

NEWSLETTER

Letter from the Chair



I am very delighted to present you with this 2015 newsletter from one of the most-dynamic and fastest-growing departments at UNT. During the 2014-2015 academic year, we continued our path to offer the quality degree programs in ABET accredited Bachelor of Science in Mechanical and Energy Engineering (MEE), and Master of Science. In addition, we successfully established, in October 2014, a brand-new Ph.D. degree in MEE, a first of its kind in the nation. MEE graduated a record number of students in Spring 2015. Two new faculty members, Drs. Kyle Horne and Weihuan Zhao, have joined our department. In this newsletter, you will be able to glance at

some of the exciting news and highlights from our faculty and students. Their academic and research achievements made all of us proud of being a MEEN Green “associate”, a person associated with the success of Mechanical and Energy Engineering programs at UNT.

Best regards,

YONG X. TAO, Ph.D., P.E., Fellow ASME
PACCAR Professor of Engineering
Director of PACCAR Technology Institute
Distinguished Research Professor

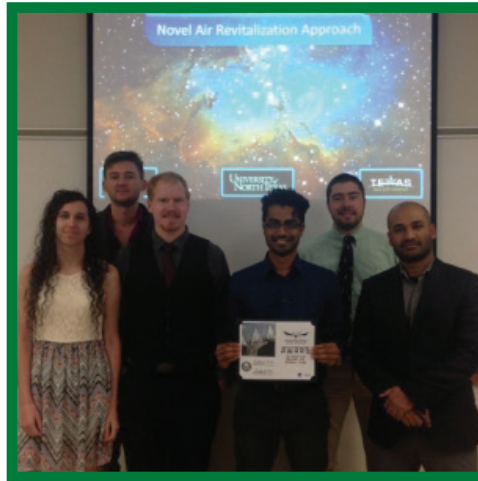
UNDERGRADUATE

Message from Dr. Qualls

Greetings from UNT! The 2014-2015 academic year was full of exciting news for our MEE Undergraduate program. We saw our enrollment increase to a record number of 608 students and we awarded Bachelor of Science degrees to 92 students. Design Day was a huge success with 21 design teams showcasing their projects and prototypes. Projects ranged from Raytheon's rocket nozzle optimization project to the Society of Automotive Engineers Formula 1 car.



Bike Helmet team



Team AD ASTRA

MEE students were also involved in several competitions throughout the year. Design team AD Astra placed 2nd top overall team at the NASA Texas Space Grant Consortium Design Challenge for its design project, Novel Air Revitalization Approach. The Bike Helmet team was selected as one of the top three finalists from the North American region to compete in the 2015 International Student Safety Technology Design Competition in Sweden. We are also very proud of the accomplishment of Alyssa Sylvester. Alyssa was one of 8 students accepted from the U.S. into the competitive NASA Aeronautics Spring 2015 Academy at the Langley Research Center, a 16-week interdisciplinary program.

Summer 2015 was a summer of learning and travel for 6 MEE undergraduates. As part of their Alternative Energy Sources elective course, the students traveled to Tongji University in China as part of a field trip to study green buildings and renewable energy. In addition to this unique elective course, we have also added new elective courses such as Geothermal Heat Pumps and Experimental Design in Engineering to our course catalog.

We are proud of the success of our students and faculty members. Thank you for being part of our MEEN Green family!



MEE students at the Great Wall of China

UNDERGRADUATE

Spotlight on Undergraduates



Joe Solis, a former contract welder, enrolled in the MEE program in the fall of 2012. A year later he was offered an internship with Luminant Energy. During his internship, he worked in the equipment repair department. Through this internship, Joe witnessed firsthand the importance of equipment repair specialists and the procedures that must be followed in the disassembly and reassembly of pump components. Joe's dedication and work ethic prompted Luminant Energy to hire him upon graduation. He now currently works as a staff engineer in asset management reliability where he uses high-level statistics to calculate the reliability of components such as boiler feed pumps and combustion turbines. He also serves as a Project Manager to support gas plant operations. Joe graduated with his Bachelor of Science in Mechanical and Energy Engineering in Spring 2015.

I attribute my success in my career to the education and experience that I received while attending the University of North Texas. The student-to-professor ratio enables the students to have a more one-on-one-relationship.

Sarah Forester is currently a senior in the MEE program. She serves as the President of Pi Tau Sigma and the Vice President of the Society of Plastic Engineers. She also is a member of the Society of Women Engineers and the American Society of Mechanical Engineers. In addition to her coursework and activities with the engineering organizations, she also works in the LAPOM plastics lab. Her main task in the lab is creating and testing an inexpensive alternative to nylon using different engineering plastics and ceramic fillers. In addition, she teaches new students how to use lab equipment, edits research papers before they go to publishing, and works on proposals to create shape memory alloy and plastic composites for various applications. After graduation she plans to go to graduate school for a M.S. degree in materials science and then possibly continue on to a doctorate.



Outstanding Awards

Award for Outstanding Undergraduate 2015 – Christopher Vorgert and Richard Roberts

UNDERGRADUATE

List of Senior Designs

Big Rock Oil

Sponsored by Big Rock Oil Company

Team members - Billy Davis, Joseph Medrano, Benjamin Erickson

Team Capstone

Sponsored by: Capstone Metering, Inc.

Team members - Aaran Barnes, Russel Elliott, Crystal Gilstrap, Mike Mielcarek

SAE Drivetrain Team

Sponsored by: SGA, Fastenal, Solid Works, Mechanix Wear, Taylor Race Engineering, RBC Bearings, Red Bull, SKF, Timken, Royal Purple, Monster Tool Company, Design Engineering Inc., Wheatridge Manufacturing, Odyssey Manufacturing, Marshall Machining, Crosslink Powder Coating, United Copper Industries, BRM, Peterbilt, Brembo Brakes, RC Engineering, Diamond Cycles

Team members - Ariel Jackson, Robert Jones, Trent McInturff, Travis Rigsby

ASME Human Powered Vehicle

Sponsored by: Eagle's Nest

Team members - David Bounds, Xavier Carr, Nadiyah El-Amin, Michael Hartzler, Sara McNutt

The Mean Green Energy Efficient Building Simulation

Team members - Yovani Hernandez, Alejandro Hernandez, Zachary Lowe

Music Box

Team members - Austin Taylor, Thomas J. Estrada

Team Ghost Pepper

Sponsored by: Peterbilt Motors Company

Team members - Christian Elliott, Chad Goucher, Khemachart Kheawsang, Alan Zuefeldt

Isolated AC System

Sponsored by: Peterbilt Motors Company

Team members - Taylor Bontz, Josiah Bujanda, Christopher Hubbard, Adam Mengestab, Edgar Vazquez

Raytheon Rocket Nozzle Optimization

Sponsored by: Raytheon Space & Airborne Systems

Team members - Michael Stoddard, Christopher Vorgert, Eric Anyanwu

Thermal Expansion Storage

Team members - Don Magedara, David Paul Palmer, Ricardo Hevia

Scuba L.E.A.P

Team members - Andrew Dean, Nathan Ley, Louis Judge, Evan Judice

Friction Stir Welding of Dissimilar Materials

Team members - Mohammed Aljoaib, Hassan Alwesaibi

Evaluation of Vehicle Performance of Non- Pneumatic Tires

Team members - Sonam Sherpa, Amir Poudel, Soksan Sor

MG Ti Engineers

Sponsored by: Center for Friction Stir Processing at UNT (CFSP)

Team members - Michael Frank, Alex Gallegos, Kaongou Temedjong

Modification of a Treadmill

Sponsored by: UNT Kinesiology Department

Team members - Dana Chesley, Rachel Mahlow, Hallie McDonald

S.E.E Venturi System

Sponsored by: West Texas Fabrication

Team members - Marco De Lira, Raul Canales, Joe Solis

Deployable Ozone Guardian

Team members - Andrew Hull, Kassra Mahjoubi, Brittani Powers, Raul Soberanes

NHTSV ESV Competition

Team members - Travis Beamon, Holly Gage, Celena Lipscomb, Leannah Nichols

Cellular Phone Functional Testing Device (CPFTD)

Sponsored by: Genco

Team members - Kevin Berry, Idris Ali, Osaretin Usiagu, Shahan Hameed, Omar Montemayor

Formula SAE – Suspension Team

Sponsored by: SGA, Monster Tool Company, Odyssey Aerospace Components, Wheat Ridge Manufacturing, Bell Helicopter, Mark Nicholas, Fastenal, Peterbilt, Solidworks, RBC Bearings, SKF Bearings, Brembo Brakes, Brush Research Manufacturing, SAMPE, Red Bull, AEM, Miltera, QA1, Cycle Center of Denton, Online Metals, CRD Manufacturing, and Diamond Cycles

Team members - Jonathan Bowman, Tyler Newbold, Julian Quintero, Alec Wells

Team Hydra

Sponsored by: Center for Friction Stir Processing at UNT

Team members - Jacob Acosta, Michael Billups, Michael "John" Luke

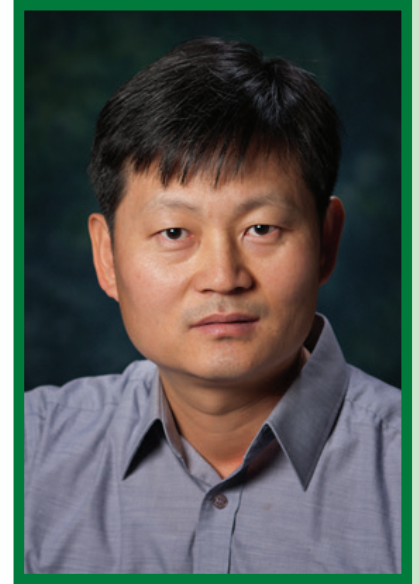
GRADUATE

Message from Dr. Choi

I am very much delighted with this opportunity to deliver a special message to all graduate students in the Department of Mechanical and Energy Engineering. Beginning this semester, I take a responsibility as a new graduate advisor, ready to serve in all aspects of graduate matters. In times of growth, I recall the time of the foundation of this department. As a founding member of the MEE Department, I have committed to establishing a good education and research program at UNT.

Every year or semester, we as a faculty make the same commitment, to not make the same mistakes. Likewise, as a new graduate student, you surely make a commitment to succeed in your academic life by working hard in class and producing good results in your research. I suggest herein three tools with which you can be successful in academia. When these tools become fundamental habits, they provide an effective means to find success in your academic life. As I say below, consider evaluating your personal use of each tool and determine how you could make better use of each one of them.

The first tool is 'plan.' 'Choose' to converse with your graduate and research advisor to make a plan towards your graduate degree, either a MS or Ph.D. degree. Make time to share your concerns and thoughts about the progress of your degree. The first step will be to complete the degree plan by the specified time indicated in the graduate handbook. The second tool is 'execute.' Absorb the teachings of faculty during the class. You may need to reorganize your priorities to provide time for the study of a scientific and engineering discipline. If so, 'just do it.' The third tool is 'follow up.' I encourage you to remember your original commitment continuously and go back to check your status to make sure you are on the right track.



Promotions



Dr. Cherish Qualls received a promotion to Senior Lecturer and Director of Undergraduate Affairs this year. A few of the courses she teaches for the Department are Systems, Dynamics and Controls, Programming for Mechanical Engineers, Aerospace Fundamentals, Fluid Mechanics, and Dynamics.



Dr. Xiaohua Li received a promotion to senior lecturer and department adviser this year. He also teaches courses for the Department in Mechanics 2, MEE Lab 1, Analytical Methods.

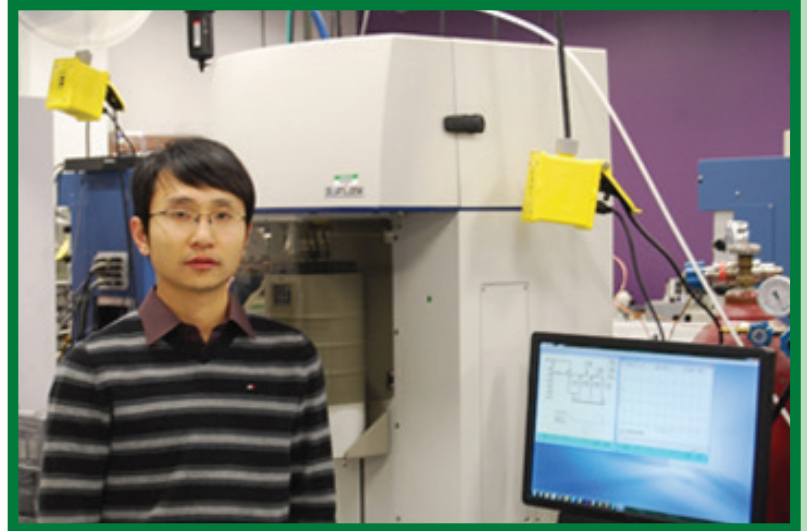
GRADUATE

Spotlight on Graduates

Changlei Xia is a Ph.D. candidate in Mechanical and Energy Engineering. He obtained his B.S. (2007) and M.S. (2010) degrees both in polymer science and engineering from University of Science and Technology of China (Hefei, Anhui, China). He started his Ph.D. from summer 2012, advised by Professor Sheldon Q. Shi.

His research focus is on renewable bio-products from biomass. His research activities include: 1) activated carbon from biomass through the self-activation process; 2) high-performance composites made from kenaf fibers; and 3) soy protein isolate based films manufacturing. During the Ph.D. study at UNT, he has made great achievements under the supervision

of Dr. Sheldon Q. Shi. He has published four papers as the first author, four as a co-author, seven manuscripts (first-author), which are in review, and one patent. Additionally, he has been very active in attending professional conferences. He won the 2nd place award for student poster competition at 58th Society of Wood Science and Technology (SWST) international convention in June, 2015.



The awards are presented to outstanding undergraduate and graduate Mechanical Engineering students who are ASME members and are full-time students at the University of North Texas. The awards are intended for students that have distinguished themselves through academic work, participation and contributions to ASME activities and civic activities. Most awards consisting of a check and a plaque have a corporate sponsor. Celena Lipscomb (undergraduate student) and Jiwon Mun (graduate student) received this award as shown in the following picture.



From left, Jiwon Mun, Celena Lipscomb, Leannah Nichols, and Professor Fortier

GRADUATE

List of M.S. Thesis

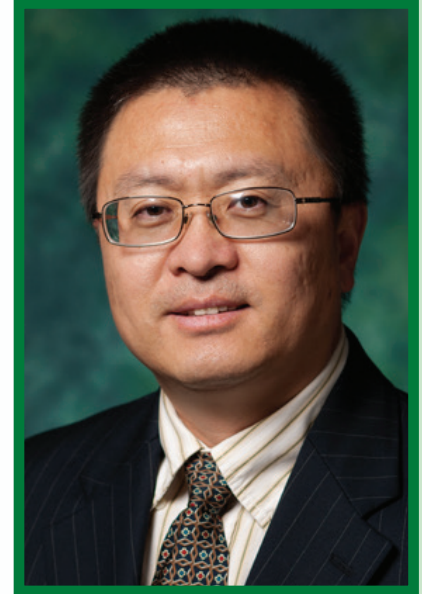


1. Ahmed Talal Abood, Source Apportionment Analysis of Measured Volatile Organic Compounds in Corpus Christi, Texas, M.S. Thesis (2014)
2. Sebastião Bittencourt de Mira, Sustainable Energy Solutions for Water Purification Applications: Municipal and Industrial Case Studies, (2014)
3. Zhiguang Ding, Electromagnetic shielding of iron oxide nanoparticle impregnated kenaf fiberboard (2014)
4. Oludamilola Adesanya, Determining the emissivity of roofing samples: asphalt, ceramic and coated cedar, MS Thesis. (2015)
5. Vikranth Gullapalli, Study of Metal Whiskers Growth & Mitigation Technique Using Additive Manufacturing (2015)
6. Hua Yang, Study of Mechanical Performance of Stent Implants Using Theoretical & Numerical Approach (2015)
7. Zachary Coker, Deleterious Synergistic Effects of Concurrent Magnetic Field and Superparamagnetic (Fe₃O₄) Nanoparticle Exposures on CHO-K1 Cells (2015)
8. Guo Quan Lim, Evaluation of the Influence of Non-Traditional Sources of Emissions on Ambient Air Pollutant Concentrations in North Texas (2015)
9. Farhan Abdi Dohde, Estimation of Air Emissions During Production Phase from Active Oil and Gas Wells in the Barnett Shale Basin: 2010-2013 (2015)
10. Adithya Chalapali, Loading Mode Dependent Effective Properties of Octet-truss Lattice Structures using 3D Printing (2015)
11. Shunli Zhao, Thermally stimulated depolarization of molding compounds, May 2014 Papers (2014-2015)

FACULTY

Spotlight on Faculty: Dr. Sheldon Q. Shi

Sustainable and energy efficiency manufacturing is one of the major focuses in the Mechanical and Energy Engineering (MEE) Department. Shi, an associate professor and researcher in UNT's PACCAR Technology Institute, contributed to the development of the manufacturing technologies for innovative renewable bioproducts. Three years ago, Shi joined UNT as a cluster hiring. Since then, he successfully acquired key equipment through company donations and equipment transfer from his previous lab at Mississippi State University, and initiated a pilot-scale manufacturing laboratory, including a compression molding line, lamination process, mat forming process, and extrusion line. This is a one-of-the-kind bio-based composites manufacturing facility in the country. With this advanced facility, UNT is able to provide a high quality of education, research and outreach in biomass and its utilization. It is expected that a new generation of professionals will be developed to advance the renewable bioproduct manufacturing program.



Shi has been serving as PI and Co-PI for federal projects including DOE, NSF, and USDA. He and his research group have been very active in technology innovations in bioproducts. Thanks to the NSF support, he has developed a novel in situ nanoparticle impregnation technology for natural fibers, from which a variety of functional bioproducts can be fabricated through proper processes. He has been actively collaborating with faculty members within the MEE and other departments, such as Materials Science and Engineering, Electrical Engineering, Engineering Technology, and Biological Science for the development of this group of functional materials. His recently patented technology on the magnetization and self-activation technology for the functional activated carbon from biomass has drawn a considerable amount of attention from the industry. The technology provides a new way to clean water from oil and chemical spills, and may be a revolution for the water cleaning and treatment.

Shi's recent research on the novel co-pyrolysis technology for the waste tire and waste biomass recycling is attracting attention from prospective companies. The co-pyrolysis with innovative self-activation makes the production of the activated carbon more efficient with high yield, and save the processing cost, while the syn-gases generated are favorable for methanol production.



Bamboo fiber piping fabrication at Zhejiang Xinzhou Bamboo-based Composites Technology Co. Ltd.

Shi is an internationally known scholar. He was elected as the President of the Society of Wood Science and Technology (SWST) during 2013-2014, Participating Member of ASTM International (D07 and D14 subcommittees) and APA Standard Committee, Committee Chair of Markwardt Award, Editor of the Board of the International Journal of Environmental Engineering and Natural Resources and ISBN Thermodynamics. He also has been appointed as an Adjunct Professor at Northeast Forestry University, Harbin, China, and Guangxi University, Nanning, China; Ph.D. Dissertation Examiner for Deakin University, Australia, and advisor at the International Center for Bamboo and Rattan (ICBR), Beijing, China. He received an honor as Longjiang Scholar from Heilongjiang province, China in 2011.

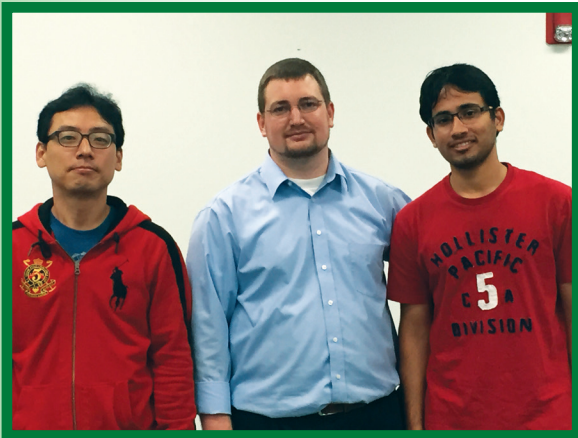
Shi is dedicated to international collaboration. In recent years, Shi has been collaborating with international scholars for over 10 joint publications, which has increased the international recognition of UNT. Currently, Shi is partnering with Zhejiang Xinzhou Bamboo-based Composites Technology Co. Ltd. and the International Center for Bamboo and Rattan (ICBR) in developing wrapping technology with natural fibers for renewable piping products.

FACULTY

Spotlight on Research: Dr. Kyle Horne

Dr. Kyle Horne's research centers on computational methods and simulations, both in their application to real-world problems and the theoretical aspects of their numerics. On the application side, he is currently working with both computational fluid dynamics and molecular dynamics simulations. The theoretical analyses focus on the inverse problem for photothermal radiometry measurement systems and uncertainty propagation in both particle-image velocimetry data processing as well as robust sensitivity analysis of molecular dynamics.

One interesting application of computational fluid dynamics is the optimization of thermal/fluid systems, which is frequently required in heating and cooling of both residential and industrial buildings. Dr. Horne has assisted collaborators from the University of Western Hungary with analysis of a fluid/solid heat exchanger in a zero energy building they constructed in Sopron, Hungary. This collaboration included a visit to their lab where his recommendations improved their system's heat transfer effectiveness by more than ten percent. Some of the lab members in Sopron were surprised to learn that Dr. Horne could speak with them in their native Hungarian language.

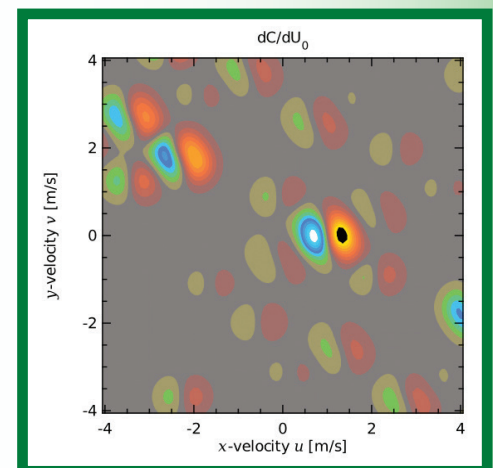
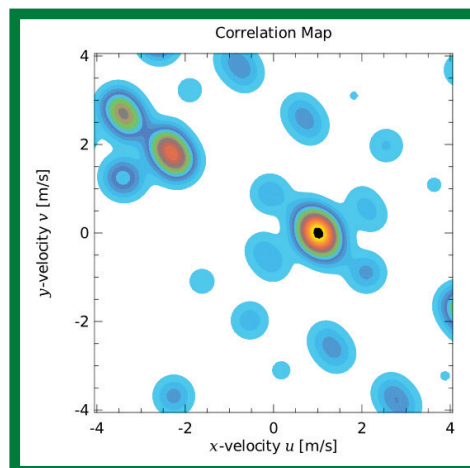


Dr. Horne (blue) with two of his graduate students, Jae Young Joeng (red, left) and Sampath Reddy (red, right).

Applications of molecular dynamics currently being pursued in Dr. Horne's lab include simulations of graphene for improved heat egress on solid-state devices and a theoretical examination of stabilization effects observed in nano-fluids from exposure to femtosecond laser pulses. The former simulations rely on conventional interatomic potentials, but the latter are implemented using an electron force field currently under development at Caltech. In both simulations the dynamic equations of motion are solved for all the atoms (and possibly electrons) in the system, with final results computed from statistical properties of the particles' trajectories.

Horne's theoretical work on the inverse problem and sensitivity/uncertainty calculations revolve around the application of adjoint methods and automatic differentiation to compute the derivatives of computed quantities with regard to the input values provided to an algorithm. The computational cost of each method differs based on the number of derivatives to compute and the number of final quantities for which derivatives are required, making both methods useful additions to a computational toolbox.

Correlation map for vector computation in particle-image velocimetry and the derivative of the map with regard to input velocity.



FACULTY AWARDS

UNT Regents Professor Dr. Nandika D'Souza

Dr. Nandika D'Souza, a Professor of the Department of Mechanical and Energy Engineering, and associate dean of undergraduate studies in UNT's College of Engineering has been named a UNT Regents Professor, a designation for faculty at the rank of professor who have performed outstanding teaching, research, and service to the profession, and who have achieved a high level of national and international recognition. D'Souza is an Associate Chair for Research and Graduate Affairs. Her research interests lie in the interactions and properties of heterogeneous materials, blends, alloys, composites, and nanocomposites. In 2013, she was named a Fellow of the Society of Plastics Engineers.



Distinguished Engineering Educator

Nandika D'Souza, has been named the 2015 Society of Women Engineers Distinguished Engineering Educator. The award is presented to educators who make significant contributions to the engineering field.

"The Society of Women Engineers has enabled students and professional engineers to develop the needed leadership skills to complement their educational excellence," D'Souza said. "Being nominated by the Dallas Section of SWE, where I serve as vice president for outreach, and having letters of support from two UNT SWE presidents, Britney Caldwell and Mayaria Johnson, my dean, and a current student was very encouraging.

"UNT SWE past-presidents are leaders in a number of engineering companies, and the current group of officers are poised to build on the structured leadership that the past leaders have enabled," said D'Souza, who advises the student organization. "The future for women engineering students at UNT is bright. Enabling an educational environment where students of all races and genders can fulfill

their potential requires a proactive approach from faculty, staff, and students. Ensuring academic excellence and personal confidence in diverse populations can change the demographics of our leaders."

D'Souza has worked with undergraduate and graduate students in the area of failure analysis, viscoelasticity, and material reliability. She is a Fellow of the Society of Plastics Engineers for her contributions to the field of polymers, composites, fibers, films, and coatings. Her teaching and research focuses on mechanics and materials and how best to incorporate them reliably in design. She has recently focused on microelectronic packaging, biomedical surgical mesh, the creation of plant-based building materials, and plant-based carbon fiber.

D'Souza has published more than 160 book chapters, journal articles, and peer-reviewed conference proceedings, and has earned numerous awards, including the UNT Research Leadership Award, UNT College of Engineering Research Award and Vinyl Division Thesis Award from the International Society of Plastics Engineers. She was named the 2009 Engineer of the Year by the American Society of Mechanical Engineers Electronics and Photonics Packaging Division. She received the designation of UNT Regents Professor in 2015.

The Society of Women Engineers was established in 1950 and works to help women achieve their full potential in careers as engineers and leaders, expand the image of the engineering profession as a positive force in improving quality of life, and demonstrate the value of diversity.



FACULTY & GRANTS

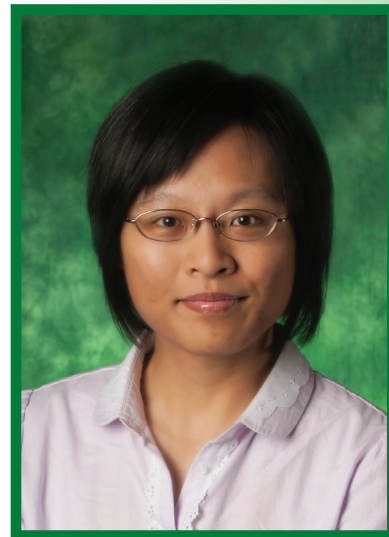
Welcome New Faculty: Dr. Weihuan Zhao

Dr. Zhao is a new assistant professor joining the Department of Mechanical and Energy Engineering at University of North Texas. Prior to joining UNT she was a postdoctoral appointee in the Energy Systems Division at Argonne National Laboratory in Illinois for two years. She obtained her Ph.D. degree in Mechanical Engineering at Lehigh University.

Her research areas are in thermal-fluid sciences, including heat transfer, thermodynamics, and fluid dynamics. She focuses on heat transfer and CFD simulations by using programming languages (i.e., Matlab, etc.) as well as the commercial software (i.e., COMSOL, etc.). She is also involved in the experimental research activities in thermal-fluid sciences.

Her research activities include the thermal energy storage system for the concentrated solar power plant (e.g. study on graphite foam-phase change material combination as the storage medium for high-temperature latent heat thermal energy storage system for the power generation in the solar power plant, etc.).

Furthermore, her research also involves thermal management technologies for other electric components, devices, and equipment (e.g. investigate the technology to enhance the coolant cooling capacity by using subcooled boiling of the coolant fluid in the applications for cooling power electronics in hybrid or electric vehicles; investigate the technology to enhance the cooling capacity of the radiator in the heavy-duty vehicles by using evaporation of water, etc.).



Grants and Publications

List of Grants

Sustainability/ Buildings

1. PFI: Farmer-Academic-Industry Partnership for the Development of Sustainable, Energy Efficient, Multifunctional Bioproducts for the Built Environment. National Science Foundation (NSF), N. D'Souza, Y. Tao, V. Prasad and M. Allen. \$600,000. 2011-2015
2. Biosynthesis, Regulation and Engineering of C-Lignin. National Science Foundation, R. Dixon, N. D'Souza, F. Chen, R. Azad, R. Boyd, \$833,723. 2015-2018
3. RCN-SEES: Predictive Modeling Network for Sustainable Human-Building Ecosystems (SHBE). National Science Foundation, (NSF) Y. Tao. \$652,846. 2013-2018.
4. North Texas Ozone Attainment Initiative. Downwinders at Risk Educational Fund (DAREF). K. John. \$120,000 2014-2015.
5. Impregnated inorganic nanoparticle at the natural fiber-thermoplastic polymer interface. NSF CMMI, S. Shi. \$116,881. 2011-2015.
6. Rider 8 (2014-2015): Corpus Christi Ozone Near Non-Attainment Area Air Quality Monitoring Activities (2014-2015). City of Corpus Christi-pass through grant from Texas Commission on Environmental Quality (TCEQ). K. John. \$339,400. Jan 2014 – Dec 2015.
7. CCTS Company. PI. S. Shi. \$62,500. July 1, 2012 – June 30, 2014.

GRANTS

Grants and Publications

List of Grants

Sustainability/ Buildings

8. Freestone Resources Company. PI. S. Shi. \$10,000. Sept. 1, 2015 – Aug. 30, 2016.

Energy

1. High Efficiency Flexible Rechargeable Battery Based on 3D Graphene-Carbon Nanotubes. Korea Institute of Energy Research. W. Choi. \$87,802. 2015.

Oil and Gas

1. Bioinspired Nanocomposite Coatings for Corrosion Protection. Qatar University. N. D'Souza and T. Golden. \$275,000. 2012-2015

Education

1. Gaming Graduate Ethics Education in Science & Engineering. National Science Foundation (NSF). K. John, A. Wilson, A. Briggler, J. Oppong. \$299,558. 2013-2016.
2. Engaging Male Colleagues as Advocates & Allies for the Advancement of Women Faculty. North Dakota State University (flow through from National Science Foundation). C. Bilen-Green, E. Dell, R. A. Green, C. McGeorge, H. A. Morrow-Jones. \$690,638. UNT Sub-award: Co-PI with C. Crutsinger, R. Reidy, C. Tsatsoulis, and A. Wilson. UNT portion: \$71,040. Sept. 2015 – Aug, 2019.

Mechanics

1. Dynamic Behavior and Failure of Advanced High-Performance Structural Materials. U.S. Army Engineer Research and Development Center (ERDC), X. Nie, \$585,784. 2014-2018.
2. Novel Experimental Techniques, Size Effect, and Damage Evolution for Heterogeneous Materials. Air Force Research Laboratory (AFRL). X. Nie. \$225,000. 2014-2016.
3. Dynamic Interfacial Friction under Various Pressures. Air Force Research Laboratory (AFRL), X. Nie, \$100,000, 2013-2015
4. Highly Stretchable Miniature Strain Sensors for Kolsky Bar Applications - Phase I: Feasibility Investigation. Sandia National Laboratory, X. Nie, and X. Yu. \$73,785. 2014-2015.

Microelectronic Reliability

1. Boron Nitride Thermally Conductive High Temperature High Dielectric Strength Interface Materials Semiconductor Research Corporation. N. D'Souza and T. Choi. \$240,000. 2013-2016.
2. A New Route Toward Systematic Control of Electronic Structures of Graphene and Fabrication of Graphene. Florida International University. W. Choi. \$104,655. 2012-2015.

GRANTS & PUBLICATIONS

Grants and Publications

List of Grants

Vehicle & Transportation

1. Evaluation of Coating Powder from Coating by PCD Inc. for Concrete Forming Application. Coatings by PCD, Inc. S. Shi. \$8,000. 2014-2016.

List of Publications (Book)

1. Y. X. Tao, and Y. Jiang. (2015). Analytics for Building-Scale Sustainable Ecosystems, Begell House, New York, Connecticut. USA. ISBN: 978-56700-279-9 (in press).

List of Publications (Patent)

1. S. Shi, C. Xia, "Porositization process of carbon or carbonaceous materials", Patent, Publication number: US 20140264143 A1, Application number: US 14/211,357, Publication date: Sept. 18, 2014. <http://www.google.com/patents/US20140264143>

List of Publications (Book Chapter)

1. N. Sule, Z. Farooqui, J. Biswas, and K. John (2014), "Evaluating the Impacts of Emissions and Global Temperature Perturbations on Air Quality in South and Central Texas", Chapter 5 (pp. 63-78) in Environmental Sustainability Issues in the South Texas-Mexico Border Region (D. Ramirez, J. Ren, K. Jones, and H. Lamm, eds.), ISBN: 978-94-007-7121-5 (Print) 978-94-007-7122-2 (Online), Springer, Dordrecht, The Netherlands.

List of Publications (Journal)

1. T. Ming, J. L. Gui, C. Peng, Y. X. Tao. "Analysis on the hydraulic and thermal performances of a microchannel heat sink with extended-nozzle impinging jets." Heat Transfer Research (accepted).
2. T. Ming, D. Chen, S. N. Toudeshki, S. Talele, G. T. Checketts, N. Hasib, C. Wicaksono, G. Xiong, Y. Qiu, C. Peng, J. Mun, R. Rayegan, Y. X. Tao. "A zero energy lab as a validation testbed: concept, features, and performance." International Journal of Hydrogen Energy (in press).
3. T. Ming, Y. Wu, T. Pan, K. Peng, T. Wu, Y. X. Tao. "Thermal analysis for optimized segmented thermoelectric generator." Energy (in press).
4. Y. Zhu, R. Rayegan, Y. X. Tao, (2015) "Case Study of Ground-Source Heat Pump Applications in Hot and Humid Climates." J. Archit. Eng., 21(1), 05014006.
5. C. Peng, T. Ming, Y. X. Tao, Z. Peng, (2015) "Numerical analysis on the thermal environment of an old city district during urban renewal." Energy and Buildings. 89: 18-31.
6. C. Peng, T. Ming, Y. X. Tao, (2015) "The effect of thermal conductivity of porous medium on heat transfer enhancement in tubes." International Journal of Heat and Mass Transfer. 81: 784-796.
7. C. Peng, T. Ming, Y. X. Tao, (2015) "Thermal and hydraulic performances of a tube filled with various thermal conductivities of porous media." International Journal of Heat and Mass Transfer, 81: 784-796.

PUBLICATIONS

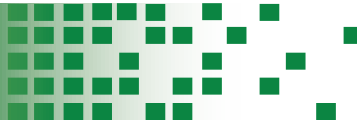
Grants and Publications

List of Publications (Journal)

8. T. Y. Choi, M. L. Denton, G. Noojin, L. Estlack, R. Shrestha, B. Rockwell, R. Thomas, D. Kim, (2014) "Thermal evaluation of laser exposures in an in vitro retinal model by micro thermal sensing." *J. Biomed Opt*, Vol. 19 (9), 097003.
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33. C. Xia, S. Q. Shi, L. Cai, J. Hua, (2015) "Property enhancement of kenaf fiber composites using vacuum assisted resin transfer molding." *Holzforschung*. (DOI 10.1515/hf-2014-0054).
34. C. Xia, S. Q. Shi, L. Cai, S. Nasrazadani, (2015) "Increasing inorganic nanoparticle impregnation efficiency by external pressure for natural fibers." *Industrial Crops and Products*, 69:3 95-399. (DOI 10.1016/j.indcrop.2015.02.054).
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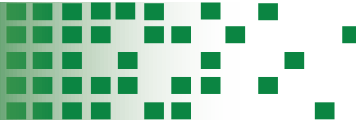


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60. K Horne, H Ban, (2015) "Sensitivity analysis of the transient torque viscosity measurement method." *Metrologia* (52).
61. W. Zhao, D. M. France, W. Yu, T. Kim, D. Singh, (2014) "Phase Change Material with Graphite Foam for Applications in High-Temperature Latent Heat Storage Systems of Concentrated Solar Power Plants." *Renewable Energy* 69, pp. 134-146.
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64. D. M. France, W. Yu, D. Singh, W. Zhao, (2014) "Subcooled Boiling System for Cooling Hybrid Electric Vehicle Power Electronics." *Argonne Invention Report ANL-IN-14-005*.
65. E. Ogunsona, N. A. D'Souza, (2015) "Characterization and mechanical properties of foamed poly(e-caprolactone and Mater-Bi blends using CO2 as blowing agent." *Journal of Cellular Plastics*, 51, 245-268.
66. Y. H. Ahmada, J. Tientong, N. D'Souza, T. D. Golden, A. M.A. Mohamed, (2014) *Surface and Coatings Technology*, 242, 270-176.

PUBLICATIONS

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List of Publications (Journal)

67. M. Nar, G. Staufenberg, B. Yang, L. Robertson, R. H Patel, V. G. Varanasi, N. A. D'Souza, (2014) "Osteoconductive bio-based meshes based on Poly (hydroxybutyrate-co-hydroxyvalerate) and poly(butylene adipate-co-terephthalate) blends." *Materials Science and Engineering: C*, 38, 315-324.
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73. M. C. Richardson, N. A. D'Souza, , C. Xia, S. Shi, P. M. Mach, G. F. Verbeck, (2015) "Metal Ion and Benzene Remediation of Simulated Hydraulic Fracturing "Fracking" Waste Water Using Natural Materials." *Hydraulic Fracturing Journal*, 2, 84.

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Pictured from left to right: Xun Yu, Yong Tao (MEE Chair), Landon Sproull, Cliff Braddock, Allan Zhong, Randy Masey, Don Lampe, John Conroy, and Andrew Wong

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Tom Babb - Advanced Technology Complex

Carla Ruge - Advanced Technology Complex

Andrew Wong - ARAMARK

Scott Lee - BAE Systems

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The Mayor and City Council Business Awards Breakfast was held on September 11, 2015, at UNT Apogee Stadium Club Level's Hub Club.

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