



School of Chemical Engineering

Chemical / Biomedical / Petroleum

Message from the Head

The 2020-2021 school year has been a year like no other due to the COVID-19 pandemic. With a strong commitment from the faculty, we have continued to deliver excellence in teaching and research. The courses were delivered online or in person during the fall 2020 semester where students had the option of attending courses online or in person with social distancing, plexiglass, and masks. In the spring 2021 semester all courses were delivered in person following strict social distancing protocol, and our unit operations laboratory was executed with masks, shields and protective glasses. The faculty showed courage and perseverance, and our students have shown an amazing resilience. With almost no social in person activities, invited speakers were delivered on Zoom, and the AIChE used Zoom for AIChE Bingo Nights. During the spring 2021 semester we had our Chem-E-Car competition. Our OSU team placed 2nd in regional competition and will be representing OSU in the national competition. Our fall 2021 courses are planned in person with normal class sizes, and we are planning and hoping to get back to regular teaching and educational normalcy.



Our faculty continued a high level of research activity and in 2020 we have for the first time in School history seen over \$6M in awarded research and almost \$4M in research expenditures, reaching the goal for the School of Chemical Engineering with an average of more than \$200k per faculty member. As we move forward, some of our future energy research will be more focused on the energy transition, with areas like geothermal, carbon capture sequestration and storage, solar, energy storage, and hydrogen, as key topics.

The School of Chemical Engineering now has a large number of CEAT Scholars, and we have also established a CHE mentorship funded scholars program where some of our brightest seniors are mentoring our sophomores and juniors, both in classes and with coursework. These programs could not have been executed without the support of our alumni. The margin of excellence in our program... past, present, and future... is provided by our alumni and supporters. Thank you! Please take a few minutes to check out the links that follow.

We graduated the Class of 2021 with 58 students. The list of highlights below provides a glimpse into some of the past year of outstanding accomplishments by our students, staff, faculty, and alumni.

We will continue to pursue excellence in teaching and scholarship into the next year with excitement and the hope of no pandemic. With our faculty's continued commitment to our students to give them the best experience and to provide educational excellence, we will create a new wave of the brightest workforce-ready graduates. Our faculty with new funded research, new endowments and scholarships, continue to give our students the best possible experience, resulting in the best students on the OSU Campus. Thank you for your support. Stay safe and healthy and, as always, Go Pokes!

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Rae-anne Williamson Named 2020 Allen Scholar

Rae-anne Williamson is a chemical engineering freshman from Fort Sumner, New Mexico. Each year, the W.W. Allen Scholars Program in the College of Engineering, Architecture and Technology awards more than \$135,000 in scholarships, enrichment activities, professional development and national and/or international travel, followed by full tuition and housing for a master's degree at the University of Cambridge in the United Kingdom. Up to two new awards are made each year. [Read more here.](#)



Amber Holle



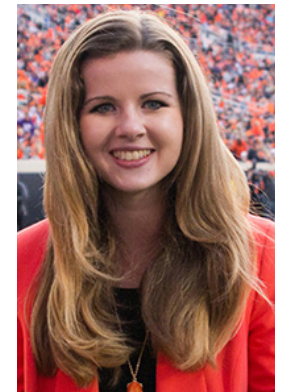
Landen Keffer

2020-2021 Seniors of Significance

Amber Holle, from Ponca City, Oklahoma, and Landen Keffer, from Ponca City, Oklahoma, were named OSU Alumni Association Seniors of Significance for the 2020-2021 academic year. This Award recognizes students who have excelled in scholarship, leadership, and service to campus and community, and have brought distinction to OSU. The 52 students selected represent the top one percent of the Class of 2021.

Alexis Vance Named Goldwater Scholar

Alexis Vance is a junior from Leawood, Kansas. She is triple majoring in chemical, mechanical and aerospace engineering. She is the first OSU student to combine all three programs at the undergraduate level, and she has supplemented her coursework with an extensive history of research projects under the mentorship of Dr. Jamey Jacob and Dr. Brian Elbing in the School of Mechanical and Aerospace Engineering. A junior from Leawood, Kansas, Vance is a W.W. Allen Scholar and a Wentz Research Scholar.



She has performed atmospheric monitoring of infrasound, led a team of students designing a spacewalk tool as part of a NASA design challenge and served on a research team working with OSU's Unmanned Systems Research Institute. Most recently, she coordinated solar balloon flight testing through a NASA PSTAR grant, a collaboration between the Jet Propulsion Lab, Sandia National Labs and OSU. She also has completed four separate work tours with NASA's Pathways Program, including spacecraft thermal design, life support systems, flight control and spacewalk execution. Vance plans to pursue a doctorate in aerospace engineering and conduct research in spacecraft development for deep space exploration.

The Goldwater Scholars program is nationwide and highly competitive. [Read more here.](#)



Chem-e-Car Competition

The We Hope it Works team, composed of Becky Chvatal, Riley Denham, Devin Hirner, and Jared Miller won 1st place in the Chem-e-Car Competition.

The Hydro-Bond team included Omar Alhajeri, Jose Garcia, and Salem Mubarak.



Jenna Abouzahr Named Niblack Research Scholar

Jenna Bouzahr has been selected as a Niblack Research Scholar for the 2020-21 academic year. The program allows students to perform cutting-edge research in various fields under the supervision of faculty mentors and with one-on-one guidance from a graduate student mentor.

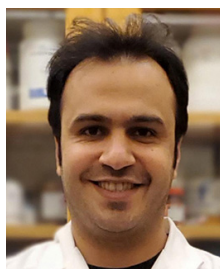
Project Title: Effects of Zwitterionic Polymers on Protein Stability, Solubility and Solvation in Presence of Salts

Faculty Research Advisor: Dr. Ramsey

Graduate Student Mentor: Amir Erfani



Jenna's research investigates the solubility of zwitterionic polymers in different salts. The results will help provide insight into protein stability, which can be used in future studies to design better protein-polymer complexes for protein delivery and address advancements in biopharmaceuticals.



Saeed Manouchehri Wins First Place in the Riata Center Business Plan Competition

Chemical Engineering PhD student Saeed Manouchehri was a part of a team rewarded first place in the Riata Center Business Plan Competition. The Riata Center Business Plan Competition promotes entrepreneurship and small business development by focusing on student ventures. The competition is open to all students at Oklahoma State University. There are three categories: Main Street Lifestyles, High Tech Business and Social Enterprise.

[Read more here.](#)

ChE PhD Students Win First and Third Place in Love's Cup Business Plan Competition

Saeed Manouchehri was part of the BioSeal XE team that won first place in the 2021 Love's Entrepreneur's Cup. BioSeal XE is developing a topical single application treatment for equine lacerations or punctures.

Diako Mahmodi was part of the Aperion Solutions team that won third place in the competition. Aperion Solutions is developing a nano-filter polymeric membrane for environmentally cleaning targeted wastewater streams within the food and beverage and waste water treatment industries. [Read more here.](#)



Manouchehri



Mahmodi



Dr. Jindal Shah Awarded the 2020 Distinguished Early Career Faculty Award

Dr. Jindal Shah was recently awarded the 2020 Distinguished Early Career Faculty award by the Provost for his strong contributions to the college. The Distinguished Faculty Award is presented to professors tenured within the last three years who have excelled in research, scholarship, teaching and service. One award is granted annually per college.

Over the years, Shah has mentored undergraduate, Masters and Ph.D. students who have gone on to be placed in the industrial, academic and national lab environments. The Shah Research Group has published numerous research articles in leading chemical engineering journals. Shah also recently received a fellowship to research ionic liquids at the National Labs in Richland, Wash. [Read more here.](#)

Dr. Shohreh Hemmati Awarded NSF Grant

The National Science Foundation has funded the collaborative work of Dr. Shohreh Hemmati and Purdue University for the three year project titled "Collaborative Research: Protein Engineering and Processing of Plant Viral Templates for Controlled Nanoparticle Synthesis."





Dr. Ömer Özgür Çapraz Awarded DOE Grant

The Department of Energy has funded the work of Dr. Ömer Özgür Çapraz for the next three years for his research into sodium- and potassium-ion batteries. Over the next three years, Çapraz and his team will be evaluating the intercalation of sodium and potassium ions into cathode electrodes and monitor the effects on the kinetics, performance, chemistry and mechanical stages of the electrodes under different load and cycle environments. [Read more here.](#)

Dr. Yu Feng Awarded Pillar World Award for Company Innovation of the Year

Dr. Yu Feng is part of a team comprised of independent researchers and Ansys Simulation Software employees that was recently awarded a Pillar World Award for Company Innovation of the Year for their work researching COVID-19.



The team's goal was to observe and simulate the potential threat of COVID-19 spread through exhaled air molecules. Namely, how does a person's exhaled aerosol behave in differing environments and what precautions should be taken to properly ensure safety in those environments. The team ran simulations for numerous environmental situations with differing wind velocities and directions, different atmospheric conditions, as well as whether a subject was moving or standing still. The team also used computer simulations to evaluate the mitigation effectiveness using portable ultraviolet (UV) air cleaners to reduce the exposure risks for physicians in patient rooms. [Read more here.](#)



Dr. Hunjoo Lee Joins Petroleum Engineering Faculty

Assistant Professor Dr. Hunjoo Lee joined the Petroleum Engineering faculty in Spring 2021. Dr. Lee's research interests are in reservoir geomechanics and hydraulic fracturing including rock fracture mechanics, hydraulic fracture interaction, drilling induced fractures, reservoir compaction/inflation, and induced seismicity.

Exciting Opportunities for Chemical and Petroleum Engineering at OSU with the donation of Baker Hughes' OKC Energy Innovation Center

Oklahoma State University announced today a technology collaboration with Baker Hughes that will drive cross-industry collaboration and innovation, in addition to the donation of Baker Hughes Energy Innovation Center ("the Center") located in the Innovation District east of downtown Oklahoma City. This is a game changer for OSU and the state of Oklahoma, supporting public and private enterprises in Oklahoma City and beyond.



The collaboration will bring industry and academic experts under one roof, creating experiential learning opportunities for OSU students and supporting Baker Hughes researchers in applying technology-driven solutions for energy and industrial sectors. Additionally, OSU students will work with Baker Hughes experts and technologists to advance key technologies in the areas of aerospace, mechanical, electrical, chemical and petroleum engineering. OSU will also host classes for its Master of Petroleum Engineering program at the Center and provide hands-on experience in state-of-the-art lab facilities. [Read more here.](#)