



Making science more female friendly

www.rse.org.uk/tapping_talents

The preface to The Royal Society of Edinburgh's report on women in science, published in April 2012, includes a sobering statistic: "In 1991 the number of female professors of physics in the UK doubled. It went from one to two!" writes well-known British astrophysicist Jocelyn Bell Burnell. The numbers speak for themselves. Despite widespread programs to encourage women into the sciences and technology, they are grossly under-represented all over the world. The dilemma for policymakers remains the same: What can be done to fix the imbalance?

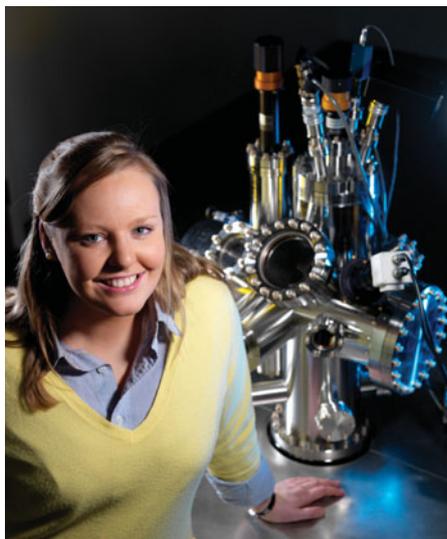
The report, titled *Tapping All Our Talents*, said that encouraging more women into scientific careers is not just a benefit to them, but a boon to society as a whole. Increasing women's participation in science, technology, and engineering could be worth "at least £2 billion" to the UK alone. A European Union (EU) study, it said, identified how making science more female might help identify new innovations and also boost public support for science.

One of the main obstacles to achieving gender balance, however, is the "practical hurdles of family responsibility," it said. According to Laurie Winkless, a young materials research scientist at the National Physical Laboratory (NPL) in London, one quarter of her team are women, but higher up in the organization among the ranks of senior staff, they begin to disappear for exactly this reason.

"All of the NPL fellows are male," she said. "This bothers me. It's not that there are no great female scientists at NPL. There are. But there are very few who have reached the required level of seniority. My guess would be that family commitments

have certainly contributed to this. If you are away from work for even a few months, it must be exceptionally difficult to keep up to date with what is state of the art in your field."

The experience of Michelle Dickinson, a senior lecturer in the Department of Chemical and Materials Engineering at the University of Auckland in New Zealand, bears this out. "I had to make a choice to get where I am, and that is not to have children," she said. "I have seen so many of my female colleagues start out so well, but lose their careers due to having children, mostly because it's so hard to catch back up after taking a few years off from research." She suggests that on-site childcare both in the workplace and at international conferences, plus more flexibility in working hours, might help women maintain a career while having a family.



Materials scientist Laurie Winkless of the National Physical Laboratory, UK, leads a research group in which a quarter of her team is female. But higher up in the organization, there are fewer women in senior positions.

"It's not rocket science," said Debbie Chachra, an associate materials science professor at Franklin W. Olin College of Engineering in Massachusetts. "At the policy level, provide good access to education, and family-friendly policies, including parenting leave and affordable childcare." The United States has already begun responding to concerns like these. In autumn 2011, the National Science Foundation unveiled a series of family-friendly policies to encourage scientists who need to take time off to start families. They include allowing researchers to defer grants for up to a year, or extend existing grants for free (see SCIENCE POLICY in the February 2012 issue of *MRS Bulletin*, p. 107).

The Royal Society of Edinburgh report suggests that another way of making life easier for working mothers could be to extend post-natal leave equally to both parents, as already happens in Finland. It also recommends faster-track career paths so women can move ahead in their careers before starting families, better provision of part-time and flexible working hours, and equality audits in business and industry. A European Commission report in 2009, titled *Women in Science and Technology: Creating Sustainable Careers*, similarly emphasized the importance of ensuring work-life balance to retain women scientists. With this in mind, scientists will be keeping an eye on the next EU Framework on the funding of research and innovation, starting in 2014, which included in a public debate last year how to "strengthen the role of women in science and innovation."

The problem, however, is not just legal or logistical—but cultural, too. The Royal Society report mentions that institutional sexism can lead to subtle discrimination against women. "Often, women face a different set of expectations and norms from male employees that make them feel like they don't belong. The classic example is only providing men's shirts at company events," said Chachra.

The phenomenon transcends borders, said Lucia Castro Diaz, a stra-



tegic consultant specializing in materials science based in the Vigo Area of Spain, who has worked as a researcher in both France and the United Kingdom. She has noticed a “subtle discrimination on the part of male-dominated teams that are in charge of choosing between candidates for new positions.”

Removing these blockades is a slow process. But there are examples that prove that when action is taken, positive results can follow, said Dickinson. Her department at the University of Auckland has achieved the rare success of raising the proportion of female students in the undergraduate chemical

and engineering degree course to 53%. “One thing that seems to be working at my university and I have seen elsewhere are women support groups,” she said. “By having a space for the women to discuss their issues, and to have support and ideas be provided by others, is a great way to strengthen each female by giving them the confidence to believe in themselves. They can work through their insecurities in a safe environment before having to deal with them in the ‘real’ world.”

The ultimate challenge is to transform the culture in physical sciences and engineering from predominantly male into

one in which women feel equally welcome and comfortable. Sujata Kundu, a materials chemist at University College London, said that she used to feel under pressure to be “less feminine.” In the end, she realized that she had no choice but to unmask her personality. “I feel now that, if I can enjoy music, dance, shoes and handbags, and still push the boundaries of science, then that is something to be proud of. To stand against the stereotype, without the fear of not being taken seriously.”

Angela Saini

Canadian composites industry receives C\$9.8 million federal boost

www.composites.ubc.ca

The Composites Research Network (CRN) was launched in January with the announcement of a C\$9.8 million investment by the Canadian government. Based at the University of British Columbia (UBC) Vancouver campus, the network is a pan-western Canada initiative, led by UBC materials engineering professor, Anoush Poursartip.

From its hub at UBC, the CRN will establish nodes in British Columbia, Alberta, Saskatchewan, and Manitoba where composites experts will work with companies to enable them to become more competitive by bridging the gap between theory and practice. The network builds on existing collaborations and aims to bring in new partners from across Canada and internationally in the future.

Minister of State for Western Eco-

nomics Diversification Lynne Yelich, who made the announcement, said, “By supporting this initiative, our Government is helping to provide western Canadian businesses with the means to capitalize on the evolving composites industry and the associated economic benefits.”

The CRN aims to better translate academic knowledge into industry practice. Recognizing the challenge for industry to take advantage of engineering research advances, the core mission of the network is to produce a new family of knowledge-based best practice documents. CRN participants will be able to access these as well as training facilities, materials and events, and linkages to key national and international organizations and institutions.

“This investment in the Composites Research Network advances important

collaborative research between researchers and businesses,” said John Hepburn, VP Research & International at UBC. “These research partnerships drive innovation by developing and implementing manufacturing solutions faster and more efficiently than would otherwise be possible.”

The Composites Innovation Centre in Winnipeg, a key partner in the network, welcomed the announcement. “The CRN will provide western Canadian industry with a significant advantage in further understanding and refining their composites manufacturing processes,” said Sean McKay, executive director of the Centre. “Developing the necessary science and hence fundamental understanding of manufacturing issues and being able to assimilate them into everyday operations to reduce defects and improve efficiencies are essential to remain competitive in today’s global marketplace.” □



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