POINTS OF PRIDE

RESEARCH

- *An NIH*, Campus Chemical Instrument Center (CCIC), led by Vicki Wysocki proposed a resource for native mass spectrometry guided structural biology with a goal of building and validating an integrated workflow for structural characterization of protein.

- *NSF-MRSEC,* Interdisciplinary Center for Emergent Materials (CEM), Pat Woodward and Joshua Goldberger are IRG leaders of this Center.

- *An NSF-CCI*, Center for Aerosol Impacts on Climate and the Environment, *Heather Allen* is the OSU partner in this center. This CCI is shared among faculty at UCSD, Utah, Yale, Iowa, Wisconsin, Cal Tech, Colorado State, and UC Davis.

- Six faculty members (Coe, Allen, Dutta, Magliery, Parquette, Pei) have small business spin offs that have resulted from recent discoveries in their labs.

EDUCATION

- We teach over 9,000 students in the fall term and nearly 7,000 students in spring semester.

- We have over 820 undergraduate chemistry and biochemistry majors, including over 50 on the regional campuses, and approximately 250 graduate students.

- We are implementing a Peer-Lead Team Learning program for our first year chemistry and biochemistry majors, in order to improve retention of students in our major.

- Two NIH Training Grants: Biophysics co-led by Tom Magliery and Ralf Bundschuh (Physics)*;* and Cellular, Molecular, and Biochemical Sciences (CMBP) co-led by *Karin Musier-Forsyth*, OES, and *Michael Ibba*, Chair, Department of Microbiology.

- Our first year undergraduate chemistry and biochemistry majors participated in a full semester research project in their general chemistry course.

- Andrea Baldwin and Robert Zellmer (lecturers) were finalists for the 2019 Provost's Award for Distinguished Teaching by a Lecturer

- Lauren Loftus (graduate student) Awarded 2018 Presidential Fellowship
- *Noel Paul* received the 2017 Provost's Award for Distinguished Teaching by a Lecturer
- *Ted Clark* received 2017 Ohio PKAL STEM Educator Award
- *Meng Huang and Billy McCulloch* (graduate students) received 2017 Presidential Fellowships
- *William Kender and Tyler Whittemore* (graduate students) received 2017 Presidential Fellowships
- *Sierra Jackson and Devin Swiner* (graduate students) received 2018 OSU Susan M. Hartmann Mentoring and Leadership Award

OUTSTANDING NEW FACULTY JOINING IN 2017

- *Alexander Sokolov,* Ph.D. in Chemistry from the University of Georgia; Postdoctoral work at Princeton University and Cal Tech; his research aims to develop new theoretical methods for the simulations of light-induced and non-equilibrium processes in chemical systems with complex electronic structure.
- *Christine Thomas,* Ph.D. in Inorganic Chemistry from Cal Tech; Postdoctoral work at Texas A&M; her research examines the ways in which different components of a transition metal complex work together and how this cooperation affects the reactivity of the complex as a whole.
- *Christo Sevov,* Ph.D. from University of California, Berkeley; Postdoctoral work at the University of Michigan; his research aims to develop strategies at the interface of homogeneous catalysis and electrochemistry for the sustainable utilization of electrical energy that is generated from renewable sources.
- *Shiyu Zhang***,** Ph.D. in Chemistry from Georgetown University; Postdoctoral work at MIT and Harvard; his research interests are in cooperative reactivity of bimetallic complexes, high power radical batter and ionic molecular receptors for reactive molecules and aims to synthetically model biological centers with high reactivities that have yet to be replicated by synthetic systems.
- *Casey Wade,* Ph.D. from Texas A&M; Postdoctoral work at MIT; his research looks at the interface of molecular inorganic/organometallic chemistry and materials science and aims to develop general strategies for the synthesis and study of new functional materials with applications in catalysis, sensing, and separation.
- *Zachary Schultz,* Ph.D. from University of Illinois, Urbana-Champaign; Postdoctoral work at National Institute of Standards and Technology; his research focuses on developing new tools for identifying molecules relevant to biomedical diagnosis and other applications by

building and developing instrumentation that takes advantage of chemical properties to characterize complex samples.

- *Amanda Hummon,* Ph.D. from the University of Illinois, Urbana-Champaign; Postdoctoral work at the University of Illinois; her research aims to develop analytical methods to evaluate both the transcriptome and the proteome in cancer cells, while exploring the deregulation in cancer-associated signal transduction pathways.

RECENT CHEMISTRY DISCOVERIES

- Yiying Wu and colleagues synthesized three molybdenum sulfide catalysts with molecular triangle moieties that mimic the edge sites of MoS_x materials. These new catalysts facilitate the hydrogen evolution reaction from water with high efficiencies, tunable rate constants and overpotentials.

- Abraham Badu-Tawiah and colleagues developed a picomole-scale, real-time photoreaction screening platform in which a handheld laser source is coupled with nanoelectrospray ionization mass spectrometry.

- David Nagib and colleagues have developed a new method of selectivity incorporating ammonia into C-H bonds adjacent to alcohols within complex molecules. The radical-mediated approach enables post-synthetic introduction of pharmacologically valuable C-N bonds into medicines.

RECENT BIOCHEMISTRY/BIOMEDICAL RELATED DISCOVERIES

- Dehua Pei and colleagues designed peptides that can inhibit proteins that heretofore have been "undruggable" due to lack of deep binding pockets, such as those involved in protein-protein interactions."
- Marcos Sotomayor and colleagues obtained X-ray crystal structures of cadherin proteins that are essential for hearing, balance, and brain wiring, with implications for our understanding of some types of deafness and epilepsy.
- Vicki Wysocki and colleagues developed a new enzyme–substrate pair detection platform based on native mass spectrometry.

RECENT FACULTY AWARDS

- *Claudia Turro*, 2019 Susan M. Hartmann Mentoring and Leadership Award

- *David Nagib*, 2019 Alfred P. Sloan Research Fellowship

- *Shiyu Zhang,* Ralph E. Powe Junior Faculty Enhancement Award

- *Casey Wade*, 2018 NASA Early Career Research Grant

- *T.V. RajanBabu*, 2018 ASC Distinguished Professor, 2018 Crano Memorial Lecture Award

- *Susan Olesik*, 2018 Exemplary Mentoring Program Award
- *Venkat Gopalan, Jane Jackman, Susan Cole (Molecular Genetics) and Mandy Simcox (Molecular Genetics)*, 2018 Diversity Enhancement Faculty Award
- *Christopher Callam*, 2018 John T. and Ruth Weimer Mount Award
- *Marcos Sotomayor,* 2018 Geraldine Dietz Fox Young Investigator Award
- *Dehua Pei,* 2018 OSU Innovator of the Year Award, 2018 ACS Columbus Section Award
- *Steffen Lindert,* 2018 NIH R01 Award and NSF CAREER Proposal Funding, 2019 OpenEye Outstanding Junior Faculty Award
- *Psaras McGrier,* 2018 ACS PMSE Young Investigator Award
- *Hannah Shafaat,* 2018 Alfred P. Sloan Research Fellowship, 2018 Excellence in Safety Award, NIH R35 Award, 2018 Ed Stiefel Young Investigator Award
- *Abraham Badu-Tawiah*, 2018 Arthur F. Findeis Award
- *Anne Co*, 2016 & 2018 Lumley Interdisciplinary Research Award, 2018 OSU Accelerator Award

February 2019