's usually treated as a volunteering opportunity rather than a possible career path," she says.

Gieso also remembered struggling with the college application process, which is very different in the U.S. than in Argentina. "My parents didn't know anything about how to apply to college here. There are so many expectations in terms of extracurriculars and writing good essays," she says. "With my Project for Peace, I wanted to help students make that jump from something they're interested in to something they have a good background in, to help when they're applying to college."

Eight high school students from the Miami area participated in Gieso's program last summer. It was, essentially, a crash course for teens considering a career in environmental issues. Gieso led field trips to natural settings around South Florida and the group met with academics and activists working on a range of issues, from beach cleanup to sustainable building materials. For the final assignment, each student designed a small-scale project that they could implement at their school or in their neighborhood, with funding from Gieso's Project for Peace award.

"I modeled it on an IQP proposal but scaled it down for high school students," she says. "They each came up with a goal and objectives and then described what the steps would be and the methods they would use. They loved brainstorming what they would need to do to make it happen."

Educating and empowering others is, in fact, what keeps Gieso from getting overwhelmed and disheartened about climate change.

"I'm trying to give students the tools they'll need to make changes," she says. "It's on a small scale, but it's something I can do. And little by little I do my best to support bigger efforts."

—Mia Lumsden



INSIDER

DOMINIC GOLDING

TEACHING PROFESSOR, GLOBAL SCHOOL
DIRECTOR, LONDON AND NANTUCKET PROJECT CENTERS

PHOTO BY JAMES CASEY

DESIGN MUSEUM BOOK
This book was the final project for an IQP team that worked with the Design Museum, a contemporary design museum in London. I've been director of the London Project Center since 2010.

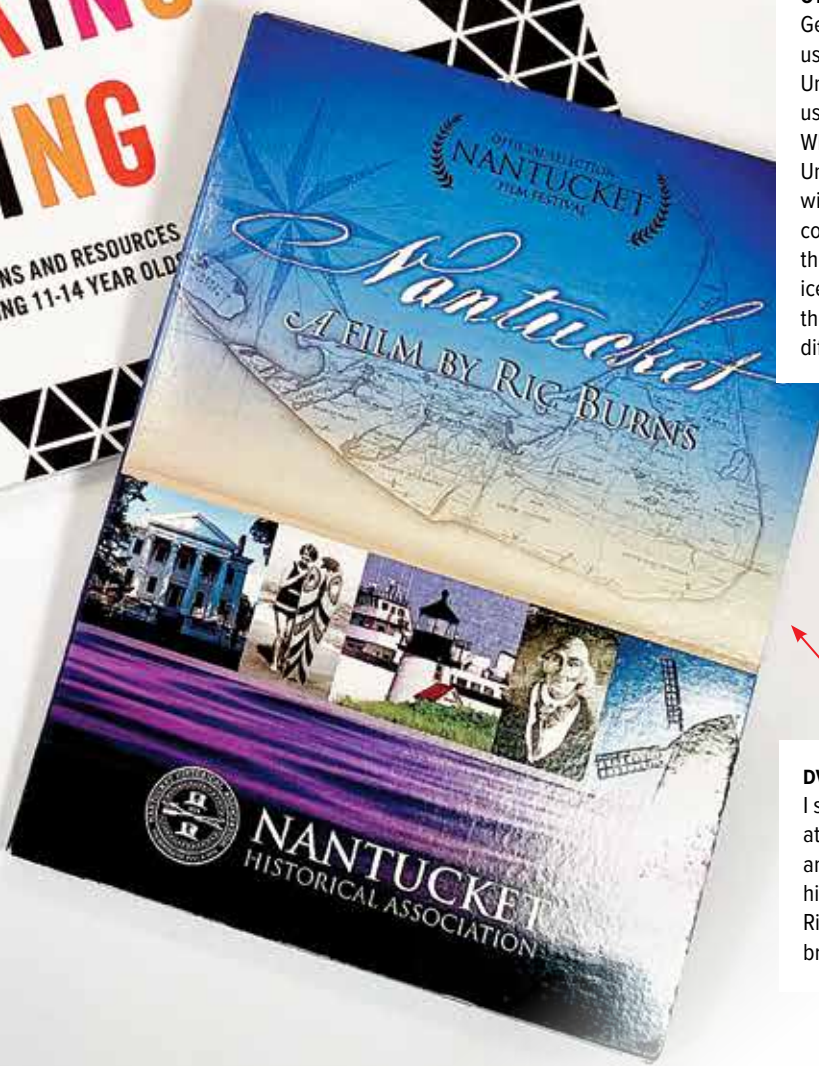
MARMITE
Marmite is an English food spread made of yeast extract left over from the brewing process. Its marketing slogan "Love it or hate it" is appropriate. I love it. Eating Marmite is as common for an English kid as eating peanut butter and jelly is for a kid in the United States.

DECAL
ACK is the FAA location identifier code for Nantucket Memorial Airport. I've been the Nantucket Project Center director since 2010.

ROCKS
These are chalk and flint stones common in the landscape of South Downs, hills located on the southeastern coast of England. I often take students to this area to talk about the unusual topography, since it's not that far from London.



OYSTER CARD
Getting around London is easy using an Oyster Card for The Underground, the equivalent of using a Charlie Card for the MBTA. While not as bad as the T, The Underground has its own issues with delays. I ask students to complete a 1,000-piece puzzle as an icebreaker so they get to know the system better. It's a very difficult puzzle.



DVD
I show *Nantucket* to the students at the project center to give them an overview of the island and its history. This documentary is by Ric Burns, the lesser known brother of Ken Burns.



FACULTY SNAPSHOT

Get to know faculty through items they have in their offices.



Events Director **Bill Battelle** and Director of Presidential & Institutional Events **Jennifer Parissi-Forti** on exciting changes to Commencement 2024.

Why is Commencement moving to the DCU Center this year?

BB: This move has been in discussion for several years, driven mostly by campus space constraints and attendance inequities. The Quad ceremony limited the amount of chairs under the tent and the past few years have yielded only four tickets per undergraduate student. In contrast, our 2024 undergraduates will receive eight tickets. As our graduating classes expand—both undergraduate and graduate—we have flexibility within the space the DCU provides.

JP-F: Additionally, being in New England, we always have weather to factor into our planning. The climate-controlled space means a safe and comfortable ceremony for all our students and guests. The DCU gives us improved peripheral amenities such as ample parking, ADA accommodations, restrooms, and concessions.

How will WPI's well-loved traditions, such as the procession over Earle Bridge, be maintained?

JP-F: We've heard from many campus constituents, from students to alumni, that they want to keep WPI Commencement traditions intact. Our committee members were excited to take on this challenge and we have collaborated with students, faculty, staff, and alumni to make sure we were hitting the mark. The Earle Bridge crossing will happen, with graduates in regalia, a few days prior to Commencement and the procession will lead into Convocation (formerly called Baccalaureate). WPI faculty will still line the bridge to congratulate their students and our Marketing team will film this tradition, and that will be shown at the DCU Center on May 9 and 10 for families and guests. With this change, we hope to find ways to introduce new traditions that will make the DCU Center an extension of our campus.

BB: Changing Baccalaureate to Convocation means we are able to celebrate both graduate students and undergraduates in unity and expand on the talent within our student population. This opens up the opportunity for our students to gather with faculty and each at a social afterward.

What are some of the challenges that come with Commencement changing this year?

BB: One of the biggest challenges with this change was how to give the DCU Center a WPI feel and presence. The planning committee has been meeting since May 2023 with DCU staff and the numerous local colleges who use the facility for their ceremonies. Logistics—such as transporting our physical resources, students, faculty, trustees, and volunteers, working with teams that are unfamiliar with our traditions, new technology vendors and bringing our “campus downtown”—has required more discussions and walkthroughs than has happened in the past.

With Reunion activities starting immediately after Commencement, what are the advantages and opportunities for our new graduates?

JP-F: Reunion activities will kick off Friday evening following Commencement so that members of the graduating class have the opportunity to experience Reunion Weekend as alumni for the first time. They and their families will be welcomed by the WPI alumni community and learn firsthand about the global WPI community of which they will then be a part. The Office of Lifetime Engagement and the Alumni Association will have special opportunities for new graduates and their families, such as special campus photo spots throughout Thursday and Friday, a social reception on Friday evening, and other opportunities on Saturday.

What are you most excited about this year?

BB: Each year's Commencement ceremonies have their unique qualities and the fact that we've added new wrinkles and enhancements to our existing programming makes it fun to plan and support. It keeps our attention laser-focused and adds excitement to both new and existing traditions that hopefully will be embraced and supported for many years to come. Working with such a dynamic group of people with extensive knowledge and creativity helps define each and every commencement ceremony year after year. It never gets old! I have personally participated in almost 30 WPI Commencements, and working with [Assistant Vice President for Student Affairs] **Greg Snoddy** for many of those years has uniquely positioned me to work with Jenn and our Core Commencement Committee as we trailblaze the next several years. There are dozens upon dozens of hard-working, highly qualified staff that nurture the soul of WPI and support our university's goal of graduating talented and highly motivated students to lead and make a difference wherever life takes them, and we're blessed to see it from their very first steps at graduation.

JP-F: Commencement 2024 brings a lot of excitement for me on both a personal and professional level. I am honored to be following in the footsteps of Greg Snoddy, after his many years of chairing the Commencement team, and taking this prestigious and milestone event into the future. This year, I will also witness my son cross the stage, as well as my first group of Insight advisees. The Class of 2024 has come a long way. I am thrilled they'll have their moment in the spotlight and be the ones to usher in this new tradition. Change isn't always comfortable, but I know we have a great team and supportive community, and I am looking forward to making the DCU part of the experience.

PHOTO BY MATTHEW BURGOS



ILLUSTRATION BY JONATHAN D. REINFURT

GLOBAL IMPACT

BUILDING CONFIDENCE WHILE HELPING THE ENVIRONMENT

One of WPI's newest project centers is only two hours from Worcester, but students who go there get their horizons broadened nonetheless. Quite literally, in fact.

The White Mountains, New Hampshire, Project Center, located in Lincoln, hosted its first full cohort of 16 students during A-Term in 2023 after a pilot program the year before. The four student teams worked on projects that will help visitors to the White Mountains enjoy safe and responsible recreation. Project center director **Corey Dehner**, associate professor of teaching in the Department of Integrative & Global Studies, found inspiration for the new project center during the 2021–22 academic year.

"The mental health crisis at WPI made me acutely aware of the need to help our students reconnect with nature and slow down," Dehner says. She wanted to help establish a project center where students would be able to build their confidence, leadership abilities, and sense of community while also doing something good for the environment.

That environmental focus was one of the main reasons junior **Katelyn Beirne** was interested in doing her Interactive Qualifying Project in New Hampshire this fall. "There are a lot of really cool IQPs that focus on something cultural, but they weren't as outdoorsy as I wanted," says Beirne, a data science major who grew up on a small farm in Massachusetts. "I knew I wanted to get outside and do something to help the environment."

Her IQP team developed lesson plans to teach a variety of audiences the 10 essentials to bring when hiking in the backcountry, as well as basic outdoor etiquette centered around the principles of Leave No Trace. Not only did the project let her spend lots of time outside, it gave her the opportunity to pay forward her love of nature by helping others learn to be better environmental stewards.

The other IQP teams at the project center this fall developed conservation information specific to New Hampshire's alpine zone that hikers can access in four languages through a QR code on trail signs; designed and set up a physical site where forestry staff will lead hands-on ecology lessons with middle school

students; and created a series of short educational videos about "recreating responsibly" that the White Mountain National Forest can share with visitors.

All students at the project center also participate in a wilderness ethics certificate program that's made possible through a collaboration between WPI, the World Trails Network, and the Waterman Fund.

"It's less based on professional skills and training someone for a specific career and more focused on helping students understand the externalities of whatever they do. I hope they will use this education to make informed decisions in their professions," notes Dehner. "The goal is also to help students develop a deeper connection to nature and realize the mental health benefits of spending time in nature."

To earn the certificate, students complete assigned readings and written reflections; participate in weekly fireside chats about various environmental topics with members of the local community; gain some perspective from the local Indigenous community; participate in a volunteer project within the national forest; complete a Leave No Trace training; and do a solo hike with reading and reflection.

Junior **Danielle Cook** especially enjoyed her solo hike to the summit of Mount Hedgehog, which gave her a real sense of accomplishment. Particularly memorable was a fireside chat with the head speakers of the Cowasuck band of the Penacook-Abenaki People, Denise and Paul Pouliot. "They spoke about their culture and beliefs from a scientific perspective," which impressed Cook, a biomedical engineering and professional writing double major. "It struck me because they were talking from a very fact-driven place and weren't pushing any religion."

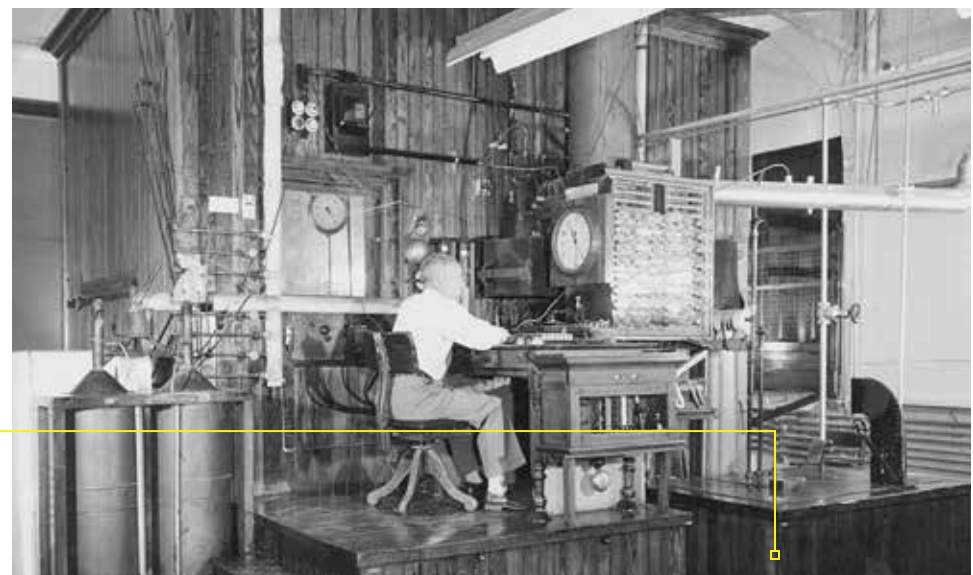
Gaining an appreciation for local knowledge and traditions, especially from Indigenous perspectives, is an important part of what Dehner wants students to take with them from this project center. Along the way, she hopes that a transformative time in New Hampshire will ultimately help students see and value what's in their own backyards.

—Mia Lumsden

PHOTOS FROM WPI ARCHIVES



THE ARCHIVIST



AT LEFT, HENRY PRENTISS ARMSBY AS A STUDENT IN 1871. ABOVE, HE OPERATES THE ARMSBY RESPIRATION CALORIMETER, WHICH MONITORED A FARM ANIMAL'S METABOLISM.

WPI'S FIRST VALEDICTORIAN: HENRY PRENTISS ARMSBY, CLASS OF 1871

The youngest member to enroll in WPI's inaugural class, **Henry Prentiss Armsby** was a serious student whose dedication to academics earned him the nickname "The Professor" among his classmates. He commuted daily from his home in Millbury, Mass., and spent little time on athletic or social activities, preferring to immerse himself in his studies. His dedication was rewarded by Principal Charles O. Thompson at the Institute's first commencement, where he was recognized as the graduate with the highest average examination score.

After graduation, Armsby accepted a position in the Chemistry Department, becoming WPI's first alumnus employee. He would leave Worcester the following year to continue his education. Armsby spent time at Leipzig University in Germany before earning a doctoral degree from Yale, under the direction of the esteemed agricultural scientist Samuel W. Johnson. After earning his doctorate, he declined an offer of a professorship in South Africa, telling his mentor Thompson in a letter that he preferred to stay as the newly appointed chemist at the Storrs Agricultural School (now the University of Connecticut) to complete his current research. That research, published in 1880, was titled

"A Manual of Cattle Feeding: A Treatise on the Laws of Animal Nutrition."

Armsby's work revolutionized agricultural practices and led to the development of Agricultural Experiment Stations across the United States. In 1887, he was selected to organize and direct the Pennsylvania State College Agricultural Experimental Station, which he led until his death. In this role, he made his most important contribution to agriculture, developing the Armsby Respiration Calorimeter in 1899. This device monitored an animal's metabolism to determine the net energy of food used to produce meat or milk for human consumption.

When he arrived in College Station, Pa., Armsby found a "struggling little school" with an enrollment of only 68 pupils and less than 200 living alumni. When he died 34 years later, the school had earned a reputation as one of the leading agricultural research institutions in the world, all made possible via the work of WPI's first valedictorian. Upon learning of his death in 1921, WPI recognized Armsby by awarding him the Institute's first honorary doctorate degree.

—**University Archivist Arthur Carlson**, assistant director, George C. Gordon Library



HENRY PRENTISS ARMSBY IN 1906.



A PROCESS IN BOTTLES

These bottles in the 15 Sagamore Road lab of Yan Wang, William B. Smith Professor in the Department of Mechanical and Materials Engineering, represent the stages of the lithium-ion battery recycling process that Wang has pioneered. From left, after shredding, spent lithium-ion batteries are sieved to obtain **spent metal**, **spent polymer**, and **black mass**. The black mass is dissolved to form a **metal sulfate solution**. From there, **precursor** is precipitated then converted to final **cathode** materials for new lithium-ion batteries. In the meantime, **spent graphite** can be recovered. **The recycled graphite** is used as the anode materials for new lithium-ion batteries.

PHOTO BY MATTHEW BURGOS



PHOTO BY ABIGAIL EBB



THE RACE FOR THE 'AULD MUG'

Liam Shanahan '18 combines engineering and sailing skills to elevate the 37th America's Cup challenge.

BY SCOTT WHITNEY

FOR OVER A CENTURY,
THE AMERICA'S CUP TROPHY
SAT CLOISTERED IN A
WOOD-PANELED ROOM AT
THE NEW YORK YACHT CLUB,
ENTIRELY UNTOUCHED BY
HUMAN HANDS.

More than just an antique curiosity, the silver pitcher known as the "Auld Mug" represents what may be the most challenging competition in international sports. After a historic upset sent the trophy to Australia in 1983, the America's Cup has changed hands six times and is currently under the stewardship of the 2021 champions, the Royal New Zealand Yacht Squadron. This coming fall, the 37th America's Cup race will decide which country will host the "Auld Mug" next.

Few sporting events capture a sailor's imagination more than the America's Cup, and **Liam Shanahan '18** counts himself among the enchanted. However, during this year's competition in Barcelona, Spain, he will be more than just a spectator. As an engineer on the American Magic team, Shanahan hopes that his handiwork will help bring the trophy back home to its original home in New York.

His path to this moment may have been paved with a little good luck, but to those who know him, his success comes as no surprise. In fact, Shanahan's passion for sailing began almost 20 years ago, when he started skimming across Lake Winnepesaukee's sun-dappled waters as a 10-year-old boy—with a stop on the WPI campus along the way.

LEARNING THE ROPES

Shanahan was feeling the pressure. It was his junior year in high school, and he needed a winning idea for the upcoming Massachusetts State Science Fair. He struggled to find a project that felt both winnable and personally exciting. "My friends were testing things like cancer prevention in dragonflies, or the effects of fetal alcohol syndrome. My biology teacher noticed I wasn't very motivated by those topics and asked, 'What's something you really care about?'" After a little thought, Shanahan offered, "Well, there are these new sailboats that interest me."

Several years prior, one of Shanahan's neighbors noticed his interest in sailing and offered him a Sunfish dinghy in need of repair. He patched the craft and set sail for a summer of watery adventure. "I fell in love with the freedom," he says. "As a 10-year-old kid, I could take this boat out and go for miles, exploring the lake by myself." The experience spurred him to join a junior racing program, where he soon became an instructor for other nascent sailors.



His young imagination was soon captivated by the AC72, a foiling yacht known to fly at high speeds just above the water's surface. The AC72 also featured rigid sails, an alternative to traditional canvas sails, and Shanahan was curious as to how much speed this innovation brought to a racing yacht. "These sails look like the wing of a 747 standing upright," he explains. "I wanted to measure how much more performance you could really get out of them." However, to run the experiments he had in mind, he would need a knowledgeable mentor to guide his research. His high-school teacher knew just the person: enter **Ken Stafford**, a WPI robotics engineering professor and fellow sailing enthusiast.

Shanahan reached out to Stafford and explained his idea to compare various sail designs. His would-be mentor was more than happy to lend a hand, but quickly dismantled the idea that winning was the ultimate goal. "I asked Ken, 'Ok, how can we pull together a project that'll win?'" recalls Shanahan. "His response was, 'Who cares about winning? Let's do something fun!'" Stafford's appeal landed, and Shanahan leaned into learning for learning's sake. The duo developed sail models in various materials and tested them for lift and drag in a wind tunnel at WPI. Their work merged two interests that the young Shanahan had not previously considered compatible: a love for sailing and an emerging interest in engineering. "Up to that point, I thought engineering was a pretty stiff subject, but the work I did with Ken sparked my interest—and opened my eyes to WPI," he says.

Stafford thought of Shanahan as more than just a high-school student executing a school project; he saw a future engineer and sailing professional in the making. "I've never seen someone with so much confidence and tenacity," Stafford recalls. "He knew what he wanted, and that I was the guy who could get him there." He introduced his mentee to the science behind good ship design, including fluid dynamics and the fundamentals of aerospace engineering. Their work paid off when, even without it being the original goal, Shanahan won first place in the Massachusetts State Fair regional competition. Soon after, he received his acceptance letter from WPI.

As a student at WPI, Shanahan followed his passion for sailing, a pursuit that kept him in Stafford's orbit. He joined the sailing team, for which his mentor served as the faculty advisor, and he quickly rose

PHOTOS BY TY BAIRD, AMERICAN MAGIC



LIAM SHANAHAN '18 WORKS ON THE AMERICAN MAGIC, AN AC75 RACING YACHT THAT WILL PARTICIPATE IN THE 37TH AMERICA'S CUP IN BARCELONA, SPAIN, THIS FALL.

THE 75-FOOT AMERICAN MAGIC HYDROFOIL RACING YACHT IN BARCELONA, SPAIN.



“ YOU CAN MAKE AN INSANELY FAST BOAT, BUT IF YOU CAN’T EXTRACT ALL THE PERFORMANCE BECAUSE YOU CAN’T REACH THE BUTTONS, YOU’RE WASTING POTENTIAL. ”



in the ranks. “Even as a freshman, he was a rock star on that team,” says Stafford, noting that Shanahan became the team’s skipper much earlier in his academic career than is typical. “Liam understood the science of sailing, but he also understood the art of it, which is baffling to a lot of scientists.”

When it came time for Shanahan to select a Major Qualifying Project, Stafford invited him to join his SailBot team. Combining robotics engineering with the rigors of sailing, the SailBot project required students to build a one- to two-meter boat capable of both remote and autonomous sailing. The team’s final design then competed in the challenging International Robotic Sailing Competition, a race that brings participants from as far away as Brazil. “With a typical mobile robot, you aim the wheels and it goes in that direction. But with sailing, you can point a boat in the direction you want it to go, but it won’t necessarily go there,” says Stafford. “It’s just not that simple.”

Shanahan threw himself into the SailBot challenge. While his teammates tackled the electrical engineering challenges posed by a network of sensors and a complex navigation system, he used his sailing know-how to make informed tweaks to the boat’s structural design. “I could contribute mechanically, designing sails and hull shapes, but to make a robot that could measure the wind, map its own course, and sail on its own, I really looked to some of the other guys on the team,” he says.

Over time, the team designed an autonomous watercraft that could chart its own course around buoys, correcting for wind speed and

adjusting ballast as necessary. Their design also borrowed heavily from Shanahan’s high-school science project, including a rigid wing option that had become standard in the high-speed sailing world. “The sail Liam designed as our back-up was so beautiful, I was worried,” says Stafford. “I told him, ‘You’ve messed it up! Your design is so good, no one’s ever going to want to try the canvas sail again.’” Not only did Shanahan and his team place first in the competition, they earned WPI’s coveted Provost’s MQP Award.

As Shanahan approached graduation and considered his career options, he kept in mind his experience with the Sailbot project. “I assumed that engineering had to be pretty dry, but the MQP helped me realize I could have a job that I actually like and is fun.” Through this lens, one aspiration remained his North Star. “The dream was to be an America’s Cup yacht designer,” he admits. Shanahan would soon learn another life lesson: Good things come to those who wait.

WHEN THE SHIP COMES IN

Despite Shanahan’s yacht-sized ambitions, his postgraduate career began on a conventional track. Shortly after graduating with a bachelor’s degree in mechanical engineering, he landed a job working for the U.S. Air Force as an aircraft systems engineer. Although the position helped him hone his practical experience, it also put into sharp relief what he wanted—and did not want—from his next career move. “Coming from WPI, I was used to a really fast pace, and I craved that intensity,” he says. In contrast, many of his co-workers were

nearing retirement, with a lifetime of engineering adventures already under their belt. He soon left the stability of his Air Force job for the uncertainties of freelance work. He and his fiancée moved to Salt Lake City, where he began networking with sailing and ski companies to win contracts.

His big break came while working on F50 yachts for SailGP, an international sailing competition that hosts Grand Prix races around the world. “I was one of the technicians who would fix the boats when they broke, and I was surrounded by the best sailors in the world,” he explains. “But it’s the same group of people in the SailGP circuit as you find in the America’s Cup circuit, so this was my foot in the door.”

In the fall of 2021, he received “The Call.” The American Magic team, which represents the New York Yacht Club, had assembled at their training base in Pensacola, Fla., and invited Shanahan to join them as a mechatronics engineer. If it was intensity he craved, he found it in his new position. During his first week, he unloaded shipping containers in a string of 12-hour days. The backbreaking work also introduced him to the American Magic team’s culture of equals. “Nobody is above the hardest work here,” he says. “The sailors are getting paid millions, and they’re mopping the floors. The COO is also right over there doing the heavy lifting with us.”

As the weeks passed, the complexity of his tasks increased, as did the gravity. “I told myself that I’d work as hard as I could when I got here. And then I arrived and realized, ‘Oh, that’s not enough,’” he says. “For the people I work with, this is the most important thing in the world. They brought me here because they needed a good engineer from a good school, but they’ve made sacrifices throughout their lives to be here.”

The 37th America’s Cup, to be held in October 2024, will feature the AC75 yacht, a 75-foot monohull with hydrofoils and no keel. The American Magic team hired Shanahan to design the wiring system for the ship’s steering wheel, an intricate interface that allows a ship’s helmsman to control many of the boat’s functions with the push of a button: Foils rise from the water; sails trim to match the wind’s direction. However, Shanahan’s responsibilities have come to include a redesign of the boat’s cockpit, from ergonomics to display layout. This role is especially important, given the innovation behind this year’s boat design.

In past races, a single helmsman would man two steering wheels—located on either side of the craft. As the ship leans, the helmsman and crew run to the boat’s high side to provide ballast. However, valuable seconds are lost in the time it takes for the helmsman to move from one steering wheel to the next. This year’s race will see most teams using two helmsmen, one for each steering wheel, who will be anchored in the cockpits—similar to the driver in an F1 race car. “My job is to make sure the drivers have easy access to their functions,” he says. “You can make an insanely fast boat, but if you can’t extract all the performance because you can’t reach the buttons, you’re wasting potential.”

Throughout its history, the America’s Cup has been as much a development platform as a sailing competition. From the introduction of the winged keel in 1983 to this year’s debut of a double cockpit, innovative designs are an essential part of the race. “The prestige is what drew me, but the development is what’s making me stay,” says Shanahan. “Because the boat changes radically from campaign to campaign, it makes for a fantastic sandbox for engineers.”

In the summer of 2023, the American Magic team relocated its base of operations to Barcelona, this year’s host city, in a move required for all competing teams. “Every morning when I bike to work, I pass the British and Italian teams. I can walk to the beach during lunch and see four boats going back and forth,” says Shanahan, noting how immersed he’s become in the America’s Cup culture. “Being here means experiencing the full gravitas of this event.”

Though Shanahan mostly watches his team’s trial runs from the shore, he keeps close tabs on how well his designs perform on the water. He outfits sailors with GoPro cameras to capture their experience in real time, and spends hours in a sailing simulator to replicate what the crew might feel in the heat of a race. However, no amount of data collecting, design tweaking, or on-the-water testing will entirely put his mind at ease. “I’m terrified that we’ll lose because the thing I designed failed, and that’s driving me to neurotic perfectionism,” he admits. And though the stakes for Shanahan may be high, his mentor’s perspective on what matters most is never far off. “Look, the bottom line is that I’m thrilled to be here,” he says. “What’s the point of life if you’re not doing what you love?”

PHOTOS BY TY BAIRD, AMERICAN MAGIC





DIGGING DEEP

To aid a fragile planet, alumni trio uses AI to improve scrap metal recycling in the face of growing demand.

BY ANDREW FAUGHT | PHOTOGRAPHY BY TONY RINALDO

The numbers tell the story.

Metal production—for everything from cars, to washing machines, to steel girders—creates 40% of all industrial greenhouse gas emissions, according to the National Institutes of Health.

40%

The challenge is becoming more pronounced by the year, as global demand for metal is expected to almost double by 2050. And so, too, will the stressors exerted on a fragile planet.

A trio of WPI graduates isn't standing idly by. **Emily Molstad '19, MS '19, Caleb Ralphs '20, MS '21, and Ben Longo '20** are the brains behind Worcester-based VALIS Insights, Inc., which is using artificial intelligence and machine learning in a groundbreaking bid to identify and recycle metals that—beyond producing harmful carbon emissions during manufacturing—also clog landfills.

The secret to improved recycling, it turns out, is buried deeply in data churned out by the nation's 565 scrap metal recycling businesses. It's information that, until now, has never been collected and analyzed in a way that not only stands to aid the environment, but also enables a multi-billion-dollar circular metal economy.

VALIS is piloting VALI-Sort, proprietary software that runs in concert with recyclers' existing sensor-based sorting equipment. The software logs every bit of metal that flows through sensors, documenting real-time usage trends in ever-changing metal markets. Recyclers then can more easily sort metals based on their profitability. (A separate software application under development, VALI-Melt, helps recyclers utilize various scrap sources to maximize recycled content in new products.)

"There's a lot of data, but it's not easy to use it, especially when it stops fitting on spreadsheets," says Longo, who wrote programming code for VALI-Sort. "We're getting all of that data in one spot, so people can use it effectively."

Common, in-demand metals, such as aluminum and copper—essential for making lightweight vehicles and for electrification—also stand to be more effectively recycled with the VALIS software.

DATA. DATA EVERYWHERE

In 2024, the role of Big Data can't be overstated. Every day, humans and machines across the globe create 2.5 quintillion bytes of new data, according to IBM—enough to fill 20 billion file cabinets. Amid the crush of information, VALIS's goal is to help recyclers identify "value creation" opportunities, ensuring that valuable materials don't end up in landfill, while also boosting their profitability. The environmental benefits are notable: recycled metal generates nearly 80% less emissions compared to newly created metals that

must be mined from ore. The technology stands to help address inefficiencies across the recycling value chain and recoup \$50 billion in metal annually, according to the company.

VALIS, a portmanteau for "value" and "intelligent sortation," is making headlines. CEO/COO Molstad and CTO Ralphs this year were named to *Forbes* magazine's "30 Under 30" list, which recognizes the "brightest young entrepreneurs, leaders and stars." (Longo joined the startup as its lead programmer in 2022, two years after Molstad and Ralphs built out VALIS from its roots at Solvus Global in Worcester.)

"Without our technology integrated with recyclers' equipment, basically all of the data is thrown away at the end of the day," Ralphs says. "What we do is pair that data with their inventory, with their procurement data, and with their sales data, so we can best understand the dynamics of their process. We can then tell them, 'Hey, this source provides you higher quality material, and this one provides you less quality material. You can expect to get this much zinc when you buy material from vendor A, and this much copper when you buy material from vendor B.'"

In the end, data is used by sales teams to augment and create new metal markets around the globe. The software is being piloted by Radius Recycling (formerly Schnitzer Steel Industries). Findings will help the founders further develop their technology, which ultimately could be used in other recyclable markets, such as plastics.

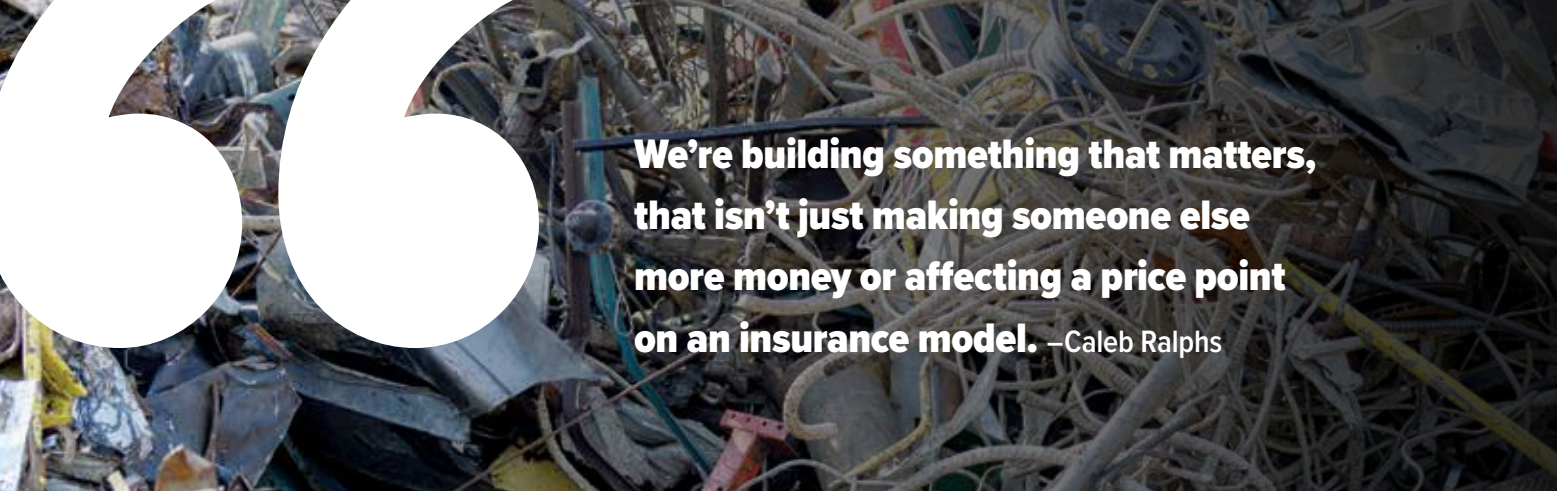
In 2023, Molstad presented its software at the Institute of Scrap Recycling Industries (ISRI) Convention & Exposition in Nashville, the world's largest recycled materials industry event, through a panel geared toward helping recyclers understand the power of software and AI applications. "We're enabling data-driven decision making so they can be confident that their processes are optimized even as material and market trends shift," Molstad says.

AN EARLY ITERATION

Ralphs and Molstad met while working as student interns at Solvus Global, which was co-founded in 2017 by former WPI engineering Professor **Diran Apelian, Aaron Birt, MS '14, and Sean Kelly '14, MS '16, PhD '18**, to create manufacturing technology innovations, including developing more sustainable methods to manufacture batteries. VALIS is one of five business enterprise units developed to date at Solvus Global.



FROM LEFT, EMILY MOLSTAD '19, MS '19, CALEB RALPHS '20, MS '21, AND BEN LONGO '20 AT RADIUS RECYCLING IN EVERETT, MASS.



We're building something that matters, that isn't just making someone else more money or affecting a price point on an insurance model. —Caleb Ralphs

During his sophomore and junior years, Ralphs worked at Solvus Global at the behest of Kelly, an adjunct instructor and lecturer at WPI who initially came up with the idea for VALIS following his doctoral dissertation (advised by Apelian) on automotive aluminum recycling. Ralphs performed data visualization and modeling for Kelly, creating an early iteration of VALI-Sort in Python computer programming language. Molstad worked in a materials engineering role at Solvus Global from 2018 to 2023.

Apelian, who retired from WPI in 2020 after 30 years (and who founded the Metal Processing Institute), is now a distinguished professor of materials science and engineering at the University of California, Irvine. He remains chairman of the board at Solvus Global, and he lauds his co-founders for running a “people-based” business. That’s always been Solvus’s lodestar, Apelian notes.

“There’s a lot of joy in building something from scratch and having it be your baby, but also at the same time making an impact, doing something that you enjoy, and knowing that people value it, and make money along the way,” he says.

In 2019, Molstad attended the National Science Foundation’s Innovation Corps (I-Corps), a seven-week experiential program that prepares scientists and engineers to extend their focus beyond the university laboratory. During that time, she took a two-month, cross-country road trip in which she visited scrap processing facilities and melt plants. In all, Molstad interviewed 150 industry players, “really getting an in-depth understanding of the language that’s spoken in recycling, and the challenges and needs.”

The founders have thus far secured more than \$3.5 million in funding from non-dilutive sources, including a Small Business Innovative Research (SBIR) grant from the NSF and Environmental Protection Agency (EPA). They’ve also received investment from Closed Loop Partners, the Massachusetts Clean Energy Center, and GS Futures, among others.

In 2023 the VALIS team began piloting its technology and once again hit the road to meet with recyclers. The travel not only served as a great opportunity to build relationships in the industry, but also to strengthen the team’s vision. During one notable trip, Molstad, Ralphs, and Longo ended up stranded in their Airbnb during a snowstorm. While the storm disrupted the original plans, it provided invaluable time for the group to brainstorm ideas for the nascent business.

The partners all have strong opinions about where to take VALIS, according to Molstad, but “we’re comfortable debating about topics without each other’s feelings getting hurt, because we’re respectful

of and centered on a common goal. We’re able to challenge each other intellectually and technically. We can always find a path that makes sense, that we can agree upon.”

AN EARLY LOVE OF NATURE

Molstad’s passion for doing right by the planet started as a kid in Connecticut. There, her grandparents’ home bordered the McLean Game Refuge, where she and her older brother, with walkie-talkies in hand, traipsed the natural wonderland and thrilled to tracking deer and bear. “My grandfather had laid old logs down to create a little entryway, and once we got past those logs, there was just a whole forest for us,” she says. “One of my most vivid memories was coming through a ravine and seeing a family of deer standing in the ferns. It was bright and sunny, and really magical.”

That love for nature inspired Molstad to pursue a career where she could have an impact in protecting the environment. She entered WPI as an environmental engineering major, but changed direction after taking a course called “Recycle the World,” taught by Apelian (and now by Kelly). Apelian says he created the class 15 years ago to lure and retain students interested in STEM fields. The course, an offshoot of the university’s Great Problems Seminar, addressed environmental, social, and policy issues around recycling, in an attempt to show students they had agency in a changing world. “Students could see why they were in school,” Apelian says. “It got them engaged and, more important, empowered.”

There, Molstad fell in love with materials science. Although WPI doesn’t offer an undergraduate major in materials engineering, she switched to mechanical engineering because it gave her a route to explore materials. She also minored in environmental sustainability studies, earning her master’s through the BS/MS program.

While women account for just a third of all employees in STEM fields, Molstad is undeterred in the face of occasional “mansplaining,” or the more frequent instances where she’s the only woman in the room (or on Zoom). She attributes her growth to the number of amazing mentors she’s received support from, but especially her mother. “My mom never let me doubt my capabilities in any capacity,” she says. “That was so empowering to me.

“People are sometimes surprised when I know what I know,” she adds. “But I’m glad to say that I’m seeing that less and less; there’s a lot of encouragement for women to build their careers, not only in STEM, but also in recycling.”



DREAMING BIG

Ralphs, for his part, brings data science and machine learning perspectives to VALIS. He grew up in Simsbury, Conn., where a friend asked him, then a high school sophomore, if he wanted to attend a computer science summer camp at Wesleyan University. It was an easy answer. Ralphs thrills to mathematics and problem solving. At the camp, he learned Java and the rudiments of computer programming. From there, he created “little game programs” on his own time. “I knew then that was the direction I wanted to go,” he says.

As a high school senior, the WPI lure was hard to ignore. Ralphs was drawn by admissions materials that stressed project-based learning and the fact that he could minor in the newly created data science program. When he met Molstad at Solvus, the pair saw business potential in metals recycling—and decided to dream big.

“I like owning the work that I’m doing and feeling like I’m delivering value and solving a problem,” Ralphs says. “We’re building something that matters, that isn’t just making someone else more money or affecting a price point on an insurance model.”

Coincidentally, the founders all lived in Daniels Hall, but Ralphs and Longo—who became close friends from their earliest moments at WPI—wouldn’t meet Molstad until their paths crossed at Solvus Global. These days, Ralphs and Longo are roommates in Cambridge, while Molstad remains in Worcester. The men share an office with a whiteboard, where “you’re staying up late, burning the midnight oil,” Ralphs says, “figuring out how to tweak a specific model or algorithm to meet a deadline.”

Ralphs’s project learning centered on creating cutting-edge computer models, which helped to give him acumen to forge VALIS. He says the data science capstone course he took as a first-year student was especially valuable, giving him critical skills in Python code.

Longo, a computer science major, similarly used his time at WPI to perform generative modeling—machine learning that relies on statistics and probability—to create traffic simulations. After graduation, he worked as a software engineer for Boston-

based Datto, Inc., and 128 Technology in Burlington, Mass., before joining Solvus Global. A native of Thetford, Vt., Longo always gravitated to mathematics and computer programming. WPI fed his natural sense of wonder.

“For as long as I can remember, I’ve tinkered with electronics and built stuff,” he says, noting he was particularly fond of Arduinos, hardware and software that allows creators to use microcontroller kits to construct digital devices. “I’ve always found a lot of fulfillment in that kind of thing.”

Longo says his best technological thinking time comes between 9 p.m. and midnight, when he dons a pair of headphones, queues up some Snarky Puppy tunes, and puzzles over the challenges at hand.

THE NEED FOR DATA

“Fundamentally, the first problem we want to solve is getting information about material through its entire lifecycle. That’s the challenge we’re really trying to push forward,” Longo says.

“When you’re talking about industrial data, there are a lot of steps that you need to do really well before you’re in a position where you can even start thinking about using AI,” he says. “Companies know they want to be using AI, and they know there’s a lot of power and value in using it, but ultimately—at the end of the day—any kind of machine learning or artificial intelligence needs data and lots of it. What we’re doing a really good job at is taking all the disparate data sources that are present in an industrial recycling context and making them joinable, so that statistics and artificial intelligence can be applied to that data.”

Apelian is pointed in describing why conquering these challenges is important to VALIS in particular, and to the environment in general.

“We’re in a completely different world today, where we’re creating so much waste,” he says. “Nothing is repaired. Electronics break down, you call the company, and they’ll send you a new one. Questions really need to be framed in that perspective, and to find means to create value from waste.” 📌





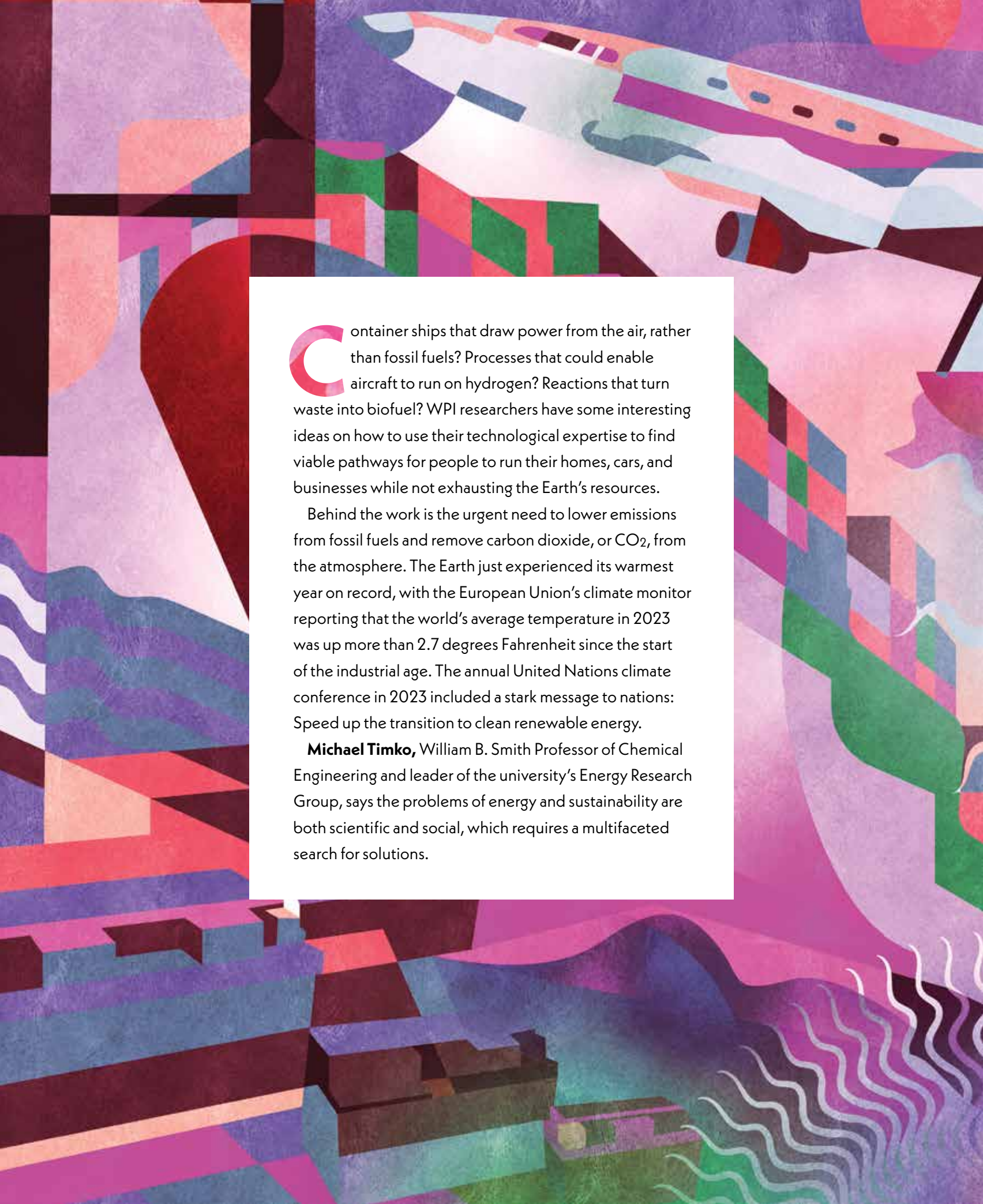
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CO₂

UNTAPPED ENERGY

WPI researchers use novel ideas to tackle the urgent need for clean energy.

BY LISA ECKELBECKER | ILLUSTRATIONS BY ALBERT ESPÍ



Container ships that draw power from the air, rather than fossil fuels? Processes that could enable aircraft to run on hydrogen? Reactions that turn waste into biofuel? WPI researchers have some interesting ideas on how to use their technological expertise to find viable pathways for people to run their homes, cars, and businesses while not exhausting the Earth's resources.

Behind the work is the urgent need to lower emissions from fossil fuels and remove carbon dioxide, or CO₂, from the atmosphere. The Earth just experienced its warmest year on record, with the European Union's climate monitor reporting that the world's average temperature in 2023 was up more than 2.7 degrees Fahrenheit since the start of the industrial age. The annual United Nations climate conference in 2023 included a stark message to nations: Speed up the transition to clean renewable energy.

Michael Timko, William B. Smith Professor of Chemical Engineering and leader of the university's Energy Research Group, says the problems of energy and sustainability are both scientific and social, which requires a multifaceted search for solutions.

"WPI researchers are tackling multiple aspects of the problem by focusing broadly on processes, materials, and modeling aimed at reducing the production of carbon dioxide," Timko says. "The research also acknowledges the importance of finding solutions that will benefit people in their communities. Climate change is a global problem, but solutions will need to make sense for communities as they deal with solid waste, water needs, infrastructure, jobs, energy costs, and clean air."

REINVENTING BATTERIES

Carbon is everywhere, and that's generally OK. Carbon is, after all, the fourth most abundant element in the universe—stored in the Earth's sediments and critical to the molecules that form living beings.

CO₂ is everywhere, too. People and animals exhale carbon dioxide when they breathe. Plants absorb CO₂ from the atmosphere and then release it when they decay. CO₂ in the atmosphere produces a natural greenhouse effect that keeps Earth cozy for plants and living beings.

Yet the growth of CO₂ emissions from human activities—burning carbon-rich fossil fuels to generate energy—is supercharging the greenhouse effect and climate change. Alternative energy sources offer cleaner options, but they also present challenges. Solar and wind power are carbon-free, but they only generate power when the sun shines and breezes blow. Batteries are needed to make the most of intermittent energy sources by storing the power for later use.

At their simplest, batteries store and convert chemical energy into electrical energy. Some materials used in those chemistries are rare, including lithium. Another rare mineral critical to many batteries, cobalt, has been mined in countries such as the Congo in ways linked to environmental damage and human rights abuses.

In the laboratory of **Yan Wang**, William B. Smith Professor of Mechanical and Materials Engineering, researchers have invented processes to recycle lithium-ion batteries from electric vehicles and produce new lithium-ion batteries without solvents. Wang has co-founded two companies to commercialize his research, including Ascend Elements, which has raised more than \$1 billion in capital since its start in 2016. The company has opened one battery recycling plant in Georgia, launched construction of a second facility in Kentucky, and signed multiple deals to supply materials to battery customers, including an agreement to supply recycled battery materials for Honda vehicles manufactured in North America.

But Wang also is examining another element for batteries: sodium. His lab has worked on processes using magnesium, a mineral that is abundant in the earth and in oceans, to improve the activity and structural integrity of sodium-ion batteries that might be useful for storing energy.



"There is only so much lithium in the earth, and demand for lithium is driving up the price of batteries," Wang says. "Sodium-ion batteries may never be as small and fast-charging as lithium-ion batteries, but they might be functional and affordable alternatives to lithium-ion batteries in low-end vehicles or renewable energy installations. Going forward, it will be critical to develop batteries without depending entirely on lithium."

Some of **Adam Clayton Powell IV's** research also is aimed at non-lithium technologies. Powell, an associate professor in the Department of Mechanical and Materials Engineering, has led work on a molten salt metal-air battery that might have the potential to power the massive container ships that transport the world's traded goods across oceans.

Unlike conventional batteries that rely on metallic electrodes, metal-air batteries draw oxygen from the atmosphere to interact with a metallic electrode and produce the chemical reaction that converts into electrical energy. Magnesium makes a good candidate metal due to its abundance in sea water, where it is second only to sodium. It also has a higher energy density than sodium or lithium in a metal-air battery.

"Container shipping accounts for nearly 3 percent of global greenhouse gas emissions," Powell says. "Ships can reduce their speed to burn less fuel, but that does not solve the fundamental problem of emissions. If a ship swapped out a small percentage of containers for large magnesium-air batteries, the ship could travel at its top speed without emitting carbon dioxide, and it might even be able to make more trips."

In the Department of Chemical Engineering, James H. Manning Professor **Xiaowei Teng** is working on a way to reimagine batteries with rust. His lab, along with researchers at the University of Louisville, University of Alabama, and Brookhaven National Laboratory, has created a prototype rechargeable battery with electrodes made of iron rust and stabilized with different common anions, including chloride.

The battery is designed so that ions move through a watery electrolyte solution that, unlike materials in flammable lithium-ion batteries, would resist catching fire. Teng says the new battery chemistry could lead to devices that could store large amounts of energy generated by renewable sources, including the wind and sun.

“Technology engineering for industry has often focused on making things that are bigger, faster, stronger,” Teng says. “In the 21st century, technology will also need to be environmentally responsible. That’s why it will be important to not just optimize existing battery chemistries, but to invent entirely new chemistries that are more sustainable.”

CLEANER HYDROGEN PRODUCTION

WPI researchers are also working to develop new materials that could enable hydrogen production and storage. Hydrogen represents a promising energy source because it is the most abundant element in the universe and, when burned, emits only water. Yet a critical barrier exists: Most hydrogen production currently requires the burning of fossil fuels.

Yu Zhong, associate professor in the Department of Mechanical and Materials Engineering, is researching chromium-resistant air electrode material in solid oxide electrolysis cells (SOECs) that would split water into hydrogen and oxygen. The project, with \$1.25 million in funding from the Department of Energy, ultimately seeks a way to produce hydrogen using electricity generated by renewable energy sources such as solar and wind power. Zhong’s lab is developing computational models for new materials and collaborating with researchers at West Virginia University on experimental work.



“It’s not enough to install a wind farm on a toxic site, because a community is still left with a toxic site. Offering a community a safe way to reduce its landfill and mitigate energy costs, however, could win support for a project.” –Michael Timko

“Current methods of generating hydrogen are not sustainable, especially for the levels of hydrogen needed to meet the energy demands of heavy industry,” Zhong says. “By linking renewable energy sources, such as wind and solar power, to installations of SOECs, it should be possible to produce hydrogen with much less fossil fuel.”

Much of the research into energy and sustainability at WPI has been funded by state and federal agencies, but corporate partnerships and philanthropy are playing a role, too.

Andrew Teixeira, associate professor in the Department of Chemical Engineering, focuses on micro-reaction engineering, and his work is core to WPI’s research collaboration with Honeywell Aerospace. While Honeywell has created its hydrogen fuel cell technology toward the electrification of the aviation industry, WPI’s researchers are engineering and modeling new solid hydrogen storage materials and reactors that safely power them. The research is aimed at examining how hydrogen fuel cells could power aircraft and reduce the carbon footprint of passenger travel, cargo airplanes, and unmanned aerial vehicles. Aviation accounted for 2 percent of global energy-related CO₂ emissions in 2022, according to the International Energy Agency.

Pratap Rao, associate professor in the Department of Mechanical and Materials Engineering, is using a \$70,000 one-year seed grant from the Gapontsev Family Collaborative Venture Fund (see related story on page 5) to develop a fiber-optic probe that could help researchers explore a process to break apart methane into hydrogen gas and a solid carbon material known as carbon nanotubes. His collaborators on the project are Teixeira and **Ceren Yilmaz Akkaya**, postdoctoral fellow, and **Yuxiang Liu**, associate professor, both from the Department of Mechanical and Materials Engineering.

The research arises from interest in improving ways of generating hydrogen for fuel. The process, known as methane pyrolysis, involves heating methane gas in the absence of oxygen to break the gas down into hydrogen and solid carbon, and typically requires high temperatures and a lot of energy. Adding a nickel catalyst to the process reduces the temperature and energy consumption, Rao says, and

directs most of the solid carbon to form carbon nanotubes. However, a fraction of the solid carbon produced by the process remains on the nickel catalyst surface and ultimately deactivates the catalyst and shuts down the reaction. The Raman spectroscopy probe that Rao’s team is developing will allow researchers to better monitor this deactivation and ultimately understand how it can be prevented.

“This is an important technical challenge with a potentially large impact, because hydrogen is a carbon-free fuel,” Rao says. “In addition, carbon nanotubes are a useful material that could be attractive in a number of industries. This one-year project to develop a new probe could open up a number of opportunities for research.”

REDUCE, REUSE, RECYCLE

Where others see waste, Michael Timko sees material that could become something better.

His lab has combined used cooking oil, water, and a catalyst called ZSM-5 in a heated, pressurized container to form industrial chemicals known as one-ring aromatics. Add pigments, and you’ve got paint. Another project has involved working with researchers around the world on a process to grind up bamboo, a fast-growing plant, and treat it with an enzyme to produce ethanol fuel for cars and trucks. Both projects aim to reduce the use of fossil fuels.

To address the amount of plastic trash floating in oceans, Timko’s lab has studied the feasibility of installing reactors aboard ships to convert marine plastics into fuel. The researchers concluded that ships could potentially self-power cleanups of debris such as the Great Pacific Garbage Patch by using a hydrothermal liquefaction process to produce fuel.

And Timko’s work on a patented process that converts municipal solid waste into fuel has spun out of WPI into a 2023 startup company that he co-founded, River Otter Renewables. The process involves adding a solvent to solid waste in a reactor, extracting liquid, and converting it to a biofuel that could be sold. It’s a technology that seeks to address an environmental challenge with engineering that offers social benefits to communities, he says.

“Solutions to the problem of clean, sustainable energy will need support from people where they live,” Timko says. “It’s not enough to install a wind farm on a toxic site, because a community is still left with a toxic site. Offering a community a safe way to reduce its landfill and mitigate energy costs, however, could win support for a project.”

Teixeira is working with Timko on a separate \$2 million project funded by the Department of Energy and the Massachusetts Clean Energy Center to engineer the optimal feedstock for a waste-to-biofuel process. The researchers are working with Idaho National Laboratory and RAPID Institute to examine feedstocks, the raw ingredients of the recipe, at the molecular level and using machine learning, a form of artificial intelligence, to determine the best feedstock attributes.

“We want to know what happens when we blend waste streams such as food waste and woody biomass, or maybe store waste for a period of time under acidic conditions before pressure cooking it in a hydrothermal reactor to extract fuel,” Teixeira says. “We are also studying the cost and carbon footprint of turning waste into fuel,



and whether the high temperatures and pressures of the hydrothermal liquefaction process might destroy PFAS, the ‘forever chemicals’ in consumer products that have been linked to health risks.”

An obvious thread running through many of the energy sustainability projects at WPI is collaboration, whether with academic or corporate partners.

Chemical Engineering Professor **N. Aaron Deskins**, whose research focuses on molecular modeling to address energy and environmental problems, has collaborated widely with WPI researchers, including with Teng on electrocatalysis and with Timko on a biochar that might be useful in filtering heavy metals from drinking water. Deskins also has worked with physics Associate Professor **Lyubov Titova** on MXenes, a class of inorganic compounds that form molecular sheets with many potential applications, including as battery electrodes.

“This field of research is at the core of what we as humans need to do to survive on this planet without destroying it,” Deskins says. “Computational modeling is valuable in advancing scientific discovery since we can model and screen hundreds of materials in a short time. But it’s also critical that we collaborate to validate in the laboratory what we predict in the computer.”

Collaboration matters, Timko says, because much work remains to be done to steer humanity to a better, cleaner future. WPI students and alumni, their families and friends, public and private research funders, and many others can play a role, he says.

“There’s nothing new about environmental concerns,” Timko says. “During the last 20 years, though, we realized we’re actually in a crisis situation. We cannot leave these problems to future generations and hope that they’ll invent miraculous technologies or find cheaper solutions. Countries and individuals are already spending billions upon billions of dollars to respond to disasters caused by climate change, provide clean water to people, and stabilize regions. We need everyone to get involved in this challenge.”





“Great Minds Scholars and its related programs resonated with us immediately. Providing deserving students exposure to a STEM education betters not just the individual but society as a whole. And, historically, GMS builds on WPI’s long-standing collaborative ties to the local community. In talking with some of the passionate educators and students involved with GMS, we could not think of a more important bequest to make in our estate plan.”

Dianna and John Robertson '80 have been loyal supporters of the WPI Fund for over 25 years. In 2023, they joined the Alden Society when they included WPI in their estate plans. Their strong desire to provide support to students who otherwise would not have the resources to attend WPI resulted in the creation of the Dianna L. and John B. Robertson '80 Great Minds Scholarship. WPI’s Great Minds Scholars program is designed to reduce financial barriers for students from low-income backgrounds. The Robertsons’ impact on the lives of these students is profound.

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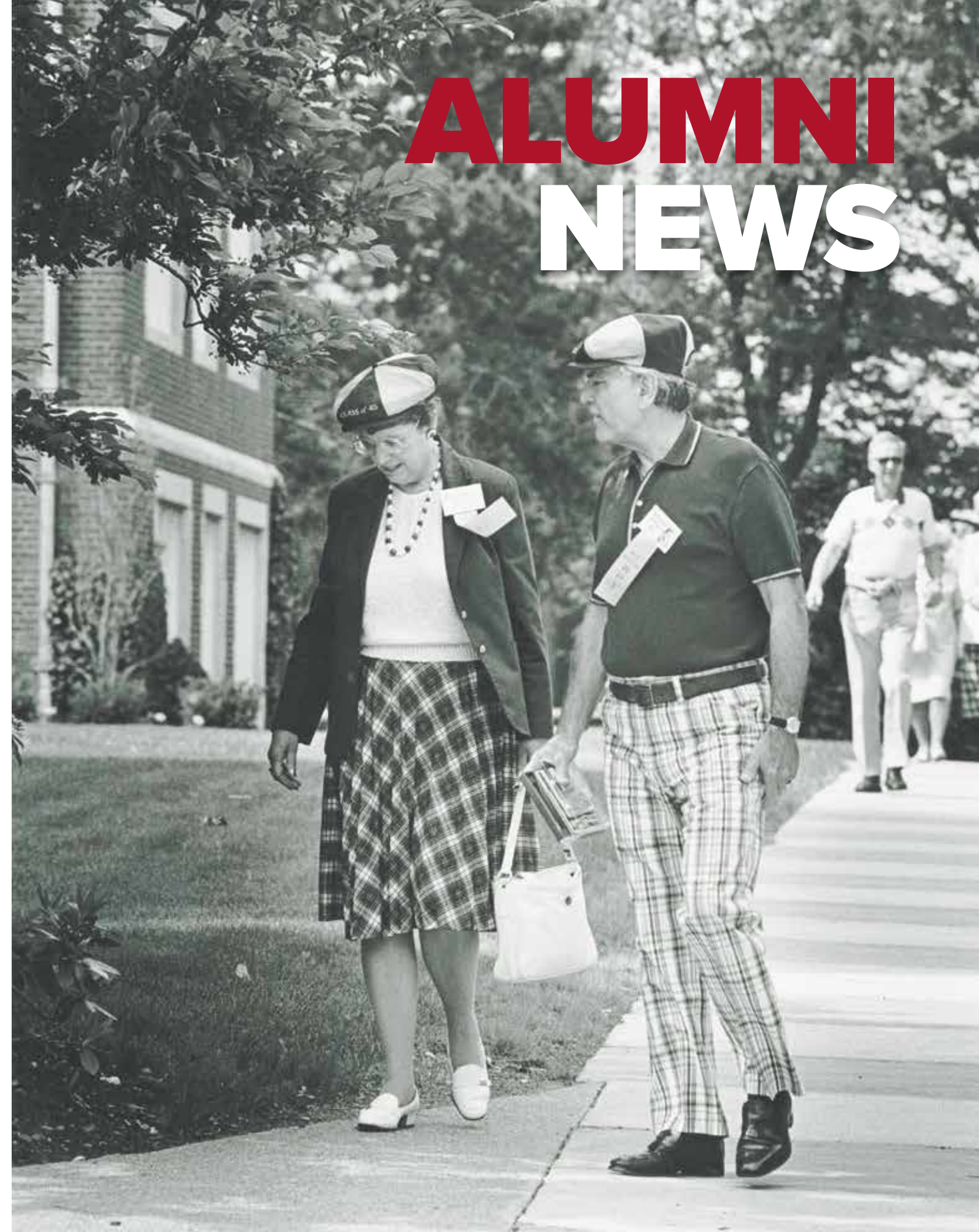
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ALUMNI NEWS



From the Desk of

ALUMNI ASSOCIATION PRESIDENT **PAMELA (GIASSON) LYNCH '05**

Dear Alumni,

As we approach an exciting moment in WPI's history, I am thrilled to share some highlights and updates with you. The upcoming Reunion Weekend, May 10-11, which for the first time coincides with Commencement ceremonies, promises to fill The Hill with unparalleled enthusiasm. This unique occasion presents a wonderful opportunity for all of us to come together on campus. I invite you to join us for the Alumni Association Annual Meeting on Saturday, May 11. We eagerly anticipate welcoming our new graduates into the vibrant alumni community.

Throughout this academic year, President Grace Wang hit the road to connect with our esteemed alumni, parents, donors, and friends across the country. The feedback from these visits has been nothing short of fantastic. From Massachusetts to the sunny coasts of Florida and California, and the bustling urban centers of New York City and Houston, the warmth and passion of the WPI community have left a lasting impression.

Reflecting on our journey, we set ambitious goals for 2023-2024, guided by the vision of fostering a vibrant and supportive community of WPI alumni. Here are some key focus areas:

- **Elevating the WPI Network:** We are committed to deploying targeted programming, such as the "Welcome to the City" initiative, designed to enhance the WPI network and create meaningful connections.
- **Celebrating Alumni Accomplishments:** Our aim is to shine a spotlight on the remarkable achievements of our alumni, thereby increasing awareness of the significant impact they have on society. Your successes are a testament to the excellence of the WPI community.



ILLUSTRATION BY ZOE PAPPENHEIMER

- **Engaging Active Volunteers:** We are dedicated to shepherding the engagement of both prospective and current active volunteers who generously give back to WPI. Your commitment to our alma mater plays a crucial role in shaping the future of WPI.

As we work toward these goals, I am inspired by the spirit of collaboration and unity that defines the WPI community. Together, let us continue to build upon our shared legacy and contribute to the success and growth of WPI.

I'm looking forward to celebrating the Reunion Weekend and Commencement ceremonies with you all. Thank you for your ongoing support and dedication to WPI.

Pamela



Ambassadors Help Bring Alumni Back to The Hill

From serving on an advisory board, sharing your expertise as a guest panelist, and judging at a project presentation day, to joining the Alumni Association, Voyagers (formerly Tech Old Timers), or The Women of WPI, there are many ways for alumni to engage with their alma mater back on The Hill.

Reunion Weekend Ambassadors conduct peer-to-peer outreach and encourage attendance at Reunion Weekend, and the impact of those efforts is far reaching. By rallying alumni to **Revisit** favorite campus spots, **Reunite** with friends and classmates, and **Relive** the traditions and memories that make the WPI experience special, ambassadors play a powerful role in growing and strengthening the WPI alumni community.

Sharing why he serves as a Reunion Weekend Ambassador, **Joseph McGinn '74** says, "As a local kid who spent nearly 40 of his 50-plus-year career here in Massachusetts and who is still active in WPI alumni and other campus activities, I enjoy the opportunity to welcome fellow graduates and alumni back to WPI and its traditions of alumni involvement with today's students. My dad,

Jack Gallagher (CE, 1950) was also a WPI graduate who remained active in his fraternity and alumni events."

As you may have heard, for the first time ever, Reunion Weekend will be held May 10 and 11 this year, immediately following WPI Commencement ceremonies, and will offer alumni and friends the special opportunity to engage with the university's newest alumni and their families. If you see a Reunion Weekend Ambassador label on a fellow alumnus/a this year, please be sure to thank them for helping bring alumni back to their home on The Hill.

Reunion Weekend will be celebrated on May 10 and 11 this year.

View the weekend schedule: <https://www.wpi.edu/news/annual-events/reunion-weekend/schedule>.

TRYING SOMETHING NEW CHANGED MICHAEL DRISCOLL'S LIFE

TURNING POINT

Unexpected things can happen when you try something completely new. That's the lesson **Michael Driscoll '97, MS '99**, passes on to his students, and he uses an anecdote from his youth to illustrate his point.

While a high school sophomore planning on a career in engineering, he was required to take an arts elective. He was really hoping for photography, but it didn't fit into his schedule. Chorus was his only option.

This unplanned class uncovered a new passion, and he soon became ever more involved in chamber groups, choruses, and Glee Clubs—even conducting some. Still, the idea of a career in music seemed far-fetched and economically challenging. He continued to pursue engineering until the tug of music became irresistible. Several years after graduating from WPI with degrees in electrical engineering, he finally gave in, plunging into the field as a high school music teacher.

The takeaway of all this: "Try something new that you may think is not for you. You may find that it changes your life," says Driscoll, who has taught music at Brookline High School in Brookline, Mass., for more than 20 years.

Music in the Background

Driscoll's young life was an intertwining path of music and science. While he participated in chorus and took jazz and theatre organ lessons, he thought he was destined for a path in engineering.

"I enjoyed music, but I didn't ever consider myself good enough to try to make a career of it," he says. Not to mention, it can be difficult to make it as a professional musician. Driscoll initially opted for an engineering career path, with the idea that he could remain involved in music in a complementary way, such as designing electronic instruments and music software.

Still, he wanted to continue pursuing music on at least a partial basis, so he minored in the discipline while studying at WPI. As a freshman, he joined the Glee Club and was a founding member and director of Simple Harmonic Motion.

It was "my first foray into the world of conducting and I loved it," he says.

When not studying for his engineering and other classes, he spent "hours and hours" in Alden Hall doing music-related work, he recalls. "I spent more time there than any other place while I was at WPI."

By design, both his Interactive Qualifying Project and Major Qualifying Project were related to music or sound. For instance, in electrical and computer engineering professor **David Cyganski's** lab, Driscoll developed a system that used a camera to follow a conductor's beat, then directed a controller to keep the tempo. "I was given musical opportunities as an undergraduate at WPI that I would never have received elsewhere," he says.

Influential WPI professors

In addition to Cyganski (now professor emeritus), Driscoll cites several WPI faculty as influential in his life, including **Louis Curran**, professor emeritus and former Glee Club director.

"I am grateful to have known him, to have worked with him, and ultimately to be both friends and colleagues with him," he says of Curran.

While working toward his master's in electrical engineering, he worked in Cyganski's lab in Atwater Kent doing machine vision research. He finished his master's and worked at Data Translation for two years before moving to a contractor position while pursuing a master's in choral conducting at New England Conservatory. But, he recalls, every time he was in his "little cubicle in a windowless office," he couldn't stop watching the clock.

"I found engineering as a concept really interesting, but the day-to-day of it I found tedious and often frustrating," he says. "Once I started music school, I realized that music is what I really enjoyed most."

While in his second year at the conservatory, he finally made the jump into music full-time, taking on the role as chorus director at BHS. "My days are busy," says Driscoll, who today serves



as BHS's director of choirs in addition to teaching piano classes and AP music theory. "I never find myself looking at the clock wishing the workday was over."

While every now and then he does pine for the relative simplicity and stress-free (and lucrative) life he had working as an engineer, Driscoll says he loves teaching, getting students engaged and excited about music, and helping them grow as human beings. He points out that being in a music ensemble requires everyone to give their best, and also actively listen to one another. "In an era where so many of us are distracted by our phones and social media, I find that more than ever young people need opportunities to connect, listen, and work with others," he says.

Driscoll also has directed adult community choruses for nearly a quarter century and says, "I think the world would be a nicer place if everyone participated in a music ensemble."

Today, Driscoll carries forward lessons learned at WPI.

Notably, he says, Cyganski taught him to break large problems down into baby steps. "It's such a simple concept, but it helped me immensely and I've used it as a guiding principle ever since," he says.

In his day-to-day teaching, he presents concepts in simple, sequential ways and strives to help students think similarly. In music literacy, for instance, students learn to read and hear music just by looking at the notation on the page—and conversely, how to hear music and know how to notate it.

And much like his mentor Cyganski, Driscoll has been influential in his students' lives. Recently, for example, a former student auditioned for his adult community chorus and aced the sight-singing portion. Eight years out of high school, she remembered what she had learned under his tutelage.

"It was a proud-teacher moment for me," he says.

—Taryn Plumb

PHOTO BY AXIE BREEN

Leading on the Court and in Life

DAVID BROWN '12 FINDS A CALLING IN MANAGEMENT THROUGH BASKETBALL

For **David Brown**, learning how to be a good teammate on and off the basketball court is what made the biggest difference in his career—and his life. Once a student-athlete and now an assistant coach for the Crimson and Gray, the management engineering major attributes his successful career to the collaboration and leadership skills he honed at WPI.

As a basketball-obsessed teenager in Lowell, Mass., Brown's first job was at the YMCA, where, in exchange for a free gym membership, he taught 5- and 6-year-olds how to dribble, pass, and score. WPI wasn't even on his radar then—he only knew that he wanted to go to college and play ball. But everything changed when **Chris Bartley**, head coach of men's basketball at WPI, caught David's impressive performance in a game and began to recruit him.

The first person in his family to graduate from high school, never mind to apply to college, Brown was overwhelmed by his choices and felt unsure about WPI initially. What if he didn't want to be an engineer? What if he felt out of place on a majority-white campus? What if it was too expensive? But once Bartley walked him through WPI's competitive advantages—including its flexible curriculum, commitment to diversity and inclusion, and long-term return on investment for graduates—Brown was sold. He understood the seismic impact a prestigious WPI education would have on his family's future.

"Start off strong," he recalls Bartley saying to him when they reviewed his first course schedule together. "He said, 'The work that you're putting in now is not only going to change your life, it's going to change your family's life. You're going to be a first-generation college graduate, and you're going to set the precedent for the rest of your family, for your kids, for your kids' kids, that's just what we do.'"

Through Bartley's mentorship, Brown not only laid a strong foundation for his academics, but also discovered he was a natural leader on the team. He was even selected as a first-year student to join an NCAA leadership cohort—a training program that would lead to a pivotal "Ah hah!" moment for his future career.

He figured out that combining his technical knowledge and people skills would be more fulfilling than focusing on technology or engineering alone. "Being customer-facing and people-facing is more important to me than a pen to paper solving a problem. I like the collaborative effort."

A Second Team

Once he started exploring the management path, David was surprised to discover that he was joining a second team at WPI: The Business School. Its supportive faculty and advisors were quick

to surround him with all the help and guidance he needed. He formed strong bonds with professors **Sharon Johnson**, **Chickery Kasouf**, **Steve Taylor**, and **Sharon Wulf** (emerita), as well as now-retired executive director **Norm Wilkinson**. They helped him with everything from passing macroeconomics to completing his Major Qualifying Project.

"Everybody was there to help you, almost at all times," he says. "The support was tremendous."

He wound up falling in love with cognitive psychology courses within the business program. Studying what makes people tick proved helpful in both coaching and sales.

But the biggest competitive advantage Brown gained at WPI was his ability to connect and work with individuals from diverse cultures and backgrounds. Thanks to the university's project-based learning model and interdisciplinary approach, he met people whom he never would've known otherwise.

He remembers one project in a product innovation class where groups of four randomly assigned students had to work together to come up with a new product and create a sales pitch. "It was actually several minds collaborating to put a product out there. That translates directly to working in an office. You're not operating in a silo."

When he started working, he noticed that many engineers who came from other universities had a hard time adjusting because they'd only ever spent time with other engineers. They didn't know how to be part of a team with colleagues from different backgrounds. But for David, that was what he'd been training for.

"It got to the point where I was an operations manager for about 120 people. I had engineers. I had operators. I had technicians. I had customer service folks. Everyone spoke a different language, but because of what I went through at WPI, I could blend it all together and get the message across to all of them."

Brown's advice for every WPI student comes from a Maya Angelou quote: "When you get, give. When you learn, teach." He explains, "Coming together to learn and to teach each other and to give to each other is going to make the WPI experience that much greater for everybody. And then that carries on with you for the rest of your life."

Now that he's coaching the same basketball team he once played for, that spirit of shared learning is more tangible than ever. "Hopefully I leave that mark on one of the students there now," he says. "As much as they think they're learning from me, I'm learning more from them."

—Rachel Tatarek



DAVID BROWN '12

PHOTO BY MATTHEW BURGOS



GREGORY TUCKER '92 AND CORINNA JENKINS TUCKER, PHD

ILLUSTRATION BY LEONARDO GAJUNA

“I give back to the university because, without WPI’s financial scholarship support, I never would have gone to college. My hope is that my gifts will enable future students to access the same academic, athletic, and social experiences that I had at WPI.” – Gregory Tucker '92

Giving Back in Gratitude

There are as many ways and reasons for why alumni stay connected to WPI as there are alumni. For **Gregory Tucker '92**, staying connected to the university is his way of giving back—to support the next generation of students and help ensure WPI remains a leader in higher education. “Whether it’s attending alumni events, mentoring current students, or making a financial contribution, there are many ways to stay involved with WPI and make a difference in the lives of others,” he says.

As with generations of alumni, Tucker was drawn to WPI by its reputed engineering curriculum. But for the self-proclaimed non-traditional thinker, the school’s creative problem-solving culture was also a major draw. “WPI is a highly respected academic institution known for its rigorous engineering programs, signature project-based curriculum, and mission to solve real-world problems, and I wanted to be part of all those things.”

WPI’s comfortable campus size, soccer program, and Alpha Tau Omega brotherhood were also attractive aspects of the school for Tucker. But his scholarship support was the deciding factor for his higher education. “WPI offered me a significant financial aid and scholarship package and made college a possibility in my life. As a student, I was allowed to gain confidence and flourish in my field, and I’ll forever be proud of my with-distinction Bachelor of Science in Mechanical Engineering degree from WPI.”

Reflecting on his WPI experience, Tucker says, “My time at WPI went by fast; my academic curriculum, rigorous soccer schedule, and Skull and fraternity commitments kept me busy, but I was able to find time to have fun with friends and gain valuable experience and life lessons. My courses gave me the foundation to build a career in manufacturing and leadership. The project work gave

me experiences I continue to reference in my current position. The team-based curriculum gave me approaches I use today to encourage me and my colleagues to think and act creatively to solve problems. And the invaluable leadership skills and compassion fostered by Skull and my fraternity stay with me always.”

Following graduation, Tucker spent decades in leadership roles with companies including Thermal Solutions Inc. (TSI), Thermo Fisher Scientific Corporation, Praxair Corporation, and General Electric. Today, the mechanical engineering major is the founder and chief executive officer of ProAmpac, a privately held, global manufacturer of flexible and paper packaging solutions.

As firm believers in giving back, Tucker and his wife, Corinna Jenkins Tucker, PhD, are involved in and started multiple foundations and non-profit organizations. WPI has been included in their philanthropic giving for decades, and their most recent gift to *Beyond These Towers: The Campaign for WPI* will support major renovations to the front entrance of Founders Hall.

“Giving back to WPI supports the university’s mission and ensures that future generations of students have access to the same high-quality educational opportunities that I did. I also give to WPI because it is important to me that WPI’s campus is accessible for everyone, regardless of ability. Philanthropic gifts enable scholarships, support project work, and fund campus improvements, and by giving back to WPI, I and my fellow alumni can help ensure the university continues to provide students with a world-class education and prepares them for success in their chosen fields.”

—Sira Naras Frongillo

“I feel a great debt of gratitude to WPI for teaching me to think outside the box and to remain grounded in reality and science to make things work.” — Jason P. Macari '84

Lifelong Learner Remains Lifelong Supporter

JASON P. MACARI STILL GIVING BACK ALMOST FOUR DECADES LATER.

As one of thousands of alumni who have benefited from WPI's project-based STEM education, mechanical-engineering-major-turned-innovator-and-entrepreneur **Jason P. Macari '84** recognizes the role WPI played in his successful career. With the project management experience gained at WPI, and later at Hasbro, Safety 1st, and Bard, Macari founded and currently serves as CEO for the family-owned businesses Baby Delight and Macari Development. “WPI's project work and team-centered learning and research absolutely helped me excel in the real world. WPI also taught me there isn't much in the world you can't figure out if you set your mind to it,” he says.

Macari was initially drawn to WPI by the university's reputation of high-quality education, focus on engineering and the sciences, and its relatively small size. As a student he found support in his Lambda Chi Alpha brothers, saying, “When you are in a fraternity at WPI, it really dominates your experience at the school. Your friends (many of whom I still stay in touch with), your extracurricular activities, studying — are all centered around your brothers.”

Beyond the academic and social support the university offered, WPI also strengthened Macari physically and spiritually. He loved playing intramural basketball and volleyball and says he was grateful Catholic mass was available to him during his time on campus. “I vividly remember how some of my fraternity brothers and I would drag ourselves out of bed on an early Sunday morning to attend mass together. It all tied in to being a strong community and college experience for me.”

Looking back, Macari offers, “WPI taught me how to learn, and I believe being a life-learner and working toward contributing to the world throughout your life is what keeps you connected and fulfilled;

I plan on working and learning throughout my life, even if I slow down a little as I get older. I am still having fun. To me, play is work and work is play, when you enjoy what you do as much as I do.” The self-proclaimed life-learner doesn't seem to be slowing down anytime soon. In fact, beyond his consumer products and commercial real estate businesses the Macari family members have recently acquired Phantom Farms, which has an apple orchard, cider mill, café, and garden center, with plans to open Phantom Farms Brewery in the near future.

Macari's philanthropic support of the university goes back to his Class of 1984 Senior Class Gift. Since then, the positive impact of his WPI experience has led him and his wife, Martha Anne, to generously support the university over the decades, with support ranging from WPI's Areas of Greatest Need and the Innovation Studio to their most recent gift in support of Unity Hall, which also helps to advance *Beyond These Towers: The Campaign for WPI*, the university's current fundraising effort.

When asked what the Macaris hope their support will do for WPI students today and in the future, he says, “Our hope is that our philanthropic giving allows for WPI students to achieve excellence in what they pursue so they can play their part in solving the world's biggest challenges.” As the university pursues its most ambitious fundraising endeavor yet with *Beyond These Towers: The Campaign for WPI*, Macari offers the following message to his fellow alumni: “Just remember how the four years you spent at WPI shaped who you are — both in the good experiences as well as the struggles you went through and how they all shaped you into who you are today.”

—Sira Naras Frongillo

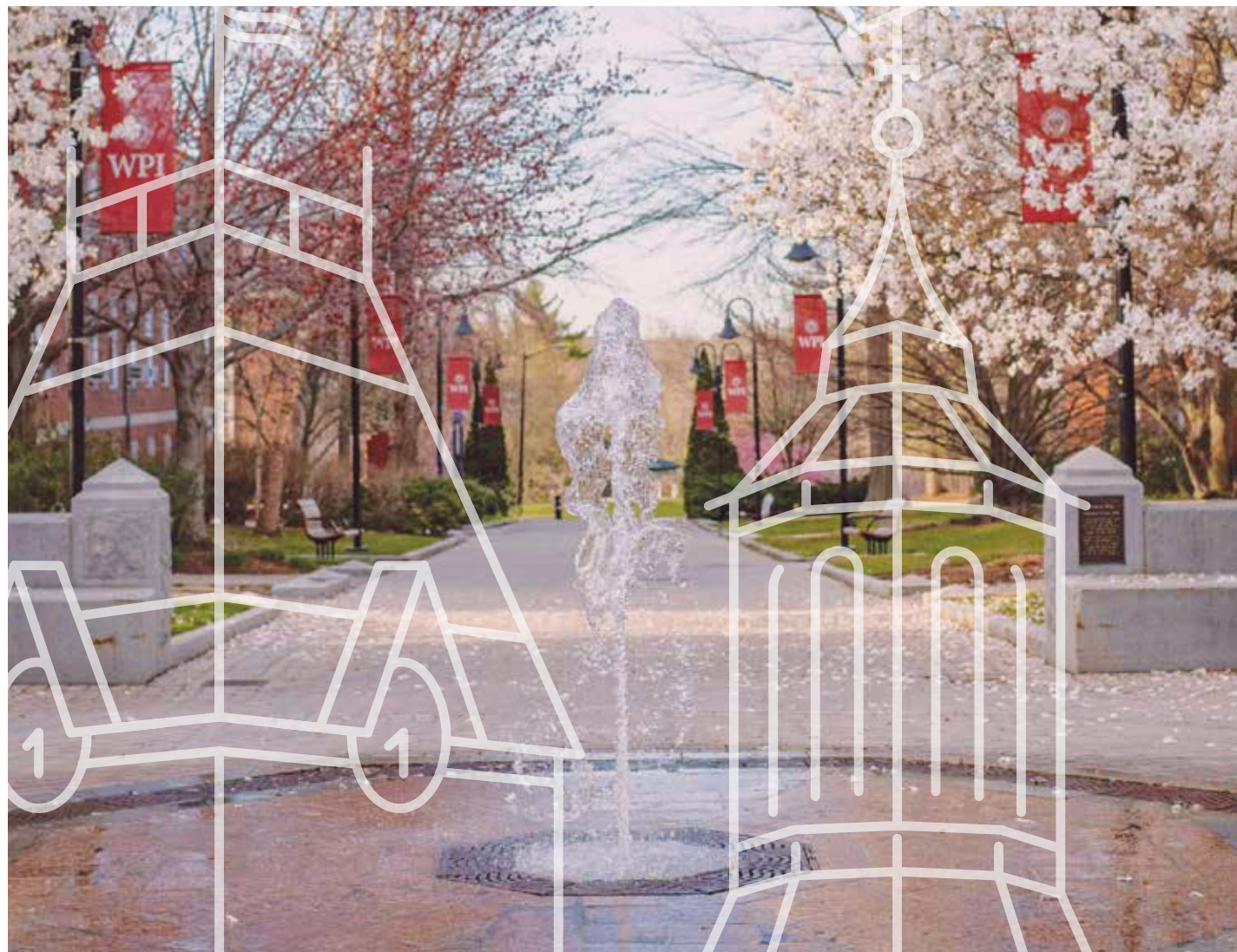


JASON '84 AND MARTHA ANNE MACARI

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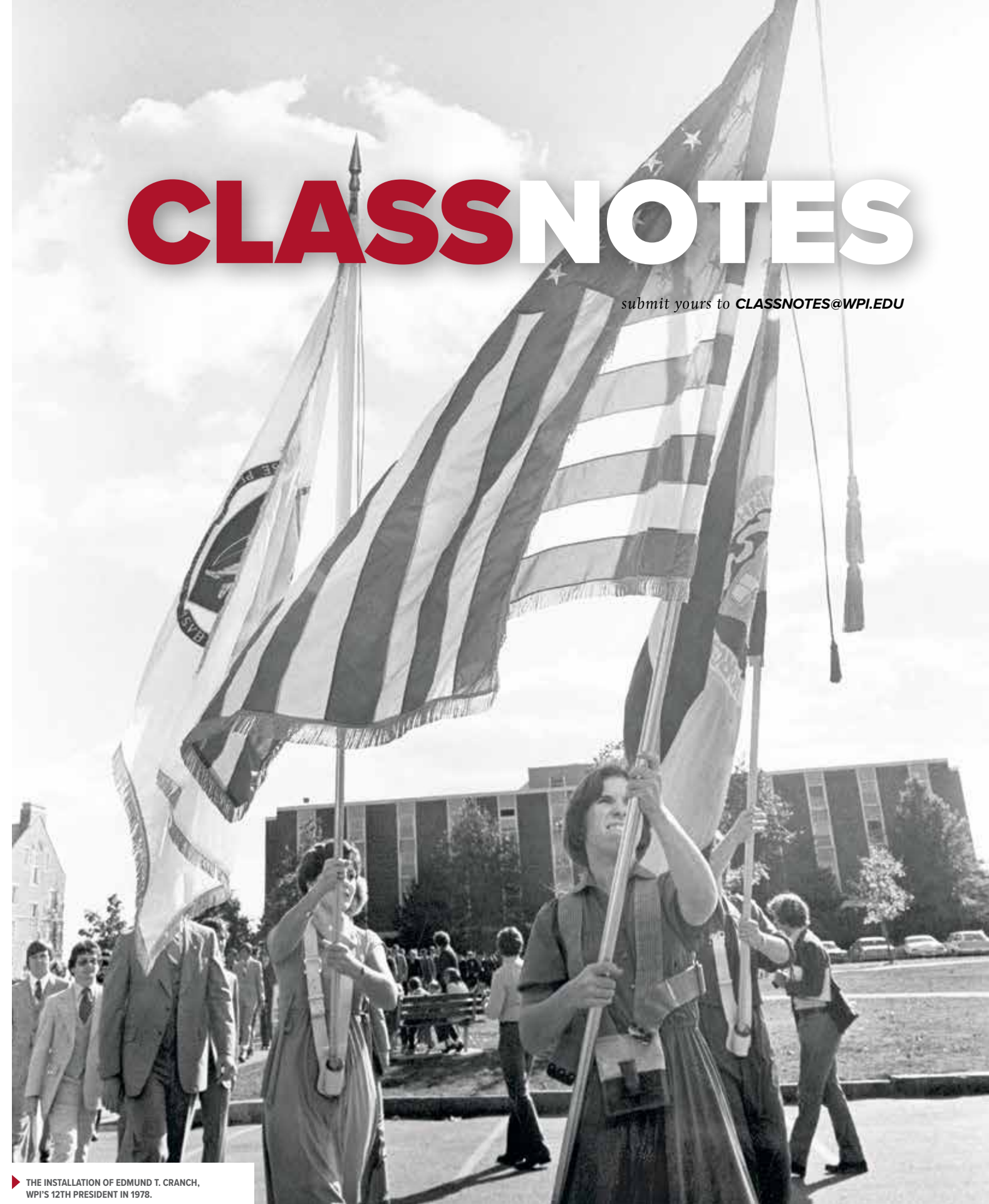
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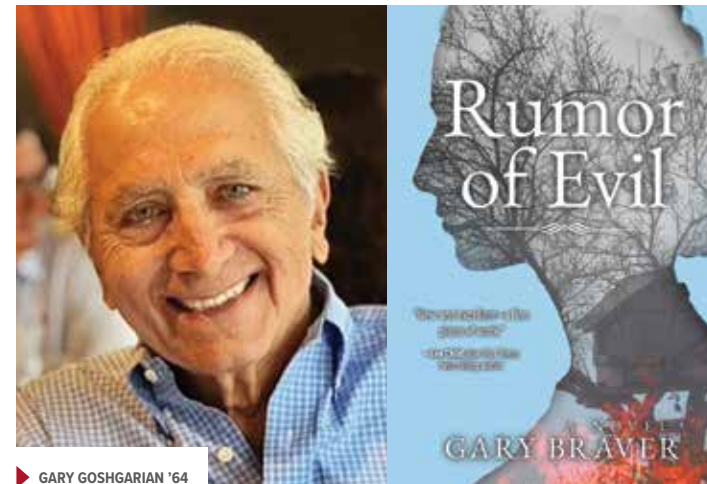
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▶ THE INSTALLATION OF EDMUND T. CRANCH, WPI'S 12TH PRESIDENT IN 1978.



1964

Gary Goshgarian writes, “I am the best-selling and award-winning author (pen name Gary Braver) of 10 critically acclaimed medical thrillers and mysteries, including *Elixir*, *Gray Matter*, *Choose Me* (co-written with Tess Gerritsen), and *Flashback*, the first thriller to have won a prestigious Massachusetts Book Award. My tenth and latest mystery, *Rumor of Evil*, was published in October to rave reviews. *Bookreporter* called it a ‘phenomenal thriller,’ while *Booklist* described the book as ‘Suspenseful and fast paced, with unexpected and shocking twists, and a haunting conclusion. Highly recommended.’ *Rumor of Evil* was also named one of the Amazon Editors’ picks as best mystery novel of the year.

He is professor emeritus from Northeastern University, where he teaches courses in science fiction, horror fiction, detective fiction, and fiction writing. He also teaches at fiction-writing workshops at conferences in America and Europe. His novels have been translated into 16 languages and three have been optioned for movies. www.garybraver.com.”

1968

Richard Formato co-authored two novels that were published in 2023. *Node Riders* is a science fiction story about the discovery of gravitational nodes for exploring the universe. After solving the mystery of node physics, the protagonists figure out how to use nodes to travel anywhere in the universe and to

any point in time. *Milo: A Murder Mystery* chronicles the rise and fall of a prominent and narcissistic criminal lawyer in Manhattan. A retired registered patent attorney, Formato is a Life Senior Member of the Institute of Electrical and Electronics Engineers and sits on the editorial board at two journals, *International Journal of Swarm Intelligence* and *Advances in Electrical and Computer Engineering*.

Scott Wilson writes, “SAE brothers Dave Andersen, Dave Gradwell, and I, and our spouses, have been meeting every month or so for lunch at local eateries in the Baltimore/D.C./Annapolis areas and staying caught up on the latest on grandchildren, general gossip, and remembrances. Much fun. Wish we had started earlier.”

1969

Anthony (Tony) Leketa writes, “In October I was selected to chair the Safety Committee of the National Academy of Construction (NAC) at its annual meeting in Boston. NAC honors outstanding construction industry leaders and shares their collective experiences and expertise to help the nation by improving the construction industry (naocon.org). The Safety Committee is actively engaged with a number of initiatives designed to improve safety in construction. Presently, the construction industry leads all other industries in annual on-the-job fatalities. Exciting opportunity for one who has spent the majority of his professional life in the construction industry.”

1970

Gregory Barnhart writes, “I am teaching an afterschool STEM class in basic electronics and computer coding to seventh and eighth graders here in Cave Creek, Ariz. The class is sponsored by Kiwanis and the Cave Creek Museum. I am on the museum’s Board of Directors and am the lead guide at the museum’s Gold Mining Experience. Our museum has the only working 10-stamp ore crusher located in its original mining district, which we operate twice a month.”

1971

Ben Katcoff writes, “I married Robin Cushner on December 10, 2023, at the Grand Lodge in Hunt Valley, Maryland. Alpha Epsilon Pi fraternity brothers **David Winer ’71** (and his wife, Barbara) and **Rick Teitelman ’71** (and his wife, Carol) attended the wedding. Robin and I are now living in Pikesville, Maryland.”

1974

Jonathan Barnett, MS ’76, PhD ’89, writes, “I’m proud to announce the expansion of Basic Expert, a company I co-founded in 2018 with Jonathan Duler, into the UK market. Basic Expert, known for its exemplary fire safety and forensic engineering services in Australia and New Zealand, is now set to extend its expertise to the UK, reflecting my commitment to global safety standards. As one of the pioneering professors of fire protection engineering at WPI, my transition from academia to industry encapsulates my dedication to applying theoretical knowledge to real-

world challenges. This expansion not only symbolizes the growth of Basic Expert but also my profound impact on the field, marking a significant chapter in my illustrious career.”

David LaPré, a WPI trustee, was named to the Board of Directors of Calidi Biotherapeutics, a California-based clinical-stage biopharmaceutical company that incorporated in 2021. “Calidi Biotherapeutics has assembled a world-class team of leaders and advisors with the expertise and skills needed to deliver effective allogeneic stem cell therapies to patient populations with few effective treatment options,” LaPré said in an article in *BioSpace*. “I look forward to guiding Calidi’s team and helping them improve operational excellence as they mature their organization.” LaPré currently heads DGL Advisors, a consulting firm that advises biopharma companies. Previously, he spent more than two decades as a senior executive in technical operations and supply chain management with companies in the United States and Switzerland.

1975

Robert Cummings writes, “I am honored to have been elevated to fellow of the Institute of Electrical and Electronics Engineers (IEEE) as of Jan. 1, 2024, with the citation ‘for leadership in power system disturbance analysis and standardization of power system protection and reliability.’ The IEEE Fellow Committee annually recommends a select group of recipients for elevation to IEEE Fellow. Less than 0.1% of

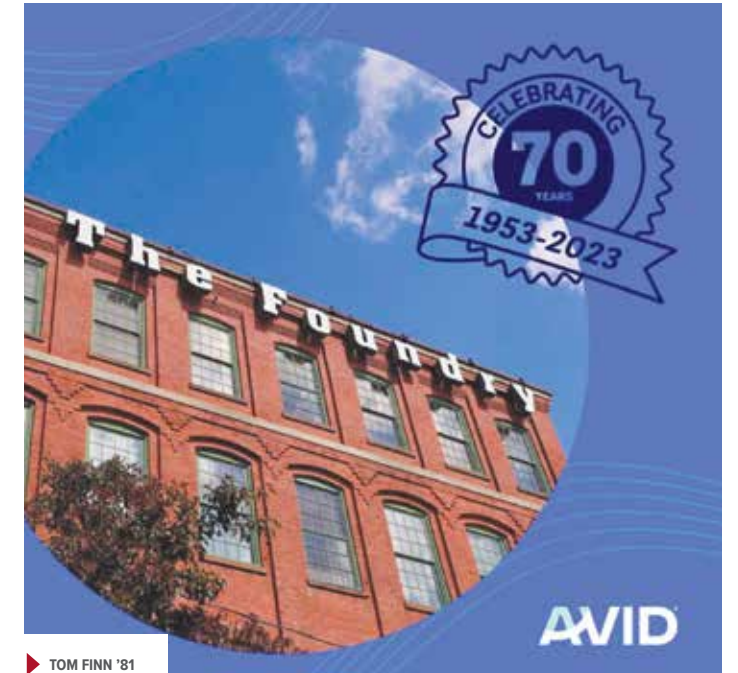
voting members are selected annually for this member grade elevation.”

1978

Wes Wheeler has been named executive chair of the board at BioTouch, a company that provides logistics and kitting for outsourced medical supplies around the world. “Wheeler has held the positions of CEO, president, and chair across five distinct public and private companies,” according to an announcement from BioTouch. “Demonstrating a breadth of leadership experience, his professional journey has been marked by successfully guiding companies through transformation while simultaneously laying the groundwork for future growth.”

1979

Robert Hart, a WPI trustee, is the host of a new monthly podcast called *Building Better Communities*. The podcast is a project of TruAmerica Multifamily, a firm that owns and operates multifamily housing units around the country. Hart is the founder, president, and CEO of TruAmerica, the 25th largest apartment owner in the United States, according to the National Multifamily Housing Council. In the first episode of the podcast, Hart spoke with William Lindsay, co-founder and senior managing partner of real estate investment firm PCCP, about the changing landscape in the commercial real estate market. The podcast is available on YouTube and on the TruAmerica website.



TOM FINN '81

1980

Tim Andrews has joined the law firm Manatt, Phelps & Phillips as a national advisor focused on using technology innovations like artificial intelligence. Andrews has extensive experience helping companies from a range of industries—including health care, biotech, and digital media—to embrace new technologies. “Having worked with many professionals across Manatt throughout my career, I have always admired the Firm’s commitment to helping clients navigate and implement technology as an integral part of their business strategy,” said Andrews in an announcement. “I am delighted to reconnect with this wonderful team of legal and consulting colleagues to continue helping these clients—many of which are trailblazers in this area—stay ahead of the curve and be leaders in innovation.”

1981

Gary Almeraris has been honored with an Outstanding Achievement Award by The Moles, a national organization for professionals working in the heavy construction industry. An active member of The Moles since 1989, Almeraris served as the organization’s president in 2021. He is currently vice president of operations for Skanska USA Civil and has spent his nearly 50-year career in heavy construction working on tunnel projects, according to an announcement in *Tunnel Business Magazine*.

Tom Finn writes, “After working around the world for nearly 40 years, I returned home to Rhode Island in 2019 to assume the role of CEO of AVID Products, a 70-year-old, employee-owned provider of audio solutions. The company recently relocated its world headquarters from its long-time home on Aquidneck Island to Providence’s Foundry

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Arnold Lane,

Director for Multicultural Education and Community Engagement



complex, which has a rich history dating back more than a century. The former industrial campus once served as the home to then-industrial global powerhouse Brown & Sharpe."

Lu Anne Green was appointed chief operating officer at MicroCare, a company that formulates and manufactures powerful cleaning fluids and tools. Green will oversee manufacturing and logistics in all of MicroCare's Connecticut-based locations. She has more than two decades of experience working with operations, logistics, and supply chain management and has held leadership positions in multiple industries.



▶ FROM LEFT: STEVE BRODEUR '82, KATHIE (CROCKETT) PIERRO '82, BERNADETTE A.K.A. BARNEY (YOUNG) FERNANDES '83, DONNA (MARTIN) DEAN '82, JOHN PIERRO '82, DEBBIE (MADAMBA) JOLICOEUR '82, RENEE (CARDINAL) BRODEUR '83, TODD DEAN '82, AND STEVE JOLICOEUR '82.

1982

Donna (Martin) Dean writes, "We had a very fun visit at the home of Steve and Debbie Jolicoeur in Nashua, N.H., in October. Most of these friendships originated from our freshman year living on Daniels second floor. Our friendships remain strong."

John Kelly was named chairman of the Wakeman (CT) Boys & Girls Club Board of Trustees. "Wakeman, an organization I strongly believe in, provides amazing opportunities to children in Bridgeport and Fairfield. I look forward to working with Sabrina [Smeltz, Wakeman BGC CEO], her team, and the Board to build on the great successes of the past, and to develop new programs that enable young people to become future leaders," Kelly said in an announcement in Fairfield's *HamletHub.com*. A member of the Wakeman trustees since 2018, he retired in 2022 as vice president of quality

operations and environment, health, and safety at Pfizer, where he had worked for 40 years.

George Oliver, a WPI trustee, was one of the panelists at "The Future of Climate, Sustainability and Clean Energy: A Conversation with Global CEOs" during the 2023 United Nations Climate Change Conference (COP28) in Dubai, United Arab Emirates. Oliver is chairman and CEO of Johnson Controls, a global building technology company that specializes in sustainable smart buildings; he also chairs the Business Roundtable's Energy and Environment Committee. According to a Business Roundtable announcement, Oliver and the other CEOs who participated in the UN event discussed how technology can be harnessed to reduce greenhouse gas emissions and how a successful global

energy transition will depend on reliable clean energy supply chains.

1985

Jay Cormier was featured during an episode of *On Tech and Vision* a podcast that explores how people with vision loss can use technology to help make their lives better. During the episode, titled "Developing Big Ideas: Product Testing and Iteration," Cormier discussed the importance of large-scale beta testing with a diverse population. "The retina is like a thumbprint. Every retina is different, every vision impairment is different. How do you test the range of how all of those could interact with the device for that person?" said Cormier, who is president and CEO of Eyedaptic, a company specializing in vision-enhancement technology.

1986

Maureen McCaffrey, a WPI trustee, has been named to the *Boston Real Estate Times* list of Outstanding Women of Commercial Real Estate for 2024. McCaffrey is director of the MIT Investment Management Company (MITIMCo), which oversees the investment of MIT's endowment, retirement, and operating funds. She is responsible for MITIMCo's planning and development of several mixed-use real estate projects in Kendall Square totaling more than 3 million square feet. According to an article in the *Boston Real Estate Times*, "McCaffrey's efforts aren't limited to her work with MIT. In June, she was named 2023–2024 President of CREW Boston at a pivotal time when the chapter is working to promote diversity through strategic growth."

1987

Jim Goodell spoke on a panel titled “Leveraging Artificial Intelligence for Talent Development in Government” during an event hosted by the Association for Talent Development. Goodell is the director of innovation at Quality Information Partners, a Virginia-based education consulting firm where he oversees development of the federally sponsored Common Education Data Standards. In that role he also co-facilitates the U.S. Chamber of Commerce Foundation’s T3 Innovation Network and Architecture Development for the Jobs and Employment Data Exchange. The panel explored ways government agencies might leverage AI to acquire, develop, and retain employees.

Joe Mitchell has been named assistant general manager of Westfield Gas & Electric (WGE), one of the largest municipal utility companies in Massachusetts that offers gas, electricity, and fiber-optic internet. Prior to this appointment, Mitchell worked as the community relations manager for Eversource. “With my last position being with a very large investor-owned utility company, I am very happy to be part of the Westfield Gas and Electric/Whip City Fiber team,” he said in an article in *MassLive*. “I find the people that work for this municipal utility really care about their community and the important part the G&E plays in it.”

Mark Willingham is the new chief executive officer of Headwall Photonics, a company based in Bolton, Mass., that

designs and manufactures precision hyperspectral imaging systems for a range of applications, including remote sensing. Prior to the Headwall appointment, Willingham was vice president and general manager of Dover Motion. He also served as an officer in the U.S. Navy and is a Gulf War Veteran.

1988

Peter Griffin has been named senior vice president of operations for medical technology company Imperative Care. He brings to the role more than 35 years of experience manufacturing and developing products, in addition to strategic supplier management. Prior to joining Imperative Care, Griffin was group vice president and chief procurement officer at Insulet Corporation, a company that makes and sells medical devices for people with diabetes.

1991

Loan Ngo writes, “I recently changed jobs and moved to Henkel Adhesive Technologies to head the Safety, Health, Environmental, and Quality functional groups for North America. What’s great is that I met **Debra Duch ’91**, who also graduated from WPI; it’s a pleasure to work alongside a WPI alumna.”

1992

Brian Tarbuck has joined the Board of Directors at Maine’s Kennebec Savings Bank. He currently serves as general manager of the Greater Augusta Utility District and as commissioner of the New

England Interstate Water Pollution Control Commission. According to an article on *CentralMaine.com* Tarbuck also sits on the Maine Board of Licensure of Water System Operators, is past president of the Maine Water Utilities Association, and vice president of the Kennebec Valley YMCA board.

1993

Steve Vassallo published an article in *Forbes* making the case for why a human-centered approach is not only helpful but necessary for the future of artificial intelligence. “Thoughtful, deliberate design and product thinking will be key for humans to harness AI’s full power and ensure that it works in harmony with our values and goals,” Vassallo writes in the article, “Why Generative AI Needs Design.” He continues, “For all their impressive abilities, generative AI models are a far cry from being reliable enough for most real-world applications. This gap between ‘gee whiz!’ demos and dependable deployments is what technologists refer to as the ‘last mile’ problem. Just as self-driving cars blunder on busy streets, AI models struggle with inconsistency, bias, and a tendency to hallucinate. In creative contexts, these features may be harmless or even welcome. But in business, finance, medicine, and other high-stakes use cases, anything short of 99.9% accuracy is often unacceptable. Innovative design of human-AI systems can help manage these last-mile risks while the technology continues to mature.” Vassallo is a general

partner at Foundation Capital, a venture capital firm that focuses on fintech, enterprise, and crypto companies.

1998

Lisa Goyer has been named vice president in the Environmental Division of Pare Corporation, a planning, engineering, and permitting company based in Rhode Island. Goyer is a registered Professional Engineer in Connecticut, Massachusetts, New Hampshire, and Rhode Island and a certified water system operator in Massachusetts and Rhode Island. She previously worked as an engineer at Pare from 2015 to 2020.

1999

Aswin Phlaphongphanich (MS) was featured in an article in *The Nation Thailand* highlighting a new partnership between Siam Commercial Bank (SCB) and DeeMoney, the money-transfer platform that Phlaphongphanich founded and runs. The partnership will make it easier for workers from Myanmar who live in Thailand to send money home. “These individuals annually wish to send money back home, totaling more than USD 1.33 billion.... Our aim is to empower them to transfer money securely through the DeeMoney application, eliminating the reliance on brokers as seen in the past,” Phlaphongphanich said in the article.

2000

Mert Aktar has been named to the board of directors at ReAlta Life Sciences, Inc., a Virginia-based clinical biotech company that develops anti-inflammatory drugs to address rare life-threatening diseases. Aktar serves as CEO of biotech company Peran Therapeutics and sits on the board of the University of California, Los Angeles, Technology Development Corporation. In addition to his undergraduate degree from WPI, Aktar holds an MBA from MIT Sloan School of Management and a master’s in engineering management from Tufts University. He has more than two decades of experience bridging science and business in pharmaceuticals and biotechnology.

Kristin Connarn is now office managing partner in the intellectual property, media, and technology practice for international law firm Hogan Lovells. According to an

announcement in *Legal Desire*, “Connarn joined the firm in 2019, bringing an extensive background in biotechnology and cancer research and a knowledge of the complex regulatory landscape for life sciences clients. Additionally, she serves as a member of the Hogan Lovells Life Sciences Leadership Team, and co-chair of the Cell, Tissue, and Gene Therapy (CTGT) working group.”

James “Andy” Lynch, MS ’04, is CEO of Fire Solutions Group, a consulting company that he founded in 2013. His expertise as a fire protection engineer was cited in an article in *Waste Advantage* magazine summarizing the first updates in more than 40 years to the Occupational Safety and Health Administration (OSHA) emergency response regulations. Lynch is a member of the Salamander Honorary Fire Protection Engineering Society; the National Fire Protection Association; the Society of Fire Protection Engineers; the National Fire Sprinkler Association; and the International Association for Fire Safety Science.

Kate Rush has been named executive vice president and chief operating officer of Androscoggin Bank. “I’m proud to join a company with 150 years of experience serving the businesses and people of Maine. ... Further, as both a mutual and a benefit corporation, this company truly values people and clients and employees are at the forefront of every decision we make,” Rush said in announcement from the bank. Before her tenure with Androscoggin Bank, she held leadership positions at Tilson Technology Management and Bangor Savings Bank.

2002

Rajas Warke was featured in a Q&A in *News Medical*, where he discussed the real-life impact of industry-wide challenges to extracting nucleic acids. In addition, Warke spoke about how he is working to mitigate

those challenges as the head of the Molecular Biology & Virology Division at HiMedia Laboratories. He explained that because DNA or RNA extraction is the first step in any biotechnology-based lab analysis, it’s vital to have fast and reliable ways to extract nucleic acid. HiMedia has developed a magnetic extraction method that “when combined with automation ... significantly reduces manual errors and saves time compared to other methods,” Warke said. To that end, he added, HiMedia is developing point-of-care testing (POCT) technology, which automates the entire extraction process.

2003

Amanda Kimball, MS ’04, was elected president-elect to the Society of Fire Protection Engineers (SFPE) Board of Directors. As noted in an announcement in *Facilities Safety Management*, Kimball is executive director of the

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National Fire Protection Association's Fire Protection Research Foundation, where she leads strategy and performance of several research programs, including those that address fire detection and signaling, building and life safety, hazardous materials, electrical safety, fire suppression, warehouse storage, firefighter health and safety, wildfire, and emerging technologies. An SFPE member for 20 years, she has served on the Board since 2017, and previously led the SFPE's New England Chapter.

2004

Justin MacEachern is now vice president at Gilbane, leading the global construction and development company's Massachusetts and northern New England offices. The move is a return to Gilbane for MacEachern, who worked there for 10 years before becoming director of construction at Boylston Properties in 2018.

2007

Amy Prange was honored at the 2024 Outstanding Women of Commercial Real Estate gala, hosted by the *Boston Real Estate Times*. Prange is WS Development's vice president of development for Seaport, the large mixed-use development project dubbed "Boston's newest neighborhood." In a Q&A following the announcement of her honor, Prange said, "It is still unusual to find women in development in leadership positions. I hope that by existing here, I can help inspire other women to pursue a path in commercial real estate

to further support the advancement and parity of women in this field."

Amanda Tarbet is the research manager at the SPFE (Society of Fire Protection Engineers) Foundation, where she supports the Foundation's research initiatives, distributes research outcomes, and manages academic partnerships. Before moving to the SFPE Foundation, Tarbet worked for 10 years as an academic librarian. She earned her master's degree in library and information science from Simmons University in 2012.

2010

Vishal Sunak (MS) was the featured guest during an interview on the floor of the New York Stock Exchange, hosted by IPO Edge. Sunak is the founder and CEO of LinkSquares, a company that develops AI-powered contract management software used by legal teams around the world. During the interview, he spoke about how AI can greatly improve the efficiency of corporate legal departments. According to a *Yahoo! Finance* article highlighting the interview, Sunak "is widely recognized as a thought leader in the legal technology space, where he has worked tirelessly to improve outcomes for legal teams, while elevating their visibility within the enterprise."

2012

Julie Bliss Mullen, founder and CEO of Aclarity, a company that breaks down PFAS "forever chemicals" announced that the company has secured \$15.9 million in new funding, which will allow Aclarity to scale up its



▶ JULIE BLISS MULLEN '12

manufacturing and develop new partners and customers around the world. "The industry is overwhelmingly demanding a solution to the PFAS problem, responding to existing and pending regulations. We are extremely grateful for the enthusiastic support from our investors and the confidence they have shown in our mission to combat the widespread issue of PFAS contamination," Mullen said. **Pamela Lynch '05** is Aclarity's chief operations officer.

2014

Caryn MacDonald is a project manager at Fuss & O'Neill, a civil and environmental engineering firm with offices in New York and New England. With nearly a decade of experience doing environmental consulting and construction project management, MacDonald will focus on Fuss & O'Neill's environment and facility services business line. This will allow the firm to expand its environmental remediation services in northern New England.

Kamal Mohamed (MS) received the Melvin Williams Jr. Legacy Award at the recent Black

Engineer of the Year Award STEM Conference in Baltimore. Currently a senior systems engineer at General Dynamics Electric Boat, Mohamed has held a variety of professional roles throughout his career, having previously worked as software engineer, systems engineer, and project manager. According to an article in the *US Black Engineer*, Mohamed's "contributions to the field of STEM have been significant, with several notable achievements to his name. He has been recognized for his work on various projects, including the Virginia Class Submarine Program, where he played a crucial role in developing advanced systems and technologies."

Corrine Nawn has published an article in *Med Device Online* about expected growth and anticipated innovations in the robotic surgery industry. Nawn is a senior consultant at Back Bay Life Science Advisors, where she specializes in medical devices and digital technologies. Previously, while completing her PhD in biomedical engineering at the University of Texas at San Antonio and UT Health

San Antonio, she developed battlefield medical devices at the U.S. Army Institute of Surgical Research.

2018

Dominic Chang is part of the research team that recently published new images of the black hole at the center of galaxy Messier 87 (M87). A PhD candidate at Harvard University, Chang is also a member of the Massachusetts-based Black Hole Initiative and the Event Horizon Telescope Collaboration, an international project that captures images of supermassive black holes. The new M87* images, which show a bright ring surrounding the black hole, are significant because they confirm earlier observations of this black hole. "The first image of a black hole looked so similar to the mathematical predictions that it almost seemed like a fluke," Chang said in an announcement about the finding and in a subsequent *New York Times* article. "Getting the opportunity to make new tests using new data, with a new telescope, and seeing the same structure is a crucial confirmation of our most significant conclusions."

2019

Grace Gerhardt was the speaker at the Zonta Club of Quaboag Valley's January celebration of aviation pioneer Amelia Earhart. Gerhardt serves as senior supervisor in Pratt & Whitney's legacy commercial engines unit, where she leads a team of more than 30 mechanics and inspectors. At the same time, she is completing her master's

degree in systems engineering at WPI. Zonta International is a global service organization that works to make the world a better place for women and girls. Every January the organization celebrates Earhart, who was a member of the Boston and New York chapters. In an article in *MassLive*, Zonta's acting co-president Karen Keough-Huff celebrated Gerhardt's achievements: "Grace's experiences as a woman in a male-dominated field and the success she has had are an inspiration for young women and women of all ages."

2020

Aidan Freeburg co-authored an article in *Food Engineering* magazine titled "Lasers Speed Food Preparation While Slashing Energy Consumption." In the article, Freeburg described a set of experiments conducted in a laser oven at IPG Photonics, the Massachusetts-based company where he is a laser applications engineer. Freeburg's team was able to bake peanut butter cookies in the laser oven at a lower temperature and for less time than the recipe instructed. This is possible, he explained, because "Laser light is highly directable so that only the fixed target area is illuminated. Thus, little energy is wasted heating the surroundings, including the underlying substrate. The intense radiation quickly brings the target to its baking temperature. Infrared cameras monitor the surface temperature, forming a closed loop control with the laser to ensure the process temperature window is never exceeded." Freeburg then added this



▶ SYDNEY PACKARD '20

important addendum: "While the speed and energy-saving advantages are obvious, we'd be remiss if we didn't mention that all onlookers were fully satisfied when the cookies were tasted."

Sydney Packard is a recipient of NCAA Today's Top 10 Award, which recognizes former student-athletes for their significant academic and athletic successes, as well as their contributions to their campuses and communities. According to an announcement from the National Collegiate Athletic Association (NCAA), "Packard is a nine-time U.S. Track and Field and Cross Country Coaches Association All-American, earning seven honors in the 800-meter event in both indoor and outdoor track and field. The 15-time all-region honoree won five regional titles and earned All-New England Men's and Women's Athletic Conference honors 11 times. A three-year team captain, Packard finished her career with six individual conference titles and two relay conference titles. The four-time College Sports Communicators Academic All-American also earned Academic All-District

honors five times." Packard is currently working toward earning a PhD in chemical engineering at WPI and expects to graduate in 2025.

Michele Tantillo Sinopoli (MBA) chaired the American Heart Association's 2024 Central Massachusetts Heart and Stroke Ball, an annual event that raises money for and celebrates heart-healthy efforts throughout the region. Sinopoli is the chief medical officer for St. Vincent Hospital in Worcester and MetroWest Medical Center.

Rediet Merra Tegegne was named one of *BostInno*'s 25 under 25 for 2023. In addition to working full time at the biotech company Quanterix, Tegegne is head of operations for Rooted Living, a Boston-based startup that makes granola from whole-food ingredients and uses fully compostable packaging. Thanks in large part to Tegegne's efforts, Rooted Living has gone from selling exclusively online direct-to-consumers to being stocked in stores around Boston and Cambridge and becoming an official supplier for the B.Good College Sports Communicators Academic All-American also earned Academic All-District

[*IN memoriam*]

Roderic Lancey '51 CHE, MS CHE, ALPHA TAU OMEGA, South Portland, Maine
Donald Sasek '51 ME, PHI KAPPA THETA, Kensington, Conn.
Merrill Spiller '51 EE, SIGMA PHI EPSILON, Guilford, Vt.
Everett Bagley '52 CHE, SIGMA PHI EPSILON, Glastonbury, Conn.
Walter Whenman '52 LAMBDA CHI ALPHA, North Grafton, Mass.
Milton Meckler '54 CHE, ALPHA EPSILON PI, Saint Petersburg, Fla.
Hans Koehlc '56 ME, PHI GAMMA DELTA, Danielson, Conn.
Raymond Lussier '56 EE, Grafton, Mass.
Norman Landry '57 EE, ALPHA TAU OMEGA, Mount Laurel, N.J.
Morgan Ely '59 CE, PHI SIGMA KAPPA, Old Lyme, Conn.
Manuel Ganz '60 CHE, ALPHA EPSILON PI, Brookline, Mass.
Francis Wisnowski '60 EE, Pittsfield, Mass.
Paul Young '60 EE, SIGMA PHI EPSILON, Middletown, Conn.
Paul Cahalen '63 CHE, PHI KAPPA THETA, Concord, Calif.
Phillip Parmenter '63 ME, SIGMA PHI EPSILON, Summerville, S.C.
James Dunham '64 CE, PHI SIGMA KAPPA, Kinderhook, N.Y.
Paul Krantz '64 ME, PHI GAMMA DELTA, Glastonbury, Conn.
John Macko '64 CHE, ALPHA TAU OMEGA, Hopkinton, Mass.
Denis Berube '65 EE, THETA CHI, Johns Island, S.C.
Richard Cavallaro '65 ME, West Bridgewater, Mass.
Richard Olson '65 CE, LAMBDA CHI ALPHA, Bradenton, Fla.
Arthus Padovano '65 ME, Harwinton, Conn.
Irwin Smith '65 SIM, Zephyrhills, Fla.
George Skoglund '68 CE, Northborough, Mass.
Wayne Turnblom '68 CH, SIGMA PI, Pittsford, N.Y.
Charles Robinson '69 CHE, THETA CHI, Foxboro, Mass.
John Shields '69 SIM, Trustee, Naples, Fla.
John Campanella '70 MS ME, Estero, Fla.
Andrew Liston '71 CE, Boylston, Mass.
Elliott Strizhak '71 EE, Framingham, Mass.
James Kalloch '78 MS NS, S. Hamilton, Mass.
Robert Forsberg '81 SIM, North Grafton, Mass.
Douglas Towart '82 EE, Lanesboro, Mass.
Mary White '83 UEP, ALPHA GAMMA DELTA, Worcester, Mass.
Michael Burns '89 PE, Westminster, Mass.
Hongxiang Chen '89 MS AM, MS CS, Acton, Mass.
David Doherty '89 ME, PHI KAPPA THETA, Winchester, Mass.
Heli Kokk '96 CS, Acton, Mass.
Neil Scannell '96 BIO, Worcester, Mass.
Juston Urban '98 ME, Tolland, Conn.
Steven Munevar '05 MBA, Worcester, Mass.

The WPI community also notes the passing of these friends of the university:
Celia McLaren, Marie Mercure, and Cornelius Spellman.

Complete obituaries can usually be found online by searching legacy.com or newspaper websites. The Alumni Office will assist classmates in locating additional information. Contact alumni-office@wpi.edu.



“I am thankful to everyone who has contributed to making my WPI experience possible. I will continue to work hard for my goals, and one day I hope these donors are proud to know they were a part of my journey.”

Taylor Jane McGinty '24, a biology and biotechnology major on the pre-med track whose goal is to become a pediatric trauma specialist and work with Doctors Without Borders. She says she wants to “help make healthcare available to people across the world.”

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K-9 BELLA IS RETIRING FROM DUTY AFTER AN EIGHT-YEAR CAREER AS THE EXPLOSIVE-SNIFFING PARTNER OF OFFICER BRIAN LAVALLEE. READ MORE ABOUT THIS BELOVED MEMBER OF THE WPI COMMUNITY ON PAGE 12.