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CPT OPEN MEETING

We invite you to attend the CPT open meeting at the 254th ACS National Meeting in Washington, DC, from 4:00 to 5:00pm on Sunday, August 20, 2017. The location is not yet available. Please check the CPT web page (www.acs.org/cpt) later for details.

Survey on International Experiences within Chemistry Major

CPT surveyed ACS-approved programs at the time of submission of the 2015-2016 annual reports on some aspects of the international experiences of their majors. 664 programs submitted responses to the survey. Almost 90% (595/664) of the programs reported that chemistry majors have the opportunity to participate in international experiences as part of their undergraduate education. At those institutions where such experiences were possible, in about 88% (524/595) of the programs, a study abroad experience during the academic year did not lengthen the student's tenure as an undergraduate. Fifty-five percent (366/664) of the programs reported that they promoted international opportunities, including internships and collaborations, for their undergraduate chemistry majors. Forty-four percent (289/664) of chemistry programs require that their majors take foreign language instruction. The survey did not ask whether the foreign language requirement was part of the chemistry major or part of the general education requirements of the institution. Programs were also asked what percentage of their undergraduate chemistry majors are international students. Among the 655 programs that responded, the majority have a limited population of international students (see Table). Nationally, chemistry majors have limited opportunities to "see the world" through interactions with international peers.

Given the relevance of international exposures to the current trend in globalization and the limited exposure to international peers majoring in chemistry, chemistry degree programs should be structured to facilitate the development of international competencies in their students. The survey results are encouraging in terms of the number of programs incorporating international experiences without lengthening the time to graduation, promoting international experiences, and offering options to learn a foreign language. CPT has a supplement on its webpage that addresses the importance of international scientific experiences for chemistry majors and describes ways students can develop the skills needed to productively engage with scientists from different cultures. ■

International Students in Undergraduate Chemistry Majors

Percent International Students	Percentage of Programs
<1%	25%
1-5%	40%
6-10%	20%
11-25%	13%
>25%	2%

Luncheon with Representatives of PhD-Granting Departments

Over 40 chairs (or their representatives) attended a luncheon for representatives of PhD-granting departments, which was organized by the Committee on Professional Training during the 2017 spring ACS national meeting in San Francisco. The luncheon facilitated discussion of two issues: (i) how departments are meeting the new macromolecular, supramolecular, and nanoscale (MSN) systems requirement in the undergraduate curriculum and (ii) strategies that are being used to enhance graduate student diversity.

The MSN requirement is part of the new 2015 ACS Guidelines. Students must be exposed to at least two types of the following MSN systems: synthetic polymers, biological macromolecules, supramolecular aggregates, and/or meso- or nanoscale materials. MSN coverage in the classroom and labs must include: 1) structure, synthesis, and/or preparation, 2) characterization, and 3) physical properties. From the luncheon discussion, it was clear that departments are still working through the issues with how best to incorporate these important topics into their lecture and laboratory curricula. Some programs are offering full courses on the MSN topics (e.g., full upper-level courses on polymers/polymer science and nanomaterials). Other departments are incorporating the MSN topics into existing, more traditional courses (e.g., biological macromolecules are typically covered in biochemistry and organic chemistry courses). Some programs are having difficulty with

incorporating these topics into the teaching laboratory, while others face the dilemma of what material to remove from existing courses to cover the MSN requirements.

Discussions on the enhancement of graduate student diversity focused on recruiting of underrepresented minorities (URM). Some programs recruit at conferences primarily attended by URM, such as NOBCChE and SACNAS. Regular presence at such conferences and fostering of relationships with faculty at HBCUs and colleges/universities with a predominant Hispanic demographic have been essential to recruit URM students. Some institutions have recognized that, for some prospective students, there is a strong connection with family and home. These institutions use their undergraduate research program (e.g., summer REUs) to recruit regionally. Post-baccalaureate programs that prepare URM students for graduate school and introduce them to what life is like in graduate school have also been effective for recruiting URM students. Some luncheon participants believed that there is a shortage of role models (ethnic/racial URM and women faculty), which could inspire more URM to pursue graduate education in chemistry. Finally, some participants stressed how critical it is to have a program that values different cultures and styles. Students ultimately join the graduate program where they feel valued and appreciated by the faculty and their peers. ■

NEW SAFETY BOOKLET OF INTEREST TO ACADEMIC PROGRAMS

The American Chemical Society Joint Board-Council Committee on Chemical Safety has released the 8th Edition of "Safety in Academic Chemistry Laboratories: Best Practices for First- and Second-Year University Students". This document has a wealth of useful information in chapters that discuss the following topics: being safe in the laboratory, your responsibility for safety in laboratories, guide to chemical hazards, recommended laboratory techniques and safety equipment and emergency response. Print copies of this document can be obtained through the ACS Online Store at <http://www.acs.org/store>. The document will also be available online in the near future. ■

CPT SYMPOSIUM: :

The Role of Research Experiences in the ACS-Certified Degree

CPT organized a symposium at the spring 2017 ACS national meeting on the role of research in the certified bachelor's degree.

Tom Wenzel, Chair of CPT, discussed how the ACS Guidelines allow students to use undergraduate research experiences to satisfy one of the four in-depth courses and 180 of the 400 laboratory hours needed for the certified bachelor's degree. He stressed how CPT expects students doing research to undertake original work that, if successful, will lead toward peer-reviewed publication. He cited numerous examples of statements from the Guidelines and various supplements that CPT has available on its website that speak to the valuable student learning that can occur through participation in research.

Andrew Crowther of Barnard College described their Summer Research Institute that involves a substantial number of students in research projects that often continue during the academic year. He also described a new four-year Science Pathways Scholars Program for underrepresented minority and first-generation-to-college students that emphasizes involvement in research.

Carlos Gutierrez of California State University Los Angeles, an institution with a large Hispanic student population, described the progressive approach to skill development that they incorporate into their curriculum. Student involvement in research is a key aspect of this student skill development, with early formative and capstone research experiences. Workshops designed to develop specific skills are offered as part of their program.

Jeff Evanseck of Duquesne University described a five-phase approach that they use with their 10-week summer research program to develop various skills in students. These phases involve identifying the scientific problem, creating a hypothesis, developing specific aims, identifying the instrumentation and methods to perform the

All of the speakers described the special steps they take at the institutional, departmental, and individual level to promote safe laboratory practices with their research students. Several of these approaches involved student membership on safety committees charged with developing a departmental culture of safety.

project, and interpreting data and drawing conclusions. He also talked about a two-year undergraduate thesis program that culminates in a written report and oral defense of the project before a faculty committee.

Nick Salzameda of California State University Fullerton, a Hispanic-serving institution, described their involvement of approximately 250 students a year in research projects. Research is a requirement for the degree and each student presents a poster and writes a report on their project. He described three upper-level courses where research experiences have been incorporated into the laboratory. Also, he talked about a three-day research opportunity for high school students involving computational modelling of a small molecule inhibitor on day one, synthesis of the compound on day two, and an enzymatic assay on day three.

Michelle Kovarik of Trinity College offered advice particular to new faculty members at predominantly undergraduate institutions trying to start a research program and engage undergraduates in a meaningful way in research. She provided a series of recommendations pertinent to the faculty member, to the department, and to the institution on ways to facilitate the initiation of a research program.

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CPT Symposium *continued from page 3*

Sayo Fakayode of North Carolina Agricultural and Technical State University, the largest historically Black university in the country, spoke about their program of involving students in academic year and summer research projects. Taking projects through to peer-reviewed publications with student coauthors is an important goal of this work. Also, the program actively encourages students to participate in off-campus summer research internships to broaden their professional development.

Lisa McElwee-White of the University of Florida talked about the efforts they undertake to match students with an interest in undertaking a research project with faculty members. With 38 faculty members and over 800 majors, it is not possible to provide these experiences to every student. An emerging scholars program allows students to start research early in their studies and many continue the project for the four years of their degree. She also described a first-year integrated lab experience that substitutes for the regular introductory biology, chemistry, and physics labs and emphasizes the development of research skills.

Safety considerations with undergraduate researchers are especially important as they often use chemicals and equipment that may be purposefully omitted from regular instructional labs. Also, undergraduate researchers have a greater degree of autonomy and independence than students in other instructional lab settings. All of the speakers described the special steps they take at the institutional, departmental, and individual level to promote safe laboratory practices with their research students. Several of these approaches involved student membership on safety committees charged with developing a departmental culture of safety.

Copies of the talks presented at the symposium are available on the CPT website (www.acs.org/cpt). ■

NEW DOCUMENTS FROM CPT

CPT provides a number of supplements to the ACS Guidelines that provide advice to institutions that wish to develop specific aspects of the chemistry program. A new supplement *Macromolecular, Supramolecular, and Nanoscale (MSN) Systems in the Curriculum* will help departments with ideas on meeting this new requirement for approved programs that was instituted in the 2015 ACS Guidelines revision. In addition, CPT has developed two new documents: *Why ACS Approval Matters for a Chemistry Program* and *Why Obtain a Bachelor's Degree Certified to the ACS*. These documents are available through the CPT website (www.acs.org/cpt). ■

Certificates Available for ACS-Certified Graduates

Chemistry majors who receive a baccalaureate degree from an ACS-approved program and complete a curriculum described in the ACS Guidelines may be certified to the Society for membership purposes by the head or chair of the approved program. If you would like to have certificates available for presentation to your certified graduates, please contact the office by email at cpt@acs.org. ■

Announcements

Changes in CPT Membership

In 2017, two associate members were appointed to CPT: Dr. Susan M. Kauzlarich and Dr. Thomas J. Magliery. Dr. Kauzlarich is a Professor in the Department of Chemistry at the University of California, Davis. Dr. Magliery is an Associate Professor in the Department of Chemistry and Biochemistry at The Ohio State University.

The Committee members would also like to express their very special appreciation for the many contributions of Dr. Steven A. Fleming and Dr. Stephen Lee who concluded their term of service in 2016.

Thank You! We Could Not Have Done It Without You!

The Committee would like to express its appreciation for the contributions of Visiting Associates to the approval process during 2016. These volunteers play a critical role in the evaluation of programs that are applying for ACS approval.

Samuel Abrash – University of Richmond

Jeffrey Bartz – Kalamazoo College

Kimberley Frederick – Skidmore College

John Gupton – University of Richmond

Matthew Mio – University of Detroit Mercy

Jeanne Pemberton – University of Arizona

George Shields – Bucknell University
(at the time of the visit)

Kris Slowinski – California State University, Long Beach

Looking for Data on the Number of Chemistry Degrees Granted?

Each year, CPT collects data on the number of degrees (bachelor's, master's, and PhD) granted by ACS-approved programs. Spreadsheets are now available on the CPT webpage (under Reports/Surveys) for 1996-97 through 2014-15. The data for 2015-16 will be released later this summer.

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Help your students plan their career with ACS's new career planning tool ChemIDP™



ChemIDP™ (ChemIDP.org) is a new and free career planning tool designed for graduate students and

postdoctoral scholars in the chemical sciences to help them achieve their professional goals. Through immersive, self-paced activities, ChemIDP™ helps users self-assess, strengthen their skills, plan goals, and develop a plan that identifies their career objectives. If you are interested in bringing a workshop to your campus please contact ChemIDP@acs.org and follow us on twitter @ACSChemidp.



Preparing for Life After Graduate School: A Career Development Workshop from ACS

This two-day workshop is designed to inform chemistry graduate students and postdocs about their career options and how to prepare for them:

- Examining careers for PhD chemists
- Describing careers in business and industry
- Knowing critical non-technical skills
- Finding employment opportunities

To bring this workshop to your department, see www.acs.org/gradworkshop or contact GradEd@acs.org; 202-872-6864.

This program is supported by the Graduate Education Advisory Board, with members appointed by CPT, SOCED, and YCC.

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