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## Message from the Chair

Dear Alumni and Friends of the ME Department:

I am pleased to bring you this newsletter as you are getting ready for the holiday season. I hope you have had a great 2017. We are having a very good fall semester in the department; our enrollment has been steady at 800 undergraduate and 70 graduate students.

We are going through some transitions in the upper administration. In August 2017, Joe Rencis, who served as the Dean of the College of Engineering for six years, moved to Cal Poly, Pomona as their dean, and Provost Bahman Ghorashi returned to the chemical engineering department as a faculty member, after having served as an administrator for four years. The faculty and staff in ME are very pleased that Darrell Hoy (who many of you know well as the previous chair of ME) has been appointed as the interim dean while we are conducting a national search for a new dean. Mark Stephens, who used to be our Senior Associate Vice President, is now serving as interim provost.

This year, the department recruited two new faculty members, Yunbo 'Will' Zhang and Ahmad Vasselbehagh, through a national search of over 130 applicants to replace the two positions vacated by the retirement of Glen Johnson and Sam Han. As seen by the academic profiles of these outstanding recruits in this newsletter, I believe these two professors are going to add luster to this department. As I mentioned in my previous newsletter, we continue to recruit high quality faculty from top universities in the country to provide high quality education to our students. The department's faculty roster now has a healthy mix of junior and senior professors with junior faculty focused more on research and graduate education, while the senior professors carry a higher teaching assignment in addition to service, outreach and mentoring junior faculty.

We had a very engaging and productive external advisory board meeting in November; I am pleased to welcome Esra Roan, Ph.D., and Ms. Navya Raghoji to the board. A short profile of these two excellent additions to our board can be seen elsewhere in this newsletter.

If you recall, we hosted the international ASME E-Fest back in April 2017, which continues to receive commendations from ASME for a job well done. Thanks to our student leaders and Professor Steve Canfield for this success. I believe these events enhance our national visibility, which is one of my priorities.

I have had good success working with the Department of Electrical and Computer Engineering on some collaborative projects. We are launching a new concentration in Vehicle Engineering at the undergraduate level in both departments starting fall 2018. This one-of-a kind concentration is a first within ME and ECE in the country and is focused on educating a new pool of engineers with an interdisciplinary background in the emerging technologies of mobility, including autonomous and hybrid vehicles. I will write to you more about this in my next newsletter.

In addition, we are currently converting the old gymnasium in Foundation Hall into a new interdisciplinary capstone design center for mechanical engineering and electrical engineering students to do joint projects. This is an 8,000 square-foot facility and when completed will be a great asset for the college. We are in the process of starting a campaign to solicit donors for the naming of different parts of the center. Please let me know if you are interested in helping us to be part of this new facility.

The mechanical engineering department at Tennessee Tech is proud of its loyal and hard-working alumni, and we count on your increased support to update our facilities equipment and laboratories. Your generous contributions to our [Laboratory Improvement Fund](#) will help us achieve our goal of making TTU-ME one of the top quality programs not only in the State of Tennessee, but also put us on the national map. Please select 'Mechanical Engineering' under the drop down menu when you pledge your support at the following web site <https://www.tntech.edu/engineering/alumni/support-engineering>.

Please watch your email and save the date for our next ME Alumni Event, which we are planning to host Tuesday, Feb. 27, in the Huntsville area.

Mohan Rao, Chair  
Mechanical Engineering

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## Welcome to New Faculty

**Yunbo "Will" Zhang, Ph.D.**  
**Assistant Professor, Mechanical Engineering**



Yunbo "Will" Zhang is currently an assistant professor in Department of Mechanical Engineering at Tennessee Tech University. He received his Ph.D. from the Department of Mechanical and Automation Engineering at The Chinese University of Hong Kong. His research interests include design for additive manufacturing, computer-aided design and manufacturing, human-centered design and manufacturing, and geometric and solid modeling. He has published 11 journal papers and eight conference papers. His survey paper about additive manufacturing has become the most downloaded paper in the last 90 days on the Journal of Computer-aided Design (JCAD). Zhang received a few awards from professional societies and industries including Best Lifestyle Bronze Award from Hong Kong ITC Awards in 2008, Championship of Vice-Chancellor's Cup of Student Innovation from CUHK in 2009, and Purdue Postdoc Travel Grant 2016-2017. He is a member of the American Society of Mechanical Engineers (ASME) and Institute of Electrical and Electronics Engineers (IEEE), and he is actively serving on the judging and reviewing panels of conferences and journals. He also worked as a guest editor for the journal of Computer-Aided Design and Applications on a special issue of "Technologies for Human Centric Free-form Products of Computer-Aided Design and Applications."



**Ahmad Vaselbehagh, Ph.D.**  
**Assistant Professor, Mechanical Engineering**

Ahmad Vaselbehagh is an assistant professor of Mechanical Engineering. Prior to joining Tennessee Tech University, Ahmad was a Postdoctoral Researcher in the University of Delaware, where he conducted research on optimization of commercial-sized wind farms. He received his Ph.D. in Mechanical Engineering from University of Windsor, Canada, while receiving the prestigious Ontario Trillium Scholarship from the Government of Ontario for four continuous years. His Ph.D. research was focused on studying hydrodynamics of mechanical energy storage technologies, particularly, underwater energy storage plants. He earned his M.Sc. and B.Sc. degrees in Mechanical Engineering from Ferdowsi University, Iran, where he developed a lattice Boltzmann model for solving fluid mechanics and heat transfer problems. Ahmad has published his research in a book chapter and several scientific journals including Journal of Fluid Mechanics, Physical Review E, Computers & Fluids, and Applied Energy. Ahmad has served as an editor of Sustainable Energy Technologies and Assessments (Elsevier) and has organized several symposiums and conferences.

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## External Advisory Board

The Department of Mechanical Engineering would like to extend our thanks to the members of our External Advisory Board for the time and service they devote to our program. We would also like to thank Arnold Lumsdaine as he enters his second three-year term as chair for his wonderful guidance and expertise.



**L-R:** Front row: Christina Bechard-Walker, David Nesbitt, Navya Ragoji. Middle Row: David Ballard, Scott Smith, Ph.D., Mohan Rao, Ph.D., Esra Roan, Ph.D., Jared Moore. Top Row: Brad Long, Lito Mendoza, Arnold Lumsdaine, Ph.D., Keith Kirkpatrick, Ph.D. (Members not present: Scott Bartlett, Jon Callies and Karen Ramsey-Idem, Ph.D.)

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## Lumsdaine Enters Second Three-Year Term as ME-EAB Chair



Arnold Lumsdaine, Ph.D., will be entering his second three-year term as chair for the Mechanical Engineering External Advisory Board. He currently works as a Senior Research and Development Engineer at Oak Ridge National Laboratory in the Fusion and Materials for Nuclear Systems Division. He serves in a lead engineering and project management role for the design and analysis of a variety of facilities, systems and components related to fusion energy research projects at Oak Ridge National Laboratory. Lumsdaine received his Ph.D. in Mechanical Engineering from the University of Michigan. He has served as an Associate Professor at the University of Tennessee, an Assistant Professor at the University of Texas-Pan American in Edinburg, Texas, and was the Research and Development Manager

for the Nanomechanics Operations of Agilent Technologies and MTS Nano Instruments. He has over 50 publications in the fields of fusion technology, nanomechanics, smart structures, design optimization and vibration damping. The ME department is grateful to Arnold for the energy and enthusiasm he has brought as a leader of our EAB. He continues to inspire and engage the board members in giving their best for the betterment of the department.

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## **New External Advisory Board Members**



**Navyashree Raghoji**

Navya Raghoji, a Manchester, Tennessee, resident, attended and graduated with her Bachelor's Degree in mechanical engineering at Tennessee Tech in 2013. During her college career, she was very active in the American Society of Mechanical Engineers (ASME) organization as president of the both the student chapter and the District F Southeastern United States region. Navya completed a co-op with Nissan during her college career and was hired as a full-time employee upon graduation. She has been with Nissan for 5 years and is currently a Lead New Model Body Engineer at the Smyrna plant,

which is currently the largest volume OEE in North America.



**Esra Roan, Ph.D.**

Professor Esra Roan is a mechanical engineer with a mission to have a positive impact on the society and the world. She is currently an Associate Professor in Biomedical Engineering at the University of Memphis and Co-Founder of SOMAVAC Medical Solutions (Memphis, Tennessee). In her academic role, Esra built a soft tissue and cell mechanics research lab at the University of Memphis and she was recognized for her research with an Outstanding Early Career Investigator Award from the American Thoracic Society. She has a diverse background in mechanical engineering spanning 20 years

including graduate research at ORNL (Oak Ridge, Tennessee) and a product development engineering role at 3M Precision Optics (Cincinnati, Ohio). She co-founded SOMAVAC Medical Solutions in 2016 to design and commercialize medical technologies focusing on the post-surgical recovery at home. Esra has B.S. and M.S. degrees in Mechanical Engineering from Tennessee Technological University (TTU) and a Ph.D. in Mechanical Engineering from the University of Cincinnati. She came to the U.S. with a tennis scholarship at TTU, where she was recognized for her achievements with an induction into the TTU Athletic Hall of Fame in 2011. She now lives in Memphis, Tennessee, with her husband Steve and two children (Ben and Emre).

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## Be a sponsor for Explorations in Engineering and Computing Summer Camp

The College of Engineering will offer a week-long, stay-over summer camp for high school rising seniors, especially students from under-represented groups, in summer 2018. The goal of the camp is to offer the students the opportunity to learn about engineering through hands-on activities, to interact with faculty and engineering students, and to experience college life. The camp, "Explorations in Engineering and Computing," will need support from sponsors to allow thirty students to attend.



If you wish to be a sponsor, please contact Beth Powell, Assistant Director for the College of Engineering's Clay N. Hixson Student Success Center, at 931-372-3540 or [epowell@tntech.edu](mailto:epowell@tntech.edu).

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## HVAC Class travels to EASTMAN Chemical

HVAC Design (ME 4210) students have had the pleasure to work with Tennessee Tech graduates Claire Delaney and Jacob Bubalo at EASTMAN Chemical on a class project this semester. Students are collaborating with local mechanical contractor, Ken Stone, to suggest innovative solutions for cost effective modifications that will improve the HVAC system in Eastman's new 280,000-square-foot Global Business Center. Design teams will offer their final recommendations at the conclusion of the semester. Many thanks to EASTMAN for their continued partnership with mechanical engineering!



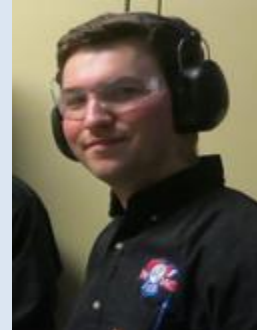
Glenn Cunningham's HVAC Design students at EASTMAN Chemical in October

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## #MEProud

Congratulations to alumnus Anthony Taylor! Anthony is an Industrial Assessment Center Alumnus hired by Ingersoll Rand upon graduation. Due to his knowledge in energy assessment, he was waived from completing their standard one-year training. He equates this honor to his work with Glenn Cunningham and the IAC.

As a Master of Science in Mechanical Engineering student at Tennessee Tech University, Anthony Taylor was an active participant in its U.S. Department of Energy Industrial Assessment Center. Over a three-and-a-half year period, he participated in 38 energy assessments of small and medium-sized manufacturers throughout Tennessee and the surrounding region and was the lead student on 18 of them. His leadership won him the 2017 Industrial Assessment Center Outstanding Student Award.



In a further testament to the hands-on, technical experience provided by the IAC program, he was hired as a compressed air auditor by Ingersoll Rand upon his graduation. In fact, he was hired on the spot after an in-person interview and waived-through the standard one-year training for the role, a first for the company. "I was welcomed with arms wide open since I had done so much work previously with compressed air systems, including plenty of Ingersoll Rand products." Taylor said. "My experience with the IAC really gave me a competitive edge."

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## Karen Ramsey-Idem Accepts Global Leadership Award



*The Republic, photographer Mike Wolanin*

Karen Ramsey-Idem, Ph.D., an alumna of Tennessee Tech and member of the Mechanical Engineering External Advisory Board, was recently recognized for her impact on the engineering profession with the Global Leadership Award by the Society of Women Engineers (SWE) at their national conference in October. This award recognizes and honors an individual who has made an impact in the field of engineering with young women on an international level. In her current role at Cummins, Ramsey-Idem

is the Global Technical Operations Excellence and Capacity Planning Leader.

[Read more](#)

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