

Program Report

[PROF 1 Freshman orientation: Educational experiences of chemists under 40](#)

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In 2001, under the direction of the Committee on Economic and Professional Affairs, ACS Career Services conducted a survey of members under the age of forty to identify the successes and shortcomings of their educational experiences. Among the many issues examined in this study were the quality of undergraduate and graduate education, members' participation in special undergraduate activities, mentoring, and educational discrimination. This presentation will discuss the highlights of this research.

[PROF 2 The careers and work of Ph.D. chemists](#)

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We present results from an in-depth study of the training, careers and work of recent Ph.D. physical scientists, focusing here on chemists. Our data on graduate training, work activities, and job satisfaction are used to examine the relationship between graduate training and work. We find that there are relatively few differences between the so-called "academics" and "non-academics" in the use of general "research skills" and overall job satisfaction. Important job skills for all employment sectors include: writing, oral presentations, management, data analysis, designing projects, critical thinking, and working in an interdisciplinary context. Rankings given by respondents of graduate training in some of these skill areas were significantly lower than the importance of these skills in the workplace. While non-academic aspirations among graduate students are fairly common, these do not appear to be well supported while in graduate school.

[PROF 3 The graduate school experience for women and minorities](#)

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This paper will describe the results of two research projects designed to provide information that could guide chemistry departments when they make changes in their graduate programs. The guiding question behind this work was: "What is the essence of the experience of being a graduate student in a chemistry department?" Within this broad context, particular attention was paid to the experiences that made some students decide to leave the Ph.D. program with an M.S. degree. The first project provided insights into the factors that lead some of the women who had enrolled in our graduate program with the intention to complete a Ph.D. to change their mind, and demonstrated clear differences between the way male and female graduate students are treated by their family, friends, fellow students, and advisors, when this decision is made. The second project was designed to probe the experiences of minority students that affect their retention within the graduate program. It demonstrated that efforts to recruit minority students are necessary, but not sufficient, unless efforts are also expended to retain students who have been recruited.

[PROF 4 The primacy of the first job](#)

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Although the first job after graduation is often viewed as the welcome end of many years of academic preparation, it does not conclude anything. It is a new beginning, a journey into the unknown, a time trial - all in one. The first job is the foundation of your career. As the most pivotal job of all for your future, you must choose it with full attention to your career plans. Because it is necessarily short-lived, you must

pursue it with urgency and daring.

This presentation examines the first job and its primacy in the career path from strategic and tactical perspectives, concluding with practical recommendations.

PROF 5 Dollars and sense: Employment characteristics of chemists early in their careers

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In 2001, under the direction of the Committee on Economic and Professional Affairs, ACS Career Services conducted a survey of members under the age of forty to explore the employment characteristics of chemists early in their careers. Among the many issues examined in this research were quality of training, career changes, job satisfaction, and salary and benefits. This presentation will discuss the highlights of this survey.

PROF 6 Charting the course - preparing to trek the career path

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One of the biggest career challenges is knowing where you want to go and then finding out the best path to get there. Many of us think we know where we want to go and think we have a good handle on what types of things that we should have in our career skills tool kit, only to find out that maybe that really isn't where we wanted to go at all. Or to find out what we thought we needed to pack in that career skills kit is not what was really needed. Just what are the potential paths, skills, tools and hazards along the way? Take a step back and look at what it takes to pack successfully for that journey which is the pursuit of a career.

PROF 7 Always be prepared to find your next job

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ACS members can expect to change their jobs much more frequently than have chemists of previous generations. The dynamics of industry: corporate restructuring, changing company priorities, widespread mergers and divestitures and a greater willingness to layoff employees to reduce operating costs have all contributed to this.

These trends mean that chemists, while they should be loyal to their current employer, should always be prepared to enter the job market. Careful preparation helps ensure that you will find a suitable and rewarding new position quickly.

So how can you do this? The author will describe several steps you can take: These include conducting an annual career self-assessment. This will help you assess the possibility of whether you will need to enter the job market in the near-term future. Prepare to enter the job market by writing and frequently updating a set of targeted resumes, accomplishments list and contact list. Maintaining your professional network is important so you can identify job leads and have references when you enter the job market. An excellent way to do this is through ACS and industry trade association activities. Of course, the bedrock activity that makes all these other efforts possible is to stay up-to-date in your technical knowledge.

PROF 8 Careers in industry - Multiple paths to personal growth!

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Entering the Chemical Industry with a degree in Chemistry or Chemical Engineering opens up a tremendous number of career possibilities: great opportunities await you in inventing new products, managing people across the globe, developing improved processes for making products, selling products to customers, providing their marketing strategies, even entering investor relations - to name just a few possibilities. The speaker will provide real-life case studies illustrating how career transitions can provide the springboard for multiple, satisfying career growth - all within the same company!

PROF 9 Alternative careers for chemists: Rewards and fulfillment outside the lab

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The greatest coach in the history of football, the premier make-up artist to the stars, the Father of his nation, and the Pulitzer Prize winning photojournalist of the Vietnam War -- what do Knute Rockne, Max Factor, Chaim Weizmann, and Malcolm Browne have in common? All were educated as chemists but followed career paths that led away from the bench. Non-traditional paths for chemists are not uncommon. With reports from the Commission on Professionals in Science and Technology projecting that each 21st century industrial scientist will average 10 job changes and 4 career changes, career flexibility is definitely here to stay. We academics must prepare our novice chemists to apply their science education to non-R&D options because many such attractive options do exist and there is a high probability that chemists will need to consider them. A sample set includes patent law, informational management, curatorial conservation, sales, tech transfer, regulatory affairs, market development, patent advisory work, consulting, and entrepreneurship. Tips for the teacher, advisor, and mentor in developing student awareness and a presentation of information access sources for alternative careers, are the core components of this paper.

PROF 10 Chemists: Meeting the communication challenge

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Communicating chemistry well is vitally important for chemists and for society. In today's rapidly changing chemical employment marketplace, non-technical skills are becoming increasingly important. They are also asked to present their science to non-scientific audiences. The form the communication takes with both scientific and non-scientific audiences may be written or oral. This presentation outlines guidelines for chemists in analyzing and building their communication skills. While some attention will be given to written communication skills, the emphasis will be on oral communication skills.

PROF 11 Sizing up your future boss during your employment interview

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The most important single factor in determining satisfaction in a new job is your relationship with your supervisor. So it is important to understand your future supervisor's work style and attitudes before accepting a job offer. During your employment interview, ask what objectives will be important for his/her department to achieve in the next 2-3 years. Ask the supervisor to describe his/her management style. Determine what work style he/she prefers or dislikes in subordinates. Inquire what advice he/she would give a new hire about advancing in the company. After your employment interview ask yourself if the supervisor was confident about his/her department's future, appeared assured, self-confident and relaxed during your discussion, complained about how the company was run and seemed to focus on unimportant aspects of your background. Answers to these and other questions will determine how

much you enjoy your new job and how well you will do.

PROF 12 Making the grade: Quality of work-related training

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In 2001, under the direction of the Committee on Economic and Professional Affairs, ACS Career Services conducted a survey of ACS members under age forty (Early Careers of Chemists Survey) to identify the educational and career concerns of chemists early in their careers. Among the many issues explored in this study was the importance of different work activities and the quality of formal and informal training members received for these work activities. Preliminary results show that most members thought their training for important work activities-- critical thinking, analyzing data, discipline-specific knowledge, oral presentations, and writing reports/articles-- was quite good. However, members also believed that training for other important work-related activities, such as working in an interdisciplinary context, informal mentoring/teaching and management responsibilities, could be improved.

PROF 13 Mentorship: Do We Understand It?

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Mentorship is the influence, guidance, and direction given by a mentor. We all try to be good mentors but do we really know how to go about it? Could it be that our ability to exercise good mentorship is more dependent on the person we are trying to mentor than ourselves. Are there any rules for being a good mentor? Is good mentorship necessary for succeeding in real life? These are questions that will be considered and discussed in this presentation.

PROF 14 Secrets, strategies, and techniques your male mentors never taught you

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Many established female chemists attained their degrees and positions after being mentored by males. In the vast majority of these cases, the mentors should be described as successful due to the successes of these females. However, many of these females faced along the way similar obstacles that often uniquely face females in chemistry. In most cases, they had no advance warning of these obstacles, because the men had no expertise in the topic or because they do not discuss it. It would be helpful for females to have advance knowledge of these artificial barriers so that they can cope with them without each having to "reinvent the wheel". Some of these problems are discussed with suggestions for circumventing them.

PROF 15 Mentoring the multicultural pipeline

Isiah M. Warner¹, Steve Watkins¹, George Stanley¹, Ernestine Baker², and Su-Seng Pang¹. (1) Department of Chemistry and Mechanical Engineering, Louisiana State University, Baton Rouge, LA 70803, Fax: 225-388-3971, isiah.warner@chem.lsu.edu, (2) Meyerhoff Scholars Program, University of Maryland @ Baltimore County

The low number of minorities opting for careers in science, mathematics, and engineering technology (SMET) has been of concern for many decades. In addition, the relative number of minorities opting for

careers in SMET has not changed substantially over the past few decades. Mentoring can play a key role in improving the pipeline. This talk will highlight three success stories regarding undergraduate and graduate education and the role of each in mentoring African Americans. At the undergraduate level, the Meyerhoff Scholarship Program at the University of Maryland, Baltimore County is an acknowledged success, producing relatively large numbers of African American undergraduates successfully entering some of our country's strongest graduate programs in SMET. At the graduate level, Louisiana State University has enrolled a record number of African American students who are pursuing PhDs in numbers comparable to the rest of the nation as a whole. The third component of this talk will highlight the effectiveness of an individual effort. Dr. Su-Seng Pang of mechanical engineering at LSU has started to produce African American PhDs at a rate which far exceeds all of his engineering colleagues combined and the nation as a whole. Data from these programs and this individual effort will be highlighted and possible keys to success will be outlined in this talk.

PROF 16 It is a two way street; the art of mentoring in the industrial setting

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Mentor is a character from Homer's Iliad. While Mentor was a real person, the role of Mentor was really Athena who joined young Telemachus on his adventures. Athena in the guise of Mentor, attempted to guide him on his journey, yet she could not guarantee that the young Telemachus would take the guidance or follow her advice. The situation between the person who is being guided by the mentor is not much different today. Both have a role to play and choices to make. This is a look at the art, trials and triumphs of mentoring in today's industrial environment.

PROF 17 Mentoring Chemical Technicians

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In the 38 years since I started my career as a professional chemical technician much has changed, not the least of which are the role and responsibility of the technician. In today's world of global companies, global products and speed to market the technician is increasingly being asked to fulfill the role and responsibility formerly associated with a chemist. In many companies the technician is assigned the critical commercialization portion of a project. It is imperative that he or she have the knowledge and guidance to complete this role. Like wise for a successful and satisfying career a mentor to help guide them is important.

To attain the maximum from these relationships it becomes apparent that a mentoring program is as important to the technician as it is to any of the other professionals in an organization.

PROF 18 Brown University's WISE Program: Our experience increasing student success through mentoring

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We propose to present a model for undergraduate peer mentoring. We will focus on the replicable aspects of the program, showing how these can be integrated with related mentoring and other support programs.

The Women in Science and Engineering (WiSE) Program at Brown University works to improve the retention of women in science and engineering concentrations and careers. Our program's several components include Affinity Groups, which conduct activities based around students' interests; academic and social activities for all students in the sciences and engineering; and the Mentoring

program.

The Mentoring Program assists women in the sciences by pairing first- and second-year students with third- and fourth-year mentors. We recruit participants during the spring semester and over the summer, and begin a new program cycle each fall. The Mentoring Program's early cycle includes a training program for mentors, initial activities for mentor-protégé groups, program-sponsored individual activities for groups, and periodic program-wide activities throughout the year. Mentoring activities focus on peer course and concentration advising, social and academic support, and informal networking. Other components of the Mentoring Program include individualized assistance in finding Brown faculty mentors for students at any level; participation in nation-wide e-mentoring programs such as MentorNet; and individual assistance accessing Brown alumni mentors.

PROF 19 From Mentee to Mentor: Men and Women in Chemistry

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Mentoring may result from both formal and informal relationships which one develops in life. Mentoring has been found to be a key component in the selection of career paths which one chooses. Many positive experiences with mentors in my career path have helped me to develop mentoring skills, which I apply on a daily basis to mentor both women and men whom I come in contact with through formal exposure in classes and informal activities outside the classroom. This presentation will discuss both mentee and mentor relationships which have helped to shape my career.

PROF 20 Be your own mentor

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Mentors can help young chemists get their careers off to a good start. However, valuable though they are, mentors are becoming an endangered species. The widespread corporate trend of eliminating layers of management has left fewer supervisors supervising more people. As a result, many managers who would like to mentor young chemists don't have the time. The same is true of senior staff chemists. Downsizing has also reduced their numbers while leaving them with more to do.

What if you can't find a mentor? The author will describe ten steps you can take to compensate for this and start down the path to professional success.

PROF 21 Mentoring in the Department of Chemistry at Illinois State University

Lisa F. Szczepura and **Marjorie A. Jones**, Department of Chemistry, Illinois State University, Campus Box 4160, Normal, IL 61790, Fax: 309-438-5538, lfs@xenon.che.ilstu.edu, mjones@xenon.che.ilstu.edu

The Department of Chemistry at Illinois State University offers a variety of programs that mentor students in different ways. These programs range from those that nurture middle and high school girls' interest in science and mathematics through the 'Expanding Your Horizons' program, to those that train students how to present their research at the Departmental Research Symposium. We feel that mentoring plays important roles in the training of our students. In this presentation we will describe the goals, processes, and outcomes of a number of key programs that involve mentoring in our Department. In addition, we will discuss the impact these programs have on the professional development of the participants.

PROF 22 Role of a mentor in the life of a graduate student

Celia K. Williams, Department of Chemistry, McGill University, 801 Sherbrooke Street West, Montreal,

The life of a graduate student has its ups and downs and it is so easy to give up when the going gets tough. Sometimes we are faced with major obstacles, such as the death of a supervisor, a very slow moving project and lack of funding just to name a few. The light of the end of the tunnel cannot make its entrance soon enough for us. It is at these times when the assistance and knowledge of a mentor are needed. Fortunately, the mentor program has seen a surge in recent years. Mentors help to provide the foundation needed for any successful professional, with chemistry being no exception. I chose to pursue my doctoral degree in chemistry because of the passion I have for experimenting and analyzing. Yet without mentors to encourage and inspire me along the way I would have faced a very difficult journey. In this talk I will give details as to the mentoring I have received in the pursuit of a career in chemistry, the financial and moral support that were available to me and the advice I have listened to and applied in the process of my professional development.

PROF 23 ACS Student Affiliates Chapters--An alternative to mentoring programs

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Chemistry educators often examine and implement various instructional techniques, such mentoring programs, in order to advance learning objectives and to equip students with analytical and technical skills, as well as the often-cited "soft" skills required of chemical science professionals. ACS Student Affiliates Chapters can be instituted as an additional effective experiential education platform that can complement the learning objectives. Students Affiliates Chapter activities:

- Promote intellectual development by engaging students actively in using strategic and integrative thinking skills to solve the inevitable problems inherent in projects that are implemented in the real world where uncertainty and change characterize the context.
- Develop entrepreneurial and problem-solving skills by encouraging students to create and implement chapter projects.
- Assist in career development by encouraging networking, teamwork, effective communication, organizational skills, and exploration of career options.
- Develop character by encouraging a strong work ethic, initiative and motivation, and build self-esteem and self-insight.

In this presentation we will discuss how ACS Student Affiliates Chapters enhance the educational experience of undergraduate chemical science students. We also discuss how a faculty advisor serves as a mentor to these students providing counseling and advise. This assists in developing a new chemistry professional and in shaping an enthusiastic and committed cadre of future chemical science leaders.
