

SPRING 2018

IIT Magazine

ILLINOIS INSTITUTE OF TECHNOLOGY

ALUMNI RESEARCH FROM THE STAGE TO THE STARS

Space Elevator
Improv Therapy
Passive House



Letter from the Vice Provost for Research and Academic Affairs



Returning from a sabbatical in 2007, I vividly remember driving down 31st Street after having been away for many months. As I passed under the Metra tracks, I glanced to my right to see Mies Campus and suddenly realized that I was home. Illinois Tech was my home. I've never forgotten that moment.

Since then I've often thought about what makes Illinois Tech special, what makes it better than other schools, what makes it home. I've concluded that the answer is actually quite simple. It's the people—the students, the faculty, and the staff.

Our student body is truly diverse, with students attending today from 100 countries. Our alumni include the first-known African-American chemical engineer, Charles Pierce (CHE '91); the inventor of the cell phone, Martin "Marty" Cooper (EE '50, M.S. '57); and even a former president of Lithuania, Valdas Adamkus (CE '61, Hon. Ph.D. '99). More recently our students and

alumni were instrumental in creating a billion-dollar company (Cleversafe), according to that company's founder, Illinois Tech Trustee Chris Gladwin. In this issue of *IIT Magazine*, you can read about our alumni today who are making strides in their chosen fields of research, from Carly Coulson (ARCH '97), who is exploring "Invisible Sustainability" in building design, to John Brophy (ME '78), an interstellar engineer with NASA's Jet Propulsion Laboratory.


Staff members across campus distinguish themselves through their dedication to both students and faculty. They serve as mentors, role models, and coaches. They volunteer to serve on the Student Success Committee, they stay late and show up early. Without them, the university could not function.

I hold a particular affinity for my fellow faculty who through the years have built the first private nuclear reactor, developed magnetic recording technologies, established the New Bauhaus, and

pioneered modern architecture. Colleagues include Nobel laureate Leon Lederman and world-renowned architect John Ronan. Faculty also maintain the rigorous academic programs that have served our graduates well. Our return on investment is one of the best in the country! Our faculty are the cornerstone of our research efforts and inspire the next generation of innovators pushing the boundaries of exploration and discovery.

The one common denominator I've found is that Illinois Tech-ers sincerely and modestly do their best to build an institution that is stronger and better than when they arrived. They support one another unlike anywhere else I've been; I'll be forever grateful to those who have unselfishly assisted me over the years. Our students, faculty, and staff are why Illinois Tech is my home.

Sincerely,


Christopher White

Christopher White came to Illinois Tech in 1995 as a particle physics researcher and was named a tenure-track faculty member in the College of Science in 2000. A professor of physics, he has performed high-profile research with colleagues around the world on the Daya Bay Reactor Neutrino Experiment Collaboration. In 2016 White and other members of the Daya Bay team received the Fundamental Physics Breakthrough Prize for their discoveries. The recipient of several teaching, research, and scholarship awards, White served as chair of the Department of Physics from 2011 to 2013 and was then promoted to vice provost.

IIT Magazine

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IIT MAGAZINE IS PUBLISHED
TWICE A YEAR
BY THE OFFICE OF MARKETING
AND COMMUNICATIONS.

© 2018

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FSC-certified recycled paper.
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SEND LETTERS TO
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Illinois Institute of Technology, also known as Illinois Tech, is a private, technology-focused research university offering undergraduate and graduate degrees in engineering, science, architecture, business, design, human sciences, applied technology, and law.

One of 21 institutions that comprise the Association of Independent Technological Universities (AITU), Illinois Tech offers exceptional preparation for professions that require technological sophistication, an innovative mindset, and an entrepreneurial spirit.

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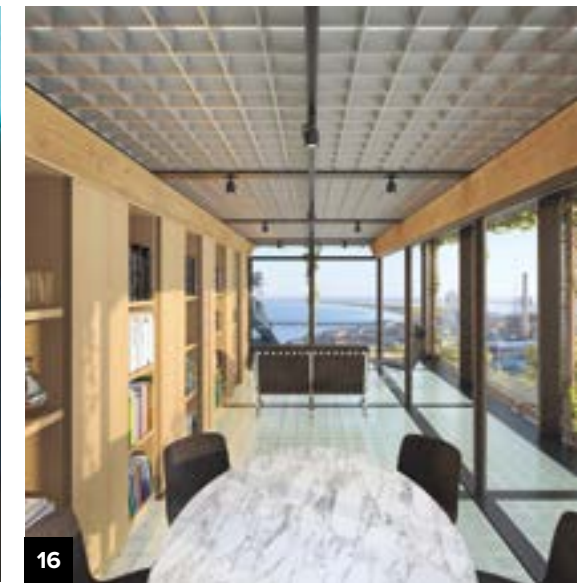
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ON THE COVER: Obayashi Corporation's technical manager, **Akihisa "Aki" Miwa (M.S. OR '83)**, looks ahead to his company's futuristic space elevator project. You can find the cover story on pages 12 and 13.



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Margaret Bonkowski, wife of **Richard Bonkowski (EE '67)**, sent a thank you letter this past January to Illinois Tech President Alan W. Cramb. He had responded positively to her inquiry about obtaining a replacement of her husband's 50th anniversary Class of 1967 commemorative medallion, which was destroyed in the 2017 Sonoma County California wildfires. Here is an excerpt:

I was overwhelmed when I opened the package I received from IIT and found

not only a medallion but also the beautiful shadow box in which it was displayed as well as photos taken at the reunion.

When [my husband and I] opened our gifts on Christmas day, I saved the best for last: the gift from IIT (and from me). Rich was very surprised—and a little confused. Actually, I was a little surprised, too. What I didn't know was that he had also made a request for a replacement medallion through the alumni office. As I explained what I had done, he was touched by my effort to obtain the medallion especially because my life has been quite busy lately, as you can imagine.

Thank you again for your generosity and for helping with this memorable Christmas surprise.

In looking over *IIT Magazine* from fall 2017, the letter from **Ron Dickman (BE '67)** caught my attention. His statement on the [local] "mining division" sounded like the Goodman Manufacturing Company, my first employer. Goodman was an employer for many of us engineers starting our

careers. I worked for Goodman for a little over four years and left at the time the Westinghouse Air Brake Company bought the mining division and the remaining part of the company was renamed Mangood Corporation. Sadly, Goodman along with Crane Company (South Kedzie Avenue), Kool-Aid [part of Kraft Foods Inc.] (South Rockwell Avenue), and many others are no longer part of the Chicago employment scene.

Thank you, Ron, for allowing me to mentally time travel to back then. And I did not have to steal a TARDIS.

Chuck Hresil (ME '61)

Write Back!

IIT Magazine welcomes all signed letters to the editor and edits letters for content and clarity. Please send correspondence to:

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c/o Letters
10 West 35th Street
Suite 4D7-1
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M. Zia Hassan: Alumnus, Mentor, and Friend



[Left to right] Past Provost Frances Bronet, M. Zia Hassan Endowed Professor Elizabeth Durango-Cohen, Illinois Tech Trustee Ellen Jordan (PSYC '79, M.B.A. '81), and John and Mae Calamos Stuart School of Business Dean Endowed Chair John F. O. Bilson

M. Zia Hassan (M.S. IE '58, Ph.D. '65) dedicated his entire career to Illinois Tech. His academic roles included professor and department chair of industrial engineering, professor of management science, and dean of Stuart School of Business. Hassan oversaw the launch of Stuart School's master of science programs and guided Stuart's accreditation in the Association to Advance Collegiate Schools of Business, a status earned by fewer than 5 percent of the world's business schools. In 2002 Hassan stepped down as dean and became director of Stuart's Ph.D. program.

During his years at the university Hassan mentored countless students. Alumni who learned from and admired him honored his Illinois Tech legacy by establishing the M. Zia Hassan Endowed Professorship fund, with contributions from more than 65 alumni. The lead donor behind the fund, Illinois Tech Trustee Ellen Jordan (PSYC '79, M.B.A. '81), served for many years on the boards of advisors for Stuart School and the Jules F. Knapp Entrepreneurship Center.

"Zia is a man for whom I had enormous respect, who made an indelible mark on me both personally and professionally. He was my professor, mentor, and more importantly, he was a trusted friend and advisor. I learned so much from Zia," Jordan said at the investiture, held last November. Hassan passed away less than one month before the event.

"I was elated to support this wonderful and fitting tribute to a man who—for more than half a century—worked tirelessly to devote himself to his students, to Illinois Tech," adds Jordan. "I am proud that he was my friend. I'm sincere when I say that I have

counted Zia's guidance and friendship among my life's great blessings."

Elizabeth Durango-Cohen, associate professor of operations management, was invested as the first-ever M. Zia Hassan Endowed Professor. Her research focuses on the formulation, estimation, and analysis of models to support managerial decision making arising in the areas of supply-chain management and nonprofit fundraising. Earlier in 2017 she was awarded Stuart School's Excellence in Teaching Award in recognition of her outstanding contributions to students.

"Zia always searched for ways to make a positive difference—whether in the lives of new faculty like me, or with students, or in the community. My goal is to use this endowed professorship to support my research as I work to make a positive difference," Durango-Cohen says.



M. Zia Hassan

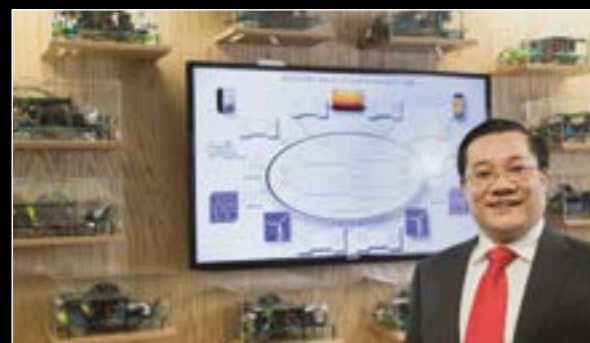
Transitions

Illinois Tech welcomes the following individuals to the Board of Trustees:

- Judson B. Althoff (ME '95)**, Executive Vice President, Worldwide Commercial Business, Microsoft Corporation
- Carter H. Eckert Sr. (CHE '64)**, Retired
- Richard Neil Levy (LAW, M.B.A. '97)**, Chief Executive Officer and Founder, Victory Park Capital
- Mitchell Harris "Mitch" Saranow**, Chairman and Founder, The Saranow Group
- Michael Steven Seedman**, Executive Partner, Siris Capital Group
- John C. Walden (LAW '86)**, President and Chief Executive Officer, FTD Companies

Illinois Tech congratulates the following individuals on their new roles at the university:

- Anijo Punnen Mathew**, Associate Professor, Institute of Design, as Academic Director, Ed Kaplan Family Institute for Innovation and Tech Entrepreneurship
- R. Russell Betts**, Distinguished Professor of Physics, as Interim Provost and Senior Vice President for Academic Affairs
- Robert Ellis**, Associate Professor of Applied Mathematics, as Associate Dean, College of Science
- Xiaofan Li**, Professor of Applied Mathematics, as Interim Dean, College of Science



Qing-Chang Zhong

Visit magazine.iit.edu to read Online Exclusives about

- Qing-Chang Zhong**, Max McGraw Endowed Chair Professor of Energy and Power Engineering and Management
- Kyllian Griffin**, head coach of the Scarlet Hawks swimming and diving teams
- Hammacher Schlemmer Institute** "The Best Personal Blender" test
- Leana Osmer (AE '16)**, component product engineer for Aerojet Rocketdyne
- Brandon Lloyd (AE '08)**, NASA International Space Station flight controller

Giving Day 2017: Tech Yeah!

On November 7, 2017, the Illinois Tech community came together to raise money for the university. Donors helped the university unlock thousands of dollars in challenge and matching gifts that are already making a huge difference for student scholarships, educational supplies, and campus support.

Giving Day may be over, but you can support Illinois Tech students all year-round at alumni.iit.edu/give.

TECH YEAH! BY THE NUMBERS

\$793,333 TOTAL DOLLARS RAISED	\$354,338 TOTAL SCHOLARSHIP DOLLARS
1,088 TOTAL DONORS	736 ALUMNI DONORS

Institute of Design
COLLEGE WITH THE MOST DOLLARS

ILLINOIS TECH GIVING DAY
11.7.17

Illinois Tech Headliners



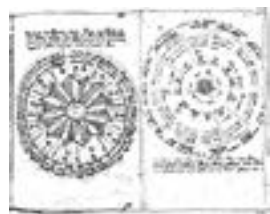
“TO BE SURE, BOLD PROTESTS THAT ATTRACT ATTENTION, EVEN IF MOST OF IT IS CONDEMNATORY, CAN PLAY A CRITICAL ROLE IN CREATING THE CONDITIONS FOR POLITICAL CHANGE.”

Christopher W. Schmidt, Chicago-Kent College of Law professor, in the op-ed “What Trump-Era Protesters Can Learn from the Lunch Counter Sit-Ins of 1960” in *USA Today*



“It’s a biological phenomenon: Physical activity is good for our mood.”

Michael Young, professor and chair of psychology, in a *New York Times* article on seasonal affective disorder



“It will give you an answer for almost anything: If you type in the letter ‘A’ 17 times, Google Translate will give you something that looks like a sentence if you squint hard enough.”

Professor of Computer Science **Shlomo Engelson Argamon** in *The Times of Israel* discussing cracking the code behind the Voynich Manuscript

PHOTO: OLIVIA DIMMER



Freedom to Be Free

If there’s one assignment universally loathed by college students, it’s the group project.

Computer science third-year students Brendan Batliner [right] and Vinesh Kannan [left] have experienced firsthand the struggles of coordinating schedules, holding group members accountable for pulling their weight, and communicating these roadblocks to their professors.

So, true to their entrepreneurial spirit, the pair developed an app to solve these challenges.

“A problem that we always noticed is that everyone is so busy with their individual lives they can’t commit to good teamwork,” Batliner says. “This is a group scheduling tool to help people not have the excuse of ‘I don’t have any time.’”

With some guidance from Illinois Tech Coleman Foundation Clinical Associate Professor of Entrepreneurship Nik Rokop, the duo launched Omnipointment in January 2016.

The scheduling application allows groups to share appointments and suggests meeting times that work for everyone. It also prevents double-booking and keeps group members accountable by showing how much free time they actually have in a day.

“Working on a personal project and applying what students learn in class to that project makes their learning much more meaningful and gives the student a sense of ownership of learning they don’t otherwise get,” Rokop says. “It is inspirational for me to see my students succeed and to have a small part in their success. I learn from them as much as they learn from me, and I develop lifelong friendships with these amazing young people.”

The app has recently been sold to Mimir, an Indianapolis-based computer science-education business. As part of the acquisition, Kannan has joined the Mimir team and will launch his postgraduate career as head of curriculum development.

The software developed by Batliner and Kannan is currently being used by more than 95 universities around the country, including Illinois Tech.

“We are so proud to say the Illinois Tech computer science department is a customer of ours,” Kannan says. “We not only got to work with and learn from professors and to interview students and professors, but we have a business relationship on tap on campus.”

Since its acquisition by Mimir, Omnipointment has been modified to allow professors to keep track of group projects and to address any issues early on. Both creators say the assistance they received from the university was instrumental in helping get their idea off the ground.

“We’re both lifelong learners who are going to enjoy learning whether we’re in the classroom or not,” Kannan says. “We wanted to be able to demonstrate, irrespective of grades and degrees, we are capable of growing. That’s why having mentors like Nik are super valuable; he has insights that extend beyond the classroom to push us and help us reflect on how we can be better.” —*Olivia Dimmer*

MORE ONLINE
Mimir: www.mimirhq.com
Omnipointment: www.omnipointment.com

Bridges to the Future

“I strongly believe that the future of America rests not on those athletic superstars or entertainment celebrities garnering headlines and idolized by today’s youth, but with those scientists, technologists, and engineers charting the new information age.” —Bob Johnson (CE ’69, M.S. ’71), contest promoter and retired structural engineer

its 43rd year. Chicago-area high schools hold their own bridge building contests in December or January, with top winners participating in the Illinois Tech event. Duchossois Leadership Professor Carlo Segre, who heads the International Bridge Building Committee, has been involved in the event since 1993.

“Bridges are built to specs as part of a kit, but the students can use any glue they want. The design depends on the specs; there are criteria that state the

“For the last number of years before I retired, I would build a sample bridge and then break it for the classes to show how it would be tested. I would load the bridge and it would eventually break with a loud bang as the weights hit the floor. Because of their surprise, I would then need to clean many of the students off of the ceiling...”

—Roy Coleman (PHYS ’64), contest co-founder and retired physics teacher



“Volunteering to judge this contest allows me to give back to the engineering community and share my professional skills to help future engineers gain a better understanding of the engineering principles.” —Jamal Grainawi (CE ’83, M.S. ’85), contest judge and vice president and Movable Bridges Specialty Group manager at WSP

PHOTO: ROBIN SUBAR

Student preparing to test his bridge to destruction at the 2018 Chicago Regional Bridge Building Contest

“It still surprises me every year how nervous the students are before they start testing their bridges. Some of them are literally shaking. I try to sit by them and talk to them to calm them down.” —George Krupa (CE ’72, M.S. ’77), contest chief judge and structural engineering consultant

exact specifications the bridges need to meet and that is the trick,” he explains. “Then they break their bridges and the one with the highest efficiency wins.”

Tinley Park High School junior Todd Bajzek, who comes from a family of Illinois Tech alumni bridge winners [see Rewind on page 32 about his sister Sasha Bajzek (CE ’11)], won first place in the Chicago South Suburban Regional division. With a lightweight bridge mass of just over 27 pounds capable of supporting 110 pounds of weight, Bajzek’s creation had the highest efficiency rating of any contestant. Efficiency is measured as the ratio of bridge mass to how much weight the bridge can support before it breaks.

Bajzek and five other first- and second-place winners will go on to compete in the International Bridge Building Contest on Saturday, April 21. The winner of the international contest is given a half-tuition scholarship to the university, if selected for admission.—*Marcia Faye*

MORE ONLINE
Bridge Building Contest: bridgecontest.phys.iit.edu

The high school students descended upon Hermann Hall, some accompanied by parents, others arriving by the busload with their teachers. Wearing fleece hoodies, down jackets, or plaid uniform skirts, the young people formed a queue to check in their masterpieces—small-scale bridges of basswood that they each designed and built in the hope that their bridge’s strength would earn them a chance at a coveted first- or second-place slot in the

2018 Chicago Regional Bridge Building Contest, held on January 23 at Illinois Tech.

In the late 1960s Morgan Park High School teacher Roy Coleman (PHYS ’64) suggested that his students “build a bridge” to better understand the concept of force dynamics. He showed some of his students’ bridges to Illinois Tech Professor Emeritus Earl Zwicker (M.S. PHYS ’52, Ph.D. ’59), who then initiated efforts for Illinois Tech to host the annual regional bridge building contest, now in



Women's Lacrosse Welcomes New Head Coach

Meghan Brady, a former star student-athlete at Robert Morris University who went on to rebuild the lacrosse program there, is the new head coach of the Scarlet Hawks women's lacrosse team. Before undertaking her coaching duties at Robert Morris, Brady served as an assistant coach at Elmhurst College and Davenport University. She also was head coach at Fenwick High School and Barrington High School, both in the Chicago area. As a student-athlete, Brady was a two-time All-American and All-Conference selection.

Teams Take Third Place and a Tight Fourth at the Liberal Arts Championships

The Scarlet Hawks men's and women's swimming and diving teams placed third and fourth, respectively, at their end-of-season meet, the 2018 Liberal Arts Championships, held February 14-17 at Luther College Aquatic Center in Decorah, Iowa.

Student-athlete Karsen Diepholz (CS/AE 2nd year), who took the top score in the 1,650-yard freestyle in 2017 also won the 2018 event, besting his previous score of 16:02.14 with a new time of 15:59.97. He also set a new Illinois Tech record and the Luther College pool record. The Lady Scarlet Hawks were just two points behind the third-place team and five points behind the second. The women's 200-yard medley relay team of Katherine Lydon (BME 2nd year), Brigitte Temple (ME 4th year), Briana Tyler (ME 4th year), and Kristin Wills (BME 3rd year) set the school record with a time of 1:49.67. The 2017 200-meter breaststroke record holder, Temple, won the event again this year with a time of 2:24.22 and a Luther College pool record.

Read the Online Exclusive "Making Waves" about the men's and women's swimming and diving head coach, Kyllian Griffin, at magazine.iit.edu.



Brigitte Temple (ME 4th year)



Karsen Diepholz (CS/AE 2nd year)



Women's Volleyball Standout Named USCAA Student-Athlete of the Year

The United States College Athletic Association selected Scarlet Hawks women's volleyball player Reya Green (PSYC 4th year) as Student-Athlete of the Year, marking only the third time that the USCAA has given the honor to an Illinois Tech student-athlete. In addition to having been team captain, Green is an involved academic leader, serving as treasurer and board member of the Student Athlete Advisory Committee and as treasurer of the Order of Omega, a selective Greek honor society whose members excel in both the classroom and extracurricular activities.



Play Ball: Illinois Tech vs. Aurora University

The Scarlet Hawks baseball team will go bat to bat against the Aurora University Spartans in Illinois Tech's annual ballgame at Guaranteed Rate Field, home of the Chicago White Sox. The big game will be held on Thursday, April 26 at 7 p.m.

illinoistechathletics.com

PHOTOS: STEPHEN BATES, WCS PHOTOGRAPHY



Inside the DNA of Pathogens

Figuring out how diseases co-evolve alongside humans can be challenging, Illinois Tech Assistant Professor of Biology Jean-Francois Pombert says. By looking at the genomes of pathogens, components involved in virulence and in host adaptation can be identified. ¶ "If we have a better understanding of what makes [pathogens] dangerous, we can start devising strategies to fight back or, even better, try to start developing prophylactic techniques to prevent diseases from occurring in the first place," he says, noting that one of the challenges of DNA sequencing is that the process is almost like a big jigsaw puzzle, except there's no picture on the box and the puzzle pieces often have the same colors, the same shapes, and are blurry. ¶ For Pombert, the process of mapping out the genomes of human pathogens is the topic of his latest research. By using the fastest cutting-edge genome sequencers, Pombert and his team of student researchers have been able to accurately sequence the DNA of several bacterial pathogens that have never been sequenced before. In another project funded by a National Institutes of Health grant, Pombert hopes to find out more about how Microsporidia, a kind of parasite often found in patients with immune system deficiencies, infect us and how they avoid the defenses in place in the human body. ¶ One of the sequencers his team uses is still in its prototype phase. The MinION Oxford Nanopore DNA and RNA sequencer can generate several gigabytes of DNA sequence data. Researchers can choose to sequence the entire genome of a substance or get a snapshot of a particular section. In addition, the MinION streams data in real time, enabling novel applications and faster responses to outbreaks. —Olivia Dimmer

MORE ONLINE
 "Researchers at Illinois Tech Use DNA Sequencing to Fight Parasites":
[youtube.com/Watch?v=LJRK25vLnFY](https://www.youtube.com/watch?v=LJRK25vLnFY)

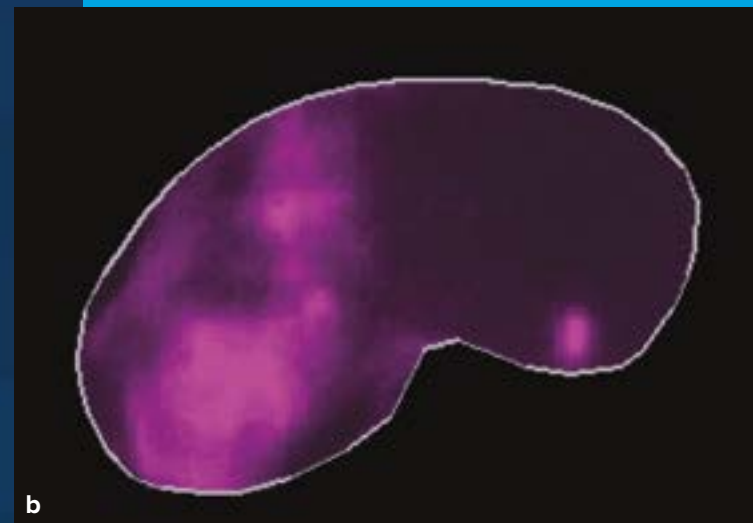
PHOTO: OLIVIA DIMMER

Brilliant Beacons on the Research Horizon

The future of tailored cancer drug therapy lies within the lima bean-shaped image on a computer screen in Illinois Tech's Medical Imaging Research Center. The image depicts a whole porcine lymph node illuminated by bright red and green points of injected fluorescent dyes and is the first produced with the ADEPT Cancer Imager. The innovative device produces a 3-D high-resolution molecular map of a piece of tissue such as a lymph node indicating microscopic areas where cancer has spread, and at a far more minute level than existing imagers.

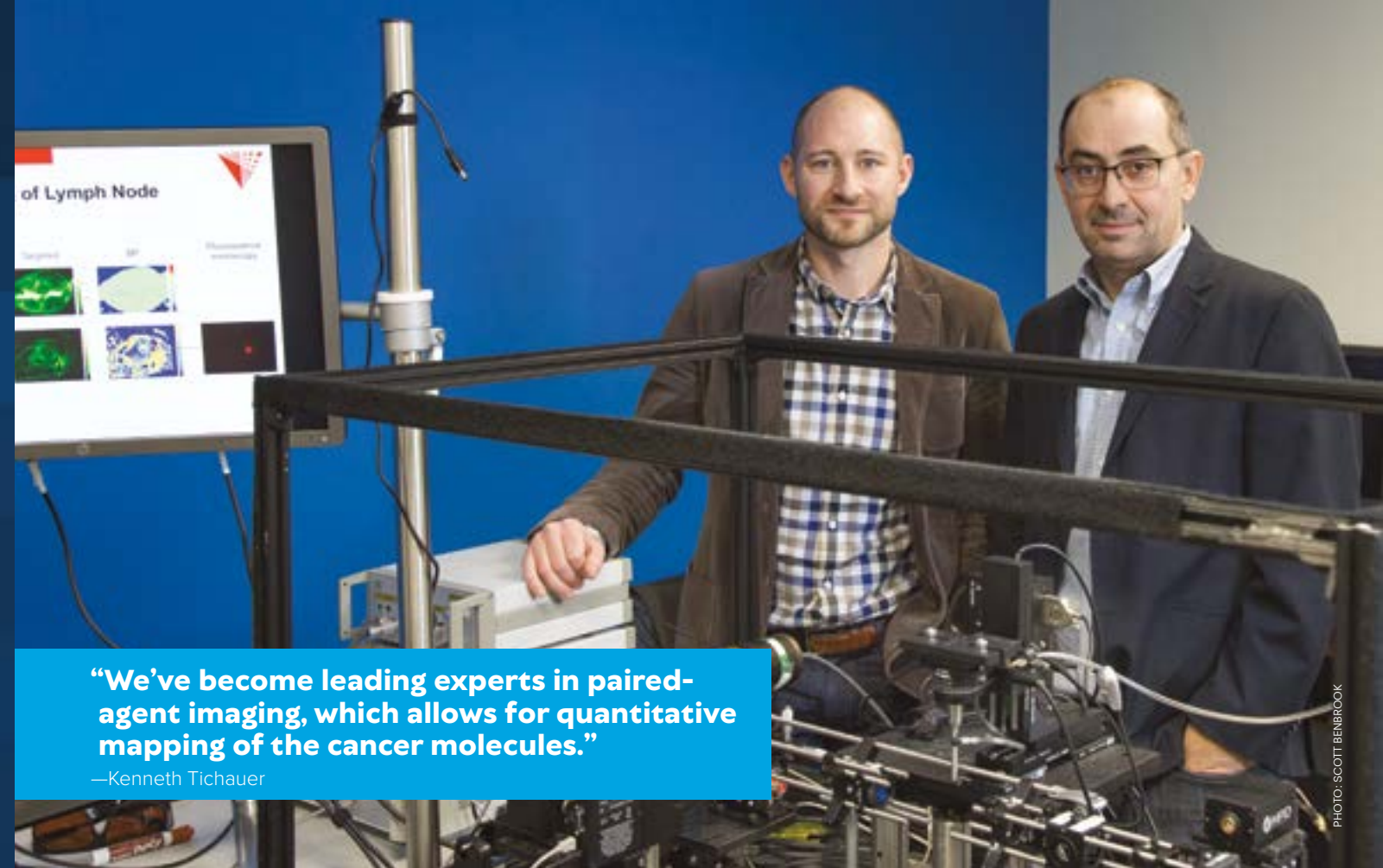
"Lymph nodes drain the primary tumor, which is the reason physicians look for cancer that is spread there. The treatment for metastatic disease is very aggressive; you would not want to give that treatment to somebody who did not need it. Physicians need some way of identifying who should be given the aggressive treatment," says Assistant Professor of Biomedical Engineering Kenneth Tichauer, developer of the ADEPT (Agent-Dependent Early Photon Tomography System) Cancer Imager. He notes that current studies indicate that patients who have microscopic levels of metastatic disease and who would benefit from a more aggressive therapy are being missed 30 to 60 percent of the time. "Patients are then coming back later with a more advanced disease than before they started cancer therapy. Our idea is to make the detection of that metastatic disease more sensitive than what is now being done."

Tichauer's research group is currently working with pig lymph nodes that have been injected with human cells or cells harvested from human cancer grown in an immune-compromised mouse. These nodes are then injected with biologically active fluorescent substances (fluorophores, which display as red and green) that chemically interact with the tissue, seeking out proteins that are over-expressed by breast cancer. The node is then suspended in the imager and photons, or light particles, pass through the tissue, resulting in a cross-sectional image displaying a "map" of where the red and green dyes, also known as paired agents, have traveled. The tissue specimen can be rotated 360 degrees in the ADEPT chamber so that a 3-D reconstruction can be produced. A larger amount of the protein-seeking dye indicates the presence of cancer while an equivalent proportion of dye distribution would indicate no presence of cancer.



Pig lymph node loaded with three microscopic human breast cancer lesions: **a)** The cyan-colored image is the ADEPT image of the targeted imaging agent distribution (lots of nonspecific retention); **b)** The magenta-colored image is the ADEPT image of the control imaging agent (to account for the nonspecific retention); **c)** The lymph cartoon is overlaid with the ratio of the cyan and magenta images [in red], highlighting the locations of the three microscopic cancer lesions.

IMAGES: KENNETH TICHAUER



"We've become leading experts in paired-agent imaging, which allows for quantitative mapping of the cancer molecules."

—Kenneth Tichauer

Assistant Professor Kenneth Tichauer [left] and Associate Professor Jovan Brankov (M.S. EE '99, Ph.D. '02) with the ADEPT Cancer Imager

"We've become leading experts in paired-agent imaging, which allows for quantitative mapping of the cancer molecules," says Tichauer, adding that in a clinical setting, the images would reveal the exact area where cancer cells lie within minutes, thereby allowing medical experts to accurately process the tissue specimen and decide upon the course of treatment.

Tichauer came up with the idea for two-color imaging for cancer detection while he was a postdoc at Dartmouth College, exploring the kinetics of imaging agents in tissue and applying mathematical models to extract quantitative information. At Illinois Tech he formed the ADEPT team with co-principal investigators Jovan Brankov (M.S. EE '99, Ph.D. '02), a systems development expert and associate professor of biomedical engineering/electrical and computer engineering, and Rajendra Mehta, a biologist with IIT Research Institute. In 2016 the ADEPT Cancer Imager was selected over two other faculty teams to advance to the second phase of Illinois Tech's Nayar Prize I. Trustee Madhavan Nayar (M.S. IE '68) and his wife, Teresa, on behalf of the Nayar

Family Foundation, established a \$1 million gift to fund the Nayar Prize I (and later, Nayar Prize II) to challenge university faculty, staff, and students to develop breakthrough, innovative projects that will, within three years, produce meaningful results with a societal impact. Tichauer was also funded through a National Science Foundation Faculty Early Career Development (CAREER) Award in 2017 to further refine the imager. The researchers credit their cadre of undergraduate and graduate students with making important contributions to the project. Doctoral student Cynthia Li (BME Ph.D. student) contributed to the development of the pig lymph node procedure. Lagnojita Sinha (BME Ph.D. student), Tichauer's student since 2013, helped build the imager.

"Although my knowledge of optics was limited in the beginning, the lab was a very supportive and encouraging environment where all ideas were equally welcomed, as we all were experimenting and learning at the same time," says Sinha, who has trained Veronica Torres (BME Ph.D. student) to take her place on the team. "It was enlightening to build a system from scratch that is

now able to perform imaging at a high resolution and has the potential to do groundbreaking research in the future."

Brankov provides a sobering statistic that underscores the researchers' ultimate goal behind the creation of the ADEPT Cancer Imager.

"From 90 to 95 percent of [cancer] drugs fail at the clinical stage. They have very good results in animal models and in some preliminary phase 1 stages, but when they go into phase 2 and phase 3, they fail," says Brankov. "The cost of the effective drug is now high because only 5 percent of the investment actually pans out to be something. One of the theories on the heterogeneity of the tumor is that there are various different cancer cells that are undetected or not differentiated. The imager would shorten the time to develop the effective drug and could be a huge savings not only to pharmaceutical companies, but also to NIH [National Institutes of Health], which is funding most of the research." —*Marcia Faye*

MORE ONLINE
Nayar Prize: web.iit.edu/nayar-prize/about

PHOTO: SCOTT BENBROOK

STAR POWER

BY RICHARD HARTH

Voyager 1, having completed its spectacular photo safari of our solar system, has one more destination in store. But don't bother waiting around. Speeding across the lonely interstellar void at 38,000 miles per hour, NASA's fastest probe isn't due to approach AC+79 3888—a nearby star—for about 40,000 years.

Those seeking to travel far beyond Earth face many complex challenges, though according to John Brophy (ME '78), the most formidable hurdle is easily defined: "Space is big," he says.

Even as stargazers today enjoy an up-close and personal view of the cosmos, thanks to remarkable ground- and space-based instruments, the prospect of ever visiting a star beyond our solar system still seems impossibly remote. The nearest candidate, Proxima Centauri, winks at us from nearly 25-trillion miles away. Even modest journeys within our solar system present daunting challenges, due to the distances involved.

Brophy is approaching the problem of the enormity of space by designing advanced propulsion systems to carry probes similar to Voyager, and perhaps one day human expeditions, over greater distances with unprecedented speed.

He began working on advanced technologies known as ion propulsion systems at Colorado State University, where he completed his Ph.D. in 1984. Since 1985 he has been an engineer in electric propulsion technology development for the Jet Propulsion Laboratory (JPL), in Pasadena, California, where he is now an engineering fellow.

As Brophy explains, one of the primary limitations of earlier spacecraft, such as the Saturn V/Apollo 11 vehicle, which carried astronauts to the moon, is the enormous weight of the chemical fuel that has to be carried aboard such rockets. This approach is simply too heavy, ungainly, and inefficient for fast, long-range voyages.

To propel the spacecraft forward, rockets spew gas from their engine

nozzles at high velocity. A formula based on the conservation of momentum says that the desired spacecraft velocity and the rate at which exhaust comes out of the rocket engine govern the amount of propellant needed. Known as the rocket equation, this principle places severe upper limits on the practicality of conventional spaceflight over large distances.

"The solution is to decouple the propellant from the source of energy used to accelerate it," Brophy says. These advanced systems, known as ion propulsion, gather energy from the sun using onboard solar panels to convert this radiant energy into electricity to run the ion thrusters.

Rather than burning a chemical propellant as in conventional rockets, ion propulsion creates thrust by producing and accelerating a beam of charged particles, or ions, with electricity. The technique creates very high exhaust velocities on the order of 40,000 meters per second. "That is about 10 times faster than the best chemical rocket engine," Brophy says.

Brophy helped implement the idea of ion propulsion on NASA's Deep Space 1 mission, which performed a successful flyby of the asteroid Braille and then the comet Borrelly. He later designed the ion propulsion system for the ambitious DAWN project to rendezvous with protoplanet Vesta and dwarf planet Ceres. In 2015 Brophy was part of the Dawn team that received the Robert J. Collier Trophy from the National Aeronautic Association for his ion propulsion system on NASA's Dawn mission.

Still, as Brophy notes, existing ion propulsion systems have their limitations for long-distance travel. Gaining additional power for the ion thrusters requires larger onboard solar arrays that add to the craft's weight and reduce its speed.

The radical solution proposed is to replace the sun as the external power source with a massive, space-based array of high-intensity lasers, spread over 1 to

3 kilometers, beaming light energy to the spacecraft across astronomical distances and providing around 100 megawatts of power to the spacecraft. The spacecraft would carry photovoltaic cells specifically tuned to the frequency of impending laser light and convert this power to electricity.

"If you had something like that, what could you do with it?" Brophy asks. "It turns out that you can do some pretty amazing things."

Such technology would permit travel to an exotic locale known as the solar gravity lens focus location, a region of space that begins about 550 astronomical units (AU) from Earth. (1 AU is the distance from Earth to the sun.) Here, the sun's gravitational field can be used like a gigantic magnifying glass, permitting spectacular imaging of distant planets.

"To put this in perspective, the Voyager spacecraft, the fastest spacecraft ever launched, has been flying for 40 years and is at about 140 AU. We want to go to

"To put this in perspective, the Voyager spacecraft, the fastest spacecraft ever launched, has been flying for 40 years and is at about 140 AU. We want to go to 550 AU and we want to do it in 10 to 15 years." —John Brophy

550 AU and we want to do it in 10 to 15 years," Brophy says. "That's the challenge."

Controlled propulsion at such a pace—around 400,000 to 500,000 mph—would potentially open up a range of other enticing possibilities, including human missions to Mars and Jupiter, robotic orbiter missions to Pluto, asteroid mining operations, and the ability to deflect nearby asteroids from a catastrophic collision with Earth. ●

MORE ONLINE

"A Breakthrough Propulsion Architecture for Interstellar Precursor Missions": go.nasa.gov/2FM19EG
God's Ground: whizbuzzbooks.com/gods-ground-john-r-brophy



INTO THE SKYY

BY MARCIA FAYE



Akihisa "Aki" Miwa (M.S. OR '83), general manager of Obayashi's Technical Division

PHOTO: BONNIE ROBINSON

BY MOST ANY COMPANY'S STANDARDS, ERECTING the world's tallest tower—the TOKYO SKYTREE®, at a height of 2,080 feet—would be an insurmountable architectural feat. But for the Obayashi Corporation, it was merely a warm-up. In 2012 the global construction, civil engineering, and real estate development conglomerate announced that it had begun research so that it could assemble a 96,000-kilometer (59,652-mile) carbon nanotube cable that will extend from Earth into the cosmos to support a space elevator. Akihisa "Aki" Miwa (M.S. OR '83), general manager of Obayashi's Technical Division, says that the company, where he has been employed since 1974, has always had one eye just beyond the horizon.

"Regarding technology development, we are spending 70 to 80 percent of our budget on current issues; 20 percent of our budget is for future things—sometimes dreams, too," Miwa says, with a hint of a smile, noting that no matter the project, his company's focus is on benefiting society.

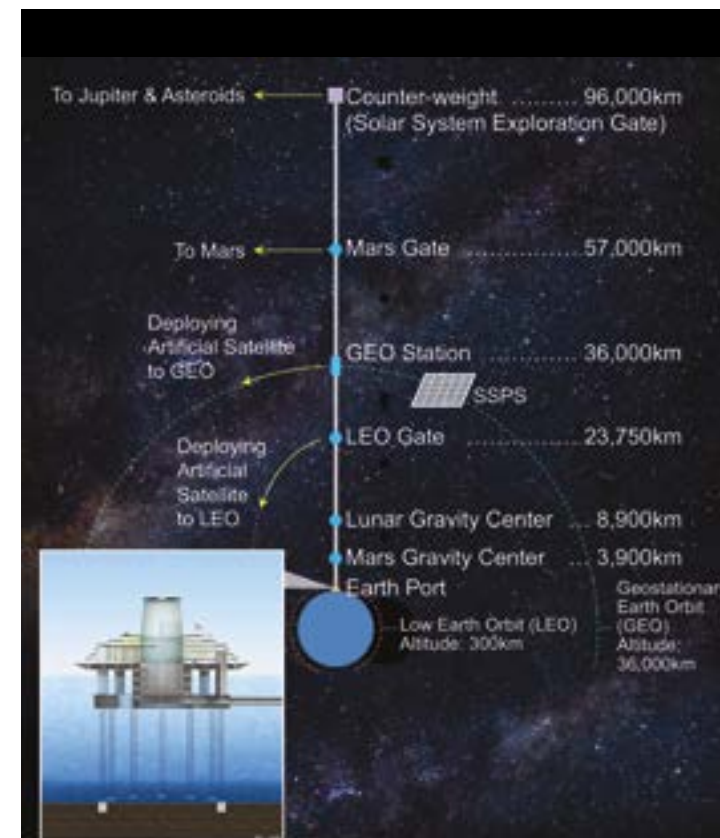
With a target year of 2050 for the completion of the space elevator, whose price tag is as yet undetermined, Miwa, who oversees the project's engineering team, says that the lift would carry humans and equipment to various celestial waystations for tourism, commerce, and exploration. At an estimated space cargo delivery cost of about \$100 per pound, the elevator could replace conventional rocket launches at a significant savings both in cost and to the environment.

On Mies Campus last December to accept Illinois Tech's 2016 International Award of Merit, Miwa also made a presentation about the space elevator, the TOKYO SKYTREE, and other innovative Obayashi projects including the award-winning Mike O'Callaghan-Pat Tillman Memorial Bridge, a.k.a., the Hoover Dam Bridge, the longest arch concrete bridge in the Western hemisphere, completed in 2010. In the audience was David Ardit, professor and director of Illinois Tech's Construction Engineering and Management Program, who is confident that Miwa can continue his stellar achievements.

"I can safely state that I did not have too many students of the same caliber in the Construction Engineering and Management Program in later years," Ardit says about Miwa, who took courses with him in 1982 shortly after Ardit established the program. "I knew he was destined to have a super successful career...The mega-projects he has been involved in are remarkable; the research operation under his purview—the facilities, the research projects—is phenomenal. No construction company in the U.S. has such research capabilities." ●

MORE ONLINE

Obayashi Corporation: www.obayashi.co.jp/english
Sky Line, *The Space Elevator Documentary*: spaceelevator.net



HOW IT WORKS

- The carbon nanotube cable will be anchored underwater near the equator and extend to a geostationary Earth orbit (GEO) satellite that circles over the equator. The cable will then extend into outer space and end at a 12,500-ton counterweight, which serves to balance the entire apparatus. The elevator will rotate with Earth's rotation.
- The cable will have the capacity to support 100 tons of climbers and transportable equipment.
- The floating Earth Port, for departures and arrivals, is the connection point to Earth's surface.
- The first waystation is the Mars Gravity Center. Training simulating the Martian environment will be done here.
- The Lunar Gravity Center will house research and moon training facilities.
- Artificial satellites can be brought up the space elevator and dropped through the Low-Earth Orbit Gate.
- Geostationary Earth Orbit Station is a multitask, state-of-the-art lab facility. It will be a launching point for GEO satellites and feature modules allowing for microgravity movement to viewing windows for space tourism.
- Beyond this station, the space elevator is open to accommodate spaceships for solar system exploration.
- Mars Gate will be a site for Mars transfer vehicles.
- The 12,500-ton counterweight will also serve as a Solar System Exploration Gate that ejects spacecraft making journeys to the asteroids or to Jupiter.

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BETTER LIVING THROUGH IMPROV

By Luke Siuty

Picture a scene with several performers. The stage fills with chatter about decorating a Christmas table, but one person interrupts claiming the stove is on fire. There is neither a table nor emergency, no script or direction. It's improvisational theater, and the people aren't actors but group therapy patients seeking psychological treatment.

Improvisational theater exercises, more popularly known as "improv," have long been used in therapy. As early as the 1960s, Viola Spolin pioneered exercises designed to tap into one's self-expression and creativity. Over the years, psychologists have found several mental health benefits for patients from integrating improv into their practice, such as reducing anxiety and treating depression.

Kristin Krueger (Ph.D. PSYC '04) first encountered improv when a friend convinced her to enroll in a class in 2006. She says that improv helped her to overcome many of her inhibitions and feelings of self-consciousness, helping her extend past her comfort zone and improving her personal interactions. Taking interest in improv as a cognitive activity, Krueger decided to create a small clinical study based on mental health outcomes when she worked for the Cook County Health and Hospitals System.

"I wanted to see if all the great things people say about improv could be measured, that it increases how you feel about yourself, that it reduces your

"Improv in and of itself probably addresses several areas; that is the nature of improv." —Kristin Krueger

depressive symptoms and anxiety and increases your self-esteem," she says. The results of the study conducted by Krueger along with two Illinois Tech research collaborators were published in the paper "Thera-Prov: A Pilot Study of Improv Used to Treat Anxiety and Depression" in the *Journal of Mental Health* (July 2017).

Krueger interviewed each person in her weekly practice treatment group individually, starting with an introductory survey on demographic information. She took five qualities designed to highlight mental health outcomes—anxiety, depression, self-esteem, satisfaction with social roles, and perfectionism—and found significant improvements in self-esteem, anxiety, and depression, alongside a trend for reduced perfectionism among participants after improv therapy.

PHOTOS: ROBIN SUBAR



Lewis College of Human Sciences alumna Kristin Krueger (Ph.D. PSYC '04) rehearses with fellow cast members of The Therapy Players.

How is this addressed in practice? Besides doing improv skits, Krueger may select a game that targets a specific concern that commonly affects patients, such as fear of failure. The participants will then engage in a challenging exercise, and they will be required to celebrate every move they make, especially when they fail at it or make some kind of error. After the exercise, the group is given a chance to reflect on the experience.

"Improv in and of itself probably addresses several areas; that is the nature of improv," Krueger says. "If they can recall a time when they were very courageous, they might also be courageous the next time they have to do something difficult at work or in a social situation."

Krueger is currently working on a second study that seeks to categorize improv exercises based on cognitive activities. Her method involves inviting clinical neuropsychologists or trainees and having them participate in games, such as "Wind and Rewind," which sharpens memory. Seated in a circle, participants go in order and say words that they associate with the beginning word. After the last person goes, everyone starts to chant the words in reverse order.

"I was impressed that Dr. Krueger was able to put this study together so that we can support claims about improv exercising specific parts of the brain and those skills," says Sherrie All, a clinical psychologist who owns the Chicago Center for Cognitive Wellness. "We're getting a lot of new evidence to show that the adult brain can continue to grow or change throughout the entire lifespan."

Outside of her private practice in Elmhurst, Illinois, Krueger partakes in the Chicago-based improv troupe The Therapy Players, composed solely of psychotherapists, who are all trained in improv. A hit at many mental health conferences and meetings as well as at The Den Theatre and Stage 773 in Chicago and Oak Park's Open Door Theater, the troupe bases about half of its skits on its work. ●

MORE ONLINE
"Thera-prov: A Pilot Study of Improv Used to Treat Anxiety and Depression":
 Kristin R. Krueger, Jonathan W. Murphy & Andrea B. Bink;
Journal of Mental Health: bit.ly/2n0h3V8
 The Therapy Players: www.therapyplayers.com



PHOTO: BOB CROSBY

Less Is Much More

By Marcia Faye

Bagley Outdoor Classroom at the University of Minnesota Duluth

April high temperatures in Grand Marais, Minnesota, located on the shores of Lake Superior, average in the mid-40°F range, balmy by its January minus 40°F low that residents take in stride. No matter what weather extreme, however, visitors to the local artist colony or nature lovers seeking a quiet escape will one day have the chance to experience life deep within the area's boreal forests from a unique perspective. In the Disappear Retreat, a 8x10x9-foot, largely transparent structure, the temperature will never drop below 60°F—and the peak heating load is 100 watts, the same amount of power needed to operate a light bulb.

"The Disappear Retreat started with the idea of a retreat with a glass roof [where viewers could] watch the northern lights and be comfortable in extreme cold but not be out camping," says designer Carly Coulson (ARCH '97), whose Duluth-based firm, COULSON, is gaining attention for eye-pleasing commercial and residential projects that meet standards established by the Passive House Institute

(PHI). "It became an experiment in getting to zero energy, figuring out how small I could build something, learning more about the climate zones this would work within, and if it could be accomplished in almost all glass."

Coulson has designed three prototype retreat models ranging from the elegantly simple to a deluxe model offering a sofa/bed, sink, shower, and refrigerator. Construction began in 2017 with testing and evaluation slated for this year into early 2019, after which production will begin. Coulson's path to triple-zero and passive house design came early in her career as an architect working on the team that designed London's Swiss Re building, known affectionately as "The Gherkin" for its characteristic shape. The building's client required that rigorous energy features be incorporated into its futuristic design and Coulson, missing the wilderness and lakes of her native Minnesota, returned home after a few years eager to employ the green architecture methods she expected were the norm everywhere. What she discovered was quite the opposite.



PHOTO: CANARY GREY

"I was shocked at how resistant both architects and engineers were to try to do anything innovative in terms of sustainability. This was a bit before LEED, but still, the idea of natural ventilation, passive strategies...I was really disappointed," admits Coulson, who was back on Mies Campus last fall to attend a special event at the College of Architecture. "To me, that was always what design excellence should be. I felt that area was a missing puzzle piece that I needed to learn more about and to develop the tools that I needed to do it myself."

Coulson found a good fit at Salmela Architect, where she helped to design the award-winning Bagley Outdoor Classroom at the University of Minnesota Duluth, a building anticipated to be the greenest on campus. Coincidentally, the North American Passive House Conference was being held in Duluth then. Coulson attended it and discovered her puzzle piece: training in the Passive House Planning Package, an energy-modeling software program developed by the PHI that allows architects to ensure that all details of their design concepts meet passive house standards.

"Then it was feet in the fire," says Coulson, who immediately began applying what she learned to the Bagley

project, which ultimately met passive house standards and became the first building at the university to be LEED-certified at the platinum level. In 2009 she opened her own firm and now proudly identifies as a passive house design rule breaker, a label she hopes more architects will one day wear.

"I feel that this is an opportunity for the architecture profession to invent new languages that are generated from modeling and experimentation. It's a fresh approach to context and climate," says Coulson, who won a 2016 Chicago Athenaeum Green Good Design Award for two COULSON designs, the MH House and the Pays d'en Haut residence. "By experimenting with the modeling, I've been blown away by what is plausible that I would have never guessed would work. One concern of the architecture industry as a whole is whether individuals are going to lose their creative freedom or the ability to create the emotional mood they want for the project. What I'm saying is, they won't."

Last year COULSON was also recognized by the American Institute of Architects as one of six national architecture firms out of 175 participants to meet energy targets in the AIA's 2030 Challenge. The call to action is that new buildings, developments, and major renovations be carbon-neutral by 2030 and by 2015 achieve a 70-percent reduction in energy use.

"Carly is definitely a leading Passive House architect with a capital 'A,' so to speak," says Ken Levenson, architect, board member of the North American Passive House Network, and chief operating officer of 475 High Performance Building Supply. "She's serious about the form making, beauty, and social impact of architecture—as much as any architect practicing today. Yet she also shows that sustainability need not impoverish these fundamental aspects. Indeed, she shows how sustainability can be baked into the very DNA of building design and construction." ●

MORE ONLINE

"Invisible Sustainability," The American Institute of Architects website:

bit.ly/2necWVp

Passive House Institute: www.passivehouse.com

It's What You Don't See

The Passive House Institute was founded in 1996 by German physicist Wolfgang Feist and set the bar for the development of the passive house concept. A structure must meet detailed technical criteria in five areas to become a certified Passive House—heating demand, cooling demand, energy demand, airtightness, and thermal comfort.

"Basically, I learned how to take a conservation-first approach," explains Carly Coulson about her Passive House training. "It's all invisible, which is what I'm really excited about. It's in the insulation, it's in the air tightness, and it's the use of the sun. And it works. It's almost magical."

She says that the high-performance building components available today in the Midwest are both impressive and affordable. Some that she utilizes in her projects include thin-film photovoltaic laminates, Larsen trusses to support super-insulated walls, all-glass triple-pane façades, and closet-sized air-exchange systems. Architect Ken Levenson notes that while the relative costs of these features can vary a great deal, homebuyers should work with architects early on rather than retrofitting their homes later.

"If Passive House is as fundamental a requirement of success as having the right tile finishes, with an experienced team, then the 'upcharge' can be a trivial amount," he explains. "Passive House, to be as cost effective as possible, must be fully integrated on day one of the planning process."

“The Best” at What They Do

By Marcia Faye

Clad in a fresh laboratory coat, Mohammed Faraj (EE '92) points out glass cases filled with black-and-white headshots of former political leaders, Hollywood celebrities, and sports stars who were loyal customers of the oldest and arguably the most gadget-centric catalog merchandiser in America: Hammacher Schlemmer. While notable figures ranging from United States President John F. Kennedy to baseball luminary Babe Ruth provide a colorful touch to the storied company's nearly 170 years in existence, Faraj, as director of Hammacher Schlemmer Institute, prides himself on knowing that *every* customer receives the highest-quality items that the catalog company can offer.

Hammacher Schlemmer's flagship and sole brick-and-mortar retail space located in New York's Midtown Manhattan district opened in 1848, but the in-house testing facility known as Hammacher Schlemmer Institute came into existence only 35 years ago.

“We are independent from Hammacher Schlemmer and operate without any commercial bias,” Faraj says about the nonprofit institute, which researches, tests, and rates consumer products, and compiles the popular “Best” category of catalog items ranging from heated vests to commuter cups to children's tablets. “When we go out and search for these products, even though we partner with the merchandising team that wants to sell this product, we don't care if the product is profitable or what its price point is, or even if we could work with this vendor. We don't care. Our job as the institute is to find ‘The Best’ for the Hammacher Schlemmer customer. It's not necessarily The Best for anybody; it's only The Best for our customer. Everything we do here is for the Hammacher Schlemmer customer.”

Faraj's testing team is composed of a senior manager of product research, two product research analysts, and a fellow engineer. Depending upon the type of testing being done, team members work in an intimate laboratory filled with heat guns, wind meters, and other instruments; a kitchen; and a more spacious room accommodating larger items to be tested, such as inflatable beds. Faraj's lab coat is especially handy on the day of the tour as he and his visitor make salsa in a mock panel test to demonstrate steps in selecting “The Best Personal Blender.” [See Online Exclusive story at magazine.iit.edu.]

A native of Jericho in the West Bank who emigrated to Jordan during the Six-Day War in 1967, Faraj wanted to obtain his college degree in the United States. He supported himself, and his employment at UL (Underwriters Laboratories) in Northbrook, Illinois, his last two years at the university paved the way for his career. Faraj managed UL testing and certification of electrical and electronic products for eight years and then accepted a

three-year assignment to establish and supervise a UL business unit in Denmark. Upon his return to the U.S., Faraj spent nine more years with UL, ultimately becoming a global business and operations manager, and then became a small-business owner and distributor of green technologies before coming to Hammacher Schlemmer Institute.

From an early age, Faraj says that he wanted to find ways to improve things and that his career at Hammacher Schlemmer Institute has expanded his testing universe in unexpected ways. He and his team drew hungry colleagues after determining the performance of The Best Toaster Oven and visited a university facility where underwater testing was conducted on The Best Talking Scale. (Don't ask him about the crickets that went missing as his team conducted tests on The Best Bug Vacuum.)

Sometimes it's back to the drawing board. As head of product development, Faraj, along with his team, had an idea for a car dashboard heater and worked with a vendor to produce one to feature in a winter catalog. The item was popular, but too many customers complained that the heater fell off the dash if the driver applied the brakes too quickly. The item was restyled, but it didn't project enough heat, so it was returned to the vendor for further refinements.

“If only one customer complains about something, I take a personal responsibility to ensure that customer's happiness from a quality point of view,” says Faraj. While he acknowledges that the web has given purchasers a world of choices, he says that Hammacher Schlemmer, supported by his team's efforts, qualifies for “The Best.”

“The Hammacher Schlemmer brand is still there,” he says. “We understand our customer.” ●

MORE ONLINE

Hammacher Schlemmer Institute:
www.hammacherschlemmerinstitute.org
“The Engineer Who Tests All Those Hammacher Schlemmer Toys”:
bit.ly/2EUzQ10



PHOTO: SCOTT BENBROOK

New Horizons

By Steve Hendershot

Honeywell executive Scott Zhang (M.S. MAE '89, Ph.D. CHE '92) in a simulated cabin of an airplane. The company's R&D efforts extend into the aerospace industry.

Scott Zhang's 28-year career at Honeywell hinged on an urgent, radical decision. It was 1990, and Zhang had just wrapped up his master's degree in mechanical engineering at Illinois Tech. He had completed a three-month internship at Honeywell subsidiary Universal Oil Products in Des Plaines, Illinois, and loved it, but there was a serious problem: In order to pursue a career at UOP, he would need to drop mechanical engineering, the discipline to which he had just devoted six years of study, and instead

become a chemical engineer. No problem, Zhang figured. He left the doctoral program he'd enrolled in and earned his Ph.D. in chemical engineering, while also working part-time at UOP. He has never looked back.

Much of that time Zhang (M.S. MAE '89, Ph.D. CHE '92) spent working in Beijing as a chief representative with UOP. A Shanghai native, he helped to spur tenfold growth in six years in China for UOP in the 2000s, a performance that ultimately earned him his next role as vice president and general manager of Performance Materials and Technologies, Asia. Since 2015 he's been president of Honeywell Technology Solutions (HTS), the corporation's technology research-and-development and engineering division. In this role,

Zhang is able to combine his engineering acumen and R&D experience with his sales and management expertise to push HTS toward next-generation innovation. HTS has more than 9,500 employees—most of them engineers—based in India, China, Mexico, and the Czech Republic.

"I'm in a perfect position to lead an engineering organization because I do have that background, but I can take a lot of the skills I've learned from the business community and apply them back to engineering management and back to innovation," says Zhang.

At HTS, Zhang has done just that. One example is the Air Touch, an air purifier initially marketed in China, where air pollution is a major concern. The Air Touch is a consumer product that makes use of some of Honeywell's R&D expertise in industries that are very much nonconsumer—it integrated Honeywell's

technology strengths in materials science, aerodynamics, sensing and controls, human factors, and software to quickly design and manufacture the first local-born commercial air purifier. The result is a lightweight, polycarbonate purifier with multiple subfilters that excels at quickly converting toxic environments into healthy, breathable spaces.

"We saw an excellent opportunity to solve an important human problem, as well as a business opportunity," says Zhang. After a successful launch in China, Air Touch is now sold in additional regions

"Part of our responsibility as a company is to support the research programs and professors that we ultimately benefit from." —Scott Zhang

such as India, Russia, and the Middle East.

Zhang's combination of marketing savvy and engineering know-how has endeared him to Honeywell's leadership.

"Scott's great technical depth and breadth coupled with superb business acumen and people focus" is spurring

his success at HTS, according to Krishna Mikkilineni, Honeywell's senior vice president for engineering, operations, and IT. "He is doing a spectacular job and is making Honeywell look good in the market. Scott is a rare global citizen with a great heart."

Zhang enjoys traveling—and it's a good thing, considering he spends more than half the year on the road, away from his wife and 6-year-old daughter in Shanghai. That's the nature of overseeing HTS's four, far-flung tech centers overseas as well as making regular visits to Honeywell's New Jersey headquarters.

He's also very involved with Honeywell's university outreach programs, particularly in China, India, Mexico, and the Czech Republic, the countries where HTS tech

centers are located. The cornerstone of these efforts is the Honeywell Initiative for Science and Engineering. Visiting Nobel laureates spend time interacting with university students—

lecturing, providing counsel to them on their projects, giving career talks, and answering questions as a way to engage students.

"Part of our responsibility as a company is to support the research programs and professors that we ultimately benefit from," says Zhang. "Personally, I also want

to share my own experience with the young talent and ensure I turn them on to engineering and encourage them to join our field."

Those campus visits remind Zhang of his own educational experience, one that began with an undergraduate degree from Shanghai Jiao Tong University in 1982 and culminated in a recruiting visit from Illinois Tech mechanical engineering professor and solar-energy pioneer Zalman Lavan (M.S. ME '62, Ph.D. '65). Lavan encouraged Zhang to come to Chicago, a decision that appealed to Zhang as a budding academic as well as a basketball fan. While at the university, Zhang frequented the United Center, where he would buy cheap seats to catch a glimpse of Michael Jordan in action. Decades later, he remains a Bulls fan and considers Chicago to be his second home. He feels similarly about his alma mater, Illinois Tech.

"IIT is always near to my heart. It was my starting point, the place where I learned the fundamentals," Zhang says.

Three decades after he arrived on campus, Zhang continues to put those fundamentals to use—on a global scale. ●

MORE ONLINE
Honeywell: www.honeywell.com

CLASS NOTES

1940s

Charles Ticho (EE '48), Hackensack, N.J., wrote the book *From Generation to Generation*, describing his experiences in the 1940s as an Illinois Tech student.

1950s

Anthony Trozzolo (CHEM '50), South Bend, Ind., was named a Lifetime Achiever by *Marquis Who's Who*.

1960s

Norbert "Pete" Pointner (ARCH '61, M.S. CRP '62), Wheaton, Ill., had his article "Sustainability for Plan Commissioners" appear in the April 2017 issue of *Planning*, the magazine of the American Planning Association. In addition, his article "The Snow, Rain, Street Width Connection" was published in the spring 2017 newsletter of the APA's Transportation Planning Division. The fifth manuscript edition of Pointner's *Readings in Urban Planning and Design* is now available with 60 papers and more than 250 illustrations. Each of these papers provides further detail on his book *Planning Connections: Human, Natural and Man Made*.

faculty member at University College London. For the past 20 years, Retsky has been studying a bimodal relapse pattern in breast cancer patients based on computer simulation and has edited a book on the research, *Perioperative Inflammation as Triggering Origin of Metastasis Development*.

Robert Gordon (ARCH '63, M.S. CRP '67), Chicago, opened a one-man show of close-up prints of neighborhoods in Chicago and Paris, in October 2017 at Chicago's August House Studio. His work at Illinois Tech with Ludwig Mies van der Rohe, Alfred Caldwell, and others became the basis of a career demonstrating architecture within an urban context. Gordon has contributed his papers including a substantial collection of sketches to Illinois Tech's University Archives and Special Collections, where they are available to researchers.



Karl Klessig (PHYS '63), Santa Fe, N.M., is chairman of SYNARGO, a post-real estate closing and document-retrieval company. He recently climbed Tanzania's Mount Kilimanjaro followed by a safari through most of the parks in the country.

Francis Kulacki (ME '63, M.S. GE '66), Wayzata, Minn., received the American Society of Mechanical Engineers 2017 Edwin F. Church Medal recognizing Kulacki's efforts to promote

the value of mechanical engineering education. The honor noted that he pioneered the introduction of computer-aided engineering into the undergraduate curricula.

Roy Coleman (PHYS '64), Chicago, has been fascinated by sports cars since viewing an ad in *Tech News* for a road rally in 1968. He has been running them ever since and recently purchased a Mustang. Coleman and his wife have been nationally ranked in the top 10 several times by the Sports Car Club of America.

Harold Mech (EE '67), Albuquerque, N.M., retired as a principal staff engineer at CTS Electronic Components Corporation after a 46-year career. His career contributions include developing wire saw technology (Motorola Internally Developed Saw) used to make RF crystals for pagers and radios and the technology for the radio-frequency testing of high-power ceramic filter products and the servoelectronics updating of the MID saws still in use today. Mech continues with his electronics hobbies and the restoration of his 1972 Dodge Challenger.

Gerald Anderson (CHEM '69, M.S. '81), Fredericksburg, Va., is a Green Party candidate and participated in the 88th District Debate hosted by the University of Mary Washington in September 2017. He is a member of the adjunct faculty at Germanna Community College.

Robert Johnson (CE '69, M.S. '71), Buffalo Grove, Ill., has been a member of the Structural Engineers Association of Illinois for more than 40 years and achieved Life Membership status. He is a fellow of the American Society of Civil Engineers and the American Concrete

Institute, a member of the American Engineering Association, and served as secretary at the Chicago Committee on High Rise Buildings.

1970s

Alexander Kovnat (MAE '71), West Bloomfield Township, Mich., and his wife, Diana, welcomed their second grandson on August 8, 2017.



Illinois Tech Life Trustee Patrick Kelly meets his scholar Alexandra Detweiler (PHYS 2nd year), who spoke during the annual Donor & Scholar Dinner. Photo: Michael Goss



Illinois Tech Life Trustee Marc Hannah (EE '77) meets his scholar Kessel Laryea (ECE 3rd year) and Greer Foundation Scholar Irvin Delgado-Ramirez (CE 1st year) at the annual Donor & Scholar Dinner. Photo: Michael Goss

Charles Haas (BIOL '73, M.S. ENVE '74), Philadelphia, received the 2017 Athalie Richardson Irvine Clarke Prize from the National Water Research Institute for pioneering and applying methods to assess and minimize health risks caused by exposure to disease-causing microorganisms in water and wastewater.

SPOTLIGHT



Leana Osmer (AE '16) examines an Aerojet Rocketdyne SLM (selective laser melt) exit flange.

Leana Osmer (AE '16), Canoga Park, California
Component Project Engineer, Aerojet Rocketdyne

As a young girl, Leana Osmer would stand on the driveway with her parents and sister, gazing up at the California sky. With anticipation, Osmer and her family searched for NASA's International Space Station—a small, bright light traveling across the starry night. Osmer's mother, Diane, had helped to develop the software that determined the orientation of the station's solar panels.

"We always kept track of the space station," says Osmer. "Looking up and seeing it in the sky, I knew my mom had a hand in that work, and I knew there was potential for me to do something like that."

Mothers and mother figures across the United States will be recognized this year on Sunday, May 13, in appreciation for their love, nurturing, and exemplary ways. Leana Osmer was inspired by her mother Diane's technological accomplishments and imagined that she would one day attain her own achievements in the aerospace industry. Now, she has joined her mother at Aerojet Rocketdyne, where each are making important contributions as women in engineering and software development.

Learn more about this dynamic daughter and mother duo in the Online Exclusive "Upward and Onward" by Amanda Cleary Eastep at magazine.iit.edu/spring-2018/inspired-trajectory.

PHOTO: AEROJET ROCKETDYNE

Frank Monfeli (CE '77), Latonia, Ky., retired from COL Bigelow after 30 years of service.

1980s

Michael Mercer (Ph.D. PSYC '80), Barrington, Ill., has delivered keynote speeches and seminars in 48 states, five Canadian provinces, the Bahamas, and Switzerland. His presentations are based on business books he wrote including *Hire the Best... and Avoid the Rest*.

Elizabeth Byrnes (M.S. PSYC '81, Ph.D. '83), Jersey City, N.J., is co-head of the Women in Technology network and championed her employer, Goldman Sachs, to partner with the group Girls Who Code. With her WIT colleagues, she created an alumni program for girls who attend her company's summer mentorship programs to have a supportive community of friends and role models and opportunities to learn about technical topics and careers.

John Huffman (CE '81), Wichita, Kan., was elected a fellow

of the Institute of Industrial and Systems Engineers for his many years of service and innovations in aircraft manufacturing. An enterprise architect and principal investigator for digital factory research at Spirit AeroSystems, Huffman was elected a technical fellow there and is a past associate technical fellow of The Boeing Company. He also serves as an adjunct professor of industrial, systems, and manufacturing engineering at Wichita State University.

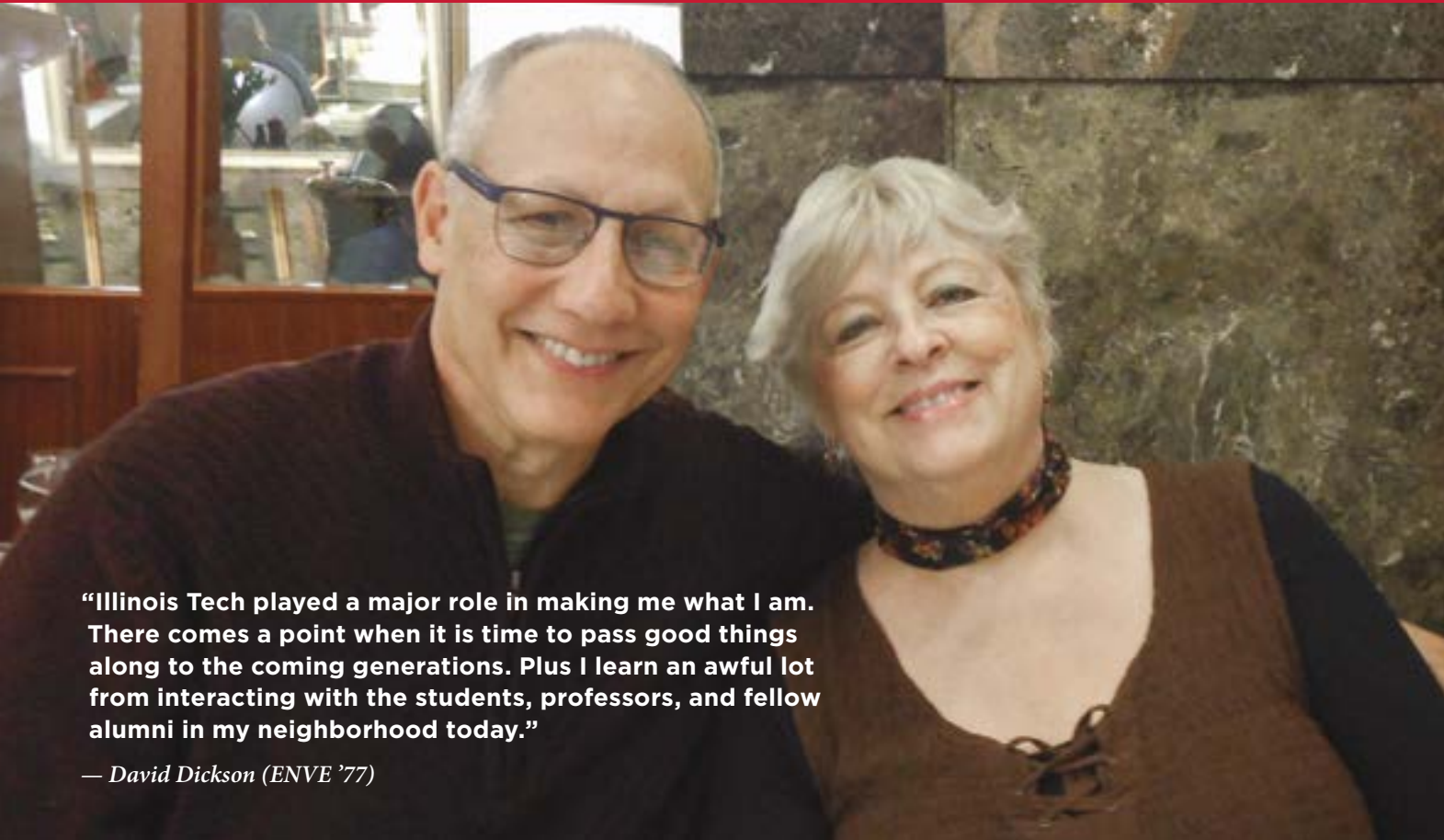
James McMahon (MET '81), Temecula, Calif., retired from Abbott Laboratories after 31 years of service. He is currently writing a children's mathematics book.

Mark Zerwic (M.S. PSYC '81, Ph.D. '84), Chicago, chief of psychology at the Iowa City VA Health Care System, has been with the veteran's administration for 29 years and was chief of psychology at the Jesse Brown VA in Chicago for 16 years. Zerwic is one of only a few psychologists to be named chief of two different VA medical centers.



M. Zia Hassan Endowed Professor Elizabeth Durango-Cohen [wearing medallion] at her investiture with [left to right] John and Mae Calamos Stuart School of Business Dean Endowed Chair John F. O. Bilson; Shakeela Hassan, wife of the late M. Zia Hassan; Illinois Tech Trustee Ellen Jordan (PSYC '79, M.B.A. '81); past Provost Frances Bronet; and President Alan W. Cramb (see story on page 3) Photo: Michael Goss

The Legacy of a Good Neighbor



“Illinois Tech played a major role in making me what I am. There comes a point when it is time to pass good things along to the coming generations. Plus I learn an awful lot from interacting with the students, professors, and fellow alumni in my neighborhood today.”

— David Dickson (ENVE '77)

After moving from suburban Naperville, Illinois, back to Chicago in 2014, **David Dickson (ENVE '77)** and his wife, Marie, decided that they should invest in his alma mater, which was just down the street from their South Loop home. David became a volunteer with Illinois Tech’s groundbreaking Interprofessional Projects (IPRO) Program, and the couple also designated Illinois Institute of Technology as a beneficiary in their will to establish a university scholarship. Now they are members of the Gunsaulus Society, which honors those who have arranged estate gifts to Illinois Tech with special events and recognition.

David runs his own software company, Crossroads RMC, while Marie has enjoyed a rewarding career in advertising and government. Both their children are doing well. The Dicksons feel an obligation to help those in need—including Illinois Tech students who depend on scholarships.

If you have named Illinois Tech as a beneficiary in your estate plan through your will, trust, IRA, or retirement plan, please let us know so that we may acknowledge your generosity and include you in the Gunsaulus Society.

Visit iit.edu/giftplanning to learn how you can benefit from these giving methods and more. Contact Dean Regenovich, Office of Gift Planning, at dregenovich@iit.edu or **312.567.5018**.

*Please check with us to make sure the gift can be used as intended.

Benefits of a Gift in Your Will or Trust:

- **Help ensure Illinois Tech’s future.**
- **Leave a legacy of giving back.**
- **Give without affecting your current cash flow.**
- **Reduce any potential estate tax.**
- **Retain control of your assets during your lifetime by directing your gift to a particular purpose.***

Gunsaulus | SOCIETY



Illinois Tech retired faculty gathered at Mies Campus for the first annual Retired Faculty Luncheon. Past Provost Frances Bronet spoke about changes to campus and university updates. *Photo: Michael Goss*



Rebecca G. Leslie [left] and **Alicia Growney** unveil the Robert L. (ME '74, M.B.A. '92) and Wilma E. Growney Collaborative Space plaque at a dedication event in Paul V. Galvin Library. *Photo: Michael Goss*

Susan Blessing (PHYS '82), Tallahassee, Fla., a faculty member of the Department of Physics at Florida State University, has been elected a 2017 fellow of the American Physical Society and was honored with the society’s 2017 George B. Pegram Award, which honors excellence in physics education in the southeastern region of the country.

Michael Plesniak (ME '83, M.S. '84), Washington, D.C., professor and chair of the Department of Mechanical and Aerospace Engineering at The George Washington University, has been honored by the American Society of Mechanical Engineers with the 2017 Fluids Engineering Award, in recognition for contributions to research and education in fluids engineering, particularly turbulent flow physics, gas turbine, and biomedical applications. Plesniak is also cited for outstanding service to ASME, which elected him a fellow in 2006. Director of GWU’s Center for Biomimetics and Bioinspired Engineering, Plesniak has authored more than 250 refereed

archival publications, conference papers, and presentations.

Michael Rogers (CE '83), Murrieta, Calif., founder of Illinois Tech’s co-op program, is vice president and global dams practice leader for WaterPower & Dams with Stantec. He has worked in 20 different countries on more than 200 dams. Last year Rogers was the lead design engineer for the Oroville Dam Spillway reconstruction.

Thomas Sullivan (ME '83), Newport, N.H., is senior vice president of operations at Sturm, Ruger & Company, where he is responsible for manufacturing, engineering, and product development activities.

James Beyer (LAW '84), Park Ridge, Ill., is assistant general counsel, associate vice president, and global head of employment law at Infosys.

Emmanuel “Manny” Maceda (CHE '84), San Francisco, worldwide managing director and board member at Bain & Company, has led the company to a strong business momentum and helped it cap a six-year period of

growth. Maceda has held other positions with Bain, including heading the Full Potential Transformation Practice and serving as the chairman of the Asia-Pacific region.

Bruce Bloom (LAW '88), Evanston, Ill., is chief executive officer of Cures Within Reach, a philanthropic leader in drug, device, and nutraceutical repurposing research.

1990s

Jason Bohm (BA '90), Springfield, Va., is the first Illinois Tech alumnus to become a brigadier general in the United States Marine Corps.



Mary Taylor (EE '90), Wheaton, Ill., is senior regional director of the board of the Illinois Adult and Continuing Educators Association. She also mentors Austin College & Career Academy students in Manufactur-

ing Connect, a signature program of the nonprofit organization Manufacturing Renaissance.

Timothy Standish (ME '91), Orland Park, Ill., and his wife, Michelle, celebrated their 25th wedding anniversary in January. They met at an Alpha Epsilon Pi event at Illinois Tech.

Anna Barbara Hantz Marconi (LAW '92), Stratham, N.H., is the 108th associate justice on the New Hampshire Supreme Court. Sworn in by Governor Christopher Sununu last August, Justice Hantz Marconi is only the third woman to sit on the state’s highest court.

Ramiro Atristain (M.B.A. '93), Chicago, has served as an executive in residence at Brennan School of Business, Dominican University, since 2016.

Yuuki Kitada (M.A.S. ARCH '93), Brooklyn, N.Y., was awarded a 2017 American Architecture Prize in the Interior Design category for “S Residence.” He also received an Honorable Mention in the 2016 International Design Awards for “K Residence.”



Robert Samson (LAW '93), Deerfield, Ill., has been named regional president for the Midwest Region of Wells Fargo Advisors, leading a team that includes 714 financial advisors at 63 branches located in northern Illinois, Michigan, and Wisconsin.

David Wiatrowski (M.S. EE '93, M.A.S. ECE '08), Woodstock, Ill., is a Distinguished Member of the technical staff at Motorola Solutions and serves as the chief infrastructure architect for professional and commercial radio systems. Over his career, Wiatrowski, who holds 190 patents in 14 countries, has received numerous honors from the company, including Motorola Solutions Business Patent of the Year, Motorola Patent of the Year awards, and election as a Motorola Dan Noble Fellow.

Robert Besecker (BA '96), Tinley Park, Ill., celebrated the launch of his book *Everest Strong: Reaching New Heights with Chronic Illness: An Inspirational Memoir*. [Read his IIT Magazine story at <http://bit.ly/2edAFYk>]

Steven Nargang (ME '96), Oak Brook, Ill., is a member of the board of directors of Health Care Institute Chicago. He has more than 25 years of design, engineering, project management, technical sales, and business development experience, with additional background in mechanical engineering and project development across a range of industries and applications.



Gregory Wyler (LAW '96), Hanover, N.H., was voted Most Powerful Person in Telecom for 2017 by the readers of *Fierce-Wireless*. Founder of

the company OneWeb, Wyler is working to provide global, satellite-powered high-speed Internet services.

Jonathan Carson (LAW '97), Los Angeles, is co-chief executive officer of Bankruptcy Management Solutions.

Mohammad Reza Mostofi Ashtiani (M.A.S. CHE '98, Ph.D. '02), Naperville, Ill., has been elected a fellow of the American Institute of Chemical Engineers. He is a lead engineer at Honeywell UOP and is responsible for computational fluid dynamics modeling and analysis of refinery units. His AIChE activities have included leadership roles in the Chicago section, the Particle Technology Forum, the Chemical Engineering Technology Operating Council, and the Societal Impact Operating Council.

Robert Brevelle (CS, M.S. '98), Rowlett, Texas, is a member of the board of directors of TriaSys Technologies, a leading provider of innovative signal-processing solutions.

Lana Vukovljak (M.S. TCID '98), Oak Park, Ill., chief executive

officer of the Residential Real Estate Council, has been elected to its board of directors.

William Dec (LAW '99), Chicago, is a partner in Rocket Ranch Productions, which is opening its sushi restaurant Sunda in Nashville.

2000s

Patrick Bourbon (M.S. FIN '00), Chicago, was featured in the online publication *Voyage Chicago*.

Varun Goyal (CPE '00), Indianapolis, founded Illuminate Health, a digital health startup, building technology tools to enable safe and accurate medication administration by consumers. He has two young boys, Sanmay and Varyan. Goyal's wife, Sumedha, is a professor of economics at Indiana University.

Lydia Lazar (née Herman) (LAW '00), Chicago, wrote the book *Dean Lazar's Golden Guide: Pragmatic Career Advice for Smart Young People*, which includes a set of action steps to help students and young professionals

develop the habits of mind and behavior that lead to career success. An English/Mandarin version of the book will also be available.

Jason Novak (CHE '00, LAW '06), Moraga, Calif., is a partner at McDermott Will & Emery.

Matthew Siniawski (ME '00), Los Angeles, is chair of the Department of Mechanical Engineering at Loyola Marymount University and is in his 14th year as a faculty member there.



Claudette Soto (ARCH '02, M.A.S. STE '05) and **Rene Barraza** (ARCH '01), Evergreen Park, Ill., welcomed their third son, Omi Ender Barraza, last November. Soto, founder of the Illinois Tech summer STEM program VAMOS, was honored last September through a Chicago City Council resolution submitted

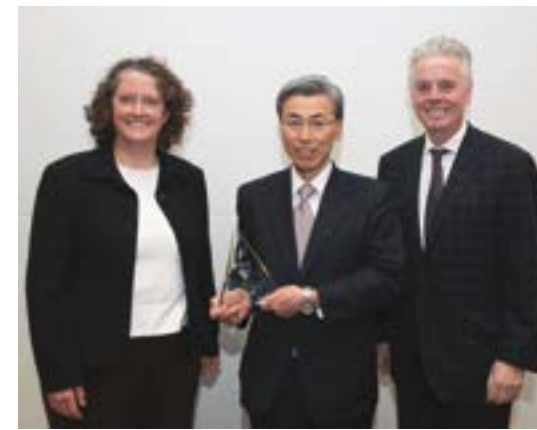
by Alderman Raymond Lopez of the 15th Ward. The program is run by current Illinois Tech students who volunteer their time to teach 15 middle-school students from the Gage Park, Back of the Yards, and Brighton Park neighborhoods about STEM.

Andrew Stolfi (LAW '02), Basel, Switzerland, is chief operating officer of the International Association of Insurance Supervisors. He leads and manages the internal operations of the secretariat, including finance, human resources, administrative support, communications, legal, and risk functions.

Daud Alwattar (M.S. MCOM '03), Chicago, president of Northland Laboratories, also became chief marketing and sales officer for Matrix Sciences after the company acquired Northland.

James Baldwin (CPE '05, LAW '12), Chicago, is associate counsel at Neal Gerber Eisenberg.

Virgil Abloh (M.A.R. ARCH '06), Chicago, creator of the Off-White fashion brand, presented the lecture



President Alan W. Cramb [right] and Dawn Schuette (ARCH, CRP '92, M.A.S. CRP '93), chair of the Alumni Awards Committee, presented Akihisa "Aki" Miwa (M.S. OR '83) [center] with the International Award of Merit in S. R. Crown Hall [see story on pages 12-13]. Photo: Bonnie Robinson

"Program Organization, Sequencing Experiences" at the Harvard University Graduate School of Design last October. Abloh was introduced by design critic Oana Stanescu, with whom he has worked on various projects, including Kanye West's The Yeezus Tour set design and Off-White's Hong Kong flagship store.

Richard D. Thompson II (EE '06, CPE '06, M.S. CPE '08) and **Alayna George Thompson** (MBB '08), Deerfield, Ill., welcomed their first child, Richard, last summer.

Gregory Zinkl (LAW '06), San Francisco, is senior counsel for the biotechnology pharmaceutical company Amgen. He practices intellectual property law including patent prosecution. Zinkl continues his Chicago ties by serving on the board of the Lakeview Orchestra, and in his new home city, he has joined the San Francisco Leadership Council for Lambda Legal. He and his husband reside in the Bernal Heights neighborhood with their two cats.

Visit bit.ly/alumni-event-photos to see more event photos from the Alumni Association.

Amy Gibson (née Rapoport) (LAW '07), Chicago, was named one of Chicago's Most Influential Women Lawyers by Crain's Custom Media.

Kristen Prinz (LAW '07), Chicago, was named one of Chicago's Most Influential Women Lawyers by Crain's Custom Media.

Nguyen Vo (LAW '08), Chicago, is a patent attorney for Medline Industries.

Mathieu Joerger (Ph.D. MAE '09), Tucson, Ariz., assistant professor of aerospace and mechanical engineering at the University of Arizona, is investigating how aviation standards can be applied to the development of robotic cars and is working with researchers at Illinois Tech to find ways to make robotic cars safe and reliable.

Randy Micheletti (LAW '09), Villa Park, Ill., launched the law firm Incubate IP, which provides intellectual property counseling and services specifically for startup companies and IP portfolio management services for more established companies.

SPOTLIGHT



PHOTO: COURTESY OF BRANDON LLOYD

Brandon Lloyd (AE '08), Houston
NASA Flight Controller for the International Space Station (ISS)

Brandon Lloyd took a trip to the Lyndon B. Johnson Space Center when he was in middle school and says that he fell in love with human space flight then. He selected Illinois Tech because it was a small school that offered an aerospace engineering degree. Now an average day for Lloyd involves ensuring that there's enough potable water for the ISS crew and spending an exciting day investigating space fires.

What does an ISS flight controller do?

For anyone who has seen the movie *Apollo 13*, we're the guys with the skinny black ties. We look at the real-time data and discern if there are any issues with our systems, have the crew respond accordingly, or respond ourselves if we can. I'm a systems flight controller, and my console position is called ETHOS: Environmental and Thermal Operating Systems. I'm in charge of the life-support systems.

What is an average day like?

We spend a lot of time on water balance: We're turning yesterday's coffee into tomorrow's coffee. We're looking at the rate at which we're collecting sweat out of the atmosphere, the rate at which the crew is drinking water, and the number of times they're using the bathroom. We extrapolate all of those inputs to see how full or how empty our tanks are going to get within the next few days. We also take the carbon dioxide that the crew breathes and perform a Sabatier process, recombining the CO₂ with the hydrogen that the oxygen generator makes to recover more water. The waste product of the Sabatier process is methane, and NASA is currently investigating more closed-loop technologies such as one that splits methane to give us more hydrogen to combine with CO₂—and even more water recovery.

How about an exciting day?

It's the middle of the night. Six people in the whole world are watching the U.S. Segment Systems [on the ISS], and a manual fire alarm hits the board. A few minutes later the crew calls down, saying, 'There's white haze all across the Russian Segment. We can't tell where the smoke is coming from.' Ventilation automatically kicks on 30 minutes after there has been a fire alarm. On this day it took us 27 minutes to figure out what the source was, so we were just in the nick of time to get eyes on it.

Why should we explore the cosmos?

We are, as humans, explorers. Our job at NASA is to figure out how we get off of Spaceship Earth, because it's not going to be around forever. We need to know what it's like out there and how to get there, and we're building the initial steps for humanity to do that in the future right now. —Jim Daley

Read the complete interview with NASA Flight Controller Brandon Lloyd at magazine.iit.edu/spring-2018/space-ace.



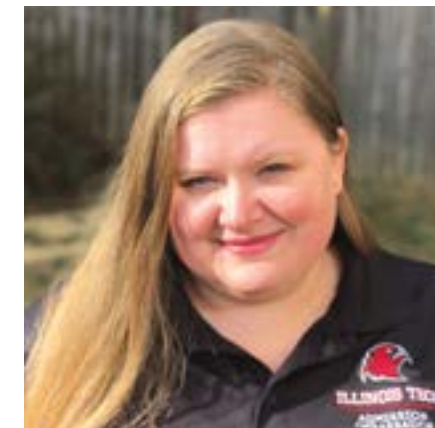
Chicago Tribune architecture critic Blair Kamin touted Illinois Tech's S. R. Crown Hall as one of his top picks at the **2017 Open House Chicago** event hosted by the Chicago Architecture Foundation. More than 1,000 people visited Mies Campus from across the nation and from various countries during the event.



Duchossois Leadership Scholars [left to right] Zachary Bonson (AE 2nd year), Henry White (AE 1st year), Tiffini Tobiasson (CS 4th year), and Noah Reardon (ME 1st year); Duchossois Leadership Professor Carlo Segre; Trustee Craig Duchossois; and Ayun Brown (EE 5th year) join faculty member Geoffrey Williamson [seated] for his investiture as the new Duchossois Leadership Professor. Photo: Bonnie Robinson



Admission Ambassadors: Share the Good Word



"I'm not the most extroverted person," Shurer says, admitting that she was somewhat apprehensive about becoming an Admission Ambassador. "But I learned that it's easy for me to talk about Illinois Tech because I love it so much, and I want potential incoming students to share in that love."

After she graduated Shurer enjoyed the higher-education world so much that she made a career of it, earning her M.Ed. in counseling psychology and working in residence life at the University of North Carolina Charlotte. She has since taken on the role of stay-at-home-mom to raise her two sons and instills in them the importance of higher education.

"It's almost pure luck that I ended up at Illinois Tech in the first place, and anything that I can do to get the word out to more students is something that I'm happy to do," she says. "We don't have the luxury of having dozens of admission officers around the country

like big state schools do. We need alumni to help make up the difference. It's an easy way to give back to our university."

The commitment of an Admission Ambassador is minimal—the only requirement is that alumni represent the university in a friendly and knowledgeable way while helping prospective students learn more about Illinois Tech. **Here are some ways to volunteer:**

- **Attend any number of admission events throughout the year, as many or as few as possible.**
- **Refer prospective students to Illinois Tech.**
- **Communicate with admitted students through phone calls, letters, and emails.**
- **Attend regional college fairs and visit high schools in your area.**

Miranda Shurer (AE '02) knows it takes a village, and she's proud to be a part of hers—the vast, global Illinois Tech alumni network that shares stories about Illinois Tech with prospective students. Shurer volunteers her time as an Admission Ambassador, attending college fairs and events near her Washington, D.C., home, spreading the word about Illinois Tech.

To learn more about becoming an Admission Ambassador in your area, visit admissions.iit.edu/undergraduate/alumni.

Cross-Country Presidential Meet and Greet

Illinois Tech President Alan W. Cramb spent much of fall 2017 and January 2018 on the road, meeting with alumni around the country to share news about the university and strategic initiatives. During a November trip to Seattle, he met with alumni who graduated 50 or more years ago, but who were unable to attend their Golden Society Reunions. Cramb presented each of them with Golden Society medallions during a luncheon.

1. WASHINGTON

During his Seattle trip, Cramb [back center] conversed with a group of Illinois Tech alumni who work at Microsoft (November 2017).

2. SOUTH CAROLINA

Cramb [left], with Paula Campbell, widow of the late trustee Calvin "Tink" Campbell Jr., who accepted a resolution in memoriam on her husband's behalf at Saint Helena Island, South Carolina (November 2017).

3. CALIFORNIA

Cramb [left] and his wife, Anna, took time out for a photo with Ken Petrusis (PHYS '67) [right] and his wife, Dale [right center], in Corona Del Mar, California (January 2018).

4. MARYLAND

Cramb [left], Mary Elizabeth Droste (ARCH '42) [center], and Vice President for Institutional Advancement Betsy Hughes [right] visited at Droste's home in Walpole, Maryland (October 2017).

5. GEORGIA

Trustee Emeritus Bill McCain (ME '53) [left] and Cramb met in Savannah, Georgia (November 2017).



Laura Rodriguez Mosquera (CPE '09), Seattle, helped to launch the iOS app for Microsoft Sway.

Matthew Santeford (M.A.S. STE '09), Elk Grove Village, Ill., is assistant vice president and senior professional partner at TranSystems.

2010S

Robert Boyer (BME '10), Gladstone, N.J., received a Medical Design Excellence Award, a Core77 Design Awards honorable mention, and an International Design Excellence Award Gold for his work on the VECTRA WB360, a 3-D

imaging system for pigmented lesions and distributed diseases.

Eduardo Morales (BA '10), Chicago, oversaw a team to expand the nonprofit organization Family Bridges and will be managing the new branch in Phoenix.

Vikas Patel (M.A.S. ITO '10), Des Plaines, Ill., was named a 2017 Outstanding Young Manufacturing Engineer by the Society of Manufacturing Engineers. He is a research engineer at ArcelorMittal, where he established a state-of-the-art welding research lab.

Utsav Gandhi (EMGT '14), Chicago, is a marketing and outreach

coordinator for Gateway House, an Indian foreign policy think tank modeled after the Council on Foreign Relations. Gandhi's new role was created to strategically use communications in external affairs, business development, and fundraising efforts.

Wesley Kohn (M.A.R. ARC2 '14), Midland, Mich., received his State of Michigan Architectural License. He has worked in architecture at Three Rivers Corporation for 19 years.

Alekya Thalari (M.S. CS '15), Redmond, Wash., is a member of the Microsoft Windows CORTANA team.

Anders Bybjerg (BA '17, M.S. FIN '17) and **Sarah Maciorowski** (AMAT '17), Chicago, took a two-month cross-country road trip after graduation. Along with their Australian shepherd dog, Smoky, they visited a number of U.S. National Park Service sites, before settling down in Minneapolis. Bybjerg is a photographer in the Twin Cities, while Maciorowski is a catastrophe modeler in reinsurance brokerage.

Attendees

Joseph Chura Naperville, Ill., chief executive officer of Dealer Inspire, represented the company at the Automotive Analytics

and Attribution Summit last November.

Yaroslav Urzhumov Durham, N.C., adjunct assistant professor of electrical and computer engineering at Duke University, developed a study for a water-cloaking device that eliminates an object's drag and wake. The study was published online in the journal *Physical Review E* (Volume 96, Issue 6, December 2017).

Share Your News!

We want to hear from you. Send us your class note by visiting alumni.iit.edu/class-notes. Submissions may be edited for style and brevity.

Alumni News

PASSINGS

Alumni

Samuel Spencer
CHE '39
Lakeland, Fla.

Lena Xydes
ARSC '40
San Jose, Calif.

Clarence Votava
EE '43
Indianapolis

H. Jack Hansen
ME '44
Elburn, Ill.

Robert Harper
ME '44
Glen Ellyn, Ill.

Edwin Kurek
ME '44
Monrovia, Ind.

Roy Churan
ME '45
Largo, Fla.

William Burt
EE '46
Bloomington, Minn.

Lester Matzek
EE '46, M.S. '48, M.B.A. '84
Lombard, Ill.

Calvin Zehnder
ME '46
Louisville, Ky.

Arnold Gavin
CHE '47
Minnesota Lake, Minn.

Donald Norton
ME '47
Arcadia, Calif.

Robert Ronningen
ME '47
Flat Rock, N.C.

Philip Cox
EE '48
Lake Worth, Fla.

Leroy Kuston
CE '48
Seminole, Fla.

Allen Moss
EE '48
Los Angeles

Milton Oran
ME '48
Chaska, Minn.

Arthur Postregna
ARCH '48
Fort Myers, Fla.

Robert Bragg
PHYS '49, M.S. '51, Ph.D. '60, Oakland, Calif., was a noted physicist and engineer who made contributions to materials characterization using X-ray diffraction and small-angle X-ray scattering. Early in his career he worked at the Portland Cement Association research laboratory and then at Lockheed Missiles and Space Company, and was subsequently offered a full professorship and joint appointment at Lawrence Berkeley National Laboratory at the University of California, Berkeley, where he served from 1969 to 1987 (and as chair of the Department of Materials Science and Engineering from 1978 to 1981). A Fulbright Scholar, Bragg worked to provide opportunities and recognition for minorities in both academia and the workplace. He served as an advisor to prominent organizations, including the United States Department of Energy, the U.S. Naval Research Laboratory, and the National Science Foundation.

Carl Hermach
ME '49
Largo, Fla.

Frank Mattausch
ME '49
Renton, Wash.

James Bulger
CE '50
Oak Lawn, Ill.

Thaddeus Kolski
CHEM '50
Wilmington, Del.

Ben Loper
CHE '50
Clearwater, Fla.

Eugene Rezabeck
ME '50
Carol Stream, Ill.

John Russell
ME '50
Clearwater, Fla.

Donald Steichen
FPE '50
La Salle, Ill.

John Arima
ME '51
Chicago

Donald Fannon
IE '51
Le Roy, N.Y.

Joseph Faul
ME '51
Naples, Fla.

Casimir Griglik
BE '51
Lake Worth, Fla.

Robert Keller
CHE '51
Basking Ridge, N.J.

John Menke
CHE '51
Minneapolis

Albin Stravinskias
IE '51
Dunedin, Fla.

Robert Anderson
CE '52
Palatine, Ill.

George Gallagher
CE '52
Baton Rouge, La.

Helmuth Hansen
EE '52
Savannah, Ga.

Lloyd Idelman
ME '52
Evanston, Ill.

Alfred Leisering
ARCH '52
Lombard, Ill.

Peter Schutz
ME '52, Naples, Fla., is credited with preventing the demise of Porsche's classic 911 sports car. A Jewish refugee from Nazi Germany, he and his family settled in Chicago. After graduating from Illinois Tech and working for the companies Caterpillar and Cummins, Schutz was recruited back to Germany to work for Porsche, where he rose to become president and chief executive officer from 1981 to 1987. Schutz implemented engineering changes in the 911 and helped to revive Porsche sales in the United States. Upon his departure from Porsche, Schutz and his wife established a business consultancy.

Vincent Turner
M.S. IE '52
Lima, Ohio

Albert Wigert
CE '52
Bokeelia, Fla.

Glenn Workman
CHE '52
Summerville, S.C.

Marlen Miller
ME '53
Mason, Ohio

William Odahowski
CE '53
Orlando, Fla.

James Karzes
EE '54
Sunnyvale, Calif.

Stanley Sternasty
MET '54
Cincinnati

Henry Zucker
M.S. EE '54, Ph.D. '59
Little Silver, N.J.

Donald McKenney
CHE '56
Midland, Mich.

Lawrence Stukel
LAW '56
Cave Creek, Ariz.

Wolfgang Eschenlohr
PSYC '57
Cincinnati

W. Impey
LAW '57
Silver Lake, Wis.

Peter Novak
EE '57
Keller, Texas

Robert Browne
EE '58
Titusville, Fla.

Robert Ebert
ME '58
Des Plaines, Ill.

James Louden
MET '58
Orland Park, Ill.

Victor Raimondi
BIOL '58
Naperville, Ill.

Thomas Stankie
IE '58
Crown Point, Ind.

Marlin Barklage
BE '59
Pittsburgh

Edward Bisone
EE '59
Middletown, Del.

John Kozlik
EE '59
Scottsdale, Ariz.

Charles Pease
CE '59
Park Ridge, Ill.

Nicholas Petrakos
EE '59
Parkland, Fla.

Edward Grahn
ME '60
Arlington Heights, Ill.

Stanley Jackson
LAW '60
Baltimore

Paul Cooper
EE '61
Villa Park, Ill.

John Gravee
BE '61
Huntley, Ill.

Martin Kozi
EE '61, M.B.A. '94
Lombard, Ill.

Albert Zoch
MATH '61
Chicago

Gordon Bartosiewicz
MET '62
Jupiter, Fla.

John Eubank
FPE '62
Nashville

John Goodin
IE '62
Hoffman Estates, Ill.

Brian Loo
EE '62
Buena Park, Calif.

John Meisner
EE '62
Cottage Grove, Ore.

John Merwin
ME '62
New Lenox, Ill.

Peter Abrams
Ph.D. PSYC '63
Fort Lauderdale, Fla.

Ralph Bogot
ME '63
Estero, Fla.

Raymond Donahue
MET '63, Ph.D. '66
Fond Du Lac, Wis.

E. Woodruff Imberman
PS '63
Winnetka, Ill.

Robert Predny
CHEM '63
Park Forest, Ill.

Alan Sicherman
EE '63
Minneapolis

Mert Thayer
DSGN '63
Sesser, Ill.

James Murphy
CHE '64
Medinah, Ill.

James Brennan
Ph.D. CHEM '65
Newark, Del.

Bruce Brock
M.S. CRP '65
Jacksonville, Fla.

Karman Kirti Ghia
M.S. MAE '65, Ph.D. '69
Cincinnati

James Trawinski
CE '65, M.S. ENVE '70
Barrington, Ill.

Richard Arazi
MATH '66
Bismarck, N.D.

James Foley
ME '66
Harrison, N.Y.

Larry Roush
M.S. SOCT '66
Altamonte Springs., Fla.

John Silvis
ME '66
Fairport Harbor, Ohio

Russell Glastetter
EE '67
Redlands, Calif.

Robert Green
LAW '67
Hilo, Hawaii

John Hourihane
LAW '67
Evanston, Ill.

Henry Knaack
ME '67
Gladstone, Mo.

Jack Kuhlman
LAW '67
Parker, Colo.

Edward Gurka
MAE '68
Westchester, Ill.

Frances Kokotis Kovacheff
M.S. DSGN '68
Lansing, Ill.

Jonas Miniatas
IE '68
Largo, Fla.

Dwight Snow
MAE '68
Richton Park, Ill.

Donald Babka
EE '69
Western Springs, Ill.

Antons Tutins
EE '70
Orlando, Fla.

Edward Wolthausen
PHYS '70
Vancouver, Wash.

Frederic Beslow
MATH '71
Glenview, Ill.

Katherine Foster
M.S. PSYC '71, Ph.D. '75
Des Plaines, Ill.

Ruey-Rong Lii
Ph.D. CHEM '71
Hillsborough, Calif.

Perry Meyers
Ph.D. PSYC '71
Highland Park, Ill.

Mercurio Oddo
BE '71
Surprise, Ariz.

Loren Schwechter
LAW '71
Deerfield, Ill.

James Weatherbee
Ph.D. BIOL '72
St. Paul, Minn.

Thomas Zeinz
CE '72
Homewood, Ill.

J. Richard Hisaw
LAW '73
Chicago

Jane Mitchell-Lizars
LAW '73
Eugene, Ore.

Charles Ziemba
EE '74
Mount Washington, Ky.

Barbara Jacobs
LAW '75
Germantown, Tenn.

Thomas Luebker
EE '76
Chicago

James Phillips
EE '76
Albuquerque, N.M.

Philip Noteboom
LAW '78
Wausau, Wis.

Terry Sietmann
M.S. IE '78
Broomfield, Colo.

Bertha Ajayi
PS '79
Los Angeles

Rakhael Ross
LAW '79
Chicago

Richard Dorsey
LAW '81
Oldsmar, Fla.

Robert Eatman
LAW '81
Los Angeles

Andrew Chaloupka
DSGN '82
Western Springs, Ill.

Marian Donohue (née Higgins)
LAW '83
Quincy, Ill.

Patricia Cummings
M.B.A. '84
Dennis Port, Mass.

John Sharkey
M.B.A. '88
Elgin, Ill.

Paul Bauer
M.P.A. '92
Chicago

Jessica Coffey
DSGN '93
Raleigh, N.C.

Kathleen Gros (née Manella)
LAW '93
Hinsdale, Ill.

William Koves
Ph.D. MAE '93
Elgin, Ill.

Raelinn Spiekhouit
CHE '93
Bourbonnais, Ill.

Former Trustees

Diego Hernandez
PSYC '55, Miami Lakes, Fla., was a decorated admiral in the United States Navy who headed the Pacific Third Fleet. Honored with the Silver Star, Purple Heart, and

Distinguished Flying Cross, he led 147 combat missions in Vietnam, serving in the military from 1955 to 1991. Hernandez conducted the first strike against two surface-to-air missile sites in North Vietnam. He served as deputy commander in chief on the U.S. Space Command and vice commander of the North American Aerospace Defense Command during his last two years of duty.

Raymond Tower
Glenview, Ill., had a 40-year career with FMC Corporation, a leading diversified chemical company. Educated as a chemist, he rose through the ranks at FMC, ultimately serving as board member, president, and chief operating officer before his retirement in 1990. Tower then devoted his time to helping others, including being president of the Lost Tree Village Charitable Foundation from 2001 to 2006. He had served on Illinois Tech's Board of Trustees since 1982, becoming a life trustee in 1992 and trustee emeritus in 2007.

Attendees/Non-Degree

Nicholas Chaparos
Cincinnati

Glen Lund
Plymouth, Minn.

Richard Mueller
Columbus, Ohio

Arthur Rubin
Boynton Beach, Fla.

Faculty

Suzanne Ehrenberg
Chicago-Kent College of Law, Evanston, Ill., professor of legal research and writing, joined the faculty in 1985 and served for many years as associate director of the Legal Research and Writing Program. Ehrenberg practiced law for four years with the Chicago firm of Mayer, Brown & Platt and served as a staff attorney with the United States Court of Appeals for the Seventh Circuit. Over the course

of her career, she was also a visiting fellow at the University of New South Wales and a clinical associate professor at Northwestern University School of Law.

Mohammad Zia Hassan
M.S. IE '58, Ph.D. '65, Chicago, former Illinois Tech professor and dean of Stuart School of Business, co-founded the Islamic Foundation School and mosque in Villa Park, Illinois, and helped to establish Chicago's Muslim Community Center. He also served as the foundation's chair for four decades. At Stuart Hassan focused his research on business policy and quality management, writing more than 30 papers and co-authoring the textbook *BASIC Programs for Production and Operations Management*. Illinois Tech established an endowed chair in Hassan's name before his retirement in 2014.

Nicholas Thomopoulos
Ph.D. IE '66, Chicago, professor emeritus of management science at Stuart School of Business, was a faculty member for more than 40 years and a thesis advisor to 32 Ph.D. students. A prolific writer, he wrote more than 70 papers that were published in various technical journals and conference proceedings; he also authored 11 books with topics ranging from Monte Carlo simulations to supply-chain and inventory fundamentals. The recipient of many awards including Illinois Tech's Outstanding Alumni Achievement Award in 2009, Thomopoulos developed new mathematical and business methodologies and designed forecast and inventory software. His wife, Elaine Thomopoulos (Ph.D. PSYC '74), and three daughters are Illinois Tech alumnae.



Sasha Bajzek (CE '11) adding weights to her entry in the 2005 International Bridge Building Contest



The A-frame winning bridge

PHOTOS: COURTESY OF SASHA BAJZEK

LAST BRIDGE STANDING

By Marcia Faye

The next time you drive across the IL-104 River Bridge over the Illinois River in Meredosia, Illinois, thank Sasha Bajzek (CE '11) for your safe passage. She designed the steel plate girders, steel details, joints, and bearings for the structure's nine approach spans, each at 140 to 200 feet in length. Bajzek won her first bridge building competition at Tinley Park High School and then went on to win a first-place slot in the 2005 Chicago Regional Bridge Building Contest and first place overall in the International Bridge Building Contest, earning a half-tuition scholarship to attend Illinois Tech. [Read the story about the 2018 Chicago Regional Bridge Building Contest on page 5.] Now a structural engineer with Parsons Corporation, Bajzek shared information about her winning student design and thoughts on why the contests remain relevant today:

As a high school pontist, what interested you specifically about participating in a bridge building contest?

I love creating things and solving problems. We had to build a bridge for my physics class, and I was fascinated that something so light could hold so much weight. My winning bridge weighed about the same as four nickels but could hold more than 200 pounds. I can't even come close to picking up 200 pounds! I wanted to learn more about the engineering behind it, and it became very addicting trying to get each bridge to hold more. My bridge was an A-frame design. I got the idea looking at one of the work benches in my parents' basement. My winning bridge weighed 0.044 pounds and supported 207 pounds, for a total efficiency of 4,738.

Did you learn something from participating in the contests that helped you in your career?

The thing I learned from the contests that has stuck with me the most in my career is tenacity. I built 20 test bridges to perfect my design, learning from each one what I could do to make my bridge stronger and lighter. I use that tenacity every day as an engineer. I work to make things as efficient as possible, which involves a lot of learning from mistakes and keeping at things until you achieve a great design.

Why does the contest continue to be relevant more than 40 years after its founding?

The contest teaches students about physics and engineering, which are present everywhere in the world. It takes learning about compression and tension in structural members out of textbook learning and into the physical world so students can better connect to the concepts. It also demonstrates the importance of iteration in engineering design with the best designs having been proven through many test runs.

MORE ONLINE
Parsons Corporation: www.parsons.com



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Homecoming Weekend 2018

September 21-22

Join us for a weekend of celebrations on Mies Campus!



REUNION GATHERINGS

Calling all reunion classes! Members of the classes of 1968, 1993, and 2008 will share in an exclusive luncheon gathering with President Alan W. Cramb. Alumni from the Class of 1968 and earlier will have the special honor of becoming members of the Golden Society. Class of 2017, don't miss your first reunion!

GLOBAL SPIRIT DAY

Celebrate the fourth annual Illinois Tech Global Spirit Day at alumni activities around the world and on Mies Campus including the Homecoming Carnival on Saturday, September 22, featuring fun for the whole family.

...AND MUCH MORE!

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