TEXAS A&M UNIVERSITY
Department of Materials Science and Engineering
Fall 2015 Newsletter

TRANSFORMING ENGINEERING EDUCATION
DEPARTMENT FACTS

15 Full-time faculty
- 6 Professors
- 4 Associate Professors
- 3 Assistant Professors
- 2 Research Faculty

4 Joint Faculty
44 Affiliated Faculty

EXTERNAL RESEARCH EXPENDITURES

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

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Dear colleagues and friends,

It has been two years since we established the Department of Materials Science and Engineering at Texas A&M University by converting the graduate program to a standalone graduate department. The department has seen tremendous growth in the last two years by way of student impact, new faculty additions, laboratory upgrades and innovative research.

In 2013, we launched the department with just five full faculty members. Two years later, our full faculty has grown to 15 including one with National Academy of Engineering membership. Our faculty members continue to create high impact learning opportunities that they facilitate within the department. We were honored to host the fourth annual summer school on Computational Materials Science where many international experts and graduate students participated, turning this summer school into a Texas A&M legacy.

When the department was established in June 2013, our total graduate enrollment was 77 students. In fall 2015, this number has almost doubled, totaling 135, with more than 110 Ph.D. students. According to the recent survey conducted by the University Materials Council, these numbers are on par with the top 10 materials science and engineering programs in the country. We have substantially restructured our graduate curriculum to address current needs in research and technology, and emphasized computational methods and engineering design in materials science, in addition to the more classical fields. Through department initiatives, almost 8 percent of our graduate students participated in international research visits with funding from the National Science Foundation – International Materials Institute.

I am proud to announce our newly established undergraduate minor program, which began in spring 2015. The minor program serves students in both the Dwight Look College of Engineering and the College of Science with multiple topical curriculum tracks. Multiple new courses are being developed for this program to attract and retain undergraduate students interested in pursuing materials science and engineering education.

To accompany our growing numbers, our laboratories have received upgrades in the form of larger space, new equipment and new facilities. The facilities for nanofabrication (AggieFab) and the Materials Characterization Facility have been moved to the Frederick E. Giesecke Engineering Research Building, a 65,000-square-foot integrative research facility. The building was built in less than two years, from planning to move-in, as a direct result of a valuable public and private partnership as well as support of the university and the department. In addition, the National Corrosion Center, a Texas A&M Engineering Experimentation Station research center, and the Texas A&M Energy Institute share in the building.

As we continue to pursue our goal of partnering with industry, we cannot ignore entrepreneurship, which is a key element of our discipline. Our faculty and alumni are actively involved in entrepreneurial activities. In this newsletter, we feature one of our former students who is now taking his materials science and engineering education to the real world of commercialization. We also feature some of our brightest students, new faculty additions and recent awards and activities from the department.

From our long history as a graduate program that grew to become a department, we have made great progress in establishing a leading materials science and engineering department and look forward to continuing to provide an excellent student experience while producing leading materials scientists and engineers.

Dr. Ibrahim Karaman
Department Head and Chevron Professor I
Texas A&M received $3 million NSF grant to train graduate students in materials design

Texas A&M University received a five-year, $3 million grant from the National Science Foundation for graduate student training and research in materials design. Texas A&M was one of only 10 institutions recognized nationwide with the award, out of approximately 200 proposals that were received by the NSF for the current funding cycle.

The NSF Research Traineeship (NRT) program titled “Data-Enabled Discovery and Design of Energy Materials (D3EM)” will provide approximately 40 NRT fellowships over a period of five years to graduate students from six different departments—materials science and engineering, mechanical engineering, chemical engineering, electrical engineering and computer science, as well as physics and chemistry—across the colleges of science and engineering. In addition to the NRT fellows, D3EM will support two Ph.D. students who will evaluate the pedagogical impact of the program.

“This NRT program constitutes a valuable opportunity for the creation of a novel interdisciplinary graduate training program that places Texas A&M at the forefront of STEM graduate training” said Dr. Raymundo Arroyave, principal investigator and associate professor in the Department of Materials Science and Engineering.

Co-investigators include Dr. Joseph H. Ross, professor, Department of Physics; Dr. Debra Fowler, associate director, Center for Teaching Excellence; Dr. Richard Malak, associate professor and Norris E. Foster Faculty Fellow I, Department of Mechanical Engineering; and Dr. Edward Dougherty, Robert M. Kennedy ’26 Chair Professor and Distinguished Professor, Department of Electrical and Computer Engineering.

Members of the core team responsible for the design and deployment of D3EM include Dr. Jodie Lutkenhaus, assistant professor and holder of the William and Ruth Neely Faculty Fellowship, chemical engineering; Dr. Miladin Radovic, associate professor and associate department head, materials science and engineering; Dr. Hongcai (Joe) Zhou, Davidson Professor in Science, Department of Chemistry, and Dr. Douglas Allaire, assistant professor, mechanical engineering.

Other D3EM affiliated faculty include Dr. Ibrahim Karaman, Chevron Professor I and head, materials science and engineering, Patrick Shamberger, assistant professor, materials science and engineering; Dimitris Lagoudas, senior associate dean for research; Alan Needleman, professor, materials science and engineering; Sarbajit Banerjee, professor, chemistry; Tahir Cagin, professor, materials science and engineering.

The D3EM team will join forces to develop the graduate curriculum with a pedagogical model developed in partnership with the Center for Teaching Excellence. The program will create a new training model to equip M.S and Ph.D. students with the skills to conduct interdisciplinary research in materials science, informatics and engineering design. Moreover, the interdisciplinary curriculum will also include energy and entrepreneurship-related courses and activities through partnerships with the Texas A&M Energy Institute and the Center for New Ventures and Entrepreneurship at the Mays Business School.

“There is a growing need to accelerate materials discovery and development, particularly in energy-related technologies. We need to instill in scientists and engineers the capability to transform data into knowledge, and use this to discover and design advanced materials. That way they can truly internalize the interdisciplinary research process. The D3EM program addresses all these needs,” said Arroyave. “More importantly, D3EM will help catalyze new collaborative research opportunities among participating faculty.”
Needleman organized workshop to find new opportunities in materials fracture challenges

Dr. Alan Needleman, distinguished professor in the Department of Materials Science and Engineering at Texas A&M University, organized a two-day ‘Ductile Fracture Workshop’ on campus. A group of nine local and international researchers met to develop collaborations in the field of ductile fracture.

The workshop brought together leading researchers in modeling and computation in order to assess the current status and to identify the advances needed to develop a predictive framework for ductile fracture.

Ductile fracture in structural metals takes place by a process of nucleation, growth and coalescence of micro-scale cavities. These cavities link up to form a crack that then threatens the integrity of a component or structure. Ductile fracture plays a role in a wide range of important technologies, for example, limiting the manufacturability of metal components, in determining the crashworthiness of vehicles and controlling the integrity of pipelines and industrial pressure vessels. Predicting ductile fracture is difficult because of the range of length and time scales involved.

“This workshop is particularly timely because recent modeling, computational and experimental developments seem on the verge of making it possible to quantitatively relate the characteristics of a material’s microstructure and its macro-scale fracture resistance,” says Needleman. “However, to make this possibility a reality further advances are needed. The workshop brought together leading researchers, primarily young researchers, who are making key contributions with the hope that the cooperative work stimulated by this workshop will lead to making the needed advances happen.”

Needleman’s research contributions include the development of a ductile fracture computational methodology, the development of cohesive zone methods for fracture analysis, and creation of a framework that enables using discrete dislocation plasticity to solve general boundary value problems.

“Dr. Needleman’s workshop tackled the critical aspects of materials reliability. The research problems identified and collaborations established in this workshop are expected to result in predictive tools that can be used in the design of advanced materials,” says Department Head and Chevron Professor Dr. Ibrahim Karaman. “Materials Reliability is an important area of research and one that we usually do not pay much attention to when we design new materials. We hope to make an impact on these research areas with the support of the expertise of our faculty and new computational and experimental infrastructure that the university has put together in the last few years”.

Introduction to Materials Science now on YouTube

Dr. Patrick Shamberger, assistant professor, has made in-class experience more interactive by launching a sophore course offered in the Dwight Look College of Engineering, “Introduction to Materials Science” on YouTube for undergraduate students and the public. He is also the undergraduate degree program director in the department. The YouTube channel (https://www.youtube.com/user/pjshamberger) features introductory concepts in materials science divided into three playlists: equilibrium structures; imperfections and mechanical properties; and functional properties. The channel has received more than 150,000 views with a staggering 500,000 minutes watched from all 50 states in the United States and 170 countries.

“Webcasting the lectures allows our department to contribute to the educational mission on a truly global scale,” says Shamberger.
Texas A&M hosted fourth IIMEC School on Computational Materials Science

Scholars and graduate students from institutions across Europe, North Africa, the Middle East and North America attended the fourth International Institute on Multifunctional Materials for Energy Conversion (IIMEC) School on Computational Materials Science at Texas A&M University in July.

IIMEC is a National Science Foundation-funded International Material Institute, established at Texas A&M, in partnership with Georgia Institute of Technology, the University of Houston and international research collaborators at universities in North Africa, the Middle East and Mediterranean countries.

Dr. Amine Benzerga, associate professor in the Department of Aerospace Engineering and materials science and engineering, and Dr. Raymundo Arróyave, associate professor in the materials science and engineering, jointly organized the summer school.

The school boasted instructors from Texas A&M, Georgia Tech, National Institutes for Standards and Technology, Los Alamos National Laboratories, Lawrence Livermore National Laboratory, Pierre and Marie Curie University (France), Arts et Métiers ParisTech (France), University of Cambridge (England) and The University of Duisburg-Essen (Germany).

Summer school participants included students from more than a dozen institutions, including six of the top universities in the U.S. as well as universities and research institutes in Mexico, France, Greece, the United Kingdom, Egypt and Saudi Arabia.

Over a period of 10 days, students were exposed to theory and practice sessions focused on different computational materials simulation tools, ranging from continuum to the electronic structure level. Hands-on computational laboratory activities were part of the class structure.

Students had access to a linux computational cluster consisting of several hundred nodes/cores. State-of-the-art computational codes such as VASP, ABAQUS, LAMMPS, ParaDis, MatCalc, VPSC and MATLAB were used to illustrate the concepts covered in the school. Software and hardware infrastructure was facilitated by Dr. Lisa Perez, manager of the Laboratory of Molecular Simulation directed by Dr. Michael B. Hall, executive associate dean of the College of Science and professor of chemistry.
Arróyave invited to study major challenges in materials science innovation

Dr. Raymundo Arróyave, associate professor in the Department of Materials Science and Engineering at Texas A&M University, was recently invited to participate in a road-mapping study sponsored by the National Institute of Standards and Technology.


Arróyave collaborated with a core team of 14 international experts representing industry, academia and government. They addressed the current state of the art, gaps and limitations, and recommendations for addressing them. The team presented the study at the World Congress on Integrated Computational Materials Engineering in Colorado Springs, Colorado in June.

Materials science students win entrepreneurship award

Brandon Sweeney and Blake Teipel, graduate students at the Department of Materials Science and Engineering jointly won the Center of New Ventures and Entrepreneurship’s 14th annual Raymond Ideas Challenge at Mays Business School. Teipel won the competition for the second year in a row.

Their business idea entitled, “Customizable Prosthesis via 3D Printing,” was voted the best from 300 ideas entered into the competition with 40 finalists. Sweeney and Teipel pitched the idea through a written proposal and a video pitch. Sweeney’s business idea stems from his research with Dr. Micah Green, affiliated faculty for materials science and engineering department and associate professor in the Department of Chemical Engineering. He applied a unique property of carbon nanotubes to overcome the difficulty of weld strength of polymers. Increased weld strength can bring about stronger 3D-printed prosthetic devices at a fraction of the cost of currently available prostheses.

“Brandon’s creative and innovative approach has the potential to greatly expand the reach of 3D printing in industrial applications,” says Green. “It’s a pleasure to work with graduate researchers like Brandon who combine such engineering creativity and innovation.”
Students and faculty at the Department of Materials Science and Engineering enjoy access to state-of-the-art facilities on campus.
The Microscopy and Imaging Center (MIC) provides current and emerging technologies for teaching and research involving microscopy and imaging in Life and Physical Sciences on the Texas A&M campus and beyond, training and support services for microscopy, sample preparation, in situ elemental/molecular analyses, as well as digital image analysis and processing. It promotes cutting edge research in basic and applied sciences through research and development activities, as well as quality training and education through individual training, short courses and formal courses that can be taken for credit.

TESCAN collaborates with Texas A&M University

TESCAN signed the Nanotechnology Collaboration Agreement in August 2015 partnering with Texas A&M University and Texas A&M Engineering Experiment Station (TEES) to streamline research initiatives into applications development. The agreement will drive an industrial outreach program and strengthen educational opportunities at Texas A&M in nanoscience and nanotechnology.

In support of the collaboration, TESCAN has completed installation of a TESCAN VEGA 3 SEM, MIRA 3 FE-SEM, LYRA 3 Gallium FIB-SEM Workstation and a FERA 3 Plasma FIB-SEM Workstation. These instruments will reside in the Texas A&M Microscopy and Imaging Center (MIC) and the new Frederick E. Giesecke Engineering Research Building, which houses the Texas A&M Aggie Fab Nanofabrication Facility (AggieFab) and Materials Characterization Facility (MCF).

Due to the proximity of the oil and gas industry, this alliance brings state-of-the-art instrumentation into the area of those involved in the oil and gas markets in Texas, opening the door to new research in these technologically challenging arenas.

Dr. Andreas Holzenburg, director of the MIC, said, “We look forward to imaging across the scales to meet global challenges and enable state-of-the-art training to a new generation of problem solvers, including undergraduate and graduate students, with the help of TESCAN instrumentation.”

“This collaboration brings together the exceptional strengths of the nanoscience and nanotechnology communities at Texas A&M with state-of-the-art instrumentation from TESCAN, significantly enhancing the research infrastructure and educational mission of Texas A&M in these critical areas,” said Dr. James Batteas, director of the MCF.

TESCAN is a leading manufacturer and supplier of Scanning Electron Microscopes and Focused Ion Beam workstations.

Materials Characterization Facility

The Materials Characterization Facility (MCF) is a multiuser facility supporting the research efforts of Texas A&M and the commercial community. The MCF houses the fabrication and characterization instrumentation essential for the development, understanding and study of new materials and devices. It has a large user-base with investigators from most departments in the Dwight Look College of Engineering and the College of Science. It supports educational activities involving lab tours and demonstrations, outreach and broader impact related activities. The Mission of the MCF is to train students to use state-of-the-art instrumentation in support of their research and educational goals and to provide infrastructure and centralized resources for faculty across campus.

TESCAN VEGA3 XMU: variable pressure analytical SEM (and main entry-level training instrument) that supplements high vacuum applications with an extended facility for low vacuum operation enabling the investigation of non-conductive specimens in their natural uncoated state. It supports magnifications from 1 x – ~500,000 x at accelerating voltages between 200 V and 30 kV.
Polymer Technology Center

The Polymer Technology Center (PTC) includes polymer faculty members from the Departments of Aerospace Engineering, Biological and Agricultural Engineering, Biomedical Engineering, Chemical Engineering, Electrical and Computer Engineering, Engineering Technology, Materials Science and Engineering and Mechanical Engineering, in addition to the Department of Chemistry. It serves the State of Texas and the nation by providing polymer science and engineering education and training to prepare students to be leaders in the polymer industry. Active since 1986, the PTC includes 27 faculty members, 16 industrial partners and 50 students. Three industry consortia, Advancing Performance Polymers in Energy Applications Consortium (APPEAL), Polymer Technology Industrial Consortium (PTIC) and Polymer Scratch Behavior Consortium (SCRATCH) support operations of the PTC. Members of the consortia sponsor research projects both individually and jointly.

AggieFab

The AggieFab is a shared nanofabrication facility dedicated in memory of Henry F. Taylor. It is equipped with more than 4,000 square feet of ISO 14644-1 class system ISO 5 and ISO 6 (class 100/1000) cleanroom space. AggieFab has its roots in the fabrication facilities developed over the years within the Solid State Group of the Department of Electrical and Computer Engineering. The lab has a broad range of equipment for the processing of wafers and substrates from a variety of materials. Examples of research topics include semiconductor, optics, MEMS, and bioengineering.
NEW FACULTY

Dr. Svetlana Sukhishvili
Professor
Joined July 2015
Dr. Svetlana Sukhishvili specializes in physical chemistry of polymers, polymers and biopolymers at interfaces, surface spectroscopies and soft materials. Her current research interest aims to understand and develop new types of assembled materials for controlled delivery of active molecules, such as drugs and antibacterial agents. She received the National Science Foundation Special Creativity Award in 2012 and was elected as a Fellow in American Physical Society in 2007. She earned a Bachelor of Science degree in polymer science from Moscow State University, Russia in 1984. She was awarded her Ph.D. from Moscow State University, Russia for her work in polymer chemistry in 1989. Prior to joining Texas A&M University’s Department of Materials Science and Engineering, Sukhishvili was a professor of chemistry and co-director of Nanotechnology Graduate Program at Stevens Institute of Technology’s Schaefer School of Engineering and Science.

Dr. Homero Castaneda
Associate Professor
Joined March 2015
Dr. Homero Castaneda joined Texas A&M as an associate professor and director of the National Corrosion Center. His research interests range from multiscale tools for corrosion analysis and mitigation in buried pipelines, dynamic electrochemical characterization and monitoring of operating batteries, corrosion assessment on storage tanks and damage evolution of coatings and steel interface, and lifetime prediction determination. He received a Bachelor of Science degree in chemical metallurgical engineering (Honors) in 1994 and a Master of Science degree in materials science (Honors) from the National Autonomous University of Mexico. He was awarded a Ph.D. from Pennsylvania State University for his work in materials science and engineering in 2001. He worked in the Department of Chemical and Biomolecular Engineering at the University of Akron in Akron, Ohio, before joining Texas A&M. He holds two patents.

Dr. Ankit Srivastava
Assistant Professor
Joined August 2015
Dr. Ankit Srivastava’s research is focused on micromechanical modeling of heterogeneous materials, microstructure-based crystal plasticity finite element modeling, phase transformations, statistical fracture modeling, failure analysis and microstructure design. He was a post-doctoral research associate at Brown University’s School of Engineering before joining Texas A&M University. Srivastava received a B.Tech. in mechanical engineering in 2007 from Kamla Nehru Institute of Technology. He received two Master of Science degrees, one in materials science and engineering in 2011 and another in physics along with his Ph.D. in materials science and engineering from University of North Texas in 2013.

Dr. Michael J. Demkowicz
Associate Professor
Joining January 2016
Dr. Michael J. Demkowicz specializes in computational materials design, fundamental physics of material behavior, mechanical behavior, and radiation response of materials. He earned two Bachelor of Science degrees from the University of Texas at Austin: one in Physics and another in Aerospace Engineering. Demkowicz also received a Bachelor of Arts in the Plan II Liberal Arts Honors Program. He earned his master's degree (2004) and his Ph.D. (2005) in Mechanical Engineering from the Massachusetts Institute of Technology.
James Monroe: An entrepreneur in materials science

Turning a research breakthrough into a business is one of the most desired outcomes classic exercise in cross-disciplinary collaboration — the exact values that Texas A&M University and the Department of Materials Science and Engineering encourage.

As a Ph.D. student under the supervision of Dr. Ibrahim Karaman, James A. Monroe ’13 was interested in finding the answers to processing, microstructure and mechanical property relationships of high temperature and meta-magnetic shape memory alloys. As an entrepreneur, he is now also interested in making the Internet cheaper, faster and more reliable.

Materials science faculty member Dr. Raymundo Arróyave helped Monroe identify and put together a fundamental theory while Dr. Karaman helped him develop the processing schemes that could be used for the technology. The three of them collaborated closely to identify the technology.

“When I realized the technology’s potential impact, I started learning the business side of things to understand how to commercialize and who would be interested,” Monroe says. He actively participated and explored entrepreneurship through NSF’s I-Corp initiative and recently received a Small Business Innovation Research (SBIR) grant as starting capital.

“Some of the competitors were already funded and had launched their products. The award added a lot of credibility to Thermal Expansion Solutions.”

In addition, he received second place and an additional $30,000 award in the Research Valley Partnership Award, a side award at the Texas New Ventures Competition. These funds went to Dr. Karaman’s Microstructural Engineering of Structural and Active Materials (MESAM) Group to continue to work on the technology.

Achievements

Recently, Monroe received third place and a $20,000 award at the Texas New Ventures Competition. The competition, which attracted more than 90 startups, promoted commercialization of emerging technology by recognizing companies with high growth potential. The day-long competition, which was open to all Texas-based startup companies seeking to bring new or enhanced technology to the marketplace, required the participants to pitch their ideas to judges that included members of the Aggie Angel Network and venture capitalists, experienced entrepreneurs, non-profit founders, legal professionals, patent experts and banking professionals.

“I was competing against real companies with real businesses,” Monroe says. “Some of the competitors were already funded and had launched their products. The award added a lot of credibility to Thermal Expansion Solutions.”

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Leadership and connections

In addition, Monroe serves as an Entrepreneur in Training at the Texas A&M Engineering Experimentation Station (TEES) Office of Commercialization and Entrepreneurship. Coming full circle, Monroe now serves as a business mentor for the new I-Corp team. He attributes freedom to pursue commercialization of his technology to Karaman. Monroe’s specialties are not limited to only state-of-the-art research and entrepreneurship. He also enjoys teaching introductory materials science classes as a post doctoral candidate. His teaching aids included several videos, experiments and household chemicals from his kitchen.
Youxing Chen received his Ph.D. from the Department of Materials Science and Engineering at Texas A&M University in May 2015. The Association of Former Students awarded him the 2015 Distinguished Graduate Student Award for Excellence in doctoral research.

Chen completed his degree under the supervision of Dr. Xinghang Zhang, associate professor in the Department of Mechanical Engineering. His research in Zhang’s Nanometal Group focused on understanding radiation damage mechanisms in nanolayered and nanotwinned metals, which can be applied to design radiation tolerant materials in advanced nuclear reactors.

“All my research skills and the vision in my research field that I have now were developed at the Department of Materials Science and Engineering,” Cheng says. “I am still using the knowledge from courses I took, especially advanced transmission electron microscopy and mechanical properties of thin films.”

Chen has published 24 peer-reviewed articles including six first-author articles, in premier materials science journals, such as Nature Communications and Acta Materialia. During his Ph.D. studies at Texas A&M, Chen gave nine oral presentations at international conferences organized by the Materials Research Society (MRS) and the Minerals, Metals and Materials Society (TMS).

Chen works as a postdoctoral research associate at Los Alamos National Laboratory.

SMART scholars in action: Sean Gibbons

Sean Gibbons works in Dr. Raymundo Arróyave Computational Materials Science Lab. His research involves development of multi-scale models for determining the properties and microstructural evolution of metallic alloys under extreme conditions.

“My research blends computational alloy design with experimental research to optimize the alloy Eglin Steel,” Gibbons says. “It aims to make the first 180-plus ksi yield strength air melt high toughness castable alloy for use in military applications and could be used to revolutionize vehicle armor for our deployed soldiers.”

Gibbons chose Texas A&M and the Department of Materials Science and Engineering for its high rank in interdisciplinary research.

“As a non-traditional student, I had to choose a location that would be good for my family and you can’t beat College Station for that,” he says.

He attended the USAF Preparatory School and Air Force Academy before graduating with a Bachelor of Science in materials science. He served on active duty for eight years. He is in the Texas Air National Guard and serves as the Deputy Commander of the 209th Weather Flight, Camp Mabry in Austin Texas.

Gibbons was selected for the Department of Defence (DOD) Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program. His sponsoring organization is the Munitions Directorate at the Air Force Research Laboratory located in Eglin Air Force Base, Florida. When Gibbons is not at work, he prefers spending time with his family and practices his marksmanship.
Liangfa Hu
In Texas A&M University’s history, Liangfa Hu was the first student bestowed with the honor to speak at the commencement ceremony for graduate students in May. He graduated with a Ph.D. from the Department of Materials Science and Engineering.

Hu completed his Ph.D. dissertation under the guidance of Dr. Miladin Radovic and Dr. Ibrahim Karaman. His research interests include metal/MAX phase composites and porous ceramics.

“A collaborative project between Drs. Karaman and Radovic was well aligned with my past research experience for my M.S. degree,” says Hu.

Hu published an article entitled “Student’s Weighing on Education” in the American Ceramic Society Bulletin. The article analyzed the results of a survey taken by students and recent graduates in materials science, indicated their views on education, and gave a fresh and modern perspective of the facets of U.S. education in materials science that have been successful and of areas where curricula are lacking. Hu was the 2013 communication committee chair of the President’s Council of Student Advisors (PCSA) of the American Ceramic Society, as well as the 2013 president of the Material Advantage Chapter at Texas A&M.

He currently works at Ames Laboratory (U.S. Department of Energy) as a postdoctoral research associate. His desire is to become a faculty member.

Los Alamos National Laboratory honors Eda Aydogan with 2015 Distinguished Student Award

Eda Aydogan, Ph.D. student in the Department of Materials Science and Engineering at Texas A&M University, received the 2015 Distinguished Student Award from Los Alamos National Laboratory (LANL). She is currently a graduate student intern at LANL and will pursue her Ph.D. research at LANL until the end of summer 2016.

Aydogan is completing her doctoral degree under the supervision of Dr. Lin Shao, associate professor in the Department of Nuclear Engineering and affiliated faculty member in materials science and engineering.

“I have been fortunate to get an opportunity to participate in such exciting materials research at both Texas A&M University and Los Alamos National Laboratory,” Aydogan said.

At LANL, Aydogan is working on the development of radiation tolerant fuel cladding materials for next generation fast reactors under the supervision of Dr. Osman Anderoglu and Dr. Stuart Maloy of the Materials Science in Radiation and Dynamics (MST-8) group.

Her research focuses on the effect of tube processing methods on the microstructure and mechanical properties of oxide dispersion strengthened (ODS) ferritic steels and their irradiation responses. Aydogan is a part of a large effort that includes Los Alamos National Laboratory, Texas A&M, the University of California, Santa Barbara, Oak Ridge National Laboratory and Case Western Reserve University that is working on developing ODS cladding tubes and understanding the effect of microstructure on their irradiation responses.

In addition to this award, Aydogan also won “The Best Poster Award” at 2015 TMS (The Minerals, Metals, & Materials Society) meeting. She has published five journal papers, with more currently under review.
The materials science and engineering department is jointly operated by the Dwight Look College of Engineering and College of Science. It offers Master of Science, Master of Engineering and Ph.D. degrees and has more than 100 graduate students currently in the program who are working on a wide range of materials-related interdisciplinary research projects. This multidisciplinary department includes faculty members from several disciplines, including aerospace engineering, biology, biomedical engineering, chemical engineering, chemistry, electrical engineering, mechanical engineering, nuclear engineering and physics.

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