

TWU Chemistry and Biochemistry Recognized Nationally for Innovative, Socially Responsible Program

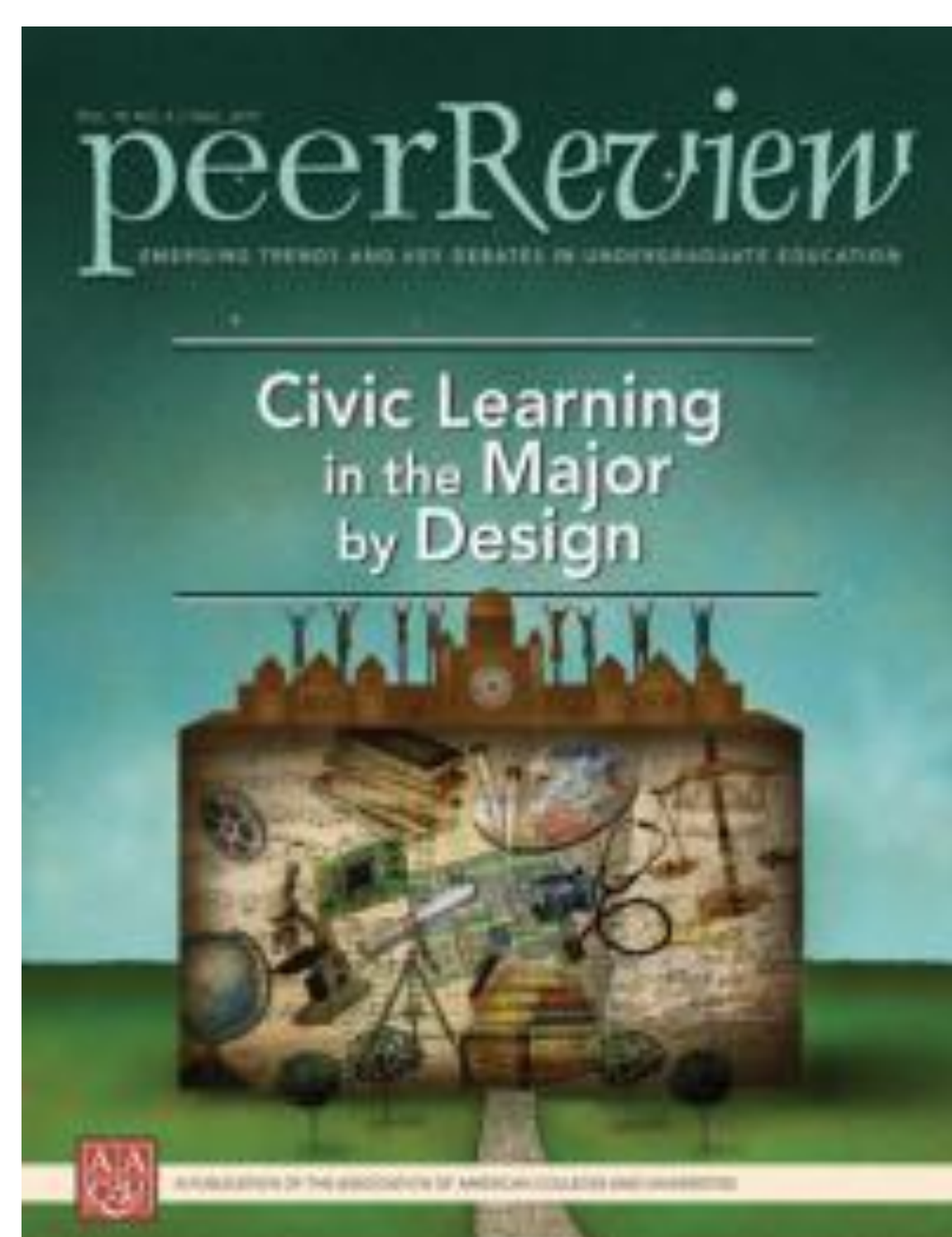
Cynthia Maguire, M.S.; Nasrin MirsalehKohan, Ph.D.; Richard D. Sheardy, Ph.D.



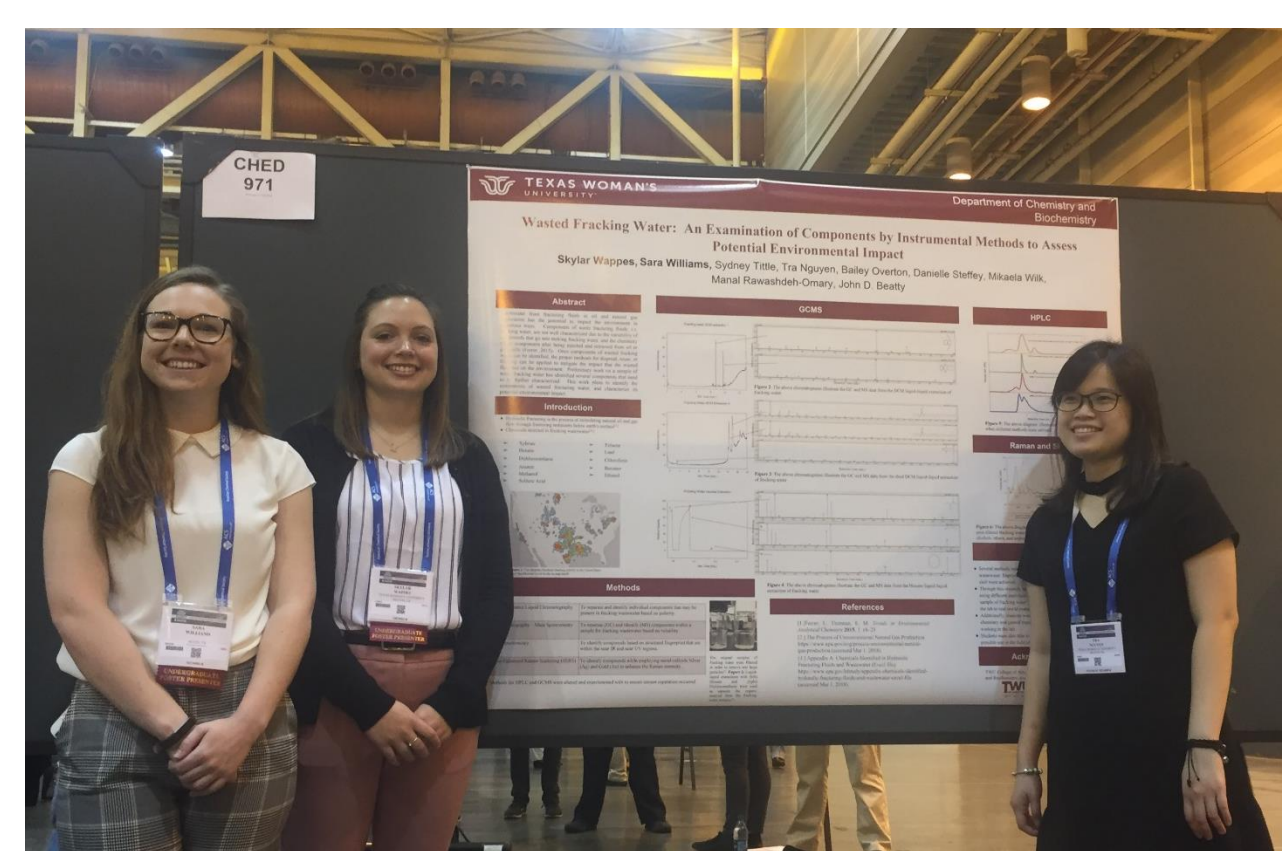
Description

TWU's Department of Chemistry and Biochemistry has twice received national recognition in 2018 for innovative and engaging teaching. The Association of American Colleges & Universities (AACU) recognized TWU as being a model for how to make civic learning and democratic engagement an expectation for all students who major in chemistry or biochemistry. The National Center for Science and Civic Engagement (NCSCE) also recognized TWU for making extraordinary contributions to citizen science education after more than a decade of using civic engagement to successfully draw students' interest in courses for non-science majors. The department hosts the SENCER Center for Innovation-Southwest (SCI-SW), part of a national program founded by NCSCE. SCI-SW focuses on three areas of expertise: Environmental Sustainability, Science Teacher Preparation, and Undergraduate Research.

Chemistry with a Civic Design



TWU Chemistry and Biochemistry has recently been recognized by the AAC&U for its incorporation of civic engagement and social responsibility into their chemistry and biochemistry undergraduate curriculum. TWU was one of nine institutions featured in *Civic Learning in the Major by Design* (PeerReview 19-4, Fall 2017, 28-30) and the only physical science department of 23 institutions recognized as model departments for educating students to apply a civic lens to their discipline.



Top 10 Reasons to Choose Us!

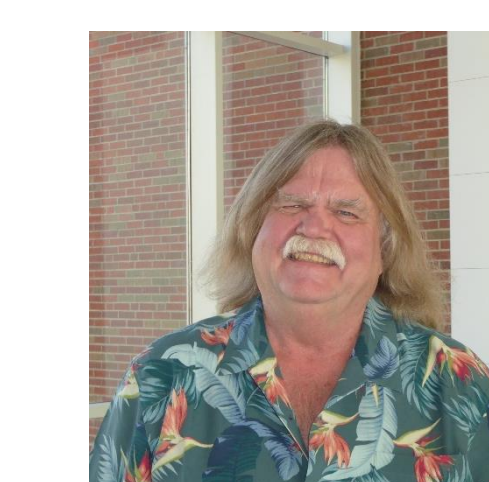
- 1. Knowledgeable Faculty**—Our faculty have graduate degrees from well-respected institutes of higher education. Their passion for teaching and research inspires our students. The faculty to student ratio for our upper division courses is favorable, often allowing one on one mentoring.
- 2. Curriculum with a Civic Lens**—In addition to educating our students to be good scientists, we are also training them with valuable 21st century skills such as critical thinking, problem solving, teamwork and communication. Further, we have incorporated civic engagement and social responsibility into our majors' curricula by connecting what we teach to real world issues and exploring solutions that benefit humanity.
- 3. Outstanding Facilities**—Our students learn the theory and practice of using analytical equipment in state of the art instrumentation laboratories.
- 4. Undergraduate Research**—Our undergraduate students participate in cutting edge research with knowledgeable faculty. These students have frequent opportunities to present their work at local, regional and national scientific conferences. Our students are co-authors on peer reviewed papers published in prestigious journals. Our research projects focus on real world issues.
- 5. KEM Club**—We have an active student organization, Kappa Epsilon Mu (KEM) Club, an ACS student affiliate chapter. The goal of our KEM Club is to inspire the next generation of scientists and show them the exciting aspects of chemistry. We also take interest in helping our community. Our national awards include Commendable Mention Award, Honorable Mention, Green Chemistry and Outstanding Chapter Awards from the American Chemical Society. KEM Club also received TWU's 2018 Redbud Award for Outstanding Student Organization of the Year. <https://www.twu.edu/chemistry-biochemistry/student-organizations/>.
- 6. Successful Students**—Our undergraduate students have gone on to PhD programs at outstanding institutions such as Washington University, Duke University and University of Alabama Birmingham.
- 7. A Culture of Safety**—The development of GLPs (Good Laboratory Practices) includes learning and using safe practices in the chemical laboratory. We have developed a culture in which safety is a both a personal and social responsibility.
- 8. Green Chemistry**—We are incorporating more and more environmentally sound practices into our undergraduate laboratory courses; for example, we are incorporating microwave synthesis experiments in organic chem lab, saving time, chemical resources and energy.
- 9. AAC&U Recognition**—TWU Chemistry and Biochemistry was recently recognized by the Association of American Colleges and Universities (AAC&U) as a national leader incorporating civic engagement and social responsibility into our chemistry and biochemistry majors' curriculum. <https://www.aacu.org/peerreview/2017/Fall>.
- 10. William E. Bennet Award for Extraordinary Contributions to Citizen Science**—Faculty from the Department of Chemistry and Biochemistry were recently awarded the William E. Bennett Award, presented by the National Center for Science and Civic Engagement (NCSCE) for exemplary and extraordinary efforts and activities to promote citizen science education in our courses for non-science majors. <http://ncsce.net/2018-william-e-bennett-awards/>.

Acknowledgements

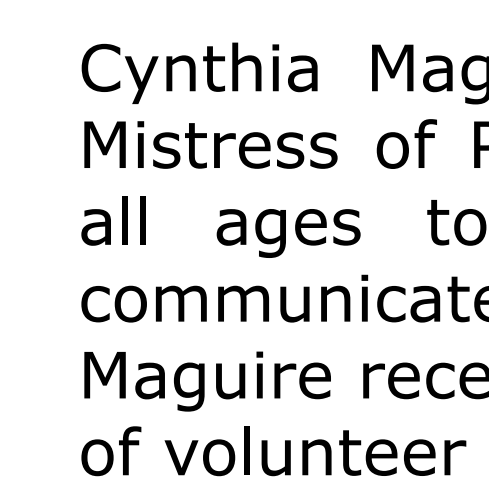
This work has been partially supported by the Welch Foundation; a National Science Foundation grant through the SENCER program of the National Center for Science and Civic Engagement, www.sencer.net and www.ncsce.net; and Experiential Learning Program at TWU, <https://twu.edu/pioneer-center/experiential-learning/>.

Innovative Faculty

Nasrin MirsalehKohan, Ph.D., assistant professor of physics, does research which will help in the design of new anticancer drugs and/or lead to valuable insights into possible treatment options for cancer patients. Her photo-book project for teaching physics has been published and expanded upon for use in many courses.



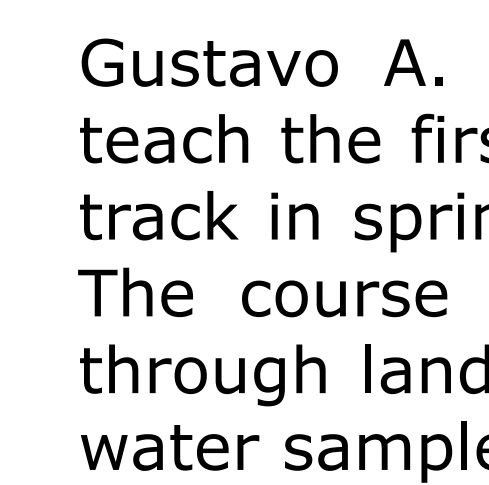
Richard D. Sheardy, Ph.D., professor and chair of the department since 2006, has led a transformation improving student learning in science/chemistry courses, as well as emphasizing safety, social responsibility and civic engagement through our work in the SENCER program. Next up? Establishing TWU as the home of a world-class environmental chemistry degree program.



Cynthia Maguire, M.S., senior lecturer, also performs as the Mistress of Potions, doing wizard shows to inspire students of all ages to love science. She teaches students how to communicate science ideas to those outside their profession. Maguire received a Fellows Award in 2018 recognizing her years of volunteer work benefiting the Native Plant Society of Texas.



Manal Rawashdeh-Omary, Ph.D., associate professor of inorganic chemistry, presented her research on solar cell materials as an invited speaker in Beijing, China, in June 2018 during the world's first international, policy-focused conference on how green chemistry tools related to bamboo and rattan research can benefit sustainable development.



Gustavo A. Salazar, Ph.D., adjunct professor of chemistry, will teach the first course in our new environmental chemistry degree track in spring 2019, the first of its kind in the North Texas area. The course will focus on the chemistry of water as it passes through land and the atmosphere. Students will test soil, air and water samples from urban and rural areas in this program.



Citizen Science for All

The [William E. Bennett Award](#) for Extraordinary Contributions to Citizen Science was established by NCSCE in 2009 to recognize and celebrate champions who advance civically engaged science. It is given annually to an individual and a team whose SENCER and other related activities have made exemplary and extraordinary contributions to citizen science.

The 2018 team award was presented to TWU Chemistry and Biochemistry, home of the SENCER Center for Innovation-Southwest, for our work in developing civically engaged science in our majors and non-majors courses, and for promoting this approach to teaching among other institutions throughout our region.

