

Chemistry Department History 2: On the Move— Our Commitment to Undergraduate Education

From the beginning, undergraduate education has been of paramount importance in the life of the Chemistry Department. The first chair, Francis Clifford Phillips was hired to teach anatomy, all branches of chemistry, as well as mineralogy, geology, botany, physiology, and zoology; literally A to Z. The first organic chemistry professor, Alexander Lowy (1918-1941) coauthored a major, widely used text, *A Textbook of Organic Chemistry*, which went through seven editions as late as 1951. There was also a companion text, coauthored with fellow faculty member William Baldwin, *A Laboratory Book of Elementary Organic Chemistry*, that went through at least two editions and was reprinted in India as late as 1947. Other important texts to come out of the Department were *Concepts and Models for Inorganic Chemistry* by Bodie Douglas (three editions), aimed at senior undergraduates, and *Symmetry in Bonding and Spectra*, written with C. A. Hollingsworth, which focused on applications of group theory at the graduate level. Finally, what texts have had more impact than the universally used and ubiquitous *Schaum's Outline of Theory and Problems of College Chemistry*? This was authored, from the third edition in 1949 through eighth edition in 1997, by Jerome Rosenberg, co-authorship of the seventh and eighth editions was with Lawrence Epstein. Recent textbooks authored by faculty are *University Chemistry* by Peter Siska in 2006 and *Principles of Physical Chemistry* by David Waldeck in 2009.

As the Department has grown and become a research powerhouse, undergraduate education has remained a pivotal focus of development and innovation. When the University began the honors college, honors-level courses in general and organic chemistry were created. About five years ago, David Waldeck and Lisa Bell-Loncella (University of Pittsburgh, Johnstown) spearheaded the Computing Across the Chemistry Curriculum (CACC) effort that has integrated computational chemistry training into the undergraduate curriculum from the freshmen level through senior level. Joe Grabowski has helped to introduce computer modeling and other high tech improvements to our course presentations. Most importantly, the chemistry course offerings continue to evolve and expand, especially in the areas of nanoscience (led by Alex Star) and biological chemistry (led by Lillian Chong and Michael Trakselis).

While course work remains a core element of the undergraduate program, experiential learning is of growing importance. Between 80 and 90 percent of chemistry majors perform undergraduate research as part of their education. This experience exposes them to the challenge of defining research questions and answering them. Our UTU (Undergraduates Teaching Undergraduates) program introduces nearly two-thirds of our majors to the

teaching of chemistry. Under the leadership of Michael Golde, this program has expanded from the general chemistry program through all of our laboratory courses, and is now the paradigm for analogous efforts throughout the University.

Another aspect of our commitment to undergraduate education is the excellence of our ACS undergraduate student affiliates, recognized as an Outstanding Chapter for over 20 years. Under the mentorship of George Bandik, students participate in many outreach activities inside and outside the Department. These include giving demonstrations at local schools and youth groups, the Saturday Science Program, which provides instruction and laboratory experiences for disadvantaged high school students, and many other activities. That students participate and excel in these extra activities while completing a rigorous 62 credit sequence of science courses is testimony to our undergraduate students' commitment and the Department's spirit of excellence in education.

The importance of good undergraduate teaching is recognized by the Department and the University. The Department's teacher training has provided a model for the University as a whole. Each year the Department holds the Hurd Safford Awards Ceremony to recognize outstanding graduate student instructors. The University has bestowed numerous teaching awards on the Department's excellent teachers. George Bandik, Joe Grabowski, and Peter Siska have won both Chancellor's Distinguished Teaching Awards and Bellet CAS Teaching Excellence Awards. Ericka Huston has won a Bellet Award, and David Pratt has won the Chancellor's Teaching Award. This record of excellence is of great pride to the Department and a benchmark for all current faculty and students.



George Bandik performs a demonstration for students in the Saturday Science Program.



Alexander Lowy

For more information
on Professor Lowy, see
www.alexanderlowy.com