

Position Statement

Research culture - improving diversity in the chemical sciences

February 2020

The Royal Society of Chemistry (RSC) is committed to improving inclusion and diversity in research environments. Our position and approach are informed by our role as a voice for the chemical sciences community, underpinned by our Royal Charter.

We value all members of our community; for the chemical sciences to further advance our knowledge and benefit society they must attract, develop and retain a diverse range of talented people.

We value diverse contributions; recognition should reflect not only the diversity of individuals and teams contributing, but also the diversity of ways in which they contribute to advancing the chemical sciences.

Inclusion and diversity is about equal opportunities for talented people, creative perspectives and innovative approaches to reach their potential, this has been shown to lead to better science.

Organisations in the research landscape, including employers (universities, institutions and companies), funders, learned societies, academies and publishers, need to act to improve diversity in research environments and give recognition to the diverse contributions researchers make to advance science and society. As a starting point, we recommend that:

1. Organisations should collect and report data covering all aspects of their community to increase understanding of where people's opportunities and experiences are impacted, particularly with respect to mental health, disability, sexual orientation, gender identity, ethnicity and socioeconomic background.
2. Organisations, particularly employers and funders, should support senior and established staff to allocate part of their time to champion equality, diversity and inclusion across all their activities, enable new ways of working and create more inclusive and accessible research environments.
3. Organisations should ensure they have a deliberate approach to who they recognise, what they recognise and how, to ensure that who and what is recognised reflects the diversity of people, contributions and achievements in research.
4. Organisations, particularly funders, publishers and employers, should collect and report data on biases in all aspects of the research process, particularly with respect to grant allocation, publishing, hiring, promotion and career progression, and responsibly act to mitigate biases where they are observed.
5. Organisations should enforce a zero-tolerance approach to bullying and harassment; funders for example should enforce by denying funding, or building in clauses to ensure that institutions and individuals have funding removed when bullying and harassment is demonstrated.

Diverse teams produce better science

Studies have shown that teams that include different viewpoints or thinking styles (cognitive diversity) solve problems faster¹ and that diversity of inputs by author ethnicity, location, and references leads to greater contributions to science as measured by impact factors and citations². Diverse teams will produce better science and will deliver economic benefits through increased productivity.

*'Only when all people feel comfortable to be themselves in the workplace, will global science truly be able to thrive, and will we stop wasting so much human capital.'*³

Recognising diverse contributions will further incentivise high-quality research that benefits society

Researchers are involved in a wide range of activities that contribute to upholding the quality of science, such as mentoring, teaching and peer review and to the translation of the benefits of science for society, such as outreach, public / policy engagement and translation to applications. A current perception prevails that academic research and publication outputs are recognised disproportionately compared to other activities and achievements inside and outside academia. Direct contributions to upholding the quality of science and to the translation of benefits for society should further be incentivised by appropriately recognising them alongside recognition of academic research.

*'We all know researchers do more than just publish: teacher, group leader, financial manager, founder, government advisor, industrial partner, journal editor, peer reviewer...the list goes on. Yet the system of rewarding and recognising today's researchers has not caught up with this breadth of asks.'*⁴

Inclusivity will lead to retention of a larger STEM workforce

While the National Audit Office expected employers in England would experience a STEM recruitment shortfall of around 1.5m in 2018⁵, the science minister (May 2019) estimated that the STEM workforce will have to double by 2027 for the government to reach its research and innovation ambitions. Whilst STEM intake needs to be part of this, retaining researchers will be crucial since most of the 2027 workforce already have chosen their A-levels today (assuming 2 years A-levels and 4(+) years in higher education). This includes groups such as women, who we know are more likely to leave research. Evidence collected by the RSC shows that fair and inclusive research culture and environments will be important to retain women in research careers.⁶

'[...] if we need to increase R&D spending by more than double our current investment levels by 2027, then we are also going to have to substantially increase the numbers of people we have working in R&D in the same period – perhaps by as much as 50%.' Chris Skidmore MP, May 2019

1. Increase understanding of the barriers to inclusion and diversity in research environments

Organisations should collect and report data covering all aspects of their community to increase understanding of where people's opportunities and experiences are impacted, particularly with respect to mental health, disability, sexual orientation, gender identity, ethnicity and socioeconomic background.

A general increase in visibility of inclusion and diversity issues has led to improvements in data collection and monitoring. However, the ability to properly describe the diversity of the science community is still limited by the lack of availability of data. Sample sizes are limited and for many data gathering exercises it is difficult to cut inter-sectionally (by disability, sexual orientation, ethnicity) and hence understand how particular groups are impacted. Therefore, there is a clear need for further and more detailed research and data gathering to be undertaken by ourselves and others across the research landscape.⁷

*'By exploring how diverse people are affected by various phenomena, research findings can inform government structures, their functions, and the policies that result.' 'Until the gender data gap is narrowed, the lack of data ... will continue to limit the effectiveness of organizations.'*⁸

What are we doing?

- Our *Diversity landscape of the chemical sciences* report helped us better understand the landscape and inform our community and future work. The report sets out five key changes everyone can contribute to, to make ‘chemistry for everyone’.
- Our *Breaking the Barriers* report sets out community insights into systemic barriers blocking women’s retention and progression in the chemical sciences, and a five point plan building on actions we have taken over past years.
- Our *Exploring the workplace for LGBT+ physical scientists* report developed together with the Institute of Physics and the Royal Astronomical Society, sets out three areas that need increased action to improve the workplace for LGBT+ physical scientists.
- Our *Is publishing in the chemical sciences gender biased?* report provides in-depth gender data analysis of each stage of the publication process within the chemical sciences community.
- From 2020 onwards, we will report on inclusion and diversity in all our activities and governance.

2. Embed inclusivity and accessibility across the research landscape

Organisations, particularly employers and funders, should support senior and established staff to allocate part of their time to champion equality, diversity and inclusion across all their activities, enable new ways of working and create more inclusive and accessible research environments.

Diversity policies alone will not enhance researchers’ lives, inclusion is essential and this means that cultural change is needed to ensure values and behaviours as well as processes and procedures promote diversity and accessibility. Organisations in the research landscape should change the way they work, so that diversity, inclusivity and accessibility are embedded in everything they do.⁷

‘Diverse talent will thrive in an inclusive culture where everybody is valued and treated equally with respect... if we get the ‘I’ [inclusion] bit right, then the ‘D’ [diversity] bit will follow’⁷

What are we doing?

- We have introduced new requirements for RSC supported events to further the RSC’s continuous efforts in promoting inclusivity and improving diversity.
- Our *Chemists’ Community Fund* offers financial support to members, for example funding for specialist equipment and aids for the home / workplace to disabled members in our community, our *Grants for Carers* for those with caring responsibilities and our *Assistance Grants* for those who need specific assistance or support to attend events.
- Our *Inclusion & Diversity Fund* provides financial support for innovative products, activities and research projects to promote inclusion and diversity beyond the work that we are doing directly. Past projects we funded include an event targeting girls and Black, Asian and Minority Ethnic (BAME) students from hard to reach areas in 2016, a sensory science programme for disabled children in 2017 and a study on barriers for students from lower socio-economic backgrounds in 2018.
- In partnership with the Institute of Physics, we support Engineering and Physical Sciences Research Council (EPSRC) Established Career Fellows to act as *Equality, Diversity and Inclusion Champions* in their respective research environments. We are a partner in several EPSRC Inclusion Matters projects and collaborate with Heads of Chemistry UK, the Athena Forum and the Science Council & RAEng Progression Framework steering group to embed inclusivity across research environments.

3. Take a deliberate approach to who, what and how we recognise in research

Organisations should ensure they have a deliberate approach to who they recognise, what they recognise and how, to ensure that who and what is recognised reflects the diversity of people, contributions and achievements in research.

Recognition of research achievements provides many benefits and can be a powerful tool to validate achievements and support career progression. Who, what, and how we recognise, will determine the benefits achieved and it is therefore important to take a deliberate approach to recognition that reflects modern science. Organisations in the research landscape should take a deliberate approach to who, what and how they recognise, and ensure that this reflects the diversity of people, contributions and achievements in research.

*'There is a self-reinforcing loop whereby activities that are visibly prized are considered to have higher status and activities that are perceived to have higher status are visibly prized.'*⁹

What are we doing?

- Our report '*Re-thinking recognition: Science prizes for the modern world*' sets out our commitment to a five point action plan to adapt our awards programmes so that future generations of scientists can be rewarded and recognised for a new, more inclusive definition of excellence. The report sets out a vision for recognition in 21st century science and recommendations on how to achieve this.
- We recognise the valuable contributions of apprentices and technicians to the chemical sciences:
 - We award Chartered and Registered Status to recognise the professionalism, knowledge and skills of those working within the chemical sciences, and in partnership with the Institute for Apprenticeships, we are enabling apprentices to work towards Chartered or Registered status.
 - We are a supporter of the Technician Commitment. Our report '*Technicians: providing frontline and vital support for student mental health and wellbeing*', in collaboration with the Technician Commitment, Science Council, Institute of Physics, Royal Society of Biology, University of Liverpool and University of Nottingham, highlights the important and potentially overlooked contributions of technicians in providing pastoral care and supporting undergraduate and postgraduate students' mental health.
 - Our author guidelines give authors responsibility to give due acknowledgement to technical staff and data professionals where they have contributed to the research.

4. Create awareness of biases in research environments

Organisations, particularly funders, publishers and employers, should collect and report data on biases in all aspects of the research process, particularly with respect to grant allocation, publishing, hiring, promotion and career progression, and responsibly act to mitigate biases where they are observed.

Recognising that both the publication of research articles and the number of citations that those articles gather remain established markers of scientific success, we have carried out an in-depth gender analysis of each stage of the publication process within the chemical sciences community. We found that biases exist at each step of the publishing profile. Many of these biases appear minor in isolation, yet their combined effect puts women at a significant disadvantage. Only by recognising the biases that are introduced at decision points by authors, reviewers, editors and publishers, can organisations in the research landscape reduce them.¹⁰

*'Initial submissions from female corresponding and first authors are more likely to be rejected without peer review' – 'Papers authored by women are less likely to be cited'*¹⁰

What are we doing?

- Our *Is publishing in the chemical sciences gender biased?* report provides in-depth gender analysis of each stage of the publication process within the chemical sciences community. The report contains views from the chemical science research community about the biases within publishing, the factors that might be contributing to these biases, and what we can do to tackle them.
- We are leading the development of a new *Inclusion & Diversity Framework for Action* to set the standard for driving change within the academic publishing industry.

5. Eradicate bullying, harassment and sexual misconduct in research environments

Organisations should enforce a zero-tolerance approach to bullying and harassment; funders for example should enforce by denying funding, or building in clauses to ensure that institutions and individuals have funding removed when evidence of bullying and harassment is shown.

In our efforts to understand barriers to diversity in research environments, we came across anecdotal evidence of harassment and bullying, reports from academia and industry that described instances of people of all genders, mostly senior colleagues, demonstrating bullying and harassing behaviours and references to the ‘unchecked power’ of managers in some teams and institutions.⁶ Organisations in the research landscape have a responsibility to increase their efforts to ensure that such behaviours are scrutinised and eradicated.

‘There must be a clear guideline as to what to do when you are harassed. It should be possible for women (or men) that are harassed to go to a third party to seek help, without having to fear that her/his career could be affected.’⁶

What are we doing?

- Our *Breaking the Barriers* report provides evidence of discrimination, bullying and harassment and a systemic failure of the sector to deal with these issues effectively. Furthermore, our recent *Exploring the workplace for LGBT+ Physical Scientists* report also demonstrated evidence of exclusionary behaviour.
- Our new video sets out what bullying and harassment are and calls on individuals to act. We will encourage research organisations and researchers to use and share this video as a resource to increase awareness and prompt action.
- Our new bullying and harassment supportline will provide listening support to individuals and sign post them to resources and other services they might benefit from. A better understanding of the prevalence of bullying, harassment and misconduct in research environments will contribute to the eradication of such behaviours.

Definitions

Inclusion is people feeling that they belong. It is about the culture, environment and processes created by an organisation. Creating a culture of inclusiveness is about establishing behaviours that support inclusion, we all have a role to play in this.

Diversity encompasses anything that can make us different from others. This includes (but is not limited to) demographic background such as gender, ethnicity, age, disability, as well as areas such as socio-economic status, education and neurological status.

Bullying is offensive, intimidating, malicious or insulting behaviour, an abuse or misuse of power through means intended to undermine, humiliate, denigrate or injure the recipient.

Harassment is unwanted conduct affecting the dignity of men and women in the workplace. It may be related to age, sex, race, disability, religion, sexual orientation, nationality or any personal characteristic of the individual, and may be persistent or an isolated incident.

The key difference between *bullying* and *harassment*, is that harassment is linked to a personal characteristic of the recipient, and therefore linked to anti-discrimination law in the case of protected characteristics in this country.

Sexual harassment is defined in the Equality Act 2010 as unwanted conduct of a sexual nature (or related to gender assignment or sex) which has the purpose or effect of violating the victims’ dignity or which creates an intimidating, hostile, degrading, humiliating or offensive environment for the victim. Sexual harassment does not have to be about sexual activity – it constitutes discrimination because it is harmful and based on gender.

Contact

The Royal Society of Chemistry would be happy to discuss any of the issues raised in our statement in more detail. Any questions should be directed to Dr Laura Norton at diversity@rsc.org.

About us

With about 50,000 members in over 100 countries and an international publishing and knowledge business the Royal Society of Chemistry (RSC) is the UK's professional body for chemical scientists, supporting and representing our members and bringing together chemical scientists from all over the world.

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- ¹ [Teams Solve Problems Faster When They're More Cognitively Diverse](#), Harvard Business Review, Alison Reynolds and David Lewis, March 2017
 - ² [Collaboration with people like me](#), National bureau of economic research, Richard B. Freeman and Wei Huang, February 2014
 - ³ [Exploring the workplace for LGBT+ Physical Scientists](#), Royal Astronomical Society, Royal Society of Chemistry and Institute of Physics, June 2019
 - ⁴ [Jisc Futures: what will research look like in 2035?](#), Joanna Dally and Frances Downey, August 2017
 - ⁵ [Delivering STEM skills for the economy](#), National Audit Office, January 2018
 - ⁶ [Breaking the Barriers: Women's retention and progression in the chemical sciences](#), Royal Society of Chemistry, November 2018
 - ⁷ [Diversity landscape of the chemical sciences](#), Royal Society of Chemistry, February 2018
 - ⁸ [Bridging the gender data gap](#), Jeanette Gaudry Haynie, November 2019
 - ⁹ [Re-thinking recognition: Science prizes for the modern world](#), Royal Society of Chemistry, December 2019
 - ¹⁰ [Is publishing in the chemical sciences gender biased?](#), Royal Society of Chemistry, November 2019