

APPG on Diversity of STEM workforce for evidence on the impact of the STEM workforce

This evidence is submitted by the Royal Society of Chemistry.

January 2021

Summary of Evidence

Our data show that the chemical sciences are not representative of wider society. The Royal Society of Chemistry's ambition is that 'chemistry should be for everyone' and so we are working to improve access to high quality robust data and evidence that will give us all insight into the barriers people face and how we can improve them.

Current data show that women and Black chemists are under-represented in senior roles. There are still significant data gaps – we are working to further improve our understanding of the impact of socio-economic background and disability – the former being particularly challenging as it is not a protected characteristic and therefore less data is available.

Key Questions

1. What are the demographics of STEM workers in your organisation or sector? Are there gaps in the quality of evidence, monitoring or reporting?

Role of diversity of the chemical sciences workforce

1.1 In our 2020 workforce report, [Chemistry's contribution: Workforce trends and economic impact](#)^[1], we provide a five-point action plan aimed at strengthening the chemical sciences workforce to enable economic recovery. The report identifies strong links between skills and innovation and outlines the vital role the chemistry workforce will play in boosting the UK economy and recovery. Diversity in the chemical sciences is vital to that innovation.

Diversity in our membership and the chemical sciences

1.2 Our [Annual Report 2017-18](#) [2] presents diversity data from across our membership and organisational activities – including governance bodies, prizes, grants, education, publishing. The chemical sciences community, particularly that in the UK, is reflected in our membership. The demographics of our largest membership category (MRSC or ‘Member’) are: **gender identity** 25% female, 75% male, <1% self-described; **ethnicity** 7% Asian, 3% Black, 1% mixed, 1% other, 87% White; **disability** 91% not disabled, 9% disabled; **sexual orientation** 2% asexual, 2% bisexual or pansexual, 2% gay man, <1% gay woman/lesbian, 93% heterosexual/straight, 1% self-described; **age** 4% age 29 or under, 28% ages 30-44, 32% ages 45-59, 25% ages 60-74, 11% age 75 and over. As membership categories are in part reflective of an individual’s career progression in the chemical sciences, we see variances in demographics including age. The diversity of our overall membership has increased over time as observed by the demographics broken down by length of membership. For example, for members of five years or less the gender breakdown is 39% female and 61% male, compared to members of over 30 years where the gender breakdown is 9% female and 91% male. A similar trend is seen for diversity in ethnicity. This could be indicative of similar changes in the future demographics of the chemical sciences workforce.

1.3 Our recent analysis of [Black representation in UK academic chemistry](#) [3] using HESA 2017/18 data for students and staff shows that there is an under-representation of ethnic minority-identifying people through academic progression in chemistry, which is particularly pronounced for Black chemists, starting with significant attrition at postgraduate studies and continuing to 0% representation at the professorial level. See also 2.4.

1.4 Our 2017-18 Annual Report [2] presents diversity data from across our membership and organisational activities – including governance bodies, prizes, grants, education, publishing. The chemical sciences community, particularly that in the UK, is reflected in our membership. The demographics of our largest membership category (MRSC or ‘Member’) are: **gender identity** 25% female, 75% male, <1% self-described; **ethnicity** 7% Asian, 3% Black, 1% mixed, 1% other, 87% White; **disability** 91% not disabled, 9% disabled; **sexual orientation** 2% asexual, 2% bisexual or pansexual, 2% gay man, <1% gay woman/lesbian, 93% heterosexual/straight, 1% self-described; **age** 4% age 29 or under, 28% ages 30-44, 32% ages 45-59, 25% ages 60-74, 11% age 75 and over. As membership categories are in part reflective of an individual’s career progression in the chemical sciences, we see variances in demographics including age. The diversity of our overall membership has increased over time as observed by the demographics broken down by length of membership. For example, for members of five years or less the gender breakdown is 39% female and 61% male, compared to members of over 30 years where the gender breakdown is 9% female and 91% male. A similar trend is seen for diversity in ethnicity. This could be indicative of similar changes in the future demographics of the chemical sciences workforce.

2.5 Our [\[2\]](#) identified that disabled people are under-represented in RSC membership and activities, as compared to the UK population. In this report, we identified that 9% of RSC members (MRSC category), 2% of editors, and 0% of prize winners self-report as having a disability.

2.6 Our 2020 report [\[10\]](#) investigated the socio-economic family background make-up of chemistry undergraduates compared to all undergraduate subjects and to the wider UK population. Our findings show that social and economic factors widen the participation gap in chemistry. Students from socio-economically advantaged backgrounds are more likely to study chemistry at undergraduate level than socio-economically disadvantaged students. The most advantaged group, with family backgrounds in higher managerial and professional occupation

5.3 Our Covid-19 impacts survey to RSC members (data to be published soon) also showed the potential impact on the chemical science industry. Of respondents who were affected by restrictions on lab access, 60% of those at SMEs and 54% of those at large companies (500+ employees) also reported experiencing potential delays in research delivery as a result. For all organisation sizes, respondents in R&D and manufacturing roles were more likely than those in other roles to report a reduction of the chemistry workforce in their department as a result of the pandemic and to anticipate job losses in their team or department in the next year. 41% of respondents in mid-career agreed there were more concerned about losing their job as a result of Covid-19, compared to 28% of those with established careers. 20% of respondents in early or mid-career said they were considering, or maybe considering, retraining for a new career as a result of the Covid-19 pandemic.

5.4 The impacts of Covid-19 on education may have long-term impacts in terms of progression through to the chemical sciences and other areas of STEM. Inevitably, learning of practical and technical skills is interrupted during periods of lockdown, and at other times due to the requirements for additional hygiene and distancing measures. We currently do not have any evidence to suggest that particular groups are feeling these impacts disproportionately as the impacts are widespread; however, during the period of recovery we will need to monitor whether, for example, students in more advantaged circumstances are better placed to take part in opportunities to catch up, and therefore end up in a better position to progress into the workplace.

At school level, we are aware of disproportionate impacts of Covid-19 on the ability of students to engage with learning. When we surveyed 199 chemistry teachers in October 2020 (unpublished data), 80% of respondents said that students having limited access to a computer or tablet at home was a significant barrier to learning during the spring 2020 lockdown. 58% identified that their students were behind in terms of their general subject knowledge, but this percentage rose to 75% among schools with higher proportions of learners eligible for Free School MQqBT/TT0 10 Tf70.825 484.52 Td[(b)-3 (e)-3 (h)-3 (ind)-5

