

Women in Chemistry 2020

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This Special Issue of the *Australian Journal of Chemistry* (AJC), edited by Colette Boskovic and Georgina Such, showcases the achievements of women scientists and highlights gender equity issues. It reflects the AJC's commitment to celebrating diversity in the chemical sciences and to recognising the broad impact women have on chemistry and related sciences.

Women chemists from around Australia have contributed to the Special Issue and articles range from commentary pieces about breaking down barriers for women in chemistry, to more traditional review and research articles.

It is almost a decade since I edited the 2011 Women in Chemistry issue of AJC, to celebrate the International Year of Chemistry. Back then, I knew all the authors.

In 2020, there are 24 articles and only four of the corresponding authors who contributed to that 2011 Special Issue are featured this time around. It is a sign that the number of women in chemistry is increasing that I have not met five to six of the authors featured in this year's Special Issue, which seems to include a younger cohort of early to mid-career chemists. It is also rewarding to see how the careers of those featured in 2011 have progressed and that they can now be described as 'senior women'.

Professor Margaret Sheil wrote the foreword in 2011. She was the first female professor of chemistry in Australia and is now Vice Chancellor of the Queensland University of Technology. The first five women professors of chemistry contributed to the first Special Issue (Margaret Sheil was the trailblazer, followed by Sue Berners-Price, Frances Separovic, Margaret Harding, and Mary Garson). Since then the Royal Australian Chemical Institute (RACI) has created the Margaret Sheil Women in Chemistry Leadership Award and the Rita Cornforth Lectureship. We also have another woman Nobel Laureate in Chemistry, Professor Frances Arnold (Caltech).

In addition, in 2011 there was a stronger emphasis on biological chemistry and it is now good to see more contributions from women chemists in a range of areas such as materials and polymer science in the 2020 issue. Women often engage in multidisciplinary research, which can be a difficult area to assess

and can, as a result, lead to funding disadvantages. Despite the call for multi- and inter-disciplinary research, taking up the challenge is not often rewarded by evaluation and promotion. Hence, as a biophysical chemist, it is pleasing to see the recent ARC Statement of Support for Interdisciplinary Research.

Thinking back to when I put together the first Special Issue on Women in Chemistry, the change in attitude is palpable. In less than a decade, we see that institutions across Australia are making more efforts to attract and retain women in science and there are more supporting programs. There is now a Science in Australia Gender Equity (SAGE) initiative, a partnership between the Australian Academy of Science and the Australian Academy of Technology and Engineering, and the Athena SWAN Accreditation Framework has been rolled out through most higher education institutions. Being part of Athena SWAN demonstrates a commitment by institutions to create a gender-inclusive workplace within universities. We also saw the launch of the Women in STEM Ambassador program and Superstars of STEM, which aim to smash society's gender assumptions about scientists and increase the public visibility of women in science, technology, engineering and mathematics (STEM).

Things have changed and we now have more role models and an increasing number of mentoring programs in place to encourage more women to choose and to persevere with science careers. It also strikes me how much has changed since 1972 when I joined the CSIRO as a fledging woman in STEM, i.e., junior technical assistant. Today, I believe, it is a bit easier to ask for and receive help. I recall having to get special permission to use the library as a technical assistant; technical assistants were, more often than not, women. It was also the first year that women were able to pay superannuation and, as a single woman, I had to get permission from a man to make a lay-by agreement to purchase a washing machine. Similarly, I had to ask my father to act as guarantor on a home loan even though at the time I earned more money than him.

Let us hope that these gains continue to accelerate and that we will soon overcome the research setbacks due to the COVID-19 epidemic. Women appear to be disadvantaged, with



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several journals claiming ~50 % drop in submissions by women and ~15 % increase by male corresponding authors. We need to recognise those with carer responsibilities and women usually undertake more caring responsibilities, particularly as families feel the impact of home-schooling and remote learning. Interestingly, there could be opportunities as more conferences and seminars move online, which removes the need to travel and makes it more likely that women can participate. It has been fun watching pets and children intrude on 'professional' webinars over the past several weeks.

I was recently asked to participate in a Women in Leadership event online. One of the questions we considered was: what makes a good leader in times of uncertainty? At the risk of displaying my bias, I'd like to emphasise the characteristics

shown by many women in chemistry: being optimistic but realistic; driven by data even when not all the facts are known; and, importantly, integrity. These are qualities that make better leaders and better scientists.

I am sure that you will enjoy this Special Issue of AJC. It is notable that since the 2011 Special Issue, the chemistry community is much more aware of the importance of attracting and retaining women in chemistry, as well as supporting and developing their careers. Things have changed and there are considerable victories to celebrate but, despite those victories, we still have much to do. It's a long list, so get started!

Conflicts of Interest

The author declares no conflicts of interest.