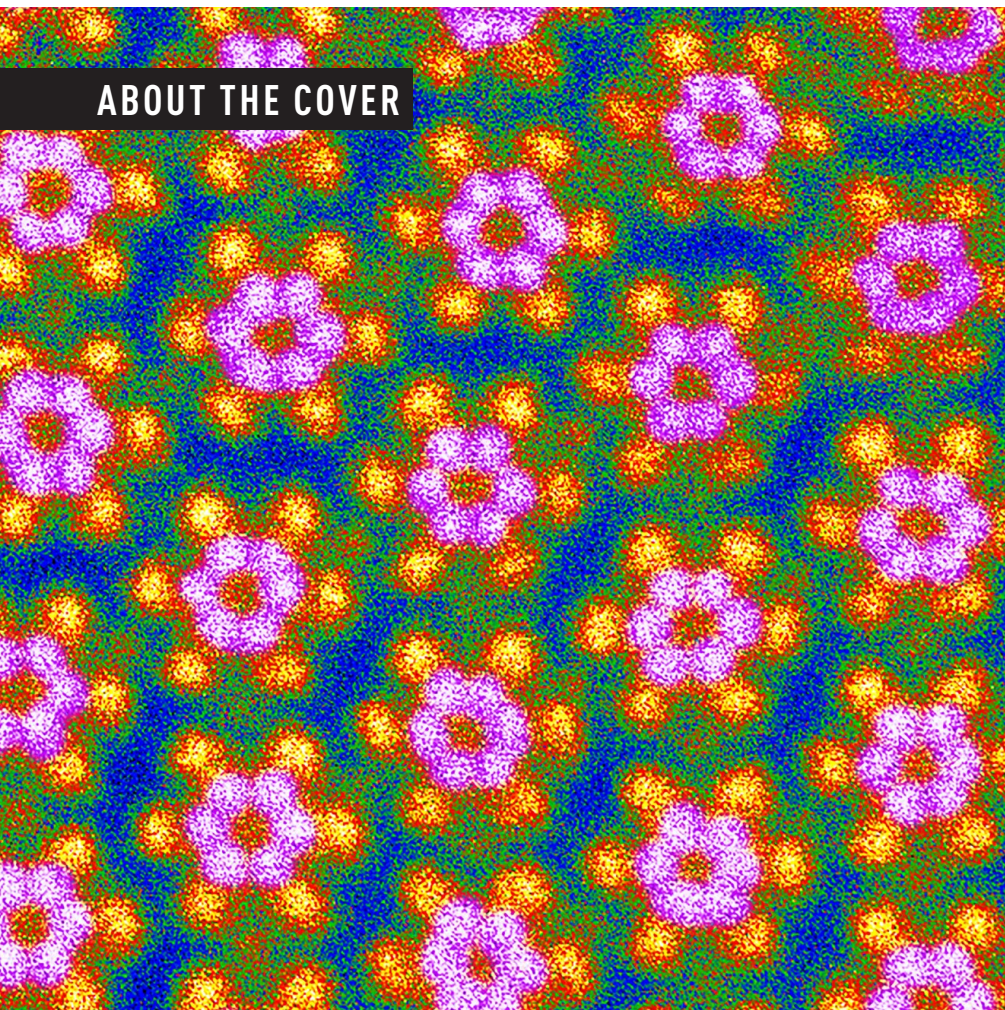


**MATERIALS
SCIENCE
AND
ENGINEERING**

ABOUT THE COVER



NANO ART

ATOMIC FLOWER, 2016

This work is a pseudo-colored atomic scale image of a newly discovered Mo₆Te₈ nanowire. A single flower shaped nanowire is about 0.8 nm in diameter — the world's smallest flower!

Dr. Moon J. Kim has spent most of his career working with nanotechnology in a laboratory. He has been extraordinarily enamored with observing the world at the atomic level ever since he began his career as a materials scientist over 25 years ago. Kim is a professor of materials science and engineering in the Erik Jonsson School of Engineering and Computer Science, as well as the Arts and Technology Louis Beecherl Jr. Distinguished Professor at The University of Texas at Dallas (UT Dallas). He is an elected fellow of the Microscopy Society of America and currently serves as director of UT Dallas' Nano-Characterization Facility.

Kim still remembers how the very first electron diffraction pattern he saw “reminded [him] of the stars.” To Kim,

the nanoscopic world is vast, seemingly infinite and holds many wonders and possibilities waiting to be discovered and perhaps tamed for our benefit. His fascination with the nanoscopic world has led to Nano Art, a series of images that he has captured during his scientific research and exploration.

To continue exploring the beauty of the nanoscopic world, Kim has envisioned a unique world class Visualization Center of Texas (ViCTX) that will provide an unrivaled capability in the 3D visualization and atomic scale characterization of innovative materials and devices for electronic, energy, biomedical, and environmental applications. These visualization capabilities will include virtual or augmented reality projections and machine-learning based, holographic

visual platforms. ViCTX's state-of-the-art visualization and characterization capabilities will be leveraged to advance collaborative academic and industrial research and increase the rate of materials discovery.

These capabilities will also be utilized in educational and scientific outreach initiatives geared towards exposing the next-generation workforce to the tools and scientific frontiers pivotal to the future economy. As the greater Dallas-Fort Worth area strives for scientific and educational excellence on the heels of its rapid economic growth and financial success, ViCTX will be a cornerstone of DFW's fourth industrial revolution. Kim is currently seeking support for this venture and wishes to extend the opportunity to create a world-class scientific and educational center.



DR. AMY WALKER

Professor of Materials Science and Engineering
Interim Head, Materials Science and Engineering

DEPARTMENT HEAD'S WELCOME

A

lumni, colleagues and friends,

These are exciting times in the field of materials science and engineering. Our department was founded 10 years ago, and in that time, the University has doubled in size to become a Tier One research institution qualifying for the State of Texas' National Research University Fund (NRUF), in addition to achieving a Carnegie R1 designation in 2016. Within the department, our exciting research achievements include making better batteries, creating multi-logic transistors and improving implant materials. Our faculty members and students have earned many awards and recognitions resulting from this work.

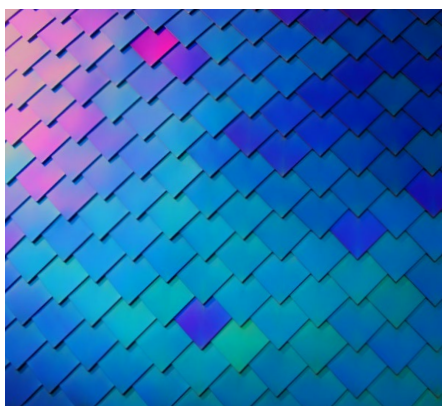
Of special note, Dr. Julia Hsu was appointed to the Department of Energy (DOE) Basic Energy Sciences Advisory Committee (BESAC), which provides independent technical advice to the DOE on the Basic Energy Sciences program. Hsu was also selected as a visiting research professor at Hong Kong University. In addition, Dr. Robert Wallace and Dr. Luigi Colombo were named to the Clarivate Analytics' 2018 list of highly cited researchers recognizing their multiple, highly cited publications. Also, Dr. William Vandenberghe received a Defense Threat Reduction Agency Young Investigator Award as well as a grant from the National Science Foundation (NSF).

Alumni are our best ambassadors, and their success is a testament to the quality of our program. This year we have founded a new MSE Alumni Chapter led by Marcela Mireles PhD'16. I look forward to helping develop a strong network and celebrating the many accomplishments of our alumni.

I hope you will enjoy reading about the achievements and activities of our Jonsson School MSE students, faculty members and alumni. We hope you will stay in touch, and we look forward to working with you!

Best wishes,

Amy Walker



ON THE BACK COVER:

Tiles from the Natural Science and Engineering Research Laboratory (NSERL) building, which houses MSE and is itself a work of art.

INTERIM DEPARTMENT HEAD

Dr. Amy Walker

ASSISTANT DIRECTOR

Tonya Griffin

EDITORS

LaKisha Ladson MA'18

Laura Schmidt

DESIGNER

Kurt Mansor

CONTACT US

Department of Materials
Science and Engineering

The University of Texas at Dallas
800 West Campbell Road, RL10
Richardson, TX 75080

©2019 by the Board of Regents of The University of Texas System on behalf of the Erik Jonsson School of Engineering and Computer Science at The University of Texas at Dallas. Reproduction in whole or in part without permission is prohibited.

ENGINEERS BOOST POTENTIAL FOR CREATING SUCCESSOR TO SHRINKING TRANSISTORS

Computers and similar electronic devices have gotten faster and smaller over the decades as computer-chip makers have learned how to shrink individual transistors, the tiny electrical switches that convey digital information.

Scientists' pursuit of the smallest possible transistor has allowed more of them to be packed onto each chip. But that race to the bottom is almost over: Researchers are fast approaching the physical minimum for transistor size, with recent models down to about 10 nanometers — or just 30 atoms — wide.

"The processing power of electronic devices comes from the hundreds of millions, or billions, of transistors that are interconnected on a single computer chip," said Dr. Kyeongjae Cho, professor of materials science and engineering at The University of Texas at Dallas. "But we are rapidly approaching the lower limits of scale."

To extend the quest for faster processing speed, the microelectronics industry is looking for alternative technologies. Cho's research, published online April 30 in the journal *Nature Communications*, might offer a solution by expanding the vocabulary of the transistor.

Conventional transistors can convey just two values of information: As a switch, a transistor is either on or off, which translates into the 1s and 0s of binary language.

One way to increase processing capacity without adding more transistors would be to increase how much information each transistor conveys by introducing intermediate states between the on and off states of binary devices. A so-called multi-value logic transistor based on this principle would allow more operations and a larger amount of information to be processed in a single device.

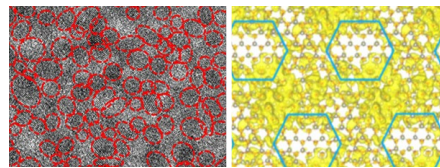
"The concept of multi-value logic transistors is not new, and there have

been many attempts to make such devices," Cho said. "We have done it."

Through theory, design and simulations, Cho's group at UT Dallas developed the fundamental physics of a multi-value logic transistor based on zinc oxide. Their collaborators in South Korea successfully fabricated and evaluated the performance of a prototype device.

Cho's device is capable of two electronically stable and reliable intermediate states between 0 and 1, boosting the number of logic values per transistor from two to three or four.

Cho said the new research is significant not only because the technology is compatible with existing computer-chip configurations, but also because it could bridge a gap between today's computers and quantum computers, the potential next landmark in computing power.

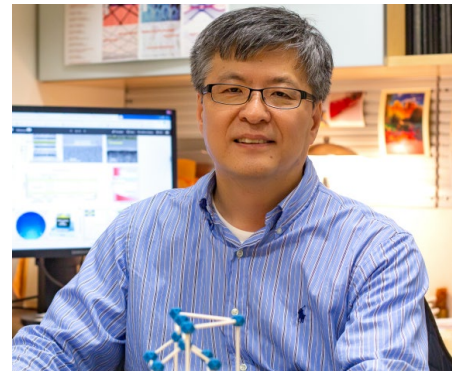


The image on the left shows two forms of zinc oxide combined to form a composite nanolayer in a new type of transistor. Zinc oxide crystals (inside the red circles) are embedded in amorphous zinc oxide. The image on the right is a computer model of the structure that shows electron density distribution.

"A device incorporating multi-level logic would be faster than a conventional computer because it would operate with more than just binary logic units. With quantum units, you have continuous values," Cho said.

"The transistor is a very mature technology, and quantum computers are nowhere close to being commercialized," he continued. "There is a huge gap. So how do we move from one to the other? We need some kind of evolutionary pathway, a bridging technology between binary and infinite degrees of freedom."

The technology Cho and his colleagues developed uses a novel configuration of



Dr. Kyeongjae Cho, professor of materials science and engineering, and his UT Dallas collaborators developed the fundamental physics of a multi-value logic transistor based on zinc oxide.

two forms of zinc oxide combined to form a composite nanolayer, which is then incorporated with layers of other materials in a superlattice.

The researchers discovered they could achieve the physics needed for multi-value logic by embedding zinc oxide crystals, called quantum dots, into amorphous zinc oxide. The atoms comprising an amorphous solid are not as rigidly ordered as they are in crystalline solids.

"By engineering this material, we found that we could create a new electronic structure that enabled this multi-level logic behavior," said Cho, who has applied for a patent. "Our next step will look at how universal this behavior is among other materials as we try to optimize the technology.

"Moving forward, I also want to see how we might interface this technology with a quantum device."

Dr. Jiyoung Kim, professor of materials science and engineering at UT Dallas, and Dr. Jeongwoon Hwang, a former postdoctoral researcher in Cho's lab currently at Chonnam National University in South Korea, are co-authors of the *Nature Communications* article, along with researchers at South Korean universities: Hanyang University, Gwangju Institute of Science and Technology, Yonsei University, Kookmin University, and Ulsan National Institute of Science and Technology.

The research was supported by the National Research Foundation of Korea.

ENGINEER RECEIVES YOUNG INVESTIGATOR AWARD



Dr. William Vandenberghe, assistant professor of materials science and engineering in the Jonsson School, has been awarded the Defense Threat Reduction Agency's Young Investigator Award for his work on nanoscale electronic circuits.

The research grant provides \$100,000 per year for at least three years, with an option to extend for two more years. The agency, part of the Department of Defense, supports basic research related to reducing, eliminating and countering the threat and effects from weapons of mass destruction.

Vandenberghe's research focuses on the study of electron transport at the nanoscale level using theoretical methods and computer modeling. His work includes the use of 2D materials and topological

insulators for new devices.

Vandenberghe said his research is tied mostly to semiconductor industry and military applications of nanoscale electronics used in smartphones, tablets and computers. He uses computers to model the configuration of atoms in novel materials and predict what properties those materials will have.

"I model materials made by an experimental group, then change the model in some way, on an atomic level," he said. "I will then 'run' the experiment on my computer before an experiment is conducted in real life, which can save businesses or government agencies time and money."

Vandenberghe's research is also funded by the NSF, the Taiwan Semiconductor Manufacturing Company and Texas Instruments Inc.

MATERIALS SCIENCE PROFESSORS RECOGNIZED FOR HIGHLY CITED, INFLUENTIAL RESEARCH



Dr. Luigi Colombo

As scientists and scholars publish their research findings in academic journals, one way to determine the value and impact of a researcher's work — and validate its significance — is to count how many times other researchers refer to, or cite, that person's papers in their own work.

This year several researchers at UT Dallas are among the most-cited in the world.

"Our faculty members consistently publish their findings in top journals and are recognized by their peers worldwide as performing exceptional and impactful research across multiple disciplines," said Dr. Joseph Pancrazio, vice president for research at UT Dallas. "Inclusion on highly cited lists is a significant measure of the University's global influence in the research community and overall contribution to the intellectual capital of the world."

Clarivate Analytics published a 2018 list of Highly Cited Researchers and included four affiliated with UT Dallas,

two of whom are within the Jonsson School. Clarivate Analytics awards its distinction to exceptional scholars around the globe who, over the last decade, have produced multiple highly cited publications, which are defined as those ranking in the top one percent by citations for a specific field and year.

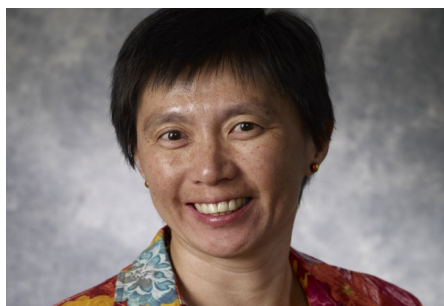
A total of 22 categories of research are considered in the analysis. New this year is the cross-field category, which identifies researchers who contribute papers in several fields.

Dr. Luigi Colombo, recently retired from Texas Instruments Inc. and currently an adjunct professor of materials science and engineering in the Jonsson School, is listed among 211 researchers in physics.

Dr. Robert Wallace, who holds the Erik Jonsson Distinguished Chair and is a professor of materials science and engineering in the Jonsson School, is also listed among researchers in the cross-field category.



Dr. Robert Wallace



Dr. Julia Hsu, professor of materials science and engineering and Texas Instruments Distinguished Chair in Nanoelectronics, was appointed as a member of the DOE Office of Science, Basic Energy Sciences Advisory Committee (BESAC) for 2019-2020.

Basic Energy Sciences (BES) supports fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic and molecular levels in order to provide the

PROFESSOR TO SERVE ON DEPARTMENT OF ENERGY ADVISORY COMMITTEE

foundations for new energy technologies and to support DOE missions in energy, environment and national security. The research disciplines that the BES program supports touch virtually every aspect of energy resources, production, conversion, transmission, storage, efficiency and waste mitigation.

BES research serves as an agent of change in achieving the vision of a secure and sustainable energy future. BESAC's recommendations include advice on establishing research and facilities priorities; determining proper program balance among disciplines; and identifying opportunities for interlaboratory collaboration, program integration and industrial participation.

Hsu's research focuses on nanoscale materials physics. She has done extensive work on nanoscale characterization of electronic and photonic materials and devices using scanning probe techniques. She currently focuses on organic and organic-inorganic halide perovskite solar cells, and solution processed oxide flexible electronics, which have potential for lightweight mobile power applications in military and consumer electronics.

Previously a scientist in the Center for Integrated Nanotechnologies at Sandia National Labs, Hsu joined UT Dallas in 2010. Hsu received her bachelor's degree in chemical engineering from Princeton University and her master's and doctorate in physics from Stanford University.

HSU RECEIVES DOE GRANT

Hsu was recently awarded funding from the Solar Energy Technologies Office of the DOE Office of Energy Efficiency and Renewable Energy. This grant supports Hsu's collaborative work with NovaCentrix, a small business based in Austin, Texas, to investigate the viability of using very intense but short — microseconds to milliseconds — light pulses to increase the throughput of manufacturing high-efficiency, organic-inorganic, hybrid perovskite solar cells.

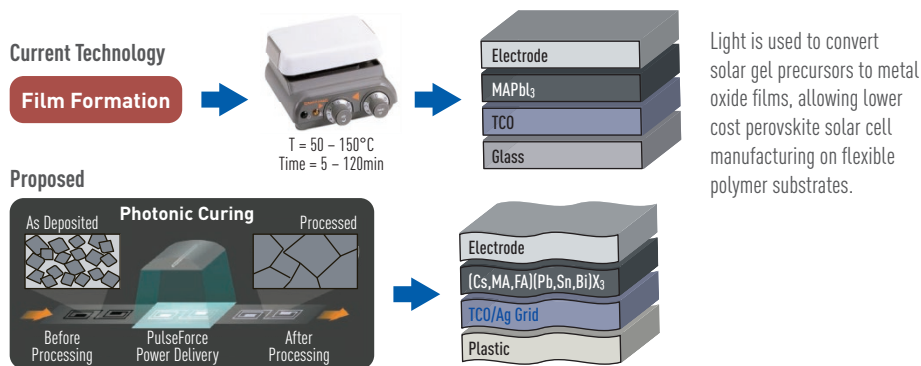
Researchers have previously envisioned that by combining solution processing and high-speed roll-to-roll manufacturing, large-area solar cells can be made on flexible substrates. However, one challenge is the necessity of thermal annealing at elevated temperatures. For a printed film processed at a speed of 30m/min, 10 minutes of annealing translates to a 300m-long oven! A successful outcome from Hsu's project will be game changing for perovskite solar cell manufacturing, enabling energy efficiency, increasing throughput and reducing cost.



Trey Daunis, a materials science and engineering PhD candidate under Hsu's guidance, focuses on fabrication and testing of oxide electronic devices on flexible polymer substrates, which is extremely challenging due to the significant differences in the thermal and mechanical properties of oxides and polymers.

The innovative factor in Daunis' approach is the use of light, instead of heat, to convert sol gel precursors to metal oxide films, avoiding heating of the polymer substrates. His research findings were published in *ACS Applied Materials and Interfaces* and *Journal of Materials Research*. He also delivered an oral presentation at the 2017 and 2018 Materials Research Society Fall Meetings, as well as at a seminar at the Air Force Research Laboratory.

Daunis' work also serves as a basis for high-speed processing of materials using light, which has led to a collaboration between Hsu's group and NovaCentrix and funding from the DOE.



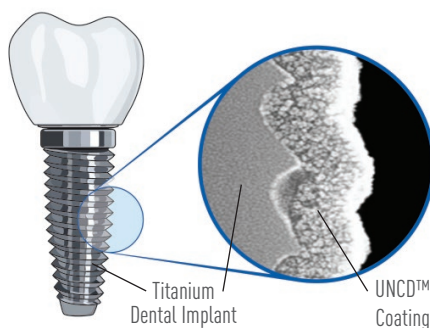
ULTRANANOCRYSTALLINE DIAMOND (UNCD™): A REVOLUTIONARY BIOCOMPATIBLE COATING ENABLES SUPERIOR BIOMEDICAL IMPLANTS

Titanium alloys are widely used today in commercial dental implants. However, these materials exhibit chemical corrosion by oral fluids and release titanium dioxide particles from the oxidized titanium surface, causing dental implant failure, human cell death and tissue inflammation. Approximately 15% of titanium dental implants fail worldwide, affecting millions of people, causing patient discomfort and requiring the added expense of replacement.

A unique low cost, biocompatible and corrosion resistant ultrananocrystalline diamond (UNCD™) coating, co-developed and patented by Dr. Orlando Auciello, professor of materials science and engineering and Distinguished Chair in Engineering, and colleagues, will enable a new generation of superior long life implantable medical prostheses. UNCD is totally biocompatible and inert to chemical attack by body fluids. The process to coat dental implants with UNCD was developed as part of a master's thesis by Karam Kang MS'17, then a biomedical engineering graduate student working under the direction of Auciello, who is also professor of

bioengineering in the Jonsson School.

The UNCD-coated dental implant research, described in the *Journal of Biomaterials and Medical Applications*, has been tested in animal bones since 2015 and has shown excellent osteointegration and total inertness to chemical attack. The first worldwide UNCD-coated dental implant was implanted in a human female in January 2019, and the second implanted in a male patient in June 2019, both as part of clinical trials conducted in Mexico by Dr. Gilberto López-Chávez, in collaboration with Auciello, who is directing the production of the UNCD-coated dental implants at Original Biomedical Implants (OBI). OBI was founded by Auciello and colleagues in



Dr. Orlando Auciello (left) and Dr. Gilberto López-Chávez

the U.S. in 2013 and expanded to Mexico in 2016. A book that details the research and development being performed to produce a new generation of dental implants is in press and projected for publication by the end of 2019.

UNCD coating is made of carbon atoms, an element of life in the DNA and cells of human bodies which provides its unique biocompatibility, and is under investigation as of 2019 for use on several other metal-based implants including hips, knees and stents. The new coating is expected to make a transformational impact and could improve the quality of life for people requiring medical implants worldwide.

FACULTY MEMBER HELPS EMPOWER DALLAS YOUTH

Teens from Project Still I Rise Inc., a Dallas-based nonprofit organization, visited Dr. Chadwin Young, associate professor of materials science and engineering, and toured NSERL as they learned about future educational and career opportunities. The organization promotes academic enrichment, mentoring and leadership development for students through projects including the Urban STEM Initiative.



FACULTY MEMBER LEADS NEW COMPANY DEDICATED TO IMPROVING MATERIALS FOR ADDITIVE MANUFACTURING



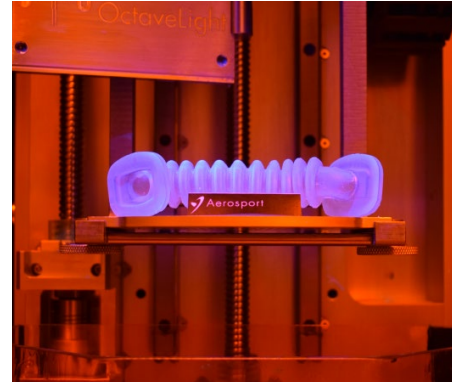
Associate professor Dr. Walter Voit BS'05, MS'06 is on an extended leave of absence from the University as President and CEO of Adaptive3D Technologies, a company that began at the Department of Materials Science and Engineering in the Jonsson School at UT Dallas. The Adaptive3D technical team includes several former

students and is commercializing technology developed at UT Dallas.

In June, Voit gave a Google Tech Talk in Mountain View, California, detailing his team's work in high throughput additive manufacturing. Voit discussed the recent launch of the world's softest, tough additive photopolymer, Soft ToughRubber™ at the RAPID + TCT 3D printing and additive manufacturing tradeshow in Detroit this past May, and his team's efforts in software design and materials design that will attempt to improve mass manufacture of polymers.

Adaptive3D closed a Series A funding round in January 2019, co-led by the venture arms of Royal DSM Co. and Applied Materials Inc. with support from Chemence Inc. and the McDermott family, a founding family of Texas Instruments Inc.. Voit detailed some of the company's recent progress at a forum hosted by the Center for Engineering Innovation at UT Dallas on May 31 to faculty members, administrators, students and corporate visitors.

Voit discussed the status of the additive manufacturing space and highlighted



A functional automotive door boot was 3D printed from Adaptive3D's tough yet flexible photopolymers.

multiple problems that the field faces that have limited the adoption of high-throughput manufacturing including issues with materials properties, speed of printing, and cost of printing materials and printing processes. Adaptive3D does business in five key market verticals: transportation, oil and gas, medical, industrial and consumer. Adaptive3D has also announced within the past quarter a strategic distribution agreement with The Royal DSM and a strategic manufacturing agreement with Chemence.

INTERIM DEPARTMENT HEAD NAMED PRESIDENT OF AVS IN 2020



Dr. Amy Walker has been elected the 2020 president of AVS. AVS is a professional society of approximately 4,000 members which supports networking among industrial, academic and government professionals who study and develop materials, interfaces, surfaces and processing. Walker has a history of involvement with AVS.

From 2016 to 2018 she was on the Board of Trustees, which is the AVS Awards Committee, and in 2018 was the committee Chair. In 2017, she was the program chair for the 64th AVS International Symposium and Exhibition, the premier meeting of the organization that draws more than 2,000 attendees each year. She also has

served on the board of directors and chair of the Applied Surface Science Division, among other positions.

In addition to Walker, several UT Dallas faculty members are fellows of the society. The Jonsson School has one of the largest AVS student chapters.

"AVS is one of the most supportive and friendliest professional societies in the area of materials, interfaces and thin films. It has provided me with countless professional leadership opportunities, but perhaps more importantly, I've met many people along the way who are now friends," Walker said.



Six students have received scholarships from the Jonsson School this year. Pavel Bolshakov and Harrison Kim received Excellence in Education Doctoral Fellowships while Yifan Nie and Edgar Guerrero Ruiz won a Beecherl Fellowship and a Stella Kim Fellowship, respectively. These fellowships are awarded to doctoral students who exhibit academic excellence. In addition two MS students, Ramayapriya Krishnasamy and Vidushi Singh, received Jonsson School \$1,000 Graduate Study Scholarships which are merit-based scholarships awarded to incoming graduate students.



Ava Khosravi, PhD student in the Wallace group, won a student scholarship to attend the 2019 Grace Hopper Conference. The Grace Hopper Conference is the world's largest gathering of women technologists and supports women in technical fields as well as their employers and academic institutions.



Dr. Yongping Zheng received the 2018 Jonsson School Best Dissertation Award. Dr. Zheng completed his PhD degree under the direction of Dr. KJ Cho during Fall 2018. After his PhD, Dr. Zheng joined the Chinese Academy of Science at Shenzhen as an assistant professor. During his PhD dissertation research, he pioneered the materials design and subsequent experimental validation for oxide catalysts and electrocatalysts for use in clean energy applications.

STUDENT INVOLVEMENT – AVS AND MATERIALS RESEARCH SOCIETY

Many of our current students are privileged to be part of one of the most active student chapters of AVS across the globe. This year, the AVS Dallas Metroplex student chapter has enjoyed numerous community activities from making tie-dye T-shirts to serving as judges at the Dallas Regional Science and Engineering Fair. Members Sergiy Rozhdestvensky, Udumbara Wijesinghe, Kolade Oyekan, Pedro Rocha, Jaidah Mohan, Yasiel Cabrera, Siddartha

Krishnan, Udumbara Wijesinghe, and Jevalyne Vienes led an activity on photolithography at Explore Engineering Day hosted by the Jonsson School in honor of National Engineers Week. The chapter also took part in an annual STEM fair at St. Mark Catholic School. Volunteers for the STEM fair included Yasiel Cabrera, Rachel Hill, Udumbara Wijesinghe, and Richard Mills. Recently, the AVS chapter has also hosted a student lunch with MSE

colloquium speaker Dr. Anthony Muscat from the University of Arizona. This lunch provided students with a low-pressure environment to freely discuss Muscat's work.

In addition to AVS, several students have benefited from involvement in the Materials Research

Society (MRS). The purpose of the MRS student chapter is also to foster an environment of professional development and interaction by hosting speakers from both industry and academia to speak about their areas of expertise. The chapter hosts a peer mentoring program to aid MSE students in adjusting to the graduate program. The chapter also invites UT Dallas MSE alumni working in industry to discuss career opportunities and professional development. This year, Marcela Mireles talked about her experiences as a postdoctoral fellow at the University of Rochester Institute of Technology. Mireles also recently founded the MSE Alumni Chapter to help alumni maintain an ongoing connection to the University. The MRS chapter also hosted Adrian Avendano-Bolivar MS'14, chief product officer and founder of Ares Materials. Ares Materials develops "novel transparent polymer materials for the next generation of truly flexible mobile, wearable and embedded electronics."



The DFW Metroplex student chapter of AVS volunteers at Explore Engineering Day.



FROM OUR FOUNDER

Hello! My name is Marcela Mireles, and I helped create the MSE Alumni Chapter.

I graduated in the summer of 2016, but my story at UT Dallas goes back a decade. In 2006, as an undergraduate student in Mexico, I visited the MSE department at UT Dallas for a summer research project. That experience made a profound impact on me. Not only did I join as a graduate student

in 2012, but also changed my focus from biochemistry to materials science.

During my time as a graduate student in the Jonsson School, I worked in the group led by Dr. Manuel Quevedo. He received a well-deserved diversity award in 2013, among other reasons, for serving as the director of student exchange programs between Mexico and Texas. This program changed my life in 2006, for which I will be forever grateful.

After completing my PhD, I joined the NanoBio Device Lab at the Rochester Institute of Technology. The group is led by Dr. Thomas Gaborski, another incredible mentor. Here, I get to utilize everything I learned at UT Dallas for the fabrication of ultrathin, nanoporous membranes for biological applications.

The MSE department in the Jonsson School Dallas will always have a special place in my career, and honestly, my heart. Which is why when I went back to Dallas to visit some friends, I went from the airport straight to our state-of-the-art research facility known as NSERL, and into assistant director Tonya Griffin's office and asked, "Is there an MSE alumni chapter?" There wasn't then, but there is one now.

The number one goal of this chapter is to maintain an open channel of communication, one that can be accessed from wherever you are in the world. Expect to read about things happening at the department and get to know the success stories from alumni. Suggestions are always welcome, so if you have anything to contribute, send an email to mirelesmarce@gmail.com. Don't be shy – it's just me.

IN THE PAST YEAR, OUR GRADUATES HAVE BEGUN THEIR CAREERS WITH THESE COMPANIES, NATIONAL LABS AND UNIVERSITIES:

Applied Materials Inc.

Aerospace Research Institute of Special Material and Processing Technology, Beijing, China

Ares Materials Inc.

University of Wisconsin

Haverford College

HEE Solar

Intel Corp.

Lam Research Corp.

Lawrence Berkeley National Laboratory

Micron Technology Inc.

Panasonic Eco Solutions Solar, New York

Sandia National Laboratories

Shenzhen Institutes of Advanced Technology, Shenzhen, China

The University of Texas at Austin

The University of Texas at Dallas

ALUMNI SPOTLIGHT

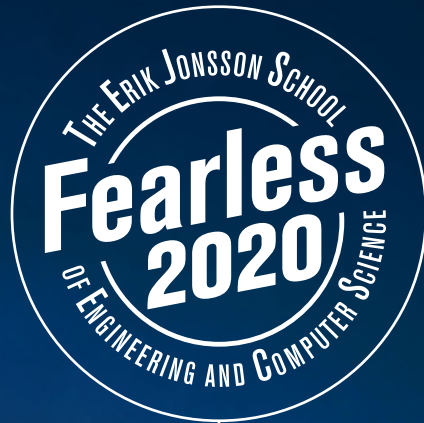


Liang Xu PhD '17, who studied under Dr. Julia Hsu, is a yield enhancement data analysis engineer at Micron Technology Inc. He has experienced some major life transitions moving from the Dallas-Fort Worth metroplex to Boise, Idaho, a northern scenic town, as well as pivoting from academia to industry.

At Micron, Xu analyzes the electrical testing results of dynamic random access memory (DRAM) devices at the technology development stage. His PhD research focused on organic semiconductors in solar cell applications, which are significantly different from the silicon based memory devices made

at Micron. Xu believes his PhD training equipped him with the confidence and skills to face these new challenges.

Xu has adapted to living in Boise – its slower pace, scenic mountains, hiking, biking and, in his words, imitation Asian foods, along with his work at Micron. However, he does miss Dallas. "I miss all my friends there, NSERL and the UTD campus, access to more authentic Asian foods, and the warm winter," he said. "Most importantly, I miss all the tough days and nights in Dallas that trained me to become a much stronger and wiser man."



\$20 MILLION BY 2020

Fearless 2020 has two core priorities — to impart knowledge in teaching and research to the next generation of global leaders and to enable greater access to higher education for underrepresented and non-traditional students — a gift of talent to North Texas and the world.

Materials Science and Engineering has demonstrated an unwavering commitment to extending opportunity and promoting diversity among students and faculty alike.

To propel the Erik Jonsson School of Engineering and Computer Science forward and continue to attract top-tier students, we invite alumni, corporate partners and the broader community to make an investment that will last.

Be fearless with us!

For more information on MSE fellowships, faculty research and other initiatives, please contact:

Senior Director Brittany Huber

972-883-4909

Brittany.Huber@utdallas.edu

engineering.utdallas.edu/fearless2020



ERIK JONSSON SCHOOL
OF ENGINEERING AND COMPUTER SCIENCE

Department of Materials Science and Engineering
The University of Texas at Dallas
800 West Campbell Road, RL10
Richardson, TX 75080



mse.utdallas.edu



[@UTDMaterialsScience](https://www.facebook.com/UTDMaterialsScience)



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



[utdallasjonsson](https://www.instagram.com/utdallasjonsson)

FEARLESS
engineering®