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What Does It Take for Women to Stay in Academic Chemistry?



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It may not be a pure coincidence that the two most women-friendly departments in the study were led by young heads who were themselves half of a dual-career couple with children.

"Some of our best chemistry departments can attract young women at a ratio of 1 to 3 at the postgraduate level but then for whatever reason fail, so that by the postdoc stage they have only 1 woman to 20 men," says Julia Higgins, professor of polymer science at Imperial College in London and chair of the [Athena](#) Advisory Committee. Although all science engineering and technology disciplines see the number of women drop at each rung up the career ladder, more leave chemistry than any other scientific subject. Can chemistry put its house in order, and can other subject areas learn from its experiences?

That's certainly the hope of the Athena Project and the Royal Society of Chemistry (RSC), which earlier this year published a report aimed at discovering what makes some departments so much better than others when it comes to recruiting--and retaining--women.

[Recruitment and Retention of Women in Academic Chemistry](#) was written by Trudie Coe of Evaluation UK. "It is quite easy to get women to join departments," says Coe, but "it is more difficult to make them stay." Thirty-five women in seven chemistry departments across the UK, selected to give a range of different Research Assessment Exercise (RAE) scores and percentage of female staff, were interviewed. Interviewees themselves represented the range of academic positions, from first postdoc to professor, and heads of departments also had their say. Women were quizzed on their

experience of and views on three key stages:
application for the first permanent lecturer
appointment, retention, and promotion to senior
lecturer and above.

Getting out of the postdoc loop is the first key hurdle for academics, and the report concludes that it is just as difficult for men as for women. "At the appointment stage, there are very few issues, and no prejudice [against women]," comments Coe. However, some departments go beyond minimum good human resources practices. These encourage internal female staff to apply and provide them with feedback, have a policy of including some women in the short list, or try to attract Royal Society and Dorothy Hodgkin Fellows. They ensure a better equity with a more rounded interview process that protects candidates from being judged on first impressions or a single presentation. They also decrease the chance of appointing somebody in their own image or through personal contacts by including both women and nonchemists on the interview panel.

The best departments are also conscientious in offering a good induction package to all new staff. They make sure that promotion procedures are spelt out at that stage, that employees are given a chance to discuss the balance of their teaching, research, and administrative duties and to raise personal circumstances, and that they provide training and mentoring.

Yet the glass ceiling feels very real for women at more senior levels. As first barriers, senior women identified a lack of guidance on how to apply for promotion and the fact that senior appointments are often based on the recommendation of individuals, instead of formal application procedures. "In principle you can apply [for] yourself, but in practice you are suggested by the head of department," says one woman.

Further, women felt that their willingness to take on nonresearch duties was not doing them any favours. The main selection criterion for promotion being research success, any time spent on pastoral care and administration makes them more likely to lose out. The RAE is perceived as making the problem worse. "If you employ a woman, there may be gaps in her research record; she may have fewer publications," says one interviewee. Some women also felt sidelined into less research-focused, and less prestigious, jobs with no clear route to promotion.

Senior women also felt that their lack of mobility was an obstacle to their promotion. While departments are commonly seen as being in favour of appointing external candidates to the most senior posts, women are less likely than men to move to advance their careers due to family or societal pressures.

So what does it take for women to stay in academic chemistry? Little more, it seems, than openness, friendliness, support from both their peers and superiors, and good management. "The most important finding to support best practice is that the best departments have almost no measures targeted at women," says Coe. "It is the culture that is supportive of all staff and of diversity. And there, men and women are thriving."

It may not be a pure coincidence that the two most women-friendly departments in the study were led by young heads who were themselves halves of dual-career couples with children. In these departments, not only is a healthy work-life balance encouraged, but there is also no assumption that women who want to have a family are not committed. "You need to deal seriously with the issue of pregnancy and

confront it," says one interviewee. "It's still the one big difference between men and women. You need to legitimise it."

In these departments the balance between men and women is also restored at the level of duties and rewards. Pastoral duties are allocated on a rotating basis, and achievements beyond those recognised by the RAE are rewarded. Having "good opportunities to do what you do well, and be seen to and be patted on the back," are important elements in making people feel comfortable in a department, comments one interviewee.

These findings of good practice bear important messages that reach far beyond chemistry. Women chemists "experience the problems of women in [science, engineering, and technology] perhaps more acutely, but women in general within all departments experience problems in maintaining and promoting their career, especially during child-bearing years," says Higgins. The first message is that getting more women into senior positions is perfectly achievable; some departments already do. However good practice is patchy and needs to become the norm--through a change in academia's culture and attitudes.

But of course, it takes time to change a culture, and the problem needs to be tackled immediately. "I think in the short-term you need women-targeted measures," says Coe. Susan Greenfield's [SET Fair Report](#) to the secretary of state for trade and industry, published in November 2002, identified several such measures (see box).

Yet the RSC report urges departments to be cautious when trying to make adjustments to a system and culture built around full-time male employment. A previous RSC report published in 1999, entitled [Study of the Factors Affecting the Career Choice of Chemistry Graduates](#), concluded that the culture of long hours and low pay was putting additional barriers on the career path of women with family responsibilities. Women also felt at a disadvantage in a career structure that offers little provision for part-time work and penalises gaps in research records. They deplored the poor working conditions, a tradition of emphasis on research results rather than process, and the segregation between the different fields of chemistry that results in women feeling even more isolated.

The Main Recommendations of Greenfield's Report

- Create a working science centre to co-ordinate the actions of the different organisations supporting women in science
- Establish a new scheme for returners with funding to retrain and update their skills
- Create a high flyer development programme to give women core management skills for senior positions
- Raise the profile of women with SET experience through SET women speaker schemes
- Raise the status of diversity on the existing R&D scoreboard.

In this context, if gender measures may raise the number of women in the short term, they also present the "danger of reinforcing these barriers" in the longer term,

says Coe. For a start, they could buttress stereotypical attitudes towards women's careers in science. Indeed, if women were, say, granted enough flexibility to switch between research and lecturing relative to family commitments, for example, the emphasis on research excellence in academia means that women would be further marginalised. Furthermore, women-targeted measures may raise the barriers to a full-time academic career. For instance, while some departments have raised salaries to help with childcare costs, this extra money has to come from departmental resources, and women fear it may increase the pressures within a department and in the end make it a less female-friendly place to work.

"There is a need for balance," concludes Coe. This is echoed in the Greenfield report: "The most successful measures have been those that are sustained, part of a strategic plan and hence integrated into a series of other measures, rather than stand-alone special measures for women."

There is also a lot women can do *now*. "Women have to take a lot of responsibility for this, and themselves," says Coe. They should be fully in charge of their own careers and more proactive in, for example, asking about opportunities for advancement. In Higgins's experience, when it comes to gender inequalities men are more "blind" than "malicious," so surely it would help if women were speaking up for themselves more often. The bottom line is, no matter how much support you get, if you don't believe in yourself you simply won't get there.

Sahar Al-Malaika, reader in polymer science and leader of the Polymer Processing and Performance Research Unit at Aston University, is one of the more senior women who was interviewed for the study. "You have to understand that you have to struggle to keep your international recognition and family," she says. "It is 10 times more difficult than for a man, and women are expected to produce double to prove themselves." But Al-Malaika shows that it can be done and would like to see more young females stay in academia. After all, she warns, changing careers brings its own issues. You are lucky if you finish your PhD before you're 26, and "if you want to move to something else, by that time you want to start a family," she concludes.

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