



CLEVELAND STATE UNIVERSITY

# WASHKEWICZ

COLLEGE OF ENGINEERING

2017 - 2018 ISSUE

## PROGRAM



## STUDENTS



## FACULTY

## PARTNERSHIPS



## ALUMNI



## QUESTION &amp; ANSWER

## An interview with Dean Anette Karlsson by Alexander Eguagie, master of science in environmental engineering candidate

**Q** | You came to CSU and the College of Engineering five years ago. What's been your experience?

**A** | It's been great. I love my adopted home city — in spite of a couple of record breaking cold winters! — and I am very proud of the accomplishments we have had over the last few years.

**Q** | What are you most proud of?

**A** | It is hard to pick one thing. But the number one thing is really the accomplishments of our students. Three years in a row now, the co-valedictorian at Commencement has been a student from engineering. [Editor's note: The University appoints two co-valedictorians each spring since the Commencement activities are divided into morning and afternoon events.] Moreover, each year our engineering students are winning national competitions. For example, in 2013 the student organization Engineers without Borders won the NCEES Engineering Award for the construction of a School and Hurricane Shelter in Belize. In 2014 a team of Chemical Engineering students won the National American Institute of Chemical Engineering (AIChE) Team Competition, while another team won the 2016 AIAA SciTech competition, a national event organized by the US Air Force Academy.

**Q** | Anything else that you are proud of?

**A** | Faculty and staff in our College are extremely dedicated to the students' success. Our faculty are also very successful in their research and scholarly work, and the funded research has increased steadily every year. Over the last five years, we have hired almost 20 new faculty members, making up more than one-third of the faculty. They bring in new energy and ideas to our engineering programs.

**Q** | What is the biggest challenge you have faced?

**A** | In general, all my experiences here have been very positive! However, explaining the name change of the College might have been one of the biggest challenges. Many alumni felt strongly about the old name, but once they understand the outstanding contributions of Donald and Pamela Washkewicz, alumni become very grateful to them.

**Q** | Can you tell us about that?

**A** | Don Washkewicz is the former Chairman and CEO of Parker Hannifin Corporation and graduated from the College of Engineering in 1972. He was instrumental in developing a long-term relationship between Parker and CSU that includes student scholarships, support of the



Administrative Building, helping develop the Human Motion and Control Lab, and a range of other activities. During my second year here, Mr. and Mrs. Washkewicz and the Parker Hannifin Foundation made a significant philanthropic gift to the College that, together with a second gift in 2015, represent the largest gifts made to the University. The CSU Board of Trustees decided to honor Mr. Washkewicz for his dedication to Cleveland State University and to the College of Engineering, renaming the College to the "Washkewicz College of Engineering." I think it is important to recognize that Mr. Washkewicz's engagement with the College and University goes well beyond the checkbook. He and his wife, as well as Parker Hannifin, are actively engaged with the College and University like no one else I know.

**Q** | That's quite a story! What is next for the College of Engineering?

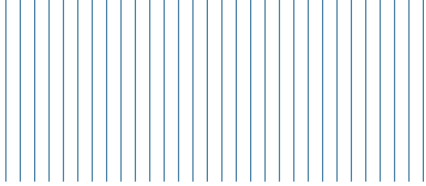
**A** | The biggest opportunity is the new engineering building, the Donald E. Washkewicz Hall. We will have the Grand Opening during Engineering Week in February 2018. The building will include the Dan T. Moore MakerSpace and the Parker Hannifin Motion and Control Laboratory, in addition to modern classrooms, and state-of-the-art teaching and research labs. We have almost three times as many students as we had 10 years ago, so we need the space. The new facility will enable the students to learn, discover and develop their entrepreneurial spirit, and it will also enable us to increase research activities along with industrial collaborations.

And personally, I am looking forward to the next five years as the dean of the Washkewicz College of Engineering, helping to bring it into its next stage of excellence.

**Q** | We are too — the College definitely has a bright future! Thank you Dean Karlsson!

**Alexander Eguagie** is the graduate assistant for the Center of Engineering Experiential Learning in the Washkewicz College of Engineering. He recently finished his summer engineering internship with the Cleveland Clinic and is seeking a full-time position in the field of environmental safety. He is graduating in December 2017.





**PRESIDENT**  
CLEVELAND STATE UNIVERSITY  
Ronald M. Berkman

**DEAN**  
WASHKEWICZ COLLEGE OF ENGINEERING  
Anette M. Karlsson, Ph.D.

**EDITOR/SUPERVISOR**  
WASHKEWICZ COLLEGE OF ENGINEERING  
Danielle Vath, Manager External Relations  
& Communications

**MARKETING COMMUNICATIONS REPRESENTATIVE**  
CLEVELAND STATE UNIVERSITY  
Erin Dengler

**ART DIRECTOR**  
CLEVELAND STATE UNIVERSITY  
Sam Twarek

**PHOTOGRAPHY**  
Brian Hart  
Cyndi Konopka

**CONTRIBUTING WRITERS**  
WASHKEWICZ COLLEGE OF ENGINEERING  
Sandra English  
Senior Manager Fenn Cooperative  
Education Program

Gregg Schoof  
Manager of Engineering Student  
Programs

Danielle Vath  
Manager External Relations  
& Communications

**MAILING ADDRESS**  
Cleveland State University  
2121 Euclid Avenue FH 104  
Cleveland, Ohio 44115-2214

**CAMPUS LOCATION**  
Cleveland State University  
Fenn Hall Room 104  
1960 East 24th Street  
Cleveland, Ohio 44115-2214

**P:** 216.687.2555  
**F:** 216.687.9280

[www.csuohio.edu/engineering/](http://www.csuohio.edu/engineering/)

[www.facebook.com/  
washkewiczcollege](https://www.facebook.com/washkewiczcollege)

[www.twitter.com/csuwashkewicz](https://www.twitter.com/csuwashkewicz)

-  [www.twitter.com/cle\\_state](https://www.twitter.com/cle_state)
-  [www.facebook.com/clevelandstateuniversity](https://www.facebook.com/clevelandstateuniversity)
-  [www.linkedin.com/company/  
cleveland-state-university](https://www.linkedin.com/company/cleveland-state-university)
-  [www.flickr.com/photos/csuohio/](https://www.flickr.com/photos/csuohio/)
-  [www.youtube.com/CSUchannel](https://www.youtube.com/CSUchannel)
-  [http://snapchat.com/add/cle\\_state](http://snapchat.com/add/cle_state)
-  <http://instagram.com/engagecsu>
-  <http://clevelandstate.tumblr.com/>

WASHKEWICZ is published annually by Washkewicz College of Engineering and CSU University Marketing. Sustainably designed and printed to reflect CSU's commitment to environmental stewardship. © 2017 CSU is an AA/EO institution. 170596/15.5 M

# Table of Contents

## **PARTNERSHIP IMPACT**

### NEW ENGINEERING BUILDING

Construction of the new \$60 million Washkewicz College of Engineering building is almost complete. Take a look and see how this building promises to transform engineering education at CSU.

04

## **FACULTY IMPACT**

### RESEARCH AND INNOVATION

See how our faculty are making an impact in the areas of big data analytics, additive manufacturing and artificial intelligence.

06

## **STUDENT IMPACT**

### GREAT ACHIEVEMENTS

Our students are achieving many great things, both on the CSU campus and beyond. Read all about the impressive things they have been up to.

18

## **PROGRAM IMPACT**

### EDUCATIONAL OUTREACH AND ENGAGEMENT

Fenn Academy and the Fenn Co-Op program continue their excellence in developing future engineers.

30

## **ALUMNI & DEVELOPMENT IMPACT**

### BUILDING A THRIVING FUTURE

Thanks to many generous alumni, corporate and personal donations, the future of Washkewicz College of Engineering is bright.

36

**NEW BUILDING UPDATE**

# Donald E. Washkewicz Hall Nearing Completion

**THIS IS AN EXCITING TIME** for the Washkewicz College of Engineering: We are constructing a new engineering building, the Donald E. Washkewicz Hall. This will be the first building designed specifically for engineering education in the history of Cleveland State University. Phase 1 is completed in December 2017, with classes starting in January 2018. Phase 2 will open for classes and research in January 2019.

The new building will feature the Dan T. Moore MakerSpace where students can transform their ideas to reality using state-of-the-art technology. The facility also includes teaching and research laboratories, simulation labs for computer modeling, student collaboration spaces, a large conference room and modern classrooms. This beautiful and functional building will greatly enhance the way we educate our engineering students, conduct research and engage with industry.

The project has been financed through a public-private partnership, with support coming from the State of Ohio and generous benefactors like Donald and Pamela Washkewicz, the Parker Hannifin foundation, Dan T. Moore and the Estate of Fredrick H. Ray.

*However, we are still looking for financial support to further enhance the facility. If you are interested in helping our students succeed, please contact Meredith Wintering, director of advancement at [m.wintering@csuohio.edu](mailto:m.wintering@csuohio.edu) or 216-687-3954. Thank you for your support!*



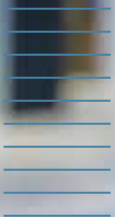
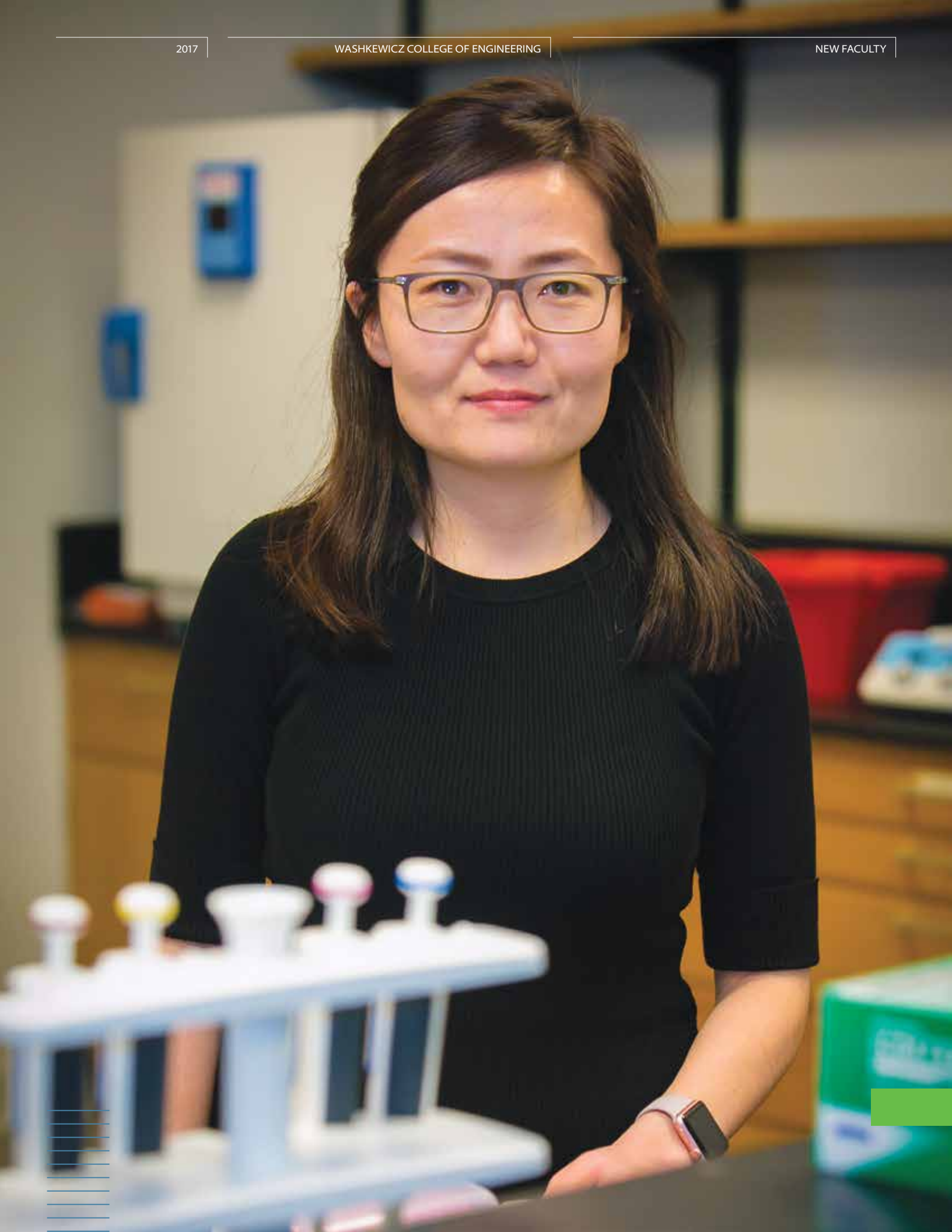


1. View of new building as of November 2017.
2. The Dan T. Moore MakerSpace will feature 6,400 square feet of open laboratory space.
3. The first floor entry lobby will highlight current events in the Washkevitz College of Engineering, feature state-of-the-art interactive signage, and display space for student projects.
4. Rendering view from E. 24th, looking west down Chester Avenue, highlighting the new entry, landscaping and exterior seating space.
5. The new south courtyard will feature a newly landscaped quad with pedestrian walks between Fenn Hall, Science and Science Research.

## QUICK FACTS

- 100,000 square-foot building.
- Five-story building including the Garden level.
- The 6,400 square-foot Dan T. Moore MakerSpace is located on the Garden level.
- **FEATURES:** modern classrooms, computer labs, teaching labs and research labs.
- Multiple collaborative spaces for students on each floor.





---

# Geyou Ao

---

## ASSISTANT PROFESSOR

Department of Chemical & Biomedical Engineering

---

**GEYOU AO IS AN ASSISTANT PROFESSOR** in the Department of Chemical and Biomedical Engineering. Following completion of her Ph.D. in chemical engineering at Auburn University, she was a postdoctoral research associate at the National Institute of Standards and Technology (NIST) through the joint NIH/NIST Postdoctoral Program sponsored by the National Research Council Research Associateship Programs of The National Academies. She launched her Bio-Nano Hybrid Materials Laboratory at CSU in fall 2016.

Dr. Ao's research falls within the areas of nanotechnology, colloid science, and rheology. She is particularly interested in integrating fundamental colloid science, molecular interactions of biomolecules-nanomaterials, and applications development of nanomaterials by utilizing chemical engineering concepts for property control and processing materials at the nanoscale. At Auburn, she studied the liquid crystalline phase behavior and rheology of carbon nanotubes that are non-covalently complexed with biomolecules such as DNA and lysozyme, and their macroscopic assemblies for applications in high strength antibacterial fibers and optical films. During that time, Dr. Ao noted the significance of the structure control of nanomaterials on many fundamental studies and novel technological development. She continued her professional training in the area of carbon nanotubes at NIST, and her research was focused primarily on developing effective selection methods for atomic structure-based sorting of carbon nanotubes using the special recognition capabilities of sequence controlled biopolymer such as single-stranded DNA.

At CSU, Dr. Ao launched her advanced nanomaterial research programs with the overarching theme of utilizing a powerful biomolecular approach to achieve structure control and manipulation of nanomaterials for applications development. Dr. Ao studies the structure-processing-property relationships in nanomaterials, with a special interest in structure control, surface functionalization and self-assembly of bio/nano

hybrid molecules. This holds promise for advancing scientific knowledge in imposing control over nanomaterial properties as well as in developing processing and applications of nanomaterials in biology and engineering materials. Her current research programs involve post-synthesis separation of nanomaterials with defined structure and property including carbon nanotubes and boron nitride nanotubes using sequence controlled biomolecules such as DNA. She also studies the mechanistic behavior of nanomaterials in biological media as well as the phase behavior and rheology of nanomaterials in liquid media to predict and control their macroscopic properties.

Various nanomaterial processing and characterization techniques that are routinely used in the lab include dispersion and structure sorting of nanomaterials, spectroscopy (e.g. optical, Raman, fluorescence), microscopy (e.g. polarized-light optical, atomic force, electron microscopy), kinetics of molecular exchange reactions, thermal gravimetric analysis, and rheology of nanomaterial dispersions. Developing novel applications of structurally controlled nanomaterials with unique properties is currently underway in the lab including using intrinsic near-infrared photoluminescence of carbon nanotubes for biological imaging and sensing, and exploring advanced coatings of boron nitride nanotubes that provide temperature and corrosion protection for aerospace applications.

Integrating research and education is also one of the key aspects in Dr. Ao's lab. She drives to impact the education and career development of both graduate and undergraduate students of all backgrounds, particularly encouraging and empowering those from traditionally underrepresented groups including women. Dr. Ao and her students have also been involved in outreach programs geared toward high school students through Fenn Academy and will continue to explore fun and rewarding outreach activities for supporting the advancement of next-generation scientists and engineers within the STEM community.

**NANOTECHNOLOGY OFFERS A FUTURE**

**OF ILLUMINATION AND STRENGTH.**



---

# Sasidhar Gumma

---

## ASSISTANT PROFESSOR

Department of Chemical & Biomedical Engineering

---

**SASIDHAR GUMMA IS AN ASSISTANT PROFESSOR** in the Department of Chemical and Biomedical Engineering. Prior to this appointment he was a professor of chemical engineering at the Indian Institute of Technology (IIT) Guwahati. He earned his master's degree (1999) and doctorate (2003) in chemical engineering from the College of Engineering at CSU.

While at IIT Guwahati from 2004-16, Dr. Gumma focused his research activities on porous materials known as Metal Organic Frameworks (MOFs). These are nanoporous materials known to have pore openings comparable to molecular sizes (~3-20 Angstroms). His group studied the structure and property relationships between these materials and their affinity to certain chemical species. Efforts were made to enhance the selective affinity of MOFs by functionalizing them with suitable chemical ligands, controlling their pore structure and/or incorporating additional nanoparticles into their structure. The group was also involved in development of theoretical and molecular simulation frameworks necessary for suitable analysis of the experimental data.

His laboratory group was involved in several industrial projects such as the development of hydrocarbon separation process for the oil and gas industry, development of amine absorption process for carbon dioxide capture, development of catalyst for coal liquefaction and modeling of hollow fiber membrane contactors for gas absorption. Based on the outcome of this

effort a pilot plant for novel separation process is currently being set up in the second-largest hydrocarbon exploration and production company in India. The cumulative total cost of the projects by his research group was over \$600,000, while his publications have citations in excess of 700.

In addition to his research activities, Dr. Gumma was one of the best rated teachers at IIT Guwahati by his students for his teaching style. He has taught a variety of chemical engineering courses such as Thermodynamics, Heat Transfer, Chemical Process Principles, Chemical Process Control and Catalysis. His interest in pedagogical methods for teaching engineering led to development of an openware course module for chemical reaction engineering. He was also involved in administration activities such as being the chairperson of a countrywide Graduate Aptitude Test in Engineering (GATE).

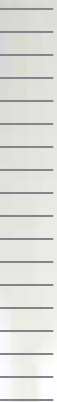
After moving to CSU in January 2017, he established the Nanoporous Materials Research Laboratory. Dr. Gumma's laboratory currently works on development of porous materials such as MOFs, COFs and HOFs. In particular, efforts are being made to develop polymer-composite membrane systems, development of stable MOFs for hydrocarbon separations and drug delivery vehicles using magnetic nanoparticles for biomedical applications. His lab always welcomes potential collaborators and curious students who want to learn more about the world of these exciting porous materials.

**THE GOAL FOR OUR LABORATORY IS TO SYNTHESIZE**

**MATERIALS THAT MAY ENABLE DEVELOPMENT**

**OF ENERGY EFFICIENT SEPARATION TECHNOLOGIES.**







**WORKING TO BRING INTELLIGENT SERVICE  
ROBOTS TO OUR EVERYDAY LIVES.**

# Shiqi Zhang

## ASSISTANT PROFESSOR

Department of Electrical Engineering and Computer Science

**SHIQI ZHANG IS AN ASSISTANT PROFESSOR** in the Department of Electrical Engineering and Computer Science at Cleveland State University, where he directs the Autonomous Intelligent Robotics Laboratory (AIR Lab). He was a postdoctoral research associate at Texas Tech University (2013-2014), and was a postdoctoral fellow (2014-2016) at the University of Texas (UT) at Austin. At UT Austin, he worked on reasoning, planning and human-robot collaboration algorithms for a team of mobile service robots in a Building-Wide Intelligence (BWI) project. Professor Zhang received his Ph.D. in computer science (2013) from Texas Tech University, where he was partly supported by a dean's fellowship. Before that, he received his master's (2008) and bachelor's (2006) in electrical engineering from Harbin Institute of Technology in China. He was a visiting student at the Tsinghua-CUHK Joint Research Center for Media Sciences, Technologies and Systems, Tsinghua University from 2007 to 2008, and interned at the Mobile and Sensing Systems Group, Microsoft Research (Asia) in 2012.

Professor Zhang's research lies in the intersection of artificial intelligence and robotics. He is particularly interested in developing algorithms that integrate computational modalities of reasoning with commonsense, planning under uncertainty, and reinforcement learning for mobile robots that work in human-inhabited, everyday environments, such as homes, hospitals, airports and offices. His doctoral thesis contributed a framework that enables robots to simultaneously reason with commonsense knowledge and plan to achieve long-term goals, while accounting for the robots' imperfect action executions and local, noisy observations. His long-term research goal is to develop mobile service robots that are able to autonomously operate over extended periods of time, safely interact with humans in collaborative environments, and eventually become a permanent component of our everyday life.

Professor Zhang is continuing his research on artificial intelligence and robotics at CSU. Ongoing research in his lab includes robot learning for human-robot interaction, human-aware robot navigation, robot spoken dialog systems, multi-robot collaboration and human-robot collaboration. His research lab has one Segway-based mobile robot platform and a team of Turtlebots that are extensively used in a variety of robot experiments.

Professor Zhang has published more than 30 research papers on these topics. He is co-chairing the AAAI 2018 Spring Symposium on Integrating Representation, Reasoning, Learning and Execution for Goal Directed Autonomy, which will take place in Palo Alto, California in March 2018. He has served on the program committees of major AI conferences such as IJCAI, AAAI, NIPS, ICML and AAMAS, and reviewed for many journals and conferences on AI and Robotics, such as the International Conference on Robotics and Automation and IEEE Transactions on Robotics. His research paper on "Learning to Interpret Natural Language Commands through Human-Robot Dialog" was one of the four that were highlighted in the press conference of International Joint Conference on Artificial Intelligence (IJCAI) in 2015. His work on "ASP+POMDP: Integrating Non-monotonic Logic Programming and Probabilistic Planning on Robots" has received the Paper of Excellence Award from the IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB) in 2012.

## Washkewicz College of Engineering Faculty Promotions

The following faculty members received promotions effective for the 2017-2018 academic year.

### TO PROFESSOR



**Hanz Richter,  
Ph.D.**

Department of Mechanical  
Engineering



**Nolan Holland,  
Ph.D.**

Department of Chemical  
and Biomedical Engineering



---

# Hongxing Ye

---

## ASSISTANT PROFESSOR

Department of Electrical Engineering and Computer Science

---

**HONGXING YE IS AN ASSISTANT PROFESSOR** in the Department of Electrical Engineering and Computer Science at Cleveland State University. He received his doctorate in electrical engineering from Illinois Institute of Technology, Chicago in 2016. He earned his bachelor's degree in information and communication engineering (2007) and master's degree in system engineering (2011), both from Xi'an Jiaotong University in China. He was a visiting researcher at Energy Division in Argonne National Laboratory in 2015 and received the Sigma Xi Research Excellence Award at Illinois Institute of Technology. Ye was elevated to IEEE Senior member in October 2017. In his first year at Cleveland State, he has been awarded a three-year grant from National Science Foundation.


Professor Ye's research interests include power and energy system, electricity market, renewable energy integration, large-scale optimization and cyber-physical system security. He has published a series of papers on the flagship journals in his areas including IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid and IEEE Transactions on Sustainable Energy. Dr. Ye has been invited to deliver plenary talks in major conferences, such as 2017 INFORMS annual meeting and workshop organized by the Department of Energy. He actively serves in several professional organizations and committees. He served as session chair for major international conferences. Dr. Ye has reviewed more than 80 papers for well-recognized journals and conferences. He was honored as Outstanding Reviewer for IEEE Transactions on Power Systems and IEEE Transactions on Sustainable Energy. As of October 2017, Professor Ye is the Principal Investigator (PI) of three ongoing projects as follows.

**National Science Foundation, "Transactive Uncertainty and Flexibility for High Penetration of Semi-dispatchable**

**Renewables in Electricity Markets."** This project focuses on the novel theories and models for improving the reliability and fairness of the electricity market when variable energy resources (VERs) become more prevalent in the power generation. The robust model that he is developing will enable broader adoption of distributed energy sources in the energy systems. The new optimization method he is developing is expected to solve problems in many domains besides energy.

**CSU FRD – Internet of Things, "Cyber-physical Security in IoT-Enabled Microgrid."** The objective of this project is to investigate vulnerability in the Internet-of-Things (IoT)-enabled microgrid and enhance the resilience and reliability against cyber or physical attacks. Microgrid is the perfect instance of IoT as a cyber-physical system. In the last decade, microgrid has been experiencing significant development in the United States. A microgrid is a localized grid that is comprised of distributed generators, energy storage and loads, which may connect to the power grid or operate autonomously. The complexed information exchanging system and electricity distribution system also pose more vulnerabilities from the security point of view.

**CSU FRD, "Active Uncertainty Management in Modern Power Systems."** Uncertainty management has been an active research area in the modern power systems in many levels including the bulk transmission system, distribution system, and microgrid. The uncertainty could come from the device outages, output deviations of solar and wind generations, and natural disaster, such as Hurricane Irma. Surviving uncertainties is fundamentally essential for the reliable and secure operation. This project focuses on developing systematic approaches to managing the uncertainty in an active way.





**DEDICATED TO RESEARCHING AFFORDABLE,  
ENVIRONMENTALLY FRIENDLY, AND RELIABLE  
ELECTRICITY, EVEN IN THE AFTERMATH OF  
EXTREME EVENTS, SUCH AS HURRICANE IRMA.**

# RE@CSU

## REHABILITATION ENGINEERING AT CLEVELAND STATE UNIVERSITY



Eric Shearer, assistant professor in the  
Department of Mechanical Engineering

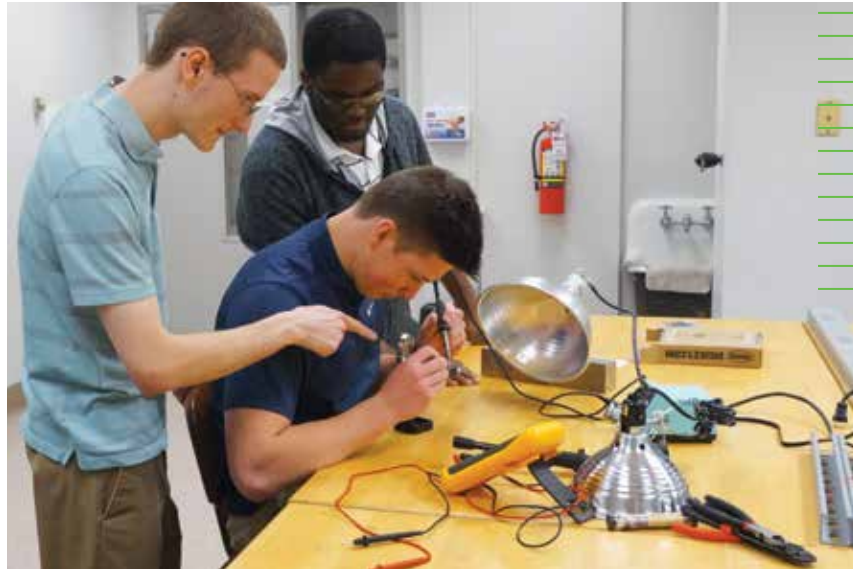
**T**his past summer, Cleveland State University hosted Rehabilitation Engineering at Cleveland State University, a National Science Foundation research experience for undergraduate students interested in creating and using technology to transform the lives of people with disabilities. The National Science Foundation funded the program through a grant applied for by Eric Schearer, assistant professor in the Department of Mechanical Engineering and Ann Reinthal, associate professor in the School of Health Sciences. For the first time, CSU welcomed 12 undergraduate students majoring in biomedical engineering, computer science, electrical engineering and mechanical engineering from all over the country, including two from the Washkewicz College of Engineering.

Students were immersed in a community of undergraduate researchers, graduate students, engineering mentors, health care professionals and, most importantly, individuals with disabilities. Together students worked on research projects to restore movement to people with paralyzed arms, developed new prosthetic legs, helped improve balance in older adults and explored the mechanics of injured joints.

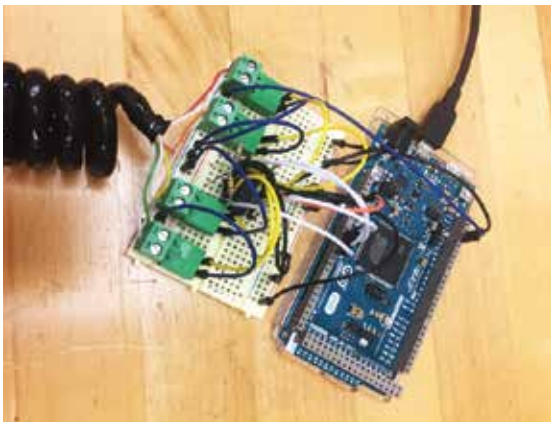
During the 10-week experience, students lived on CSU's campus and worked in CSU's research labs and in Cleveland local hospitals. Student participants also received a stipend, graduate school application and job application assistance, mentoring, participation in activities and membership in a supporting research community.

RE@CSU will be accepting applications for summer 2018 beginning December 2017. For more information or to apply for the program please visit our website at [csuohio.edu/engineering/recsu/recsu](http://csuohio.edu/engineering/recsu/recsu).





**HUMANIZING  
ENGINEERING  
BY TRAINING  
ENGINEERS  
WHO IMPACT  
PEOPLE'S  
LIVES.**





**DEVELOPING NEW MATERIALS THAT  
REDUCE THE ENVIRONMENTAL FOOTPRINT OF  
CHEMICAL PRODUCTION AND IMPROVE  
THE FUNCTION OF CONSUMER PRODUCTS.**

Dr. Christopher Wirth is an assistant professor in the Department of Chemical and Biomedical Engineering and the principle investigator at the Wirth Lab.

# **The Wirth Lab Awarded American Chemical Society Grant**

**Complex fluids** consisting of multiple interspersed phases are everywhere. Food, pharmaceuticals, cosmetics and personal care products are all complex multiphase fluids that have been designed with specific functionality to satisfy customers' needs. Complex multiphase fluids are also regularly found in a variety of industrial processes, ranging from coatings to the production and processing of commodity chemicals.

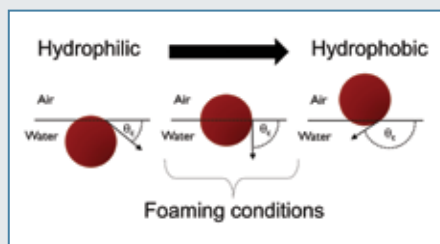
Existing in various forms — suspensions (solid/liquid), emulsions (liquid/liquid), or foams (gas/liquid) — these mixtures are each considered complex multiphase fluids. As part of the Department of Chemical and Biomedical Engineering, the Wirth Lab works to engineer materials for existing and next generation applications. With this \$110,000 Doctoral New Investigator Grant from the American Chemical Society Petroleum Research Fund, Dr. Christopher L. Wirth seeks to develop new foam technology for the unconventional recovery of gas and oil.

New foam technology would prove timely for the gas and oil industries as they move toward shale fracturing and enhanced oil recovery (EOR). Shale fracturing, commonly known as fracking, is a process in which water containing sand and chemical additives is injected into a well to create fractures within rock formations to release natural gas contained within shale. As natural gas is a cleaner fuel source than other carbon-based sources, it is considered to be a potential "Bridge Fuel" as the U.S. moves towards a more low-carbon energy economy. EOR involves pumping gas or liquid into a reservoir to release additional hydrocarbon following the initial depletion stage. Gases, including carbon dioxide, nitrogen, or air, are often more effective for EOR than liquids as gases tend to have higher sweep efficiency than liquid-based EOR. However, gases do not have a high volume sweep efficiency.

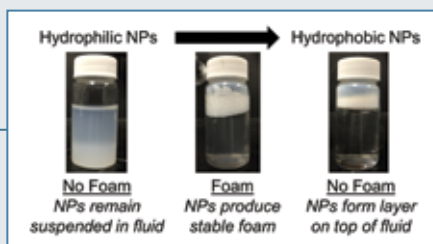
Dr. Wirth's funding will help develop new foams to increase process efficiency, while decreasing environmental impact. One of the most significant environmental concerns with shale fracturing is the enormous volume of water used in each well. Greater efficacy of foam fracking fluids will substantially reduce the volume of water required for unconventional natural gas drilling. Additionally, the rheological and mechanical properties of foams are also suitable for use in EOR as effective displacing fluids, as well as sweeping fluids for environmental remediation.

During the grant period, Dr. Wirth's lab will develop and utilize foams stabilized by nanoparticles. Nanoparticle stabilized foams have many properties that make them desirable, including strong stability in the presence of oil. One of the project's goals is to optimize the nanoparticle surface chemistry to achieve a foam that has a microstructure and transport properties tailored for each application. Until now, there has been very little work on how particle properties and interfacial microstructure influences the transport of nanoparticle stabilized foams in porous media, which is crucial for implementation in real world applications.

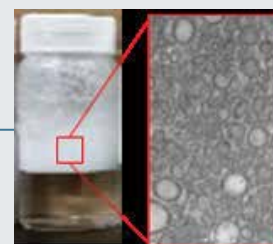
Dr. Wirth is actively seeking both federal and commercial partners to continue this work beyond the initial two-year grant period. Given the omnipresence of complex multiphase fluids, the technologies developed in CSU's Wirth Lab could potentially have applications beyond the gas and oil industries.



NPs pinned at an interface enhances interfacial stability. The interfacial position of the NPs depends on whether the NP is hydrophilic (water-loving), hydrophobic (water-hating), or somewhere in between.



Complex multiphase fluids following agitation, from left to right: wetted nanoparticles (NPs), partially wetted NPs, and non-wetted NPs.



Internal structure of NP stabilized foam.



# Joseph Hubach

**VALEDICTORIAN** ▶ WASHKEWICZ COLLEGE OF ENGINEERING

**CO-VALEDICTORIAN** ▶ CLEVELAND STATE UNIVERSITY

In May 2017, Joseph Hubach graduated as the Washkewicz College of Engineering Valedictorian and Cleveland State University's Co-Valedictorian with a Bachelor of Mechanical Engineering degree.

**BASED ON HIS HIGH SCHOOL GRADES,** Hubach was awarded a four-year MCS Parker Hannifin Engineering Scholarship. He went on to make both the Dean's List and the President's List repeatedly, and received the Washkewicz College of Engineering Student Achievement Award. He was also a member of Tau Beta Pi, the Engineering Honor Society.

Hubach cites Dr. Michael Adams as the teacher that most influenced him. "He was a tough teacher, but his real world examples were a great teaching tool," said Hubach. He also thinks his classmates had as great an influence on his success. "They pushed me to be a better student. You rely on them to help fill in knowledge gaps and they rely on you."

His senior design project was titled The Smart Damper, where his team created an automotive shock absorber that could achieve a wide range of damping coefficients based on the speed of the car.

As a member of the American Society of Mechanical Engineers he helped build a catapult, competing against the CSU Society of Physics students. Hubach also helped assemble a quadcopter, an unmanned helicopter with four rotors, as a member of the American Institute of Aeronautics and Astronautics' quadcopter design team. Quadcopters use two pairs of identical fixed pitch propellers — two clockwise and two counterclockwise. Control is achieved through varying the speed, allowing the controller to generate a desired thrust, as well as torque to create the desired turning force.

Involvement in both professional student organizations taught him to be a team player, which he put to good use outside the lab environment. Playing club lacrosse for CSU, Hubach's team won the National College Lacrosse League Midwest Conference championship in 2015.

"I'm glad my cousin introduced me to lacrosse. It gave me the opportunity to do more than just go to classes. It taught me better time management and provided stress release, which made me a better student," said Hubach.

"I chose CSU because the affordability is unmatched by other area colleges." And engineering runs in the family. With an uncle, brother and numerous cousins in varied fields of engineering, and a father who has worked as a technician at Honeywell and NASA, Hubach had considered majoring in civil engineering. "I enjoyed math in high school and was looking for a career that incorporated math and art — mechanical engineering has a bit of an art aspect to it."

As a produce development engineering intern at Nordson Corporation, Hubach designed and prototyped a food grade pressure reducing regulator for a food dispensing system that coated foods with materials like vegetable oil or sugar solutions. The previous summer, he interned at Nordson as an application engineer, updating drawings in AutoCAD and SolidWorks. Working on a team, he helped create over 1000 new SolidWorks parts for powder coating systems as an alternate to liquid paint.

While at Nordson, he also had the opportunity to volunteer for Second Harvest Food Bank of North Central Ohio and Big Brothers/Big Sisters of Lorain County.

Hubach's internships at Nordson not only offered a learning opportunity, but there he realized how much he enjoyed product development. Currently, Hubach is pursuing a master's degree at Rose-Hulman Institute of Technology and hopes to pursue product design and development.



**“THEY [CLASSMATES] PUSHED ME  
TO BE A BETTER STUDENT.**

YOU RELY ON THEM TO HELP FILL  
IN KNOWLEDGE GAPS AND THEY  
RELY ON YOU.”

## FEATURED STUDENT ORGANIZATION



"I JOINED SWE BECAUSE I WANTED TO BE ABLE TO CONNECT WITH SUCCESSFUL FEMALE MENTORS AND ALSO TO BE ABLE TO INSPIRE AND EMPOWER OTHER WOMEN AROUND ME ESPECIALLY AT CLEVELAND STATE UNIVERSITY. SO FAR, IT HAS BEEN A WONDERFUL EXPERIENCE."

**ELIZABETH AKOSILE**

# Society of Women Engineers

**THE SOCIETY OF WOMEN ENGINEERS (SWE)** is a not-for-profit educational and service organization that empowers women to succeed and advance in the field of engineering and to ensure recognition for their life-changing contributions as engineers and leaders. During the 2016-17 academic year, the CSU SWE chapter focused on creating a community of support for women engineering students, providing networking and career development opportunities, and inspiring the next generation through volunteering and outreach.

Previously, CSU's SWE chapter was not recognized nationally or by the university. With extremely low membership and a history of inactivity, CSU chapter President Sherry LaBonne and Vice President Brianna McKinney worked alongside Advisor Danielle Vath to develop the organization. Working solutions included a plan to work with the national SWE and CSU's Student Life, to recruit new members and host regular events, and to completely refocus the group's structure.

During the past school year, the CSU SWE chapter was recognized by the university, improved their succession plan, increased active membership, laid the groundwork for annual events such as Tea w/ SWE and the Students vs. Faculty volleyball tournament, reestablished relationships with other CSU organizations, and aligned with the national SWE organization.

**The End Result of a Year of Hard Work:** CSU chapter members of the Society of Women Engineers were able to attend both the national and regional conferences, where they learned how to get in good standing with Nationals, as well as how to maintain membership once the current chapter leadership graduated. Additionally, they attended networking events and hosted their own STEM Women in Leadership panel discussion. Members also gathered to attend a showing of the movie, "Hidden Figures," which highlighted women and minority achievements in NASA's space program. Currently, the CSU SWE chapter is a thriving organization in great standing with Nationals and has become a great place for female engineering students to gather for needed support and encouragement — academically, personally and professionally.



## FEATURED STUDENT ORGANIZATION



# Xellia Pharmaceuticals Creates New CGMP Design Certification Program

**A key issue facing pharmaceutical manufacturers** operating in the United States is the need for highly skilled chemical engineers who are well versed in regulatory requirements mandated by federal agencies including the Food and Drug Administration.

Unfortunately, many chemical engineering degree programs do not feature a comprehensive regulatory curricula that matches current industry need. To address this, Cleveland State University partnered with Xellia Pharmaceuticals to create a Current Good Manufacturing Practices (CGMP) design certification program that provides future workers with the skills necessary to meet workforce demand.

“Xellia recently opened a manufacturing facility in Bedford, Ohio and has been actively recruiting engineers to assist with production ramp-up,” said Niels Lynge Agerbaek, general manager for Xellia Cleveland. “We realized that there was a lack of workforce understanding of the regulatory requirements that are essential to drug manufacturing. We did not have the ability to create a full-service training program on our own so we looked to partner with an institution to enhance the educational programming that already existed.”

“CSU continually investigates opportunities to improve our degree programs to better meet the needs of industry, and this opportunity was a chance to provide additional skills that will make our graduates more valuable to Xellia and numerous other pharmaceutical manufacturers,” said Joanne Belovich, chair of the Department of Chemical and Biomedical Engineering at CSU.

Xellia Pharmaceuticals developed a seven-week course that offered instruction in a host of regulatory topics including architectural design, high purity water systems, and sterile manufacturing, while also providing tours of current manufacturing operations and an opportunity to interact with engineers working in the field. Xellia’s engineers and managers taught the course, and Dr. Belovich worked with the student chapter of the American Institute of Chemical Engineers and department staff to recruit participants and organize the events. Over 60 students completed the spring edition of the course and received certification. CSU and Xellia Pharmaceuticals plan to offer it again next year and hope to open it up to additional majors on campus.

“This partnership allowed our company to address a specific workforce need and identify talented students for future employment opportunities,” said Joseph Yurko, a CSU chemical engineering alum who serves as an associate project lead at Xellia. “It also assisted CSU in providing additional professional training and development for their students that will make them more employable in multiple facets of the pharmaceutical industry. It truly is a win-win.”

## STUDENTS ACCOMPLISHING GREAT THINGS

# 2017 Graduate's Roots Run Deep at CSU

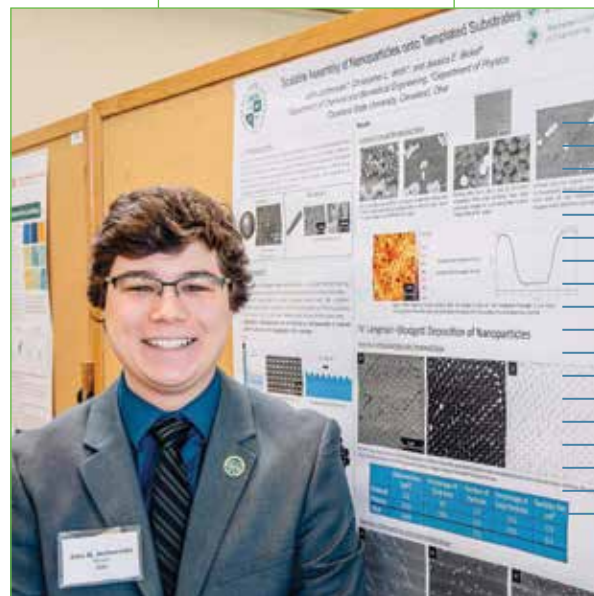
## John Juchnowski's family history dates back to Fenn College.

As a recent chemical engineering graduate, Juchnowski has continued the legacy of a CSU education. While one grandfather attended Fenn College for business, the other grandfather studied civil engineering — a picture of him was once in the lobby of Stilwell Hall (now Fenn Hall).

With engineering and business in his bloodline, graduating Magna Cum Laude with a bachelor of chemical engineering seemed a given. "I always liked chemistry, but didn't want to teach. Chemical engineering allows me to use chemistry and apply mathematics in ways that can impact the world by helping develop products people use everyday," said Juchnowski.

Juchnowski and his design team won second place in Materials Engineering and Sciences for their research poster on Scalable Assembly of Nanoparticles onto Templated Substrates at the 2016 National AIChE Annual Student Conference. Anisotropic nanoparticles such as carbon nanotubes and noble metal nanorods have excellent electric, mechanical, and thermal properties, but all of these properties cannot be fully realized without a scalable method of particle alignment. The goal of the project was to combine existing patterning and deposition techniques in order to lay the foundation for the manufacturing of materials that exploit the properties of anisotropic nanoparticles over large surface areas. Real world application could result in nanotransistors that generate less heat — a desirable characteristic for creating smaller and more flexible electronic devices.

In summer 2016, Juchnowski continued his research into scalable assembly of nanoparticles onto template substrates when he was hired



through the University Scholars program. In spring 2017, he was granted an undergraduate research award of \$1,000 from the CSU Office of Research. His work also won honorable mention at the Washkewicz College of Engineering 2016 Research Day and took 1st Place at the CSU Physics 2017 Undergraduate Research Poster competition.

As both a Cleveland State University Scholar and a Parker Hannifin Scholar, Juchnowski also served as treasurer, vice president and then president of the American Institute of Chemical Engineers CSU student chapter. "The skills I learned through my involvement with AIChE have allowed me to talk comfortably in front of large crowds. I also learned about budget proposals and conducted fundraising for the national AIChE conference," said Juchnowski.

Juchnowski credits his success to his research advisor, Dr. Christopher L. Wirth, for providing research and career advice and helping him plan future goals and Dr. Jessica Bickel, assistant professor of Physics in the College of Sciences and Health Professions, for bringing his writing skills for presentations up to par. "I view the whole Department of Chemical and Biomedical Engineering as being my mentors."

Following graduation, Juchnowski was hired as a chemical associate at Xellia Pharmaceuticals in Bedford, Ohio. Working as an analytical chemist, his role is to get Xellia's lab equipment up and running and qualified for pharmaceutical analytical testing in order to create safe consumer products. Manufacturing is scheduled to begin in early 2018. Until then, products made at Xellia's Copenhagen facility are being shipped to Bedford for packaging and national distribution. The company produces sterile anti-infective injectable products, including those used to treat life-threatening infections. Juchnowski sees this opportunity as having room for tremendous growth.



# Chaney Jr. Thrives Outside Classroom

**A CLEVELAND HEIGHTS NATIVE**, George Chaney Jr. is passionate about increasing diversity in STEM fields, following in the electrical engineering career path of his uncle. En route to earning his bachelor's degree in electrical engineering, Chaney gained valuable educational and extra-curricular experiences. His experiences included being in a number of student organizations, including the National Society of Black Engineers (NSBE), the Institute of Electrical and Electronics Engineers (IEEE), Eta Kappa Nu (IEEE honor society) and Engineers Without Borders (EWB).

As president of the National Society of Black Engineers, he displayed exceptional leadership and dedication, representing CSU at regional and national conferences, participating in community service projects and serving as workshop presenters to encourage youth to consider engineering careers.

As team lead on a one-year senior design project with FirstEnergy Corporation, Chaney willed his team of four electrical engineers to the successful production of a Transmission & Substation Protective Relay & Control Training Rack. This project earned the honors of "Best Senior Design Project in Electrical Engineering and Computer Science at Cleveland State University."

Chaney also has a passion for giving back to the community, volunteering his time and efforts in many ways throughout the Greater Cleveland area, as well as across the United States. He recently took an eight-day service trip to New Orleans, Louisiana. While there, his service activities included volunteering at two food pantries, a horse rescue ranch and construction on a home that was severely damaged in Hurricane Katrina.

Chaney graduated from Cleveland State in May 2017. He is beginning his career as an Electrical Engineer with Honeywell FM&T (Federal Manufacturing and Technologies) in Kansas City, Missouri.



## Students Win Big at StartupVikes

The fourth annual Startup Vikes business plan "boot camp" provided participants with a crash course in how to develop a business and awarded top finishers with cash infusion and business training that will help them turn their plans into working companies.

The winning businesses were: **Lex** (\$2,000), **Rise** (\$1,000), and **PneuKinetics** (\$500). PneuKinetics, an Entrepreneurial Senior Design team was comprised of all engineering students while Lex and Rise also had Washkewicz College of Engineering student team members.

**Lex uses real docket data to create an online resource for those seeking attorneys.** The service provides consumers with attorneys that have the best docket record for their particular type of case. Using analytics, artificial intelligence and a proprietary algorithm, **Rise seeks to predict the current ranking of a user's website**, as well as analyze and provide recommendations on how to optimize website quality.

**PneuKinetics is a lightweight, inexpensive exoskeleton which seeks to improve mobility for people with physical disabilities and neurological diseases.** This product seeks to replace canes, walkers and crutches with an inexpensive and more user friendly option.

Among the 150+ participants were students from Cleveland State University, students from four other local universities and numerous business leaders and community members. More than 40 mentors and presenters provided help, guidance and resources throughout the weekend ranging from strategy, branding, marketing, sales, financial, legal, design services and manufacturing to name a few.





## STUDENTS ACCOMPLISHING GREAT THINGS

# Kolovich Earns Student Travel Award

**CONGRATULATIONS TO RP+M INTERN** Maggie Kolovich, who was selected by the National Science Foundation (NSF) as a recipient of its 2017 Student Travel Award Program. Kolovich was the only student selected from an Ohio university for this program. She attended the PowderMet conference in Las Vegas June 13-15 to present on her collaborative work on the binder jet printing of tungsten heavy alloys.

Kolovich started her internship with rp+m in January 2017, while being a full-time mechanical engineering student at Cleveland State. Throughout her tenure at CSU, she has spent time volunteering as the vice chair of the student association for the American Institute of Aeronautics and Astronautics (AIAA), while still delving into research programs at rp+m. Kolovich is set to graduate from CSU in May 2018. "Maggie is a huge asset to our team. She is well organized, bright and incredibly personable. We are very proud of the student and researcher that she is," said rp+m President and CTO, Dr. Tracy Albers.



# Rodriguez Finds Success Far From Home

**HAFID HUGO MIRAMENDI RODRIGUEZ** was born in Santa Cruz, Bolivia. The oldest of three children, he came to the United States in 2009 as a high school foreign exchange student. During high school, he participated in an engineering shadowing program through De Nora Tech, a state-of-the-art technology center located in Ohio. Fortunately, his high school host family continued sponsoring him and following high school Rodriguez applied to Lakeland Community College. At Lakeland, he became treasurer of the student government, working his way to vice president and then president. Additionally, he participated in new student orientation, became a student ambassador and joined the Campus Activity Board.

Having earned his associate of science and arts degrees from Lakeland, Rodriguez transferred to Cleveland State University, where he is working on his B.S. in Chemical Engineering. Rodriguez's family has had a major influence on his career decisions, as his father is a chemical engineer in Bolivia. One of Rodriguez's goals is to increase Hispanic representation in STEM fields. Now, as an AiCHE member and one of the founding members of the Society for Hispanic Professional Engineers (SHPE) at the Washkewicz College of Engineering, he is pursuing that goal. While serving as the CSU President of SHPE, Rodriguez exemplifies strong leadership skills, attending the National SHPE conference on behalf of Cleveland State. Under his leadership, the organization is working with local cultural programs to develop scholarship initiatives.

Rodriguez completed the College co-op program with his first co-op rotation at ABB, followed by two rotations at Lubrizol. While at CSU, he has developed both professional and personal skills from his co-op experiences, as well as from his involvement in student organizations. Rodriguez is scheduled to graduate in May 2018. With the growing demand in technology, he plans to work with Lithium in the United States or abroad, and would eventually like to own his own business.



# Engineering & Computer Science Students Take Ethics Pledge

On April 6, 2017 the Washkewicz College of Engineering hosted the Order of the Engineer and the First Annual Pledge of the Computing Professional. The Pledge of the Computing Professional is a new organization to promote the notion of computing as a recognized profession at the time of graduation for students in Computer Science and related programs. It is solely intended to promote and recognize the ethical and moral behavior of graduates of computing-related degree programs as they transition to careers of service to society.

The Order of the Engineer ceremony in the United States was first held at Cleveland State University in the Washkewicz (then Fenn) College of Engineering on June 4, 1970. Since then the ceremony has been adopted by several other engineering colleges throughout the United States. Ring ceremonies are conducted by Links (local sections) of the Order; there are currently 189 Links in the United States and the Washkewicz College is Link 1.

Over 80 students participated in the ceremony this past year and received either their Order of the Engineering Steel Ring or the Pledge of the Computing Professional Pin.



```
01001000
01101111
01101110
01101111
0110010
```

Pin given to all computing professional members. It spells HONOR in ASCII.

## STUDENTS ACCOMPLISHING GREAT THINGS

# No Looking Back as McRae Finds Success at CSU



After attending Lakeland Community College, Jammel McRae II had planned to study aviation technology until he discovered he didn't like working with planes.

"My mother is a teacher and has been preaching engineering to me since I was about ten years old," said McRae. A family friend also encouraged him to pursue engineering, figuring he'd always have a job. So, McRae changed his major to electrical engineering, transferred to Cleveland State University and hasn't looked back.

Currently, he's in the accelerated math program, is carrying a 3.86 GPA, is a Trio McNair Scholar (a program designed to prep undergrads who plan to attend graduate school) and plans to graduate from CSU with a bachelor's degree in May.

McRae chose CSU because it's close to home, allowing him to commute, but he was also impressed by what he saw on campus. "The first day I stepped into a classroom, I noticed how close knit CSU was. Students were asking each other questions, everyone was there to learn and always willing to help. When you see the money CSU is spending on new facilities, students really can see their tuition dollars at work," said McRae.

A recipient of the Parker Hannifin Washkewicz Scholars Program scholarship, McRae also interned at Parker Hannifin during the summer of 2016, where he helped program the TRUMPF TruMark Station 5000 laser-etching machine for use in their Fluid Systems Division's Repair Station. His greatest take away — "Seeing another side of engineering, as I got to work with mechanical engineers on the project."

During summer 2017, McRae interned for FM Global testing sprinkler systems and design components for the property insurer. "I learned the ins and outs of fire systems and sprinkler design, and how engineering factors into how insurance premiums are determined," said McRae.

While attending to his studies has landed him on the CSU Dean's List for the last three years, McRae still finds time for the National Society of Black Engineers (NSBE). As a member of the NSBE CSU chapter, he has served as secretary and vice-president, and is currently the chapter president. "Membership and attending meetings, regional and national conferences has been a great bonding experience," said McRae.

Among his learning experiences, McRae cites his electronics and control systems courses with Dr. Lili Dong and his circuits course with Dr. Charles K. Alexander among some of the more memorable. "Dr. Dong is very organized and makes herself accessible to students. Dr. Alexander has what I call a flipped classroom approach. Instead of rigid lesson plans, students come to class prepared with topics they're interested in learning and related questions for him," said McRae.

When he's not studying or working, McRae enjoys playing basketball, gathering with family members at his aunt's home to watch the Cavs and spending time with his girlfriend, who recently graduated with a degree in nursing.

As for McRae's future plans — "I'd love to stay in the Cleveland area and work in the consulting sector."





## BEST POSTER AWARDS

### FIRST PLACE

**How Seal Whiskers Suppress Vortex-Induced Vibration: Effect of Angle of Incidence on Wake Structure**

*by Aidan Rinehart, Joseph Bunjevac, Vikram Shyam and Wei Zhang*

### SECOND PLACE

**Automated Generation of a Coarse Grained Model of Axonal Microtubules**

*by Erin M. Tesny, Neda Abdollahi and Jason P. Halloran*

### THIRD PLACE

**Layer-by-Layer Printing of Hep3B Cells in Hydrogels for Cancer Cell Migration Assays**

*by Alexander Roth, Yana Sichkar, Stephen Hong, Kyeong Name Yu, Oju Jeon, Eben Alsberg and Moo-Yeal Lee*

### HONORABLE MENTIONS

**Scalable Assembly of Nanoparticles onto Templated Substrates**

*by John Juchnowski, Christopher L. Wirth and Jessica E. Bickel*

**Optimization of Ligament Properties Using an Instrumented Knee Implant**

*by William Zaylor and Jason P. Halloran*

**Neuromuscular Reflex Controllers Can Describe Human Gait and Responses to Perturbation**

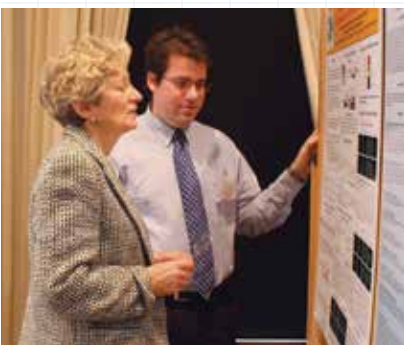
*by Sandra K. Hnat and Antonie J. van den Bogert*

2016

WASHKEWICZ COLLEGE OF ENGINEERING

# Research DAY

On Friday, November 18, the Washkewicz College of Engineering hosted Research Day at Fenn Tower. The event featured a poster session highlighting the cutting-edge research being conducted by the College and a keynote presentation by Dr. Robert Graf, corporate vice president research and development from The Lubrizol Corporation.





Over the past several months the College has received a number of new endowed scholarships that will help ease the financial burden of tuition for select students. The specifics and eligibility criteria will be listed on the College's website.

- ▶ **American Concrete Institute NE Ohio Endowed Scholarship**
- ▶ **Leia M. Schier Endowed Scholarship in Engineering**
- ▶ **Richard R. Schier Endowed Scholarship in Engineering**
- ▶ **Nathan N. Hoffman Endowed Scholarship Fund**
- ▶ **David D. and Lois E. McFarland Endowed Scholarship**



# Scholarships: Over \$600,000 Awarded to Students in 2016-17

**THROUGH THE GENEROUS DONATIONS** of corporate and individual donors, the Washkewicz College of Engineering has awarded over \$600,000 in student support during the 2016-17 academic year. Well over 200 individual awards helped our students pay for tuition, fees, housing and books. Awards are based on donor criteria determined at the time the scholarship funds were established.

Scholarships help ease the financial burden many students face and give students a chance to focus on their academic studies. Without this generous support many students would not be able to fund their college degree. Our scholarship students not only attend class, but many are also CSU athletes, university scholars, and cooperative education participants, thus providing them a well-rounded college experience and preparing them for life after college.

Scholarships and online applications are listed on the College website. Since the inception of the online format, applications have risen nearly 100%. The selection process can seem daunting, but the essays and recommendation letters help the dean's office get to know our students better. Once a scholarship recipient has been identified, the assistant dean monitors their academic performance to ensure the student continues to meet all eligibility requirements.

"Getting an engineering scholarship means a second chance at a life I thought I had missed the opportunity to pursue. Even though I am an older student with loans from a previous degree, **I have been given the means to pursue an education that is thoroughly fulfilling and will open doors for the kind of life I had only imagined.**"

**ANGELA RODRIGUEZ**  
Mechanical Engineering

"It means that **not only do I believe in myself, but someone out there also believes in my future.** That someone has enough faith in me to know that I can reach my dreams and help humanity."

**JAMMEL MCRAE II**  
Electrical Engineering

"To receive a scholarship feels like the department offering the scholarship believes in me. **The department believes in me enough to support me and to do what they can to assist me in my college career.**"

**CHRISTINA POPE**  
Mechanical Engineering

"The Washkewicz College of Engineering provides a great opportunity for us, as students, to **gain abilities and skills that will allow us to be successful before and after graduation.**"

**BRIANNA MORIARTY**  
Chemical Engineering

"My favorite part of the Washkewicz College of Engineering is the professors. They genuinely care about your education and are passionate about what they do, which **allows me to get the most out of my experience at CSU.**"

**JACOB ZBIN**  
Computer Engineering

"I appreciate that **all my hard work in school was noticed** and the scholarship gives me the opportunity to further my education in a field that I can flourish in."

**JACOB SEBERA**  
Mechanical Engineering

"Even though some people believe that this career is just for men, for me, engineering is just a natural continuation of my childhood curiosity. **I would like to make a difference in my field that can help me improve the technology in my new home of Cleveland.**"

**MITSI DABBIERI**  
Electrical Engineering

"What I like most about the Washkewicz College of Engineering is their **emphasis on providing students with a network of industry connections and real work experience** from the very start of the program."

**DILLON ZETZER**  
Mechanical Engineering





## Welcome New Fenn Academy Coordinator

**Hannah Rosen, M.Ed.,** is the new coordinator of engineering student programs and recruitment. Originally from Phoenix, Arizona, Rosen earned her undergraduate degree in English and creative writing from the University of Arizona and her Master's of Education in Higher Education from Arizona State University. Rosen joined the recruitment team in August 2016, and has been working alongside Gregg Schoof to organize high school visits, college fairs and a recruitment event for women. She also oversees tutoring for the college and assists with activities for engineering student organizations.



### What is Fenn Academy?

Fenn Academy is a consortium among Cleveland State University's Washkewicz College of Engineering, local school districts and industry partners that collaborate in educational activities designed to encourage high school students to pursue post-secondary education and careers in engineering. Currently, over 70 high schools in Cuyahoga, Lake, Lorain, Geauga, Summit and Portage counties belong to the Fenn Academy program.

### When did Fenn Academy begin?

Established in 2005, the Fenn Academy was created to help raise engineering enrollment at CSU. Since then, Fenn Academy has been incredibly successful and has raised engineering enrollment to unprecedented levels. As of 2016, 3,408 students participated in the program.

### What activities does Fenn Academy offer?

The Fenn Academy offers a number of programs throughout the year for primarily middle and high school students. Engineering Activity Days are half-day programs, which offer high school groups of 10-40 students engineering activities, presentations and lab tours. Fenn Academy also hosts signature programs annually including the Women Exploring Engineering event for female high school students and the Engineer for a Day shadowing event, which allows any student to shadow an engineer for a day.

### Who leads the Fenn Academy?

Gregg Schoof, manager of engineering student programs and Hannah Rosen, coordinator of engineering student programs and recruitment, run the day-to-day operations of the Fenn Academy. They are assisted by nine student recruiting assistants and one graduate assistant. Dr. Majid Rashidi, faculty member in the mechanical engineering department, is the program director.

65+

Member High Schools  
and Middle Schools

34.5%

of admitted students  
for Fall 17 came from  
Fenn Academy partner  
high schools

Ten

Student Recruitment  
Assistants

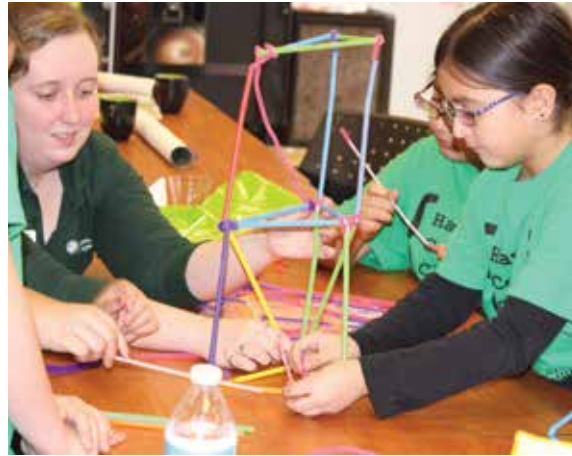
100%

of teachers who  
brought their class to  
an Engineering Activity  
Day would recommend  
the program

88.3%

of students who  
attended an  
Engineering Activity  
Day said they have a  
greater understanding  
of the fields of  
engineering

3,000+

students participated in  
a Fenn Academy activity  
either on or off-campus  
during academic year  
2017-18

# Fenn Academy School Partners Supported Through Small Grants

A relatively small amount of money can go a long way to help local teachers and their students develop creative engineering projects.

**WITH THAT IN MIND**, the Fenn Academy Small Grants Program offers a competitive application process for educators. Since 2014, over \$13,000 has been distributed through the generous support of Fenn Academy's funding providers.

During the 2016-17 school year, teachers from Euclid High School (Euclid), New Tech East High School (Cleveland), Benedictine High School (Cleveland), and Theodore Roosevelt High School (Kent) were awarded small grants totaling \$3,984.

Euclid High School created a challenge and data collection experiment requiring problem solving and engineering design. Each student was assigned to a Euclid elementary school fifth grader to help them design, decorate and launch a rocket. The launch will be shown to ninth and tenth graders and the video will also be used during open houses and on the school's TV channel to encourage student interest in STEM.

At New Tech East High School students built small table top trebuchets using the design process provided by Project Lead the Way. CSU engineering students Tyler Vegh, Elizabeth Akosile, Victor Rosa and Christina Pope visited the class weekly to offer help with Computer Aided Design (CAD), technical drawings and measurement.

Benedictine High School developed a cardboard canoe challenge. A grant covered part of the cost of an optical scanner paired with a 3D printer, which will be used in the school's CAD class and STEM club activities. Funding was used for prizes and for monthly engineering design challenges. Students also participated in job shadowing.

Additionally, Benedictine students were among 800 of their Cleveland area peers who participated in the national TEN80 event, supported by the U.S. Army in collaboration with Fenn Academy. Ten80 is a team of STEM, education and business professionals dedicated to cultivating STEM interest to unite and inspire the next generation of entrepreneurs and innovators.

At Theodore Roosevelt High School, three drone kits purchased from Airwolf 3D were used in a student 3D printer competition. Both teachers and students are members of the Society of Manufacturing Engineers (SME) and Skills USA, who have participated in multiple technical contests. Students also participate in the Engineering Academy, a program offered through the Six District Educational Compact, which includes high schools in Kent, Stow, Hudson, Tallmadge, Woodridge and Cuyahoga Falls.



## Vath Takes on New Role

**Danielle Vath** is the new manager for external relations and communications for the Washkewicz College of Engineering. In this role, Vath will be responsible for the external relations program for the college that includes public relations, communications, alumni relations and the senior design program. Vath previously served as the coordinator for cooperative education program for the Washkewicz College of Engineering. She brings extensive corporate relations experience from her previous position and is consistently recognized for excellence in service to students.

If you are interested in engaging with the Washkewicz College of Engineering please contact her at [d.vath@csuohio.edu](mailto:d.vath@csuohio.edu) or 216-975-9754.



### CO-OP ADVISORY COUNCIL MEMBER SPOTLIGHT

# Joseph Feigenbaum

**AS A SENIOR PROJECT LEADER** at Rockwell Automation, Joseph Feigenbaum knows the value of the Fenn Co-op Program. As an honors student in electrical engineering, he benefited from three co-op rotations at Rockwell. There he joined Rockwell's sustaining engineering team and was tasked with upkeeps to product lines, where he dealt with regulatory, manufacturing and customer issues.

Following graduation, Feigenbaum was hired to work in Rockwell's new product development department.

Looking to give back, Feigenbaum joined the Washkewicz College of Engineering's Cooperative Education Advisory Board in 2014. In this role, he provides advice on planning the CSU Engineering Connections Fair as well as the annual picnic. Since becoming a board member, he has witnessed changes and improvements to the co-op program.

"I've seen the incremental steps moving forward. With guidance from Sandra English, there is a lively exchange of ideas between members of academia and industry," said Feigenbaum. The process runs smoothly as industry partners have a chance to provide insight on the timing of career fairs and have helped align methodologies pertaining to the requirements for students attending those fairs.

As a student, Feigenbaum took the ESC 130 Engineering co-op orientation class. Now he presents to the class as an industry partner. "It's a good opportunity to tell students about Rockwell, their hiring process and how to be successful in focusing their career development.

"The best part is seeing the progression from the student perspective. We're seeing more interest both in engineering and the co-op program from freshmen and sophomore students, and that interest ultimately translates into greater success for students and industry alike," said Feigenbaum.

In today's competitive job market, Feigenbaum says the benefits of the co-op experience are key to success. He recalls fellow students who didn't take advantage of the co-op program, and their struggles to secure work. "I believe the co-op experience helps ensure finding a job after graduation," said Feigenbaum.

"I'm a strong proponent of the co-op program, as I had friends in industry while I was a student and those relationships helped me understand how the engineering world worked. Those early experiences were invaluable in helping me focus my career goals.





# Williams Experiences Japan Through Co-op

**X**avier Williams, a senior mechanical engineering student from Cleveland Heights, Ohio, has completed his third cooperative education (co-op) rotation with Hitachi General Electric (GE) in Hitachi City, Japan. During this time he completed three rotations with three different groups in the Hitachi factory.

Williams' first rotation was with the inspection group, where he was responsible for securing PCV and inspecting welds for safety. He also worked with the debris removal group developing a bill of materials for a robot for another plant, and worked with the repair and cleaning group to design a basic machine utilizing his AutoCAD skills.

"The opportunity to work with AutoCAD & Mechanical Engineering Measuring prior to my co-op allowed me to be successful within the projects I worked on. I constantly had to think about measurement conversions while working on control systems within a nuclear setting," said Williams.

Williams' experience with Hitachi GE was overwhelmingly positive. "The work was challenging and I learned a lot about engineering, but also about myself. Through previous co-op experiences I knew how important communication during a project can be, but had to remain patient as I learned to communicate through language and cultural barriers."

IAESTE (International Association for the Exchange of Students for Technical Experience), which matches math, science, and engineering students with international internships and co-ops coordinated Williams' co-op experience. He received housing provided by Hitachi GE and was able to walk to work daily, but was responsible for airline transportation and a program placement fee.

His trip wasn't all work. He was able to visit a Samurai Museum, where he was able to connect Japanese Culture to one of his favorite movies, StarWars. He also traveled the Oiwa Shrine on his own, feeling confident to master the language, travel and bus schedule.

Williams always knew he wanted to travel abroad and thought with his hectic schedule studying abroad wasn't an option. So what does Williams have to say to others on the fence about going abroad?

"Just go. Know that it is going to be frustrating, scary, and difficult to be so far away, but it's going to be worth it. You'll gain perspective, cultural understanding and may be able to bridge a cultural gap in the future."

Williams received his certificate of academic completion of the Fenn Cooperative Education Program at the Employer and Student Appreciation Night.





## SENIOR DESIGN SYMPOSIUM

# Mechanical Engineering Students Take First Place

**A TEAM OF MECHANICAL ENGINEERING STUDENTS** took first place at the Washkewicz College of Engineering's third annual Senior Design Symposium and Awards Dinner, for their project entitled "Cam Compressor."

Members of the Cam Compressor team included Christopher Abraham, Kevin Calmer, Robert Miller, Philip SESCO and Timothy Watkins. Dr. Majid Rashidi, professor of mechanical engineering, served as faculty advisor, and Rebecca Bompiedi served as the entrepreneurial senior design advisor. This project was sponsored through the entrepreneurial senior design program. The entrepreneurial senior design program allows students to develop their own products and potentially launch startup companies.

An electrical engineering team took second place for their "Transmission Substation Protective Relay & Control Training Rack for Engineering Lab" project. The FirstEnergy Foundation sponsored this project for students to become Ready-to-Go Engineers in the Power Systems industry. The scope of this project was to construct a transmission and substation protective relay and control training rack for the Washkewicz Engineering College's Power Systems Laboratory.

Members of the FirstEnergy Team included Charles Baskette,

George Chaney Jr., Aishwarya Gandhi and Brianna McKinney. Dr. Allen Morinec served as both the advisor and company supervisor for the team.

Electrical engineering technology student Sami Alahmed earned third place for his "Barkless Friendly Dog Collar" project. His solution consisted of a smart phone controlled shock collar replacement that's mini size and low power consumption was almost unnoticeable around the dog's neck. Toufik Aidja, lecturer, engineering technology, served as the faculty advisor.

Thanks to gracious donors the top three teams took home cash prizes of \$5,000, \$3,000 and 2,000, respectively.

The Senior Design Symposium and Awards Dinner is the culmination of the two-semester-long senior design capstone course, where teams of engineering students partner with industry to develop solutions to real-world engineering problems. The event featured a poster session showcasing more than 70 design projects (over half of which were sponsored by industry), a keynote presentation by President & Chief Executive Officer of KoMotion Technologies, Joe Kovach and the Senior Design Awards Ceremony, where the top three projects were recognized.





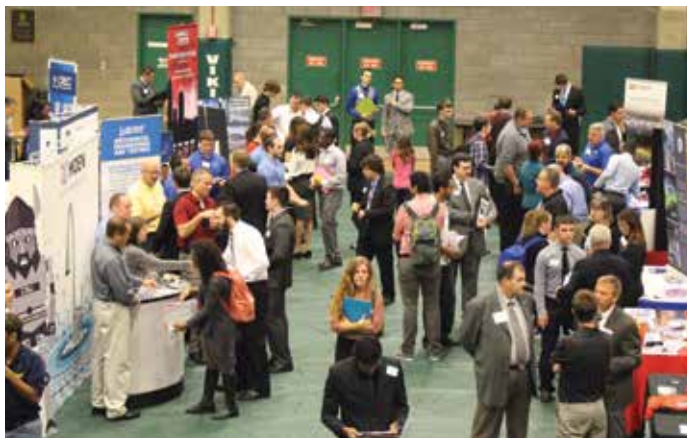
# Washkewicz College of Engineering Hosts Engineering Connections Fair

The Fenn Cooperative Education Program hosted the fifth annual Engineering Connections Fair October 13, 2017 in Woodling Gym on the CSU campus. More than 700 engineering students connected with 90 employers seeking students to fill co-op, internship and full-time positions. Employers engaged with faculty members from each department prior to the beginning of the fair. The Fenn Cooperative Education Program will host its first spring semester Engineering Connections Fair on Friday, February 16. For more information contact Annalise Kelleher at [a.kelleher@csuohio.edu](mailto:a.kelleher@csuohio.edu) or 216-687-6970.



## Welcome New Co-op Coordinator

In April 2017, the Washkewicz College of Engineering welcomed **Annalise Kelleher**, M. Ed. as its new co-op program coordinator. Kelleher has worked in higher education since 2013. A graduate of The Ohio State University, she worked in the Undergraduate Admissions office at both Ohio State and Cleveland State before transitioning to her new position. She received her Master's Degree in Adult Learning and Development from CSU in December 2016.





## CSU Alum Haselton Recognized as Rising Star by *Civil + Structural Engineer Magazine*

**IN MAY 2017, CSU ALUM JUSTIN HASELTON** was recognized as a rising star by *Civil + Structural Engineer* magazine. Having graduated in 2012 from the Washkewicz civil and environmental engineering master's program, Haselton was one of 29 professionals nationwide selected for the magazine's sixth annual awards program.

The award honors engineers 40 years old and younger, who have shown exceptional technical and leadership ability, effective teaching or research skills, or public service benefiting the civil and structural engineering profession.

Currently, he manages the Civil Engineering/Survey Department at R.E. Warner & Associates in Westlake, Ohio and is responsible for managing, supervising and growing civil engineering and surveying work, as well as personnel.

Haselton was also recognized as one of R.E. Warner's next-generation leaders and in 2012, he was elected to become a shareholder in the firm. By 2016, Haselton was promoted to department manager based on his leadership skills and ability to plan, organize, coordinate and implement engineering and administrative operations of considerable complexity and diversity.

As part of his commitment to future engineers and to help promote STEM education, he mentors and engages with local students through speaking engagements at area schools and helps coordinate career shadowing opportunities. He also has been instrumental in developing R.E. Warner's Mentorship Matters program.

"Justin has excellent technical and leadership skills, and has made many contributions to the engineering profession. We are proud to have him as part of our team and look forward to seeing all that he accomplishes in the years to come," said R.E. Warner's President Ted Beltavski.

"We pride ourselves on our program's goal to graduate 'Ready-To-Go' engineers, so it's always great to see one of our graduates enjoying this level of career success," said CSU's Washkewicz College of Engineering Dean Anette Karlsson.



ALUMNI SPOTLIGHT:

# Brian Squirek

## BRIAN SQUIREK WORKS ON ENGINES. BIG ONES.

The newly minted electrical engineer is in the process of completing his second summer internship at General Electric's locomotive engine plant in Erie, Pennsylvania, with hopes of becoming a full-time employee.

"When I first came to GE, I was blown away by the size of the engines," said Squirek. "Car engines have many of the same types of sensors, but working on something so big, it's a neat experience."

During his GE internships, Squirek has assisted in a variety of functions, testing engines for emissions compliance, safety and performance. He's learned about the entire process of building a locomotive engine, from design to manufacturing, testing to troubleshooting.

When Squirek graduated from North Royalton High School, he knew he wanted to follow in his grandfather's footsteps as an electrical engineer at GE.

"He kind of served as my mentor," Squirek said. "He was the reason I wanted to get into engineering."

Seeking a lower-cost and flexible way to complete his first two years of college, he initially chose Tri-C.

Squirek flourished at Tri-C, where he graduated with honors in 2014. In 2015, he transferred to Cleveland State University on an accelerated track to a bachelor's degree in engineering, graduating last May. But he's still studying. He's on track to graduate from CSU next May with a Master of Science in Engineering and an MBA.

After he's donned his final cap and gown, Squirek will begin GE's Edison Engineering Development Program, which trains GE engineering employees for management positions within the company.

4TH ANNUAL

ALUMNI

# Meet & Greet



## THE 4TH ANNUAL ALUMNI MEET AND GREET

was hosted on August 18, 2017 at Collision Bend located on the east bank of the Flats. Over 70 people registered for the event, with over 40 being alumni. The event gives engineering alumni the opportunity to engage with each other, faculty, staff, and students, while learning about the exciting new developments at the Washkewicz College of Engineering. The evening began with cocktails followed by a short program addressing updates about the College, external affairs, engineering student affairs updates and naming opportunities.



### FAST FACT

Over 40 alumni attended the event, with graduates ranging from 1960 to 2016.

# Theodore Beltavski named 2017 Washkewicz College of Engineering Distinguished Alumni Award Recipient



Ted Beltavski with his faculty advisor, Dr. Paul Bellini (left).

**A TWO-TIME ALUMNUS**, earning a Bachelor of Science in Civil Engineering in 1982 and a Master of Science in Civil Engineering in 1986, **Theodore Beltavski** is the Washkewicz College of Engineering's 2017 Distinguished Alumni Award (DAA) Recipient.

Beltavski and other DAA recipients were honored at the Distinguished Alumni Awards event on Friday, October 6, at the Bert L. and Iris S. Wolstein Center. Sponsored by Cleveland State University and the CSU Alumni Association, the event recognizes one graduate from each CSU college based on his or her professional accomplishments, community involvement and engagement with CSU.

Beltavski is the president and chairman of R.E. Warner & Associates, Inc. He has been with the firm for 15 years, serving as department manager, operations director and vice president before being named president in 2012. He is a Registered Professional Engineer in 11 states and has more than 33 years of management and engineering experience, primarily for heavy industrial and power generation and transmission facilities.

Beltavski is the immediate past president for the Cleveland Engineering Society, is a member of the Board of Directors for the Cleveland Chapter of Legatus, an organization of Catholic business executives and past president of the Association of Bridge Construction and Design. Beltavski is active with the Washkewicz College of Engineering Community as a member of the Dean's visiting committee as well as an active participant in college activities including the distinguished alumni speaker series, co-ops and internships, as well as in our mock-interview day.



# Lyczkowski Forges Path for Next Generation Engineers

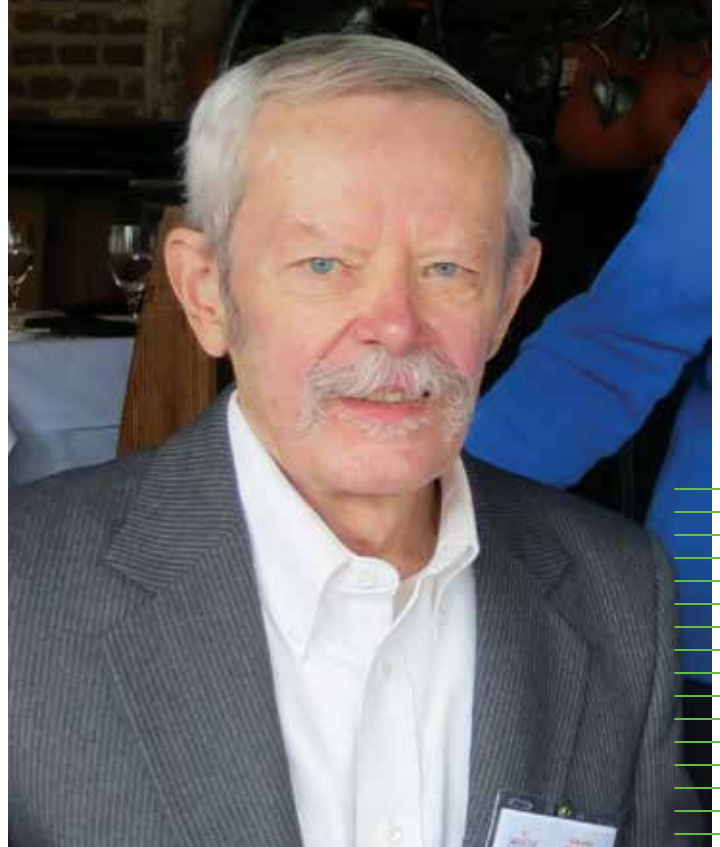
**DR. ROBERT W. LYCZKOWSKI** received his Bachelor of Chemical Engineering from Cleveland State University and Fenn College of Engineering in 1964. Fenn College officially became a part of CSU on September 1, 1965 making Lyczkowski one of the few students that received two diplomas, one from Fenn College and the other from Cleveland State University.

Lyczkowski's desire to become an engineer started early and was sparked by Sputnik 1 being successfully launched by the Soviet Union in 1957. After not receiving the New York State Regent Scholarship in the first cut, he ultimately decided to attend Fenn College notably for its cooperative training program (co-op), later called the cooperative education program.

He traveled by train in 1959 to take scholarship examinations and was interviewed by Dr. V. Richard Gulbenkian, director of admissions and records. He was awarded the Fenn College Freshman Year Scholarship and the Federal National Defense Loan that allowed his dream of attending college to become a reality.

During his years as a student, Lyczkowski worked on campus as a telephone switchboard and elevator operator and as a lab assistant for Dr. Frank Bockhoff, chair of the chemistry department. These positions were in addition to working as a co-op. Lyczkowski completed six quarters of cooperative training with Arthur G. McKee & Company, located right next to Stilwell Hall. He has kept all of his co-op reports and plans to publish them in the future. In addition he has written his memoirs that will be published in 2017.

While attending classes at Fenn, Lyczkowski built and maintained great working relationships with faculty including Professor Pettyjohn and Frank Bockhoff, one of the best teachers he ever had at Fenn. Bockhoff also taught a polymer chemistry course for Arthur G. McKee employees in the evenings that Lyczkowski attended as a co-op, while Professor Pettyjohn, played a role in Lyczkowski's future enrollment at Illinois Institute of Technology.



Lyczkowski had the desire to continue his education after graduation, and since Fenn did not have a graduate program at the time, he had to attend another institution. He also applied to several engineering companies as a backup, in case funding didn't come through.

He graduated from Fenn and was accepted at several graduate schools. He received funding from several institutions including Illinois Institute of Technology's (IIT) Civil Engineering Department. Professor C. Fred Gurnham wrote to him to explain that the Chemical Engineering Department's funding had been depleted, but that his department still had funding. After turning down an offer for full-time employment with BFGoodrich in Avon Lake, Ohio, Lyczkowski decided to accept an offer at Carnegie Institute of Technology. However, prior to his departure from Fenn, he received an IGT Fellowship offer from IIT's Gas Technology Department. With Carnegie Tech's approval, Lyczkowski accepted the IGT Fellowship, ultimately earning his Masters of Science and Ph.D. from IIT. After graduating, he returned to Ohio to work for Goodyear Atomic Corporation.

Lyczkowski's career consists of working at three national laboratories: Idaho National Engineering Laboratory (INEL), Lawrence Livermore National Laboratory, and Argonne National Laboratory, where he spent most of his career, retiring in 2012. He also worked at Energy Inc., a consulting firm located in Idaho Falls after leaving INEL.

Robert W. Lyczkowski has established an endowed scholarship fund to provide financial support to students pursuing a doctoral degree in chemical and biomedical engineering. He will supplement the Robert W. Lyczkowski Endowed Scholarship Fund with an additional estate commitment.



## *Sridhar Named Dean of Graduate Studies*

Dr. Nigamanth Sridhar has been appointed dean of the College of Graduate Studies at Cleveland State University. His new position is effective as of August 1, 2017.

Sridhar is a professor of electrical engineering and computer science in CSU's Washkewicz College of Engineering. He is also president of the CSU Faculty Senate and associate director of the CSU Transportation Center.

Since joining CSU in 2004, he has served the University in various capacities and made significant contributions to research, teaching, faculty governance and community engagement. His outstanding accomplishments in research and teaching were recognized by the prestigious NSF Early Career Award in 2008. Currently, he is playing a crucial role in CSU's joint efforts with Case Western Reserve University on the Northeast Ohio Internet of Things Collaborative and the national Computer Science (CS) for All effort to enhance computer science education in K-12 schools.

Sridhar received his Ph.D. in 2004 and M.S. degree in 2000, both in Computer Science and Engineering from The Ohio State University.



## *Alumni Adapt 50+ Toys for RePlay for Kids*

Over 50 students, alumni and friends gathered in the Foxes' Den in the Washkewicz College of Engineering to adapt 50+ toys to benefit children with disabilities as part of the college's annual Toy Modification Workshop. The event benefitted RePlay for Kids, a non-profit organization whose mission is to increase the availability of toys and assistive devices for children with disabilities.

Alumni and friends adapted mainstream, battery-operated toys by placing a switch cable in parallel with the original on/off switch, allowing the toy to be operated by an alternative on/off switch that is plugged into the cable. This alternative on/off switch is larger and easier for children with disabilities to use.

"It's great to see so many of our students, alumni and friends come back and participate each year and give back to the greater Cleveland community in an engineering way," said Danielle Vath, manager of external relations and communications with the Washkewicz College of Engineering.



## *Ye Awarded NSF Grant*

Professor Hongxing Ye has been awarded a NSF Grant for his project "Transactive Uncertainty and Flexibility for High Penetration of Semi-dispatchable Renewables in Electricity Markets." Dr. Ye's research will focus on the increasing penetration of variable energy resources (VER), such as solar and wind generation, is challenging traditional power system operations and electricity market mechanisms. Due to its intrinsic intermittency and variability, VER generation leads to increased uncertainty in the power grid. The uncertainty inherent in VERs must be accommodated by available flexibilities, such as energy storage, demand management, and generators that can offer large rates of increase or reduction of generation. However, the flexibility in the system is limited, and the scarcity of these resources not only causes the renewable energy curtailment but also jeopardizes the system security. On the other hand, the computation complexity is extremely challenging in the optimization problems considering uncertainties.

This project will develop a theoretically sound yet practical model and scheduling tool for power grids with high penetration of semi-dispatchable renewables. The successful completion of this project will potentially address the fundamental challenge of uncertainty management in electric power systems.



## *Office of Inclusion & Multicultural Engagement Hosts Annual Diversity Councils Awards Celebration*

The Office of Inclusion & Multicultural Engagement, a division of University Engagement, concluded its program year with the annual Diversity Councils Awards Celebration. The breakfast event was well attended and the presentations, by the chairs and co-chairs of the diversity councils from the colleges and administrative departments, represented the overall diversity and inclusion goals of the University.

We are excited to be among this year's winners of the President's Award for Excellence in Diversity. This is the third time Washkewicz College of Engineering has received this award. Congratulations to Chair Dr. Lili Dong, Co-Chair Rose Begalla and the entire Dean's Diversity Council (DDC) for your hard work.

The Washkewicz College of Engineering's DDC is comprised of faculty, staff, students and community leaders.

The mission of the DDC is to promote a culturally and intellectually rich environment for diversity and inclusion, support the professional success and personal development

of all members of the Washkewicz College of Engineering."

This year the committee focused on two goals:

- ① *Enrich the campus climate for diversity and inclusion through multi-cultural programs*
- ② *Strengthen recruitment, retention, achievement and graduation of diverse students*

We held, and participated in, several activities throughout the academic year including hosting an "Implicit Bias" workshop followed by book discussions in which faculty and staff from across the University participated, 8th annual "Inclusion Conference", Global Awareness Day, Women-in-Engineering Recognition Dinner, attended the Ohio Celebration of Women in Computing, held a Diversity Networking Program, and "Preparing Diverse Students to Pursue Careers in Rehabilitation" proposal funded by the National Science Foundation commencing Summer 2017 through 2019.





## *Washkewicz “Lunch and Learn” Event Informs FIRST Robotics Group*

Fifty student participants from the 2017 Buckeye Regional FIRST Robotics Competition, along with their parents, registered for the annual “Lunch and Learn” event in the Washkewicz College of Engineering. After boarding buses from the Wolstein Center to Julka Hall, visitors listened intently to Engineering Student Recruiting Assistant Kyle Stephens present “What Do Engineers Do?” an engaging overview of CSU’s engineering degree programs. Details were also shared about available college activities and student services such as cooperative education and free tutoring. Guests later watched an interesting video tour of the University. Following a buffet lunch and time allotted for questions, two groups of visitors were led to Fenn Hall for concurrent tours of the Parker Hannifin Human Motion and Control Lab and the Machine Shop, presented by mechanical engineering professors, Dr. Ton van den Bogert and Dr. Majid Rashidi.

FIRST (For Inspiration and Recognition of Science and Technology) was founded in 1989 to inspire young people’s interest and participation in science and technology. Dean Kamen, FIRST’s founder, is a prolific inventor and entrepreneur, as well as the inventor of the Segway and the Slingshot, among other devices.



## *Chu Receives Distinguished Faculty Award*

The Distinguished Faculty Award for Teaching is intended to honor those whose teaching at Cleveland State is recognized as exceptionally strong. Each year, two members of CSU’s faculty receive this award for exceptional contribution to Cleveland State University as well as an exceptional impact in teaching. Recipients must be nominated by a fellow member of the faculty and are selected by a committee of faculty and student members.

Dr. Pong Chu, associate professor in the Electrical Engineering and Computer Science Department, received the Distinguished Faculty Award for Teaching at the December 2016 Commencement Ceremony. This is a distinct honor and the recognition of the importance of his contributions to the academic mission of Cleveland State University. We continue to devote our best efforts toward excellence in research, scholarship, and education.

Chu has been an associate professor in the College of Engineering since 1989. We thank Dr. Chu for his continued dedication to CSU, Washkewicz College of Engineering and our students. Congratulations Dr. Chu!



## *Internet of Things: the ‘In’ Thing at CSU and CWRU*

CSU and Case Western Reserve University are teaming up to provide innovative educational, research and economic/workforce development opportunities related to the “internet of things” (IoT), the vast and ever-expanding network of devices (encompassing smart cars, smart lighting, smart appliances, etc.) that are interconnected via the internet.

We’re grateful to the Cleveland Foundation for a planning grant to fund this unique regional collaboration to the tune of \$200,000 over six months, as part of its digital excellence initiative.

Led by Professors Nigamanth Sridhar of CSU and Kenneth Loparo of CWRU, the joint effort will seek to create a model of public-private higher education collaboration around education, research and training; conduct a feasibility study to test the model with an industry partner; and host an IoT symposium to engage additional stakeholders from the public and private sectors.





## *Dominion Makes Contribution to Department of Chemical and Biomedical Engineering*

At Dominion's September Higher Education Lunch, the company made a \$15,000 contribution to the Chemical and Biomedical Engineering Department. This gift was for a new chemical reactor service unit for the Unit Operations Lab at Cleveland State. The Unit Operations Lab has been gradually upgraded with the addition of new experiments. Students now take an additional 1-credit lab course in the fall of junior year in order to get them started in experimental design, statistical data analysis, and report writing.

Dr. Marvin Thrash, Dr. Joanne Belovich and Director of Advancement Meredith Wintering received the award on behalf of the department. The award was presented by Dominion Vice President and General Manager of Dominion East Ohio Jeff Murphy.



## *Kothapalli Receives Grant from USDA*

Dr. Chandra Kothapalli received \$258,251 in grant funding from the United States Department of Agriculture, NIFA ARFI Mechanism, for "Modeling Pathogen Cross-Contamination and Chlorine Dynamics in Fresh Produce Wash-Cycles." The principle investigator on this project is Dr. Partha Srinivasan, an associate professor in the Mathematics Department. The co-principle investigators are Dr. Chandra Kothapalli, an associate professor in the Chemical and Biomedical Engineering Department, and Dr. Daniel Munther, an assistant professor in the Mathematics Department. The modeling component of the grant will be performed by Dr. Srinivasan and Dr. Munther while the experimental component will be performed in Dr. Kothapalli's laboratory. The grant will run from 2017 to 2020.



## *Thomas Bell Lectureship Established at CSU*

The Thomas Bell Lectureship in the Department of Chemical and Biomedical Engineering has been established in honor of former CSU chemical engineering faculty member, Dr. Donald J. Harvey as a result of a generous donation from CSU alumnus Mr. Thomas Bell.

Dr. Harvey joined Cleveland State University as an assistant professor in 1968. He taught nearly every course in the undergraduate chemical engineering curriculum as well as graduate courses. While at CSU, Dr. Harvey developed a dynamic simulation of a quad-evaporative system for caustic production for the Diamond Shamrock Chemical Company, which then hired him away from CSU in 1977. In 1985, he moved from Diamond Shamrock to Lubrizol, where he worked on the simulation of kinetics and plant operations in their pilot plant. He stayed at Lubrizol until his retirement in 1996.

The inaugural Bell Lecture was given by Dr. Michael Solomon, professor of chemical engineering and macromolecular science and engineering at the University of Michigan, April 13, 2017. Immediately following the lecture there was a reception with tours available of research labs and the recently renovated Lubrizol Foundation Unit Operations Lab.

## IN MEMORIAM



### *Kyle James Matthew Braun*

Kyle James Matthew Braun, a sophomore mechanical engineering student, 2015 Operation STEM/ Louis Stokes Alliances for Minority Participation Scholar and exceptionally gifted trumpet player in both jazz and classical was loved and respected by everyone he met. He had a kind and generous spirit, sweet disposition, and keen intelligence.

Although Kyle arrived to CSU as a freshman with a full scholarship as a music major, the Washkewicz College of Engineering classes, faculty and engineering programs piqued his interest remarkably so. He knew he had to switch his major to mechanical engineering. He made the decision with the drive and intent, of course, to continue to embrace music as his other key passion.

Kyle was just getting started in the engineering coursework when a tragic motorcycle accident took his life while traveling to his summer job on July 24, 2017. Kyle's plans to become an engineer were cut short abruptly, and his sweet trumpet was silenced too soon. We will miss him tremendously.



### *Santosh Kumar Tankala*

Santosh Kumar Tankala was diagnosed with terminal cancer and passed away in spring 2017. He was about to graduate from the Department of Electrical Engineering and Computer Science at Cleveland State University in a month. He was very happy when CSU and members of the College awarded his M.S. degree in a special ceremony.

Tankala received his Bachelor of Science in Computer Science and Engineering from the GMR Institute of Technology, Rajam, India. He worked at Tata Consultancy Ltd., in Hyderabad, India for three years before he joined the master's program at Cleveland State.

Tankala pursued research in cyber security at CSU under the supervision of Dr. Sanchita Mal-Sarkar. His research was supported by the National Science Foundation and focused on enhancing AES encryption algorithm. He was very intelligent, ambitious, and hardworking. His plan was to pursue a Ph.D. and make a difference in science and technology.

He touched the lives of many people. He will be remembered fondly by the faculty, students, his family, and friends.



## IN MEMORIAM



### *Seyed Mahmoud Moosavi*

Seyed Mahmoud Moosavi was born in Iran on September 20, 1984. In 2008, he earned his bachelor's degree in electrical engineering from Shiraz University.

In 2015, Moosavi began his graduate studies in the Electrical Engineering and Computer Science Department at CSU, with a focus on power electronics and control systems. He published his master's thesis research in a conference paper at the American Control Conference, which is one of the world's premier controls conferences. While at CSU, he also co-authored a journal article that was published in the ASME Journal of Dynamic Systems, Measurement, and Control.

Moosavi completed his master's thesis in May 2017, at which time the only thing remaining for his graduation was his oral defense and the technical editing of his thesis. In June 2017, he suddenly and unexpectedly passed away. Since his thesis was essentially complete, the Department of Electrical Engineering and Computer Science finished editing his thesis, and Moosavi graduated posthumously in August 2017 with a master's degree in electrical engineering.

He was extremely intelligent, likable, friendly, perceptive, helpful and persistent. Those who knew Moosavi will never forget him.



### *Steven G. Belovich, PhD*

Dr. Steven Belovich, husband of Dr. Joanne Belovich, was an entrepreneur and founder and majority shareholder of IQware Solutions, LLC, an enterprise software company. He was an expert in cyber security software, holding numerous patents.

Dr. Belovich was an assistant professor of Electrical and Computer Engineering at Cleveland State University's Washkewicz College of Engineering. He created CSU's Master of Science in Software Engineering (MSSE) degree program, the first of its kind in the State of Ohio. He published numerous technical papers and testified in Federal court under oath as an expert witness on intellectual property (IP) matters numerous times. He held a number of U.S. patents for medical and electrical devices. Dr. Belovich earned a B.S. in Electrical Engineering and Applied Physics from Case Western Reserve University, a Master of Science in 1983 and a Ph.D. in 1987 from Cleveland State University in Electrical and Computer Engineering.

He enjoyed carpentry but will be remembered most for his love of music. He was an accomplished violinist and loved to entertain his family and friends.



### *David McFarland*

David Diedrik McFarland, professor emeritus of sociology at UCLA, died Thursday, April 20, 2017. McFarland attended Fenn College for his Bachelor of Engineering Science degree; Michigan State University for his Master of Science in Statistics; and the University of Michigan, where he earned his Doctorate in Sociology and met the love of his life, Lois Harder. He began his career in the Department of Sociology at the University of Chicago before joining the faculty at UCLA in 1975, where he remained until retiring in 2008.

Raised in rural poverty, McFarland's research interests included social mobility and status attainment, and he emphasized the benefits of intellectual curiosity and education throughout his life. He was an important mathematical sociologist and an early adopter of what was then mind-boggling technology: the computer. McFarland's recent research and publications focused on pre-electronic computational techniques and devices, especially those used by early sociologists.

The McFarlands established a scholarship, the David D. and Lois E. McFarland Endowed Scholarship Fund at Cleveland State University to support underrepresented students.

# Thank You

A heartfelt thank you to the 820 donors who gave \$1.6 million in gifts and pledges to the Washkewicz College of Engineering during the Fiscal Year 2017 (July 1, 2016-June 30, 2017).

Your generous support allows the College to continue providing a high quality, affordable engineering education, along with innovative programming that helps our students succeed.

The list below gratefully acknowledges gifts and pledges of \$500 or more from alumni, friends, corporations, and foundations to the College during the period of July 1, 2016-June 30, 2017. Please note that pledge payments are not included.

## **\$300,000+**

The Cleveland Foundation

## **\$100,000-\$299,999**

Mr. John Hubbard  
Mr. Richard Schier  
The Lubrizol Corporation  
The Lubrizol Foundation  
Dr. Robert Lyczkowski

## **\$25,000-\$99,999**

Jewish Federation of Cleveland  
Mr. & Mrs. Mark Hoffman  
Parker Hannifin Corporation  
Schweitzer Engineering  
Laboratories  
American Concrete Institute  
Northeast Ohio

## **\$10,000-\$24,999**

Mrs. Lela Schier  
Mr. & Mrs. Donald Washkewicz  
The Lincoln Electric Foundation  
Dominion Energy Charitable  
Foundation  
Thogus  
The Lincoln Electric Company  
Bendix Commercial Vehicle  
Systems, LLC  
Dr. Patricia Mintz &  
Mr. Charles Mintz  
Mr. Anthony DiGeronimo

## **\$5,000-\$9,999**

Selas Heat Technology  
Company, LLC  
FirstEnergy Corporation  
ZIN Technologies  
Mr. Dan T. Moore  
MCI Technologies, Ltd.  
Mr. Martin Ignasiak  
FirstPower Group, LLC  
Dante Solutions  
CRES COR  
Mr. & Mrs. Anthony Colnar  
Buckeye Business Products  
Mr. & Mrs. Michael Sturdevant

## **\$2,500-\$4,999**

Mr. & Mrs. James Heckelman  
Vanguard Charitable  
Endowment Program  
Mr. Jack Aten  
Great Lakes Construction  
Company Inc.  
Mr. & Mrs. Kenneth Jayjack  
Altera Corporation  
Mr. & Mrs. George Palko  
Mr. Eugene Klingshirm  
Dr. Monir Ahmad  
WSP Parsons Brinckerhoff  
Mr. Myron Toomey  
Mr. Michael Pollock  
Mr. Ward Kinney  
Mr. Robert Harder

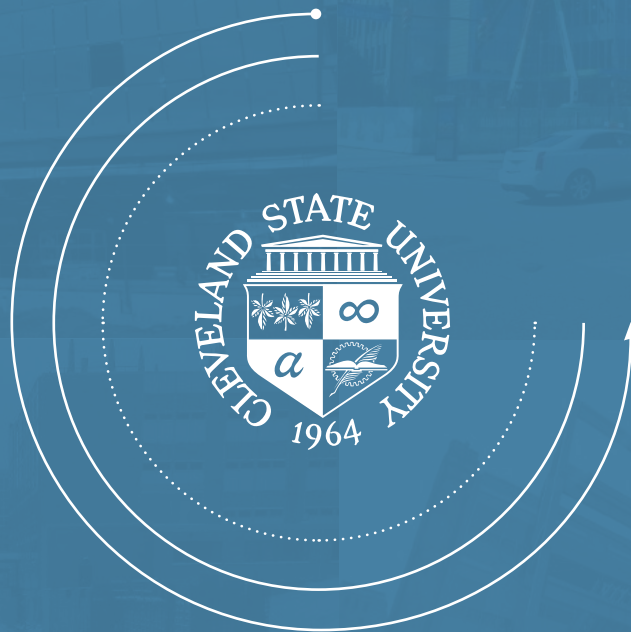
## **\$1,000-\$2,499**


Mr. Joseph Spagnuolo  
Tangent Company, LLC  
Scottcare Corp.  
The Martindale Electric  
Company  
Dr. Anette Karlsson  
Mr. Edward Addicott  
Mr. & Mrs. Richard Lorentz  
Fidelity Charitable Gift Fund  
Mrs. Marilyn Schroeder  
Mr. Laszlo Ilyes  
Mr. & Mrs. Phillip Seitzer  
Mr. Nicholas Yoke  
R.E. Warner & Associates  
Mr. Gary Price  
Mr. Michael Podkowa  
Mr. Joseph Marcsik  
Mr. Robert Maas  
Mr. Pavan Ladha  
Mr. Michael Kocevar  
Ms. Victoria Hoover  
Ms. Margaret Benham  
& Mr. Jeffrey Gwinnell  
Mr. Theodore Beltavski  
Mr. John Beadle  
Mr. Vishal Chitranj Aslot  
Dr. Pierre Abboud, Jr.  
Mr. & Mrs. Frank Jankowski


## **\$500-\$999**


Mr. Frederick Ray  
Mr. Eugene Baxendale  
Mr. & Mrs. Richard Lorentz  
Mr. John Fetters  
The Whiting-Turner  
Contracting Co.  
Mr. & Mrs. Gordon Wetzel  
Mr. Scott Ullman  
Mr. Gary Creager  
Mr. John Varley  
Mr. & Mrs. John Struble III  
Mr. Anthony Siracusa  
SIFCO Industries  
Mr. Micahel Repas  
Mr. James Reagan  
Mr. James Mismas  
Mrs. Mary Ellen Matts  
Mr. Daniel Lee  
Mr. Richard Jeschelning  
Mr. Richard Hess  
Mr. George Hadden  
Mr. Michael Galgoczy  
Mr. Robert Bauer





 [csuohio.edu/engineering](https://twitter.com/csuohioedu/engineering)

 [facebook.com/washkewiczcollege](https://facebook.com/washkewiczcollege)

 [@csuwashkewicz](https://twitter.com/csuwashkewicz)

## **WASHKEWICZ COLLEGE OF ENGINEERING**

CLEVELAND STATE UNIVERSITY / FENN HALL ROOM 104  
1960 EAST 24TH STREET, CLEVELAND, OH, 44115 / 216-687-2555





# CLEVELAND STATE UNIVERSITY

## WASHKEWICZ COLLEGE OF ENGINEERING

2121 Euclid Avenue FH 104  
Cleveland, Ohio 44115-2214

NON-PROFIT ORG.  
U.S. POSTAGE  
**PAID**  
CLEVELAND, OH  
PERMIT #500

CHANGE SERVICE REQUESTED

