Commentary

Mentoring Strategies To Recruit and Advance Women in Science and Engineering

by Kerry K. Karukstis*
Department of Chemistry, Harvey Mudd College, Claremont, California 91711
*Kerry_Karukstis@hmc.edu

by Bridget L. Gourley
Department of Chemistry and Biochemistry, DePauw University, Greencastle, Indiana 46135

by Laura L. Wright
Department of Chemistry, Furman University, Greenville, South Carolina 29613

by Miriam Rossi
Department of Chemistry, Vassar College, Poughkeepsie, New York 12604

The underrepresentation of women in almost all science and engineering fields is a well-documented statistic. One strategic effort to broaden the participation of women in the technical workforce is to increase the advancement of women faculty in science and engineering fields at academic institutions of higher learning. The presence of senior women faculty in the highest ranks of academic leadership enables female students to self-identify as potential scientists and engineers, thus, having a powerful influence on their choice of major and career.

Effective Mentoring Approaches

Numerous strategies have been considered to achieve a greater presence of senior women scientists and engineers at colleges and universities. For example, compelling evidence exists to support the hypothesis that both formal and informal mentoring practices that provide access to information and resources are effective in promoting career advancement, especially for women *(1, 2)*. Mentoring relationships provide opportunities to improve the status, effectiveness, and visibility of a faculty member via introductions to new colleagues, knowledge of information about the organizational system, and awareness of innovative projects and new challenges *(1, 3−5)*. The changing responsibilities of faculty members as they advance in the professoriate suggest that mentoring relationships could continue to facilitate career advancement for senior faculty seeking new challenges and leadership roles and desiring greater professional visibility and recognition. An investment by an institution in the continuous development of a faculty member's career will have a broad impact not only on the faculty member, but also on his or her colleagues and students and on the ability of the institution to attract and retain excellent faculty and students. However, while institutions generally place substantial focus and resources on junior faculty *(6, 7)*, significant investment in faculty members throughout the whole of their career is not as common.

On March 24th, 2010, at the 239th National Meeting of the American Chemical Society in San Francisco, the symposium "Successful Mentoring Strategies To Facilitate the Advancement of Women Faculty" will feature an array of successful mechanisms for enhancing the leadership, visibility, and recognition of faculty members using various mentoring strategies. In particular, the organizers will share the results of their NSF-ADVANCE-PAID project *(8)* that focuses on the distinctive environments of undergraduate liberal arts institutions and tests a "horizontal mentoring strategy" involving the formation of five-member alliances of senior women faculty members in chemistry and in physics at different institutions. Alliance members participate in discussions, workshops, and activities focused on career and leadership development through periodic gatherings of alliance members and the use of various collaboration and communication mechanisms. Results of an ethnographic study using qualitative research methods will be presented that show this form of peer mentoring to be particularly effective. In particular, the varied career experiences and achievements of a cohort of women faculty who have reached the senior ranks at their institutions have provided a rich resource to use for guidance and recommendations. Numerous other mentoring programs for women faculty at all career stages and at a range of institutions will also be showcased at the symposium to demonstrate a range of successful strategies to broaden the participation and advancement of women in all fields, particularly in science and engineering.

Acknowledgment

This material is based upon work supported by the National Science Foundation under Grants NSF-HRD-061840, 0619027, 0619052, and 0619150. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Literature Cited

1. Ragins, B.; Cotton, J. *J. Appl. Psychol.* **1999**, *84*, 529–550.
2. Ambrose, S. *Journeys of Women in Science and Engineering*; Temple University Press: Philadelphia, PA, 1997.

10.1021/ed800138s Published on Web 03/09/2010

3. Kanter, R. *Men and Women of the Corporation*; Basic Books: New York, 1977.
4. Burke, R. *Group Organ. Stud.* **1984**, *9*, 353–372.
5. Cawyer, C.; Simonds, C.; Davis, S. *Int. J. Qual. Stud. Educ.* **2002**, *15*, 225–242.
6. Gentile, L. N.; Mills, N. S.; Karukstis, K. K. *J. Chem. Educ.* **2006**, *83*, 1584.
7. Karukstis, K. K. *J. Chem. Educ.* **2008**, *85*, 343–344.
8. NSF-ADVANCE-PAID Project "Collaborative Research For Horizontal Mentoring Alliances" (NSF-HRD- 0619150). http://www.hmc.edu/nsfadvance (accessed Feb 2010).

