ROYAL SOCIETY OF CHEMISTRY

SCIENCE CULTURE

# Missing Elements

## Racial and ethnic inequalities in the chemical sciences

# Introducing our new perspectives series

In a world where global challenges and advances in technology bring both uncertainty and new possibilities, the chemical sciences have a critical role to play. But what will that role be? How can we maximise the impact we make across academia, industry, government and education? And what actions should we take to create a stronger, more vibrant culture for research that helps enable new discoveries?

Our perspectives series addresses these questions through four lenses: talent, discovery, sustainability and science culture. Drawing together insights and sharp opinion, our goal is to increase understanding and inform debate – putting the chemical sciences at the heart of the big issues the world is facing.

## Science Culture

Scientific research and innovation is becoming increasingly multidisciplinary and collaborative. How do we create the open, inclusive, dynamic environments that will allow scientists to thrive and make their maximum contribution to global prosperity? And how should we recognise and incentivise the breadth of skills and diversity of people, contributions and achievements that enable new discoveries and breakthroughs?

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Our planet faces critical challenges – from plastics polluting the oceans, to the urgent need to find more sustainable resources. But where will new solutions come from? How can we achieve global collaboration to address the big issues? And where can the chemical sciences deliver the biggest impacts?

## Talent

Talent is the lifeblood of the chemical sciences. But how do we inspire, nurture, promote and protect it? Where will we find the chemical scientists of the future? And what action is required to ensure we give everyone the greatest opportunity to make a positive difference?

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Chemistry is core to advances across every facet of human life. But where do the greatest opportunities lie? How will technology and the digital era shape the science we create? And what steps should we take to ensure that curiosity-driven research continues to unlock new opportunities in unexpected ways?

Find out more at **www.rsc.org/new-perspectives**

# Foreword

**Chemistry should be for everyone. Not only is this a matter of basic fairness, but it is essential if our discipline is to benefit from the fullest possible range of talented people.**

Unfortunately, racism, discrimination and ethnic inequalities are a reality in the chemical sciences, just as they are in our wider society.

The data and evidence collected in this report are clear: we are failing to retain and nurture talented Black chemists at every stage of their career path after undergraduate studies, and people from other minoritised ethnicities remain underrepresented at senior levels in chemistry.

The lived experiences of chemical scientists also cast stark light on the way that discrimination and racism operate in our community. We are grateful to those who took part in this research for sharing their perspectives so openly.

We further acknowledge the invaluable contributions of Black chemists and those from other minoritised ethnicities to the chemical sciences, which have so often been overlooked.

Our inclusion and diversity work is driven by evidence, because this enables us to act and advocate more effectively for change.

In recent years, we have highlighted the challenges that women in our profession face, introduced interventions and called on others to act. We are now seeing some signs of improvement towards gender equality.

Similarly, we want this report to be a rallying cry for the whole chemical sciences community.

Our message is clear: we need to talk about and address racism, discrimination and inequality in the chemical sciences.

We are committed to working with others to break down barriers for people from minoritised ethnic backgrounds.

Together we can – and must – make progress toward becoming a truly inclusive community, where everybody can fulfil their potential.

**Dr Helen Pain**
Chief Executive, Royal Society of Chemistry

# Foreword

**As scientists, we collect and analyse data to ensure an evidence-driven approach, because it allows us to address challenges, develop solutions and evaluate progress. We did this when addressing the gender imbalance in chemistry, with our Breaking the Barriers report, which has led to improvements as well as actions by others.**

We continue to highlight inequalities in chemistry and we now present this report, which provides undisputed evidence that racial and ethnic inequalities are pervasive in the chemical sciences community.

The RSC's Inclusion and Diversity Strategy to 2025 has set out our objective of increasing the diversity of people choosing to study and work in the chemical sciences, and making sure they progress and fulfil their potential. Both the RSC Inclusion and Diversity Committee and the Board of Trustees have strongly encouraged and supported the RSC's work to map out the issues about race and ethnicity in the chemical sciences, which demonstrates a long-term commitment to provide leadership in this area.

This report paints a stark picture of the pervasive racial and ethnic inequalities within the chemical sciences community, drawing special attention to how difficult the current exclusion and marginalisation is to challenge. The evidence suggests that challenges and barriers are present both in academia and in industry. The systemic barriers cannot be addressed by a single organisation and we hope that the data and evidence presented will drive new initiatives from different parts of society and encourage joint initiatives.

The data and lived experiences presented in this report are intended for everyone to use as a starting point for much-needed action towards addressing inequalities in the UK chemical sciences and building a truly global chemistry community. Everyone has a role to play in making a difference; this is a collective societal responsibility. Individually, we can resolve to be part of the solution and not the problem, and to engage with the data with honest and open minds rather than be in denial.

In developing solutions to racial inequalities, it is important that they are aimed at achieving long-term institutional culture changes, avoiding a deficit model where solutions are aimed at changing individuals. The chemical sciences, and STEM in general, face the same issues of exclusion that are apparent in other sections of society. We hope that this report will help us to think about how we choose to engage with others, who we engage with and any prejudices we may have, remembering all the time that excluding or diminishing any section of society weakens science. The RSC is taking some bold steps with the initiatives announced in this report, with examples that other organisations – in academia, industry and beyond – can use to set up their own approaches to tackling inequalities.

**Creating an inclusive and diverse culture is essential for our community. It will influence chemists' careers, and lead to better science and ultimately a sustainable and successful society.**

**Professor Marina Resmini**
Chair, RSC Inclusion and Diversity Committee
Professor of Materials Chemistry at Queen Mary University of London

**Professor Robert Mokaya**
Trustee, Royal Society of Chemistry,
Pro-Vice Chancellor, Global Engagement
The University of Nottingham

# Acknowledgements

**We would like to thank everybody who took part in the research presented in this report. Participants were generous with their time and willingness to share personal perspectives and experiences.**

Their contributions have significantly enriched our understanding of how racial and ethnic inequalities operate in the chemical sciences and informed our recommendations to address these issues. All contributions have been anonymised to protect participants' confidentiality.

We would also like to thank everybody who guided and supported the conduct of this research and the preparation of this report, including the members of the Royal Society of Chemistry (RSC) Inclusion and Diversity Committee, colleagues from across the RSC and members of our wider community.

# Executive summary

**This report shines a stark light on racism and ethnic inequalities in the chemical sciences.** We reviewed relevant data and reports and gathered new qualitative evidence of chemical scientists' lived experiences. Our findings paint a stark picture of how pervasive racial and ethnic inequalities are within the chemical sciences community, how hard this is to challenge, and the way exclusion and marginalisation are to a large extent normalised for many Black chemists and others from minoritised ethnic backgrounds.

**We are losing Black chemists after undergraduate level at an alarming rate.** At undergraduate level, 4.9% of students identify as Black, higher than the 3.0% of the UK population who identify as Black. However, this drops sharply after undergraduate studies, with just 1.4% of postgraduate chemistry students, 1.0% of non-professorial academic chemistry staff and 0% of chemistry professors identifying as Black*. [1,2]

**There are hardly any chemistry professors from minoritised ethnic groups.** In UK chemistry departments, 0% of professors* identify as Black or mixed (compared to a combined 5% of the UK population) and 5.7% identify as Asian (compared to 6.9% of the UK population).[1,2]

**Black and minoritised ethnic people are underrepresented at senior levels in academia more broadly.** Across all subjects, only 0.8% of UK professors identify as Black, while 7.5% identify as Asian, and 88.5% as White.[3] Similarly, of Principal Investigators (PIs) awarded research grants, 12% are from a minoritised ethnic background and only 1% identify as Black.[4]

**More limited access to research funding is a significant structural barrier.** PIs from minoritised ethnic backgrounds are less likely to win a bid for research funding than their White peers, with an awarding gap of seven percentage points. Those who succeed also get less funding. The median award in 2019/20 for minority ethnic PIs was £320,000 vs £355,000 for White PIs – 10% less.[5]

**The evidence suggests chemists and other scientists also face barriers in industry.** Although there is limited data on chemical scientists in industry specifically, wider evidence shows that people from minoritised ethnicities are underemployed, under-promoted and underrepresented at senior levels across the UK workforce, and that STEM occupations are even less ethnically diverse.[6,7]

**Organisations are not incentivised to do better.** Most initiatives to improve inclusion and diversity are voluntary and appear to be having a limited impact. Just 21 universities hold a bronze Race Equality Charter award, and none have received a silver or gold award, despite the scheme being launched in 2016.[8] Similarly, 37% of FTSE 100 companies have no representation of minoritised ethnicities on their board, despite the Parker Review target of one director from a minoritised ethnic background on every board by 2021.[9,10]

*Based on HESA data. HESA uses anonymisation methodology which rounds numbers to the nearest five. Therefore, figures reported as 0% may not always equate to zero in numerical terms, as any number that is less than 2.5 will be rounded down to 0.

**Our new qualitative research suggests there are six key interacting themes that impact retention and progression for Black and minoritised ethnicity chemists.**

1. **Attraction, inspiration and progression**. This includes a lack of relatable role models, limited careers guidance and support, the impact of familial and cultural influences, and short-term approaches to outreach.

2. **Mentorship, sponsorship and networks.** This includes limited access to advice and opportunities, the impact of homophily (the tendency for people to form connections with people similar to themselves), and the need for a more consistent, institution-wide approach to support.

3. **The culture of chemistry.** This includes implicit and explicit racism and exclusion as well as the wider challenges of a chemical science culture that is often competitive, hierarchical and inflexible.

4. **Funding systems and structural barriers.** This includes a lack of equal access to research experience at earlier stages and, later, unequal access to funding, as well as narrow definitions of success that penalise people who take less traditional paths.

5. **Global community.** This includes the need for increased diversity of thought and innovation by strengthening collaboration and recognition of the talent in the Global South, ensuring a flourishing chemical sciences discipline.

6. **Leadership in the community, accountability and allyship.** This includes the need for stronger and faster institutional and sector-wide leadership and accountability, as well as for all individuals, particularly those who are White, to act as allies.

# Our action plan

**The data and evidence presented in this report show that systemic racial discrimination hinders the retention and progression of talented chemists from minoritised ethnic groups, in particular Black chemists.**

Many of the barriers linked to racial and ethnic inequalities are shared by other groups underrepresented in the chemical sciences, such as women. For example, a lack of role models and networks and the impact of inflexible career paths and measures of excellence.

However, there are clear distinctions in the depth and history behind race inequalities. This includes difficulties in acknowledging racism.

More broadly, people have multiple identities. This report has also highlighted how different aspects of identity, for example gender, socioeconomic background and race and ethnicity, can intersect to affect people's experience.

It is clear that the depth of systemic inequalities are far beyond any one institution's capacity to change. We are just one part of the chemical sciences community.

Academia and industry, institutions and individuals – we all need to work together to stamp out racism and inequality and create the needed real, lasting and structural change.

**In order to continue dismantling barriers for people from Black and minoritised ethnic backgrounds in the chemical sciences, we will:**

1. **Create a dedicated Race & Ethnicity Unit, funded by an initial £1.5 million investment to lead systemic change.**
2. **Partner with chemical industry employers to strengthen career support, opportunities and progression.**
3. **Launch a five-year RSC-Windsor Fellowship mentoring scheme for chemistry students.**
4. **Proactively increase representation in our governance, committees and editorial boards.**
5. **Engage with our community and partners to listen to, share and learn from lived experiences and continually challenge ourselves to do more.**

# Introduction

**Racial and ethnic inequalities are not new. It is time we did something about them.**

This report is the Royal Society of Chemistry's (RSC) first thorough examination of racism and ethnic inequalities in the chemical sciences.

The need to tackle racism and discrimination has recently been accelerated by the resurgence of the Black Lives Matter movement and murder of George Floyd in 2020, as well as the way the Covid-19 pandemic has highlighted and exacerbated health and social inequalities in the UK and elsewhere.[11,12]

However, these problems are not new in the chemical sciences, just as they are not new in our wider society. It is time that the chemical science community took them seriously.

This is not only the right thing to do, but it will also enhance the success of our discipline, because more diverse and representative teams achieve better outcomes.[13]

**This report builds on our previous work to highlight inequality.**

We previously analysed Higher Education Statistics Agency (HESA) data focusing on ethnicity and particularly the representation of Black people in UK academic chemistry[14]. This showed that people from minoritised ethnicities are disproportionately facing barriers to progression in their careers, which is particularly pronounced for Black chemists.

We responded by:

- Conducting an open consultation with our community on racism, discrimination and ethnic inequalities in July 2020.
- Issuing an Inclusion and Diversity Fund special call for community-driven projects that support the inclusion of Black people in the chemical sciences.
- Holding an Inclusion and Diversity Forum in 2020 and 2021 focused on race and ethnicity in the chemical sciences.
- Launching the *Destination STEMM – Chemical Sciences* pilot mentorship programme for year 12 chemistry students who are Black, Asian or from a minoritised ethnicity, in partnership with the Windsor Fellowship and supported by our Chemists' Community Fund. The programme supports the students as they navigate the transition from school to chemistry-focused degrees and pathways.
- Convening senior leaders in industry to discuss how to address the underrepresentation of Black and minoritised ethnicity people in the chemical sciences through career options in industry and innovation.
- Bringing together international funders and publishers to tackle the lack of racial and ethnic diversity in the chemical sciences, define goals and measure progress.
- Conducting research into the sense of belonging in the chemical sciences and the role this plays in enabling greater inclusion and diversity, published in our report: *A sense of belonging in the chemical sciences*.[15]

**Our latest findings shine a stark light on racism, discrimination and ethnic inequalities in the chemical sciences, particularly for Black chemists.**

We wanted to further understand and highlight the barriers to success in the chemical sciences faced by Black people and minoritised ethnic groups.

We therefore conducted a desk review of relevant data and reports, as well as gathering qualitative evidence of people's lived experiences of racism, discrimination and ethnic inequalities.

This included a series of interviews and focus groups with academics, chemists working in industry, students, funders of research, policymakers and inclusion and diversity specialists.

Although racism and discrimination affect all minoritised ethnicities in the chemical sciences, they are particularly pronounced for Black people. In summarising the data and evidence, we therefore focused on inequalities experienced by Black chemists, while highlighting other racial and ethnic inequalities where most relevant.

Our findings paint a stark picture. They demonstrate how pervasive racism is within the chemical sciences community, how hard this is to challenge, and the way that exclusion and marginalisation are to a large extent normalised for many chemists from Black and minoritised ethnic backgrounds.

**We need to talk about racism within the chemical sciences, but even more importantly we need to take action.**

Concerns about racism and inequalities often result in a flurry of reports, while little is done to change the realities they highlight.

We recognise the burden that requests to contribute to such inquiries can place on those who are impacted by racism. Some people understandably declined our invitation to participate in this research. They told us: "I've said all I can say…".

Despite this, we know that some people in the chemical sciences do not fully appreciate the systemic nature and impact of racism and discrimination within our community.

Our aim with this report is to present the evidence for the chemical sciences in one place to make the case for change crystal clear. As a professional body for chemical scientists, and a leading voice within the community, we have a duty to advocate for action.

We are grateful to those people who were able to take part in this research and were so generous with their time and in sharing their experiences.

We want this report to be a rallying cry for the entire chemical sciences community to stamp out racism and discrimination once and for all.

# A note on language

**When talking about race and ethnicity it is important to recognise that language can perpetuate inequalities, stereotypes and discrimination.**

For example, the acronyms 'BME' (Black and Minority Ethnic) and 'BAME' (Black, Asian and Minority Ethnic) have been criticised for grouping different ethnic identities together under a single label, which implies a false homogeneity and prevents a proper understanding of disparities and outcomes for specific groups. For this reason, there have been several recommendations against the use of these acronyms, including the UK government's independent Commission on Race and Ethnic Disparities.[16,17]

In this report we use "people from minoritised ethnic backgrounds", "people of minoritised ethnicities", or similar phrasing, to highlight that particular racial or ethnic backgrounds are not inherently, 'minority' but that, dependent on geographical, historical and social contexts, some people are minoritised on the grounds of their racial or ethnic background.

Where possible and relevant, we specify ethnicity, e.g. Black, as published by data sources or otherwise self-reported through our research. However, we acknowledge and highlight that race and ethnicity data is nuanced, contextual and may apply a single label to different lived experiences.

# The existing evidence on racial and ethnic inequalities

## The wider context

**Racism and ethnic inequalities have been well documented in Higher Education.**

Students who identify as Black or from minoritised ethnic backgrounds face a number of barriers in higher education in the UK, from access and representation to curriculum content and delivery and their overall experience of university.

This has been well documented in a range of reports, including *Race for equality* published in 2011 by the National Union of Students[18] and *Aiming higher* published in 2015 by the Runnymede Trust.[19]

**The impact of these barriers is evident in the awarding gap in higher education between students from different ethnic backgrounds.**

White students are 13% more likely to get a first or upper second class degree than those from Black, Asian or minoritised ethnic backgrounds (2017/18 data), and analysis suggests this gap cannot be explained by a student's background or prior qualifications.[20]

The impact continues at PhD level, where students who identify as Black are significantly underrepresented compared to the wider population.[19] Available evidence from UK Research and Innovation (UKRI) also shows that only 10% of funding goes to students from minoritised ethnic backgrounds, even though they make up 18% of postgraduate research students. This gap widens further for Black students, who receive 1% of studentships despite making up 4% of the total postgraduate research population.[4]

**Inequalities continue along the academic career path, particularly for Black academics.**

Academic staff who identify as Black or from a minoritised ethnic background are on average paid less, less likely to be promoted and more likely to be over-scrutinised by senior colleagues than their White peers.[19]

Previous research has highlighted the barriers that Black academics in particular face in progressing in their careers. For example, the 2019 report *Staying Power* documented the bullying and stereotyping that Black women academics experienced in their efforts to reach professorship.[21]

**Racial and ethnic inequalities are particularly acute at senior levels in academia.**

HESA reports that, for professors of known ethnicity across all subjects, only 0.8% identify as Black (compared to 3.0% of the UK population), while 7.5% identify as Asian (compared to 6.9% of the UK population), and 88.5% as White (compared to 87.2% of the UK population)[2,3]. Of the 540 academic managers, directors or senior officials at UK universities, 0% identify as Black* and less than 5% identify as Asian, mixed or other[22].

**Academics from minoritised ethnic backgrounds find it more difficult to secure research funding.**

Funding is essential for success in an academic career. Yet in the UK Principal Investigators (PIs) from minoritised ethnicities are less likely to win a bid for research funding than their White peers. According to figures from UKRI for the financial year 2019/20, the award rate for minority ethnic PIs is 25% compared to 32% for White PIs – a difference of seven percentage points. Those who succeed also get less funding. The median award for minoritised ethnic PIs £320,000 vs £355,000 for White PIs – 10% less.[5]

In addition, UKRI reports that 12% of PIs awarded funding are from minoritised ethnicities. Less than 1% identify as Black, compared to the 2% HESA estimate of the proportion of the academic workforce that identifies as Black, as well as the 3% proportion of Black people employed in the UK workforce more broadly.[4]

**There is significant attrition of Black STEM students from postgraduate level to academic employment.**

The Royal Society reports that across science, technology, engineering and maths (STEM) subjects as a whole, there is no significant attrition of Black students from undergraduate to postgraduate level, accounting for the time lag for progression through undergraduate studies.

Of all STEM first degree entrants in 2015/16, 7.6% identified as Black, similar to the 7.1% of postgraduate entrants in STEM subjects that identified as Black in 2018/19.[23]

However, significant attrition occurs from postgraduate level to academic employment, leading to an underrepresentation of Black scientists and engineers in academic careers.

In 2018/19 just 1.7% of STEM academic staff identified as Black, while 13.2% identified as Asian (compared to 6.9% of the UK population) and 2.1% identified as mixed (compared to 2% of the UK population).[23]

*Based on HESA data. HESA uses anonymisation methodology which rounds numbers to the nearest five. Therefore, figures reported as 0% may not always equate to zero in numerical terms, as any number that is less than 2.5 will be rounded down to 0.

## Racial and ethnic inequalities in the chemical sciences

### We are losing Black chemists after undergraduate level.

To better understand racial and ethnic inequalities within the chemical sciences community, we first analysed available data.

Figure 1 shows the ethnicity breakdown of students* and staff in chemistry at UK universities for the 2019/2020 academic pipeline.[1] Table 1 in the Appendix: Data shows the corresponding Full Time Equivalent (FTE) numbers. Percentages are of known ethnicity. The dashed lines show the ethnicity percentage representation in the UK population from the 2011 census[2].

At undergraduate level, the percentage of Black students in chemistry is 4.9%, higher than the UK population baseline of 3.0%. However, there is a significant drop at PhD level, where Black students make up just 1.4% of the total.

This attrition of Black students occurs earlier than in STEM more widely, where the drop in Black representation happens between postgraduate level and academic employment.[23]

In chemistry, we are losing Black students earlier as compared to the rest of STEM subjects.

### The number of Black chemists drops at every stage of the academic career ladder, while Asian chemists are underrepresented at professor level.

Black representation in chemistry drops again after PhD level, with only 1.0% of non-professorial staff and 0% of professors† identifying as Black. Any chemistry professors in the UK who are Black are so few that HESA data and anonymisation methodology reports this as zero.

Asian chemists are also underrepresented at professor level, with 5.7% of chemistry professors identifying as Asian. These figures are below average for the wider higher education sector.[4]

*HESA student data only contains ethnicity information for UK-domiciled students. Students domiciled outside of the UK are not included in this analysis.

†Based on HESA data. HESA uses anonymisation methodology which rounds numbers to the nearest five. Therefore, figures reported as 0% may not always equate to zero in numerical terms, as any number that is less than 2.5 will be rounded down to 0.

**There has been no notable improvement in the representation of Black people in academic chemistry in the past ten years.**

In the past 10 years, there has been no significant increase in the proportion of people in chemistry departments who identify as Black at all stages of the academic career pathway (see Appendix: Data, Figures A-D and Tables 2-5). This is particularly stark at the professor level, where the total FTEs have increased by over 50%, while the number of Black professors has remained stagnant at zero.

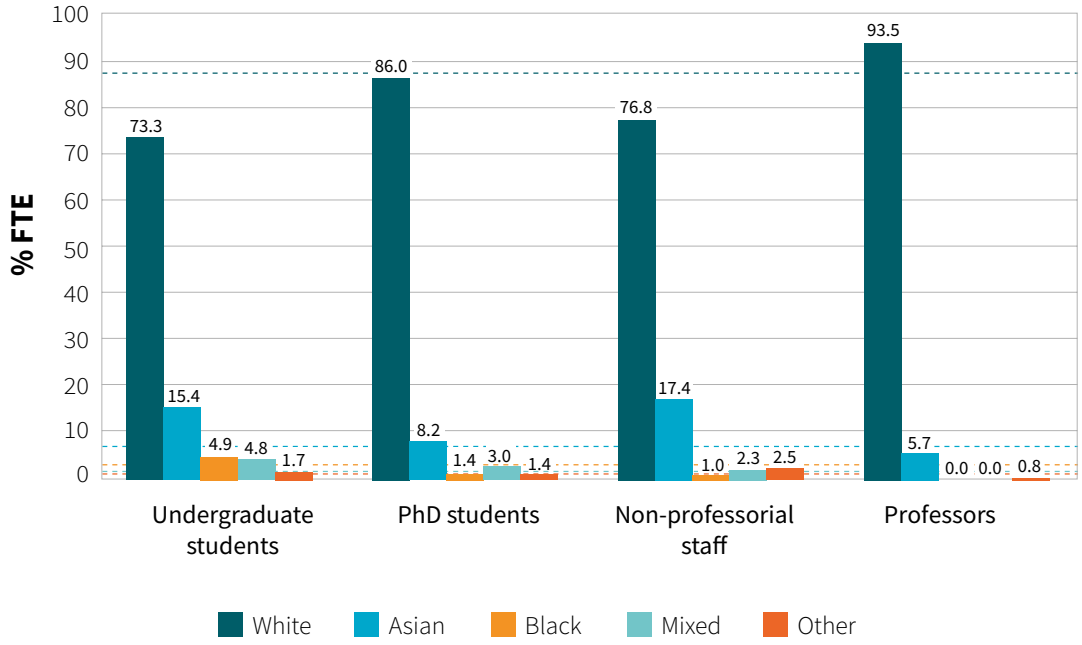


**Figure 1: Ethnicity breakdown for chemistry students and staff at UK universities as percentages of Full-Time Equivalents (FTEs) of known ethnicity. The dashed lines show the ethnicity percentage representation in the UK population. See also Appendix: Data, Table 1. Sources: HESA[1] 2019/20 student and staff records, and 2011 UK census[2].**

**Black and Asian chemistry students are less likely to study at a Russell Group university than their White peers.**

Of all chemistry undergraduate students, 55.6% attend a Russell Group university. However, only 37.8% of Black chemistry students and 49.1% of Asian chemistry students do so, compared to 58.0% of their White peers (see Figure 2).

This represents a structural challenge, as Russell Group institutions are more research-intensive. Their students are therefore more likely to have opportunities to gain high-quality research experience, giving them an advantage in applying for PhD funding or jobs in chemistry.

We also know from this same data that the percentage representation of Black undergraduate students among the chemistry student population is lowest at Russell Group universities, at 3.3% (Appendix: Data, Table 6 and Figure E). Percentage representation is calculated for students of known ethnicity only*.

At the PhD level, although it is not surprising that the majority of all students regardless of ethnicity pursue their degrees at Russell Group universities, again Black chemists are under-represented at these universities among their peers, making up only 1.5% of the total (Appendix: Data, Table 6 and Figure E).

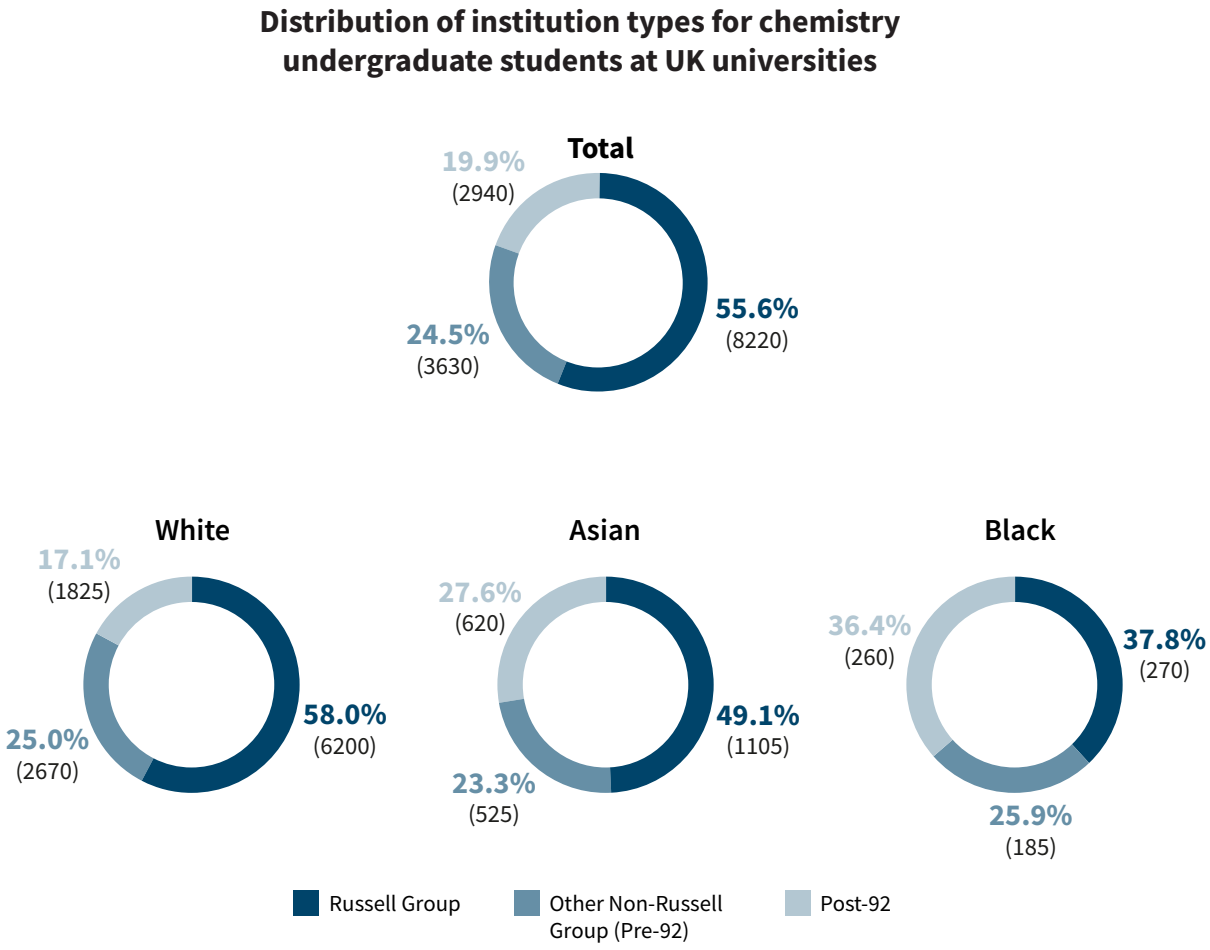


**Figure 2: Distribution of institution types where chemistry undergraduate students at UK universities are enrolled, as shown for all undergraduates and for students of White, Asian, or Black ethnicity. Source: HESA[1] 2019/20 student records. See also Appendix: Data, Table 6.**

*HESA student data only contains ethnicity information for UK-domiciled students. Students domiciled outside of the UK are not included in this analysis.

**The comparative lack of racial and ethnic diversity at Russell Group universities may present an additional barrier for students from underrepresented backgrounds.**

There is evidence to suggest that students from Black and minoritised ethnicities at Russell Group universities may be negatively impacted by the lack of racial and ethnic diversity at these institutions.

A recent report on research culture published by the Russell Group of Universities highlighted a lack of role models for people from underrepresented backgrounds, along with other structural barriers, such as the presence of biases (including those based on ethnicity) in funding and publishing review processes, which may affect grant evaluations and manuscript acceptance rates.[24]

While minoritised ethnicity students at non-Russell Group universities may face structural barriers to progression due to limited access to research opportunities, those who are at Russell Group universities will nonetheless struggle with underrepresentation in their field.

**Awarding gaps may not explain the attrition of Black and minority ethnic students from chemistry.**

To further understand the factors behind the attrition of Black and minority ethnic students from the chemical sciences after undergraduate studies, we analysed HESA Graduate Outcomes data.

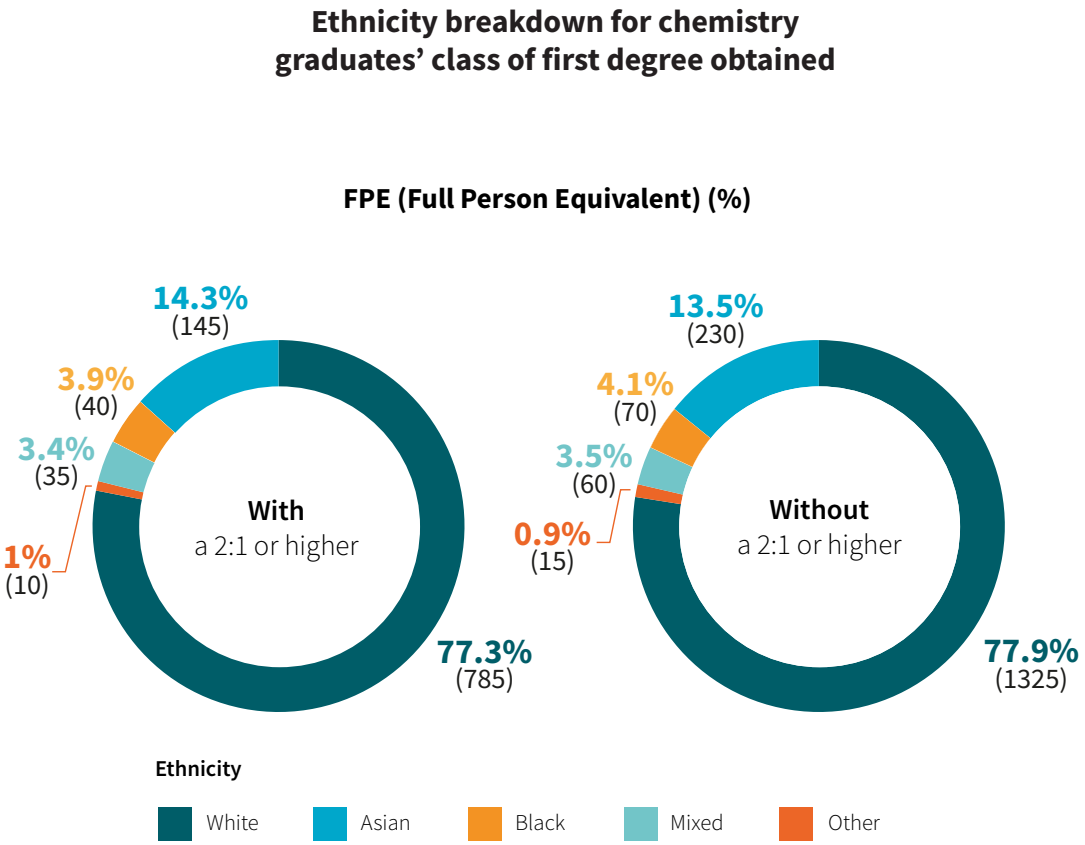


**Figure 3: Ethnicity breakdown for first-degree chemistry graduates in the UK as percentages of Full-Person Equivalents (FPEs) of known ethnicity, by class of first degree obtained. Source: HESA[1] 2018/19 graduate outcomes records. See also Appendix: Data, Table 7.**

We first looked at the ethnicity breakdown for graduates who obtained a degree classification of 2:1 or higher, compared to those who did not, as this is usually the cut-off to get funding to start a PhD in the UK. As Figure 3 shows, for chemistry graduates from all UK universities, we found that there was no significant difference in the ethnicity breakdown of those who did attain this qualification compared to those who did not.

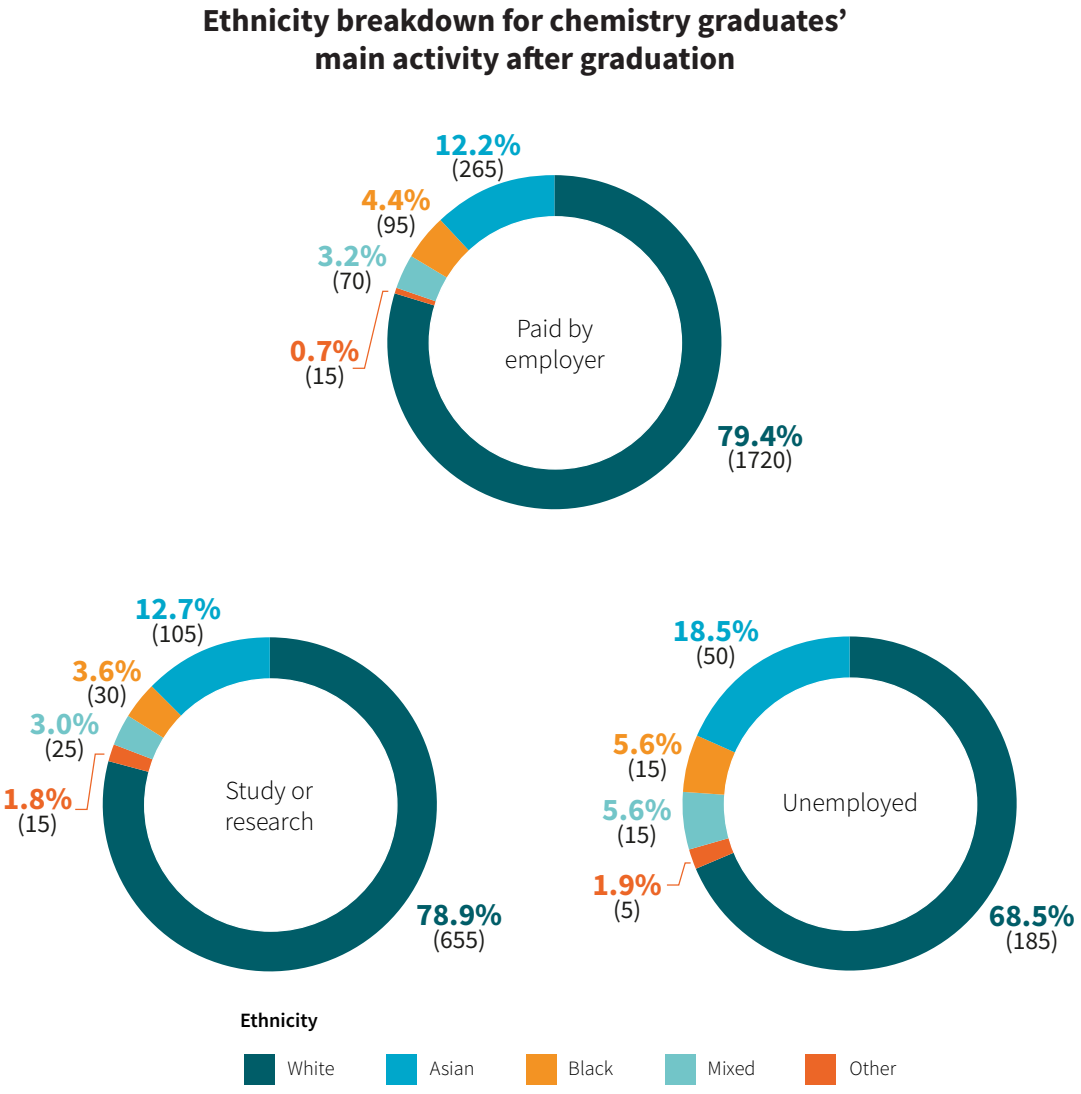


**Figure 4: Ethnicity breakdown for chemistry graduates as percentages of Full-Person Equivalents (FPEs) of known ethnicity, by main activity after graduation. Source: HESA[1] 2018/19 graduate outcomes records. See also Appendix: Data, Table 8.**

Graduate outcomes data also shows us the difference in the paths undergraduate students pursue after graduation (Figure 4). Black graduates represent a larger proportion of those who go into employment (4.4%) than those who pursue further study or research (3.6%), while graduates of other ethnicities are similarly represented for both pathways.

Similarly, comparing those who pursue further study or research against those who are unemployed, White graduates are more likely to continue with their studies, while Black, Asian and mixed ethnicity graduates are more likely to be unemployed. Comparing those who are employed with those who are unemployed, White graduates are more likely to be employed while Asian and Black graduates are more likely to be unemployed.

**Women tend to leave academic chemistry after PhD level, but this attrition is most marked for Black women.**

There are significant differences in gender breakdown at undergraduate and PhD chemistry level according to ethnic background.*

For White students, there is a male majority at undergraduate and PhD levels, whereas for Asian students, the gender distribution is more even at both levels, and for Black students, there is a female majority at both levels (see Figure 5 and Table 9).

This picture changes after chemists complete their postgraduate studies and aligns with our previous findings in *Breaking the barriers: Women's retention and progression in the chemical sciences*[25], with fewer women progressing to non-professorial staff or professorship, regardless of race and ethnicity.

However, this trend is most pronounced for Black women, who only account for 16.7% of Black non-professorial staff in chemistry departments. According to HESA data anonymisation methodology the number of Black chemistry professors in the UK rounds to zero, so accordingly there is no gender distribution available for this demographic.

**Intersectional data of ethnicity and gender for chemistry students and staff at UK universities**

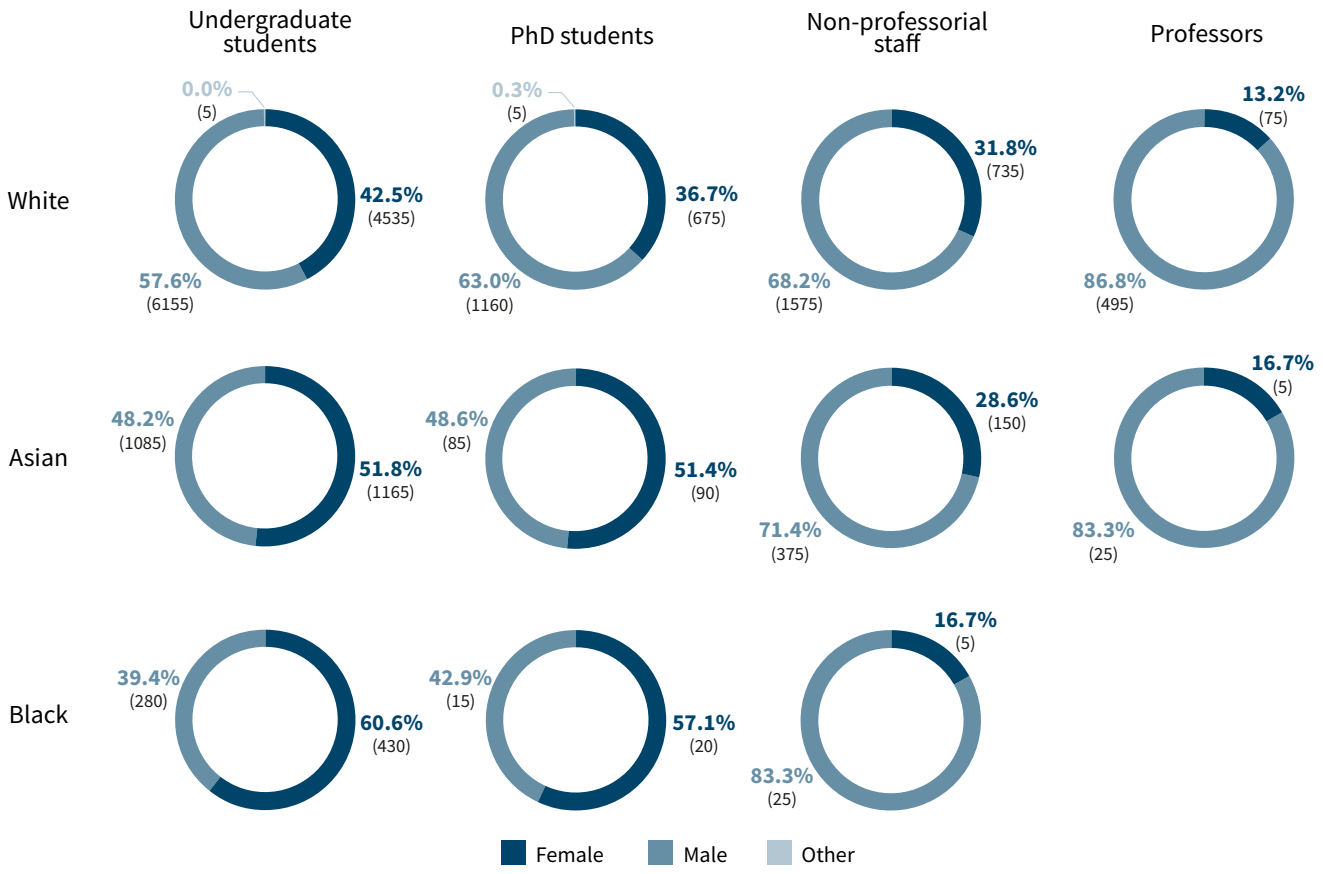


**Figure 5: Gender breakdown by ethnicity for chemistry students* and staff at UK universities as percentages of FTEs. Source: HESA[1] 2019/20 student and staff records. See also Appendix: Data, Table 9.**

*HESA student data only contains ethnicity information for UK-domiciled students. Students domiciled outside of the UK are not included in this analysis.

**The evidence suggests chemists in industry also face significant barriers to success, although there is limited data on the chemical sciences specifically.**

There is limited data available on the representation of people from different ethnic backgrounds who work as chemical scientists outside of academia. However, racial and ethnic inequalities have been documented across the UK workforce.

The 2017 government-sponsored *Race in the workplace: The McGregor-Smith Review* concluded that people from minoritised ethnic backgrounds are underemployed, under-promoted and underrepresented at senior levels across the UK workforce, costing the UK economy £24 billion each year.[6]

The evidence suggests that STEM occupations are even less diverse than the UK workforce as a whole. A recent report by the All-Party Parliamentary Group on Diversity and Inclusion in STEM says that 65% of STEM jobs are done by White men[7]. It is essential we do more to understand and address the barriers in the chemical sciences, which account for 275,000 chemistry-using professionals as we found in our report *Chemistry's contribution: Workforce trends and economic impact*.[26]

**The RSC membership also highlights the poor progression prospects for Black chemists and our survey reveals a gap in pay and reward based on ethnicity.**

Our membership is comprised of chemical scientists from around the world and a diverse range of sectors and disciplines, including those working in areas such as industry, government and education. This data therefore enriches the picture provided by HESA data for academic chemistry.

We offer a range of member categories: Affiliate, Associate Member (AMRSC), Member (MRSC) and Fellow (FRSC). Membership across AMRSC, MRSC and FRSC categories tends to correlate with progression in career stage and increase in age, in that order.

The proportion of our members who identify as Black decreases from AMRSC (14%) to MRSC (3%) and FRSC (1%) (see Figure 6, and Table 10 in Appendix: Data).[27]

**Ethnicity breakdown of RSC membership, by member category**

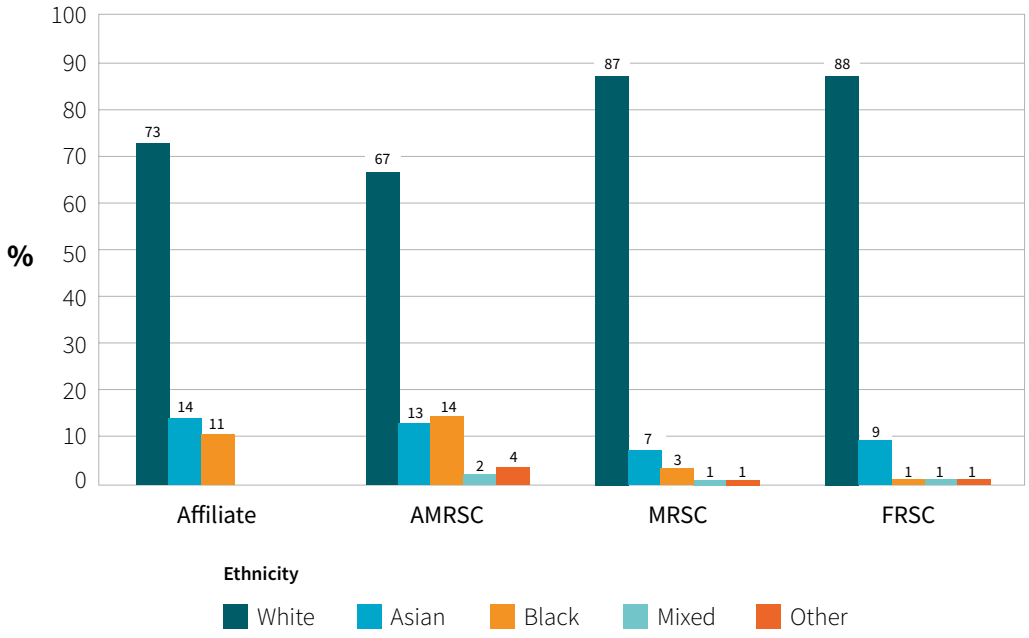


**Figure 6: Ethnicity breakdown of Royal Society of Chemistry membership, by member category. Source: RSC Diversity Data Report 2020.[27] See also Appendix: Data, Table 10.**

This reduction in representation at more senior membership categories reflects wider inequalities in all sectors, with limited career progression for Black chemists.

Our *Pay and Reward Report 2021*[28] further reveals inequalities in the chemical sciences based on responses from our members in the UK, including gaps in salary and reward based on ethnicity. Respondents from minoritised ethnic backgrounds have a lower median salary (£41,000 full-time) than White respondents (£47,000 full-time), as well as a lower median annual bonus (£2,100 vs £4,000). Chemists from minoritised ethnicities are also significantly less likely to agree that their pay is fair and significantly less likely to say that their current job provides a level of income they are happy with, compared to White chemists.

The report also found that unemployment is higher for respondents from minoritised ethnic backgrounds than those who are White (4% vs 1%), as is the percentage of those on a fixed-term contract which is more common in academia (20% vs 7%). This may be related to the relative overrepresentation of respondents from minoritised ethnic groups in academia vs outside academia.

As a professional body we need to actively track and understand the demographics of our membership and the barriers that are perpetuating the underrepresentation of particular groups, so that we can help to increase diversity in the community we are here to support.

Although there is limited data globally, and nuances as to race and ethnicity data collection, there is further evidence of the underrepresentation of Black people in the chemical sciences as a global community. For instance, in the US, Black chemists are also underrepresented throughout academic progression. While Black people make up 12.3% of the US population, only 7.9% of those who receive a bachelor's degree are black. This further drops to 4.5% among those who receive a PhD. After postgraduate studies, Black representation further drops to 3.2% of postdoctoral researchers in universities and only 1.6% of chemistry professors at the top 50 US schools.[29]

**Organisations are not sufficiently incentivised to do better.**

It is clear that higher education institutions and businesses are not doing enough to improve ethnic equality. While there are a range of voluntary initiatives, these are not incentivising change at a sufficiently rapid pace.

For example, the Race Equality Charter (REC) was launched in 2016 to encourage and recognise universities' efforts to remove barriers for staff and students who identify as Black, Asian or from minoritised ethnicities.

At the time of publishing this report, just 21 institutions held a bronze REC award and none had received a silver or gold award.[8] There has also been no single sector-wide initiative dedicated to improving the retention and progression of UK Black faculty.

***"The [REC] scheme doesn't have any incentive, it's more of a marketing tool. Ethnicity problems are where gender problems were 20 years ago."***

**TANVIR HUSSAIN, UNIVERSITY OF NOTTINGHAM (NEW SCIENTIST[30])**

Industry is also making slow progress. In 2017, the *Parker Review* recommended that every FTSE 100 company should have at least one director from a minoritised ethnic background on its board by 2021. Currently, 37% of FTSE 100 and 69% of FTSE 250 companies still do not have any minority ethnic representation on their board.[9, 10]

There is also no requirement for companies to publish data on retention and progression for different ethnic groups. However, there is some momentum to change this. In 2020 the Confederation of British Industry and leading companies launched the Change the Race Ratio campaign, calling for businesses to set and publish clear targets for greater racial and ethnic diversity at board and senior leadership levels.[31]

Other initiatives, such as Business in the Community's *Race at Work Charter*, include capturing and publishing ethnicity data as a key action to improve equality of opportunity in the workplace.[32]

# Barriers to success – key findings from our new research

**A range of complex and interacting factors lead to discrimination and inequalities that limit people from Black and minoritised ethnic backgrounds from choosing and fulfilling their potential in the chemical sciences.**

However, the interviews and focus groups we conducted with chemical scientists working in a range of sectors, including academia and industry, enabled us to identify common drivers that have the greatest impact on retention and progression.

## Six key themes

emerged from our qualitative research,
which recur at each stage of the career pathway:

1. **Attraction, inspiration and progression**
2. **Mentoring, sponsorship and networks**
3. **The culture of chemistry**
4. **Funding systems and structural barriers**
5. **Global community**
6. **Leadership in the community, accountability and allyship**

## 1. Attraction, inspiration and progression

### A lack of role models

Many participants said the lack of relatable role models from Black and minoritised ethnic backgrounds is a significant barrier to inspiring people of similar backgrounds to pursue and progress in a chemical sciences career.

A lack of racial and ethnic diversity in teachers and leaders in schools means that young people often do not have role models early on. The chemistry curriculum, particularly through celebrated contributions from chemists that are predominantly White, can also foster a sense that chemistry is "not for people like me".

This persists at later stages. Black and minoritised ethnic chemists don't often see or interact with "people like them" who have successful careers in the chemical sciences and could inspire a sense that they too could achieve highly in the field.

> **"There is such a lack of role models. The people who are celebrated chemists are White people, I just don't see people who look like me."**

### A misconception about a career in chemistry

Some chemists said that their parents and other close family members had a strong influence on their decisions to study chemistry. However, it was also suggested that many parents and carers do not see chemistry as aspirational or as providing a route for social mobility.

A lack of role models may also mean that young people and families from minoritised ethnic backgrounds, are less likely to be aware of the rewarding career options available in the chemical sciences.

Our previous research has shown that students' knowledge of relevant career options, perceptions of scientists and family influences, among other factors, contribute to their decision to study chemistry beyond compulsory level.[33]

These considerations have also been echoed in recent conversations we have had with people working in industry. Students from Black and minoritised ethnic backgrounds may be more likely to pursue vocational or professional courses such as medicine, due to cultural or family pressures and a lack of awareness of alternative options.

### Limited careers guidance

In addition, many participants said they received limited guidance and support related to chemical science careers both at school and later on.

A lack of resources and limited time make it harder for schools to address issues of inequality and attainment gaps. There are opportunities for other organisations to showcase different stories and experiences and for targeted visibility among schools and communities that have high Black and minority ethnic populations. Our careers campaign *A future in chemistry* attempts shows a range of case studies, but a concerted effort will be required to make sure inspiring materials appeal to and reach diverse audiences.

> **"There is definitely much more opportunity here around careers in chemistry. Organisations like the RSC could be making a real difference here – a campaign around what a career in chemistry could be or "a chemist looks like..."**

### The need for more long-term outreach

Short-lived school outreach programmes were perceived to have limited use and impact. This echoes the results of our five year longitudinal research programme *Chemistry for All*[35]. A more successful approach would focus on the long-term, target multiple levels (student, school and parents/guardians), and involve industry support.

> **"Outreach needs to be for decades, not days."**

### Intersectionality and socioeconomic background

Discrimination and disadvantage are often intersectional in nature. For example, in the UK those from Black and minoritised ethnic backgrounds are more likely to be living in poverty (in a household with an income less than 60% of the median) than those who are White.[34]

This potentially puts minoritised ethnicity individuals at an additional disadvantage when it comes to pursuing chemistry. Our *Chemistry for All* research showed that students from less advantaged socioeconomic backgrounds are less likely to have a positive home learning environment for chemistry and to have lower levels of family science capital.[35]

This means that they may have had fewer opportunities to experience and feel connected with chemistry, or science more broadly, and be less expected or encouraged to continue with it.

## 2. Mentoring, sponsorship and networks

### The key role of mentoring and sponsorship

Participants highlighted the fact that Black chemists and those from other minoritised ethnic backgrounds are less likely than their White peers to benefit from the mentorship and sponsorship that is so crucial to success as a student and professional.

> **"Coaching, sponsorship, mentoring, allyship - these are the four threads we must pull on to make the change come through."**

This is partly due to the underrepresentation of these groups at senior levels. Mentors and sponsors, regardless of ethnicity or any other identity, play a key role in giving advice and opening doors to networks and opportunities, but the tendency towards homophily means that many people intuitively nurture people who seem more "like them". This has to change if we are to make measurable progress on the retention of Black and minoritised ethnicity individuals in chemistry, as the data shows that those currently in senior levels are predominantly White.

> **"There is a lot of focus on getting people into university, but what happens when a Black student gets in? We need to look at transition support as students go through different stages. You need mentors to help you navigate the system for the duration."**

# Mentoring, sponsorship, allyship – what's the difference?

**MENTORS** provide guidance, advice and support through a sustained and one-to-one relationship. Mentoring is valuable to both mentees and mentors. Mentors will often suggest or facilitate opportunities, for example by introducing you to key contacts in their network. Often, mentors are more experienced in their career paths and may share similar lived experiences or ambitions as you.

**SPONSORS** act as champions or advocates for you, and can help by identifying and suggesting opportunities. Sponsors can be anyone – colleagues, peers, managers, acquaintances or even strangers – who is familiar with your experience and is willing to share this with others. For example, a sponsor would suggest your name when considering collaborators, speakers for an event, or any other opportunities that may help you advance in your career.

**ALLIES** support and advocate for those who are underrepresented, and usually are not part of that underrepresented group themselves. Allies can be anyone who actively works to self-educate, self-reflect, recognise their own privilege, and advocate for those who do not have that privilege. For example, if you are Black or from a minoritised ethnicity, an ally would identify and challenge perspectives based on racism and discrimination that may impact you and your career, whether you are in the room or not.

### The problem with homophily

Homophily describes the tendency for individuals to associate with those who are similar to themselves, sharing common characteristics which may include ethnicity. This leads to a further disadvantage for underrepresented groups, as the lack of 'similar' individuals around you, in particular at senior levels, means that you are less likely to have equal access to mentors, sponsors and networks. Homophily requires conscious and continued efforts to break.

### Support for individuals is rare and lacks an institutional approach

Mentorship experiences often had a transformational impact on people's careers. Several participants described their experiences of being sponsored or mentored by a senior White academic.

> **"I was mentored by my senior White colleague very recently and this has made an enormous difference... I can see the possibilities to move into a new more senior role in a way that I didn't believe was possible before."**

> **"There was no-one more senior than me who was Black. And this can close doors. I never had formal mentoring, but I did have people who were interested in my career. Those people are still supporting me."**

However, these examples are still few and far between. Too often, getting the right support relies on the efforts of individual colleagues.

There is a need for institutions to make systematic commitments to tackling inequality and exclusion, rather than it being left up to individual action alone.

### Stereotyping of Black students

There is substantial evidence that negative stereotypes about Black people and those from minoritised ethnicities are widely held in UK society and this in turn affects how people with these identities are treated in education and work.[36, 37]

Participants in this study shared a range of experiences where stereotypes about their motivation and focus may have influenced the level of support they received. For example, some said they had noticed lecturers being reluctant to push Black students to succeed, out of a misplaced sense of concern or kindness.

This kind of harmful stereotyping can start early. For example, one participant highlighted that young Black women are often held to a different standard and are encouraged to modify their behaviour.

> **"There is definitely a double glass ceiling if you are Black and a woman or a girl. You get told to be quiet, speak more softly. That starts early in school too."**

### The importance of networks for community and support

Many participants said getting involved in networks can help those from underrepresented backgrounds find a sense of community and support in a context where they often feel they don't belong.

This echoes the findings from our research on *A sense of belonging in the chemical sciences*.[15] We found that building a sense of belonging is essential for enabling people to feel more included and to increase diversity, and leads to better science outcomes.

However, the time needed to build networks is often constrained by the need to earn an income, particularly for students under financial pressures.

There is also a need to both recognise differences and build solidarity between different groups of students and researchers. There is a risk of reinforcing a sense of being 'othered' if people are viewed through the lens of being 'not White'.

**"'We're not all White' doesn't automatically bring people together. We need to create the spaces where discussions about race can happen separately and together – led by students but very much supported and enabled by staff and leadership teams."**

## 3. The culture of chemistry

### Being excluded

Participants said it is common for chemists from Black and other minoritised ethnic backgrounds to feel isolated and like they don't belong. This is particularly the case at undergraduate level, although it continues to be a challenge at later stages of the career path.

A few participants reported experiences of overt exclusion. One participant was told as an undergraduate: "this place is not for your sort".

However, most exclusion is subtle and therefore difficult to challenge or even distinguish as discrimination.

For example, many participants described a pervasive "Black tax" – being subject to greater scrutiny and held to a higher standard than White colleagues.

They gave examples of behaviours from supervisors and colleagues that undermined their initiative and confidence, such as being more closely monitored than their White peers.

**"There is bias in everyday interactions. Often, it's so subtle that supervisors are often not aware they are doing it. I called this behaviour out with a supervisor... I had to point it out two or three times, I don't think it was deliberate, she just didn't see she was doing it."**

**"There are definitely cases of over-supervision. I have one PhD student, one of the supervisors always made sure he was always in the room with him, watching what he's doing. This is different to other White colleagues."**

Participants said this kind of regular discrimination does more long-term damage than major confrontations around race. For some this directly impacted on their motivation and commitment to stay the course.

**"I am leaving academia. I want to be able to take control of what I do, in academia you are controlled by others... Someone wants to guide you, check on you, make sure you're doing it right. This doesn't happen to White peers."**

Our report *A sense of belonging in the chemical sciences*[15] similarly highlighted the negative impact that not-belonging can have, particularly on underrepresented groups.

***Chemists described how feeling like they don't belong is associated with a sense of under-performance, of losing motivation, falling 'out of love' with chemistry, and seeing their career stall. Over time, not-belonging leads chemical scientists to ask whether chemistry is the right place for them.***

**A sense of belonging in the chemical sciences**

### A double jeopardy

In some cases, participants identified a double jeopardy, where it is assumed a Black candidate will be automatically advantaged as "the diversity hire" and this leads to them being denied opportunities. Or conversely their successes are attributed to positive discrimination rather than talent.

**"Projects get taken away from you and given to others. It's assumed you don't need it – there's actually a sense that I'll be alright because I'm the 'diversity hire'."**

### A competitive, hierarchical and inflexible working culture

Some participants also highlighted the culture of competitiveness and long hours in chemistry.

This echoes the findings of our *Breaking the barriers* report.[25] on the challenges that women face about progression in chemical science careers, and our *A sense of belonging in the chemical sciences* report[15] on the experiences of chemical scientists more broadly.

Participants in both these pieces of research highlighted the negative impact of a chemical sciences culture that can be competitive, hierarchical, exclusive and inflexible.

**"Academia has a problem in terms of its culture – even if you remove race and ethnicity. There is a culture of 'just always working'."**

Although this culture impacts everyone, it can compound the sense that success in a chemical science career is inaccessible for those who are already underrepresented in the chemical sciences, and particularly those facing the intersectional challenges of also coming from a disadvantaged socioeconomic background or having familial or caring responsibilities.

## 4. Funding systems and structural barriers

Many participants spoke about the need to focus on structural disadvantage across the board, rather than helping individuals adapt to a flawed system.

**"We mustn't change the water, we must change the pipe – the whole process, systems and the infrastructure that support the progress of Black and Asian people through the system."**

**"The system is broken... from postal reviews to panels. It's not simple or overt, it's nuanced and it's institutionalised. We need a serious and holistic intervention to address this."**

**"Too much has been focused on the deficit model and making us 'better'."**

### Unequal opportunities to gain research experience

Early research experience is a key driver for progression in the chemical sciences. Getting access to prestigious laboratories as an undergraduate can often be a defining step.

Many interviewees highlighted that Black and Asian students are less likely to study at a Russell Group university than their White peers, as shown in Figure 2 in the previous section of this report. This puts them at a disadvantage for gaining research experience, as a large proportion of research funds are awarded to Russell Group universities.

**"Students from non-Russell Group [universities] don't get the access to research experiences that their Russell Group counterparts do. The point gets compounded if you are a Black or minority ethnic PhD student as you're less likely to be coming from a research-intensive university in the first place."**

**"There are certainly opportunities for collaboration between institutions – using more Coordinating Investigator roles and bringing in experiences from different institutions, particularly from Post-92s."**

In addition, students with financial support find it easier to get research experience. Positions are often unpaid and there is a perception by PIs that students are talented but 'cheap' labour.

This excludes students from less advantaged socioeconomic backgrounds, many of whom are statistically more likely to be Black or from minoritised ethnic backgrounds.

There is also the intersectional challenge shown in *Chemistry for All* that socioeconomically disadvantaged students are less likely to have family science capital[35], and so do not have familial guidance to help them navigate the academic or research systems or to help facilitate connections that lead to research opportunities.

### Unequal access to research funding

Many participants highlighted the unequal distribution of research funding, with Black researchers and those from minoritised ethnic backgrounds being less likely to be awarded grants.[5]

This creates a further structural barrier in the chemical sciences and STEM more widely, particularly in academia, because research outputs are the primary driver of progression.

This form of disadvantage also compounds over time. Limited access to funding makes it harder to produce and publish research, which means that in turn scientists are less likely to get funding in future as funders look at applicants' track records.

**"There are definite issues of inequity in the way that calls for funding are shaped. You get these sandpit events and they are invitational only... everyone who is invited can say what they think then the call is shaped to the loudest voice in the room..."**

**"There is an under-estimation of my potential – decision-making panels need to be trained and balanced."**

There is a need and an opportunity for funding bodies and other organisations, such as scientific publishers, to take steps as a community to drive racial and ethnic equality in the global research ecosystem, for example by collecting and publishing relevant data and by using this to measure progress.

### Narrow definitions of excellence

Many participants shared how narrow and outdated definitions of excellence can limit opportunities for a more diverse range of candidates.

Perceived academic "pedigree" can be a barrier to moving ahead despite somebody's potential or achievements, as can time restrictions for demonstrating certain outcomes.

> **"The place of one's last job, studies or supervisor gives you a certain branding. This bias is very hard to get past."**

> **"I think we lose diversity at the top particularly in academia by the narrow definition of success."**

This again echoes the findings of our *Breaking the barriers* report[25], as well as our *Re-thinking recognition: Science prizes for the modern world* report on the findings of an independent external review of our prizes.[38]

Following the *Re-thinking recognition* review, we have been evolving our recognition portfolio to ensure that it reflects and incentivises the many types of achievement and contribution that are important to ensure that the chemical sciences have maximum impact for the world.

This includes recognising different types of excellence, including technical excellence as well as excellence in areas like leadership, service and engagement. In 2020, we launched our new Horizon Prize programme that recognises teams and collaborations. The first cohort of winners includes people in a much broader range of roles and career stages than the historical portfolio.

### The need for more flexible career paths

Some participants suggested that, as well as improving racial and ethnic diversity at all levels of the career path, we need to rethink the pipeline concept itself.

There was a strong view that funders and higher education institutions need to recognise and value more than one type of career path in academia and beyond.

> **"Most grants and awards for early career researchers judge people on how long it has taken them to achieve 'X'... Beyond carer duties and maternity leave, other reasons for taking more time to achieve 'X' are not considered."**

Supporting a less linear, more flexible career path, with a wider range of roles and greater movement between roles and sectors, would open up the chemical sciences to a much broader range of people.

> **"We need to talk about career *paths*, not a single path. Where people can move between sectors and roles, not just stick in one lane."**

### The case for proactive measures

Some participants spoke about the UK government's increased commitment to research and development spend over the coming years. They identified an opportunity to level the playing field in the chemical sciences, for example by ring-fencing funding and adopting representation targets, although they also said a cautious approach is needed.

> **"I think there is a case for positive action. We need significant grant funding that can be earmarked for people of minoritised ethnic groups."**

> **"Maybe ring-fencing funding for Black postgraduate students to address underrepresentation. We do need to be careful though – we need to be there on merit, not tokenism."**

Institutions should give more useful feedback to candidates who are unsuccessful in applying for jobs and grants. Currently, it is not the norm to give detailed feedback, which means it is hard for researchers to know how to improve their future chances of success. This can have a greater impact on Black and minoritised ethnicity researchers who have few role models and mentors to help them navigate these processes.

## It's time for equity

Equity is defined as the situation in which everyone is treated fairly and equally.[39]

Equity goes a step further than equality through positive action to achieve fairness of outcomes and equal access to opportunities. This requires acknowledging and addressing the barriers that are hindering or preventing individuals from reaching their potential.

## What is meant by Global North and Global South?

The terms Global North and Global South refer to groupings of countries based on socioeconomic and political characteristics, rather than the geographic Northern and Southern Hemispheres.

## 5. Global community

A number of participants highlighted the fact that scientists in countries such as the UK tend to prioritise collaborations with other countries in the Global North or other English-speaking countries, with research conducted in the Global South sometimes being under-valued.

They highlighted the need to challenge this view and embrace opportunities to recognise and collaborate with the diverse range of talent across the global chemical sciences community.

Building stronger links with the Global South could enable chemical scientists to be inspired by and work with role models from a wider range of racial and ethnic backgrounds.

> **"We're interconnected as a world; we need a global perspective and approach. We need to be engaging with organisations outside of the UK to help bring in new role models."**

This echoes a point made by some contributors to our *Sense of Belonging report* [34], who spoke about how at home they felt attending international conferences with chemists from different countries, where there was a diverse range of participants and everybody was accepted.

### Global perspectives for global challenges

More broadly, working more closely with partners in the Global South could open up different perspectives, approaches and opportunities for impact.

> **"We need more global support for a global chemical community. The RSC could be helping to build this and build a global community of practice."**

> **"There is a role here, potentially for the RSC as well as others, in igniting the fire – in partnership and in creating accountabilities for change."**

This is particularly the case in relation to the United Nations Sustainable Development Goals, which will require proactive and sustained commitments and cooperation between the Global North and South.

Some participants spoke about the need to communicate the central role that chemistry plays in solving such global challenges, to attract a broader range of people into the discipline.

> **"We need to change the way we talk about careers and the contribution that chemistry makes … Make chemistry a social force for good in the world. Make it more about economic benefit and sustainability."**

## 6. Leadership in the community, accountability and allyship

### The need for institutional and sector-wide leadership

Many participants reflected on the slow pace of change and the risk that organisations will merely make cosmetic changes, rather than commit to the structural shifts required to truly address racial and ethnic inequalities.

> **"Black Lives Matter prompted a change, but sometimes it's cosmetic – commission a report, wring their hands, present their data but there's no real change…"**

They called for much stronger institutional leadership within the chemical sciences on issues of racism, discrimination and inequality.

> **"I would like to see a strategic and institutional commitment, which provides leadership for the community and signals where we want to see all our partners going."**

### Holding organisations to account

A number of participants highlighted the fact that there is limited data on the racial and ethnic composition of organisations' workforces, or their plans to improve inclusion and diversity. This makes it hard to hold them to account on inclusion and diversity.

They suggested that publicly funded bodies should be required to publish race and ethnicity data, along with their plans to improve progression and retention for underrepresented groups.

> **"Any organisation that receives one penny of public funds should publish their ethnicity data AND an action plan to get Black and minority ethnic people to the top of their organisations."**

This view was echoed by someone in a senior leadership position in industry, who emphasised that "what gets measured gets done."

We can learn from the progress that has been made in supporting women's retention and progression in the chemical sciences, although there is still a long way to go to achieve gender equality.

> **"We need something like we have had with gender in the chemical sciences. Something to help focus the attention and the effort into something practical to actually help make a difference."**

### The unequal burden of addressing inequalities

Many participants reported a striking sense of representation fatigue. The same small group of people, usually from minoritised ethnic backgrounds themselves, are called upon time and again to push for change.

> **"I've never heard a White colleague say, 'What we need is more Black chemists around here!'"**

> **"There is a burden in always being "the voice" for diversity and inclusion."**

Initiatives to boost participation are often the passion and work of a few dedicated individuals.

For example, more senior students and staff from Black or other minoritised ethnicity backgrounds are repeatedly called upon to act as mentors or to support colleagues from minoritised ethnicities.

However, they usually receive little support or recognition for their work from their organisations, which puts them at risk of fatigue and burnout.

**"The same people are called on all the time – people get burned out by this. We need to find more people. We need to build the networks."**

**"Inclusion and diversity are central to my university's new strategy and leadership – that gives me confidence. However, people who are doing this day-to-day are still doing their day job – they are not recognised for it."**

### The importance of allyship

The overreliance on Black chemists and those from minoritised ethnicities to champion inclusion and diversity highlights the crucial need for allyship in challenging racism, discrimination and ethnic inequalities.

Allyship means using one's power, visibility and voice to raise awareness and start conversations about racism and exclusion. White colleagues can play a particularly important role in doing this when it comes to racial and ethnic inequalities, much as men have been essential allies in challenging sexism and discrimination against women.

The chemists we spoke to emphasised the positive difference that allies can make.

**"A strong network of allies can be critical in helping drive change for the better so that... Higher education institutions provide equity for staff from all minorities and create a welcoming inclusive culture."**

Although anybody can be a valuable ally, senior colleagues can often have a significant impact in nurturing a more supportive culture.

We heard several examples where a PI had a significant influence (both positive and negative) on the culture of a research team and ultimately whether an individual from a minoritised ethnicity decided to stay in a team.

**"Many well-intentioned people in these positions of power who could be disposed to help simply have a blind spot – racism and inequality are just not on their radar as issues."**

### We need to keep race and ethnicity top of the agenda

Our research makes it clear that we need to keep talking about race and ethnicity in the chemical sciences, just as we do in society more widely. This involves using terms including racism, discrimination, power and privilege.

These conversations may be difficult and uncomfortable, but unless we persist with them, we won't move forward.

**"We need to take a stark look at the culture we've built – does it invite people in and allow them to grow? We have work to do."**

**"I think there's an appetite for change in the chemical sciences community. Equally there is a lack of knowledge of what to do. Many organisations can't even have the conversation about race and ethnicity. They don't have the language and it's inconvenient and uncomfortable – they're not willing to put in the work, time and reflection."**

# Our commitments

**In order to continue dismantling barriers for people from Black and minoritised ethnic backgrounds in the chemical sciences, we will:**

## 1 Create a dedicated Race & Ethnicity Unit, funded by an initial £1.5m investment to lead systemic change.

The depth of inequalities has shown us that dedicated resources are required to address them. We will establish a Race and Ethnicity Unit within our Inclusion and Diversity team with an initial investment of £1.5 million over the first three years. The aims of this unit will include:

- convening partners as the focal point for collaboration with education, industry, charity, and government sectors, in addition to publishers and research funders.
- collecting, analysing and publishing new data and evidence from lived experience in a timely way, and following up on progress.
- devising, managing and delivering large projects, research and actions.
- providing new large grants for UK chemistry departments to create systemic change by improving the representation and progression of chemical scientists from minoritised ethnic backgrounds.

We will also continue to encourage and financially support community-driven initiatives that address racism and ethnic inequalities through our existing Inclusion and Diversity Fund, including ringfenced funding.

## 2 Partner with chemical industry employers to strengthen career support, opportunities and progression.

We will launch a programme in partnership with companies of all sizes, across chemical science sectors, to increase the retention of Black and minoritised individuals within the chemical sciences. Focusing on career routes in industry, innovation and entrepreneurship, the pilot programme will be called *Broadening Horizons in the Chemical Sciences*. It will provide undergraduates, postgraduates and recent graduates with direct exposure to:

- options for career pathways;
- role models, mentoring and sponsorship;
- non-academic workplace and research environments;
- RSC careers support;
- opportunities for paid experience with participating companies.

## 3 Launch a five-year RSC-Windsor Fellowship mentoring scheme for chemistry students.

We have launched *Destination STEMM – Chemical Sciences*, a five-year pilot mentoring programme to support chemistry students from Black or minoritised ethnic backgrounds through their A-level or equivalent studies. This programme, in partnership with the Windsor Fellowship and supported by our Chemists' Community Fund, will include pairing Year 12 chemistry students with a mentor for 18 months, to help them navigate the transition from school to chemistry-focused degrees and pathways.

## 4 Proactively increase representation in our governance, committees and editorial boards.

We remain committed to proactively increasing the representation of those from Black and minoritised ethnic backgrounds in our governance boards and committees, making progress toward our goal of reflecting the ethnic diversity of the UK. This will continue to be reported in our diversity data report, which is published every two years, alongside other diversity data, including from our publishing editorial boards.

## 5 Engage with our community and partners to listen to, share and learn from lived experiences and continually challenge ourselves to do more.

We recognise the above four commitments will begin to address some of the inequalities highlighted in our research but will not solve the scale and complexity of the issues in their entirety.

In seeking to achieve a truly global chemistry community we will continue to empower, convene and raise the voices of the underrepresented, working hand in hand with partners to address racism and racial and ethnic inequalities wherever they exist in the chemical sciences.

# Appendix: Data

## HESA data sources and filters applied

This publication contains data provided by the Higher Education Statistics Agency (HESA), based on the student and staff records from 2010/11 through 2019/20, and graduate outcomes survey results record from 2018/19.[1] Copyright: Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information supplied by HESA Services. Only UK domiciled students were included in the analysis. People with unknown ethnicity were not included in percentage calculations.

HESA data have been treated according to the ***HESA anonymisation methodology***, and percentages have been calculated from numbers that were rounded to the nearest 5. Numbers below 2.5 are rounded to zero and omitted.

## Students

- Student numbers were obtained from ***HESA Student dataset*** by summing the Full-Time Equivalent (FTE) numbers filtered by:
  - "Subject of study" = "Chemistry": For 2018/19 and earlier, "Principal subject JACS (2 Digit)" = "(F1) Chemistry" and for 2019/20 "Subject of study (CAH3)"="(CAH07-02-01) chemistry
  - "Student population marker" = "Counted in the standard registration population"
  - "Domicile" = Wales; UK, not otherwise specified; Wales (unitary authority unknown); North West; South West; Yorkshire and The Humber; West Midlands; Guernsey, Jersey and the Isle of Man; East of England; North East; Scotland; Scotland (council area unknown); South East; Northern Ireland; Northern Ireland (district council area unknown); London; East Midlands; England region unknown; England (county/unitary authority unknown); UK region unknown; United Kingdom, not otherwise specified
- "Undergraduate Students" corresponds to Level of study: First degree; Foundation; Other undergraduate
- "PhD Students" corresponds to Level of study: Doctorate
- "Russell Group" corresponds to Institution Founding Year (group): Russell Group
- "Other Non-Russell Group (Pre-92)" corresponds to Institution Founding Year (group): 1600-1959; 1960-1991; Before 1600
- "Post-92" corresponds to Institution Founding Year (group): 1992-2000; Post 2000
- "Female" corresponds to ***Sex***: Female
- "Male" corresponds to Sex: Male
- "Other" corresponds to Sex: Other

## Staff

- Staff numbers were obtained from ***HESA Staff dataset*** by summing the Full-Time Equivalent (FTE) numbers filtered by:
  - "Cost Centre (group)" = "Chemistry" for "Chemistry"
  - "Session population marker" = "Contract counted within session population"
  - "Academic employment function" = "Academic contract that is both teaching and research" or "Academic contract that is neither teaching nor research" or "Academic contract that is research only" or "Academic contract that is teaching only"
- "Non-Professorial Staff" corresponds to:
  - Contract Level: L0 Senior Administrative staff ( Professional/technical) Research assistant, Teaching assistant; Senior Administrative staff (Professional/technical) Research assistant, Teaching assistant; (L0) XpertHR level L
  - Contract Level: K0 Senior Professional(Technical), Lecturer, Research fellow, Researcher (senior research assistant), Teaching fellow; Senior Professional(Technical), Lecturer, Research fellow, Researcher (senior research assistant), Teaching fellow; (K0) XpertHR level K
  - Contract Level: I0 Non-Academic section manager, Senior/principal lecturer, Reader, Principal Research fellow; Non-Academic section manager, Senior/principal lecturer, Reader, Principal Research fellow; J0 Team Leader(Professional, Technical, Administrative), Lecturer, Senior Lecturer, Senior
- "Professors" corresponds to Contract Level: F1 Professor; Professor; A0 to C2 Senior management; Senior Management; D and E Head of Schools/Senior Function head; head of schools/Senior function head; F2 Function head; Function head; (F1) UCEA level 5A; (F2) UCEA level 5B; Head of schools/Senior function head

## Graduates

- Graduate numbers were obtained from ***HESA Graduate Outcomes*** dataset by summing the Full-Person Equivalent (FPE) numbers and all numbers shown are filtered by:
  - Principal subject, JACS 3.0 (2 Digit) = "(F1) Chemistry"
  - Level of qualification = First degree (excluding Doctorate, Foundation degree, Masters, Other postgraduate, Other undergraduate)
  - "With a 2:1 or higher" corresponds to Class of first degree: First class honours; Upper second class honours
  - "Without a 2:1 or higher" corresponds to Class of first degree: "Lower second class honours; Third class honours/Pass.
  - "Paid by employer" corresponds to Main activity: Paid work for an employer
  - "Study or Research" corresponds to Main activity: Engaged in a course of study, training or research
  - "Unemployed" corresponds to Main activity: Unemployed and looking for work
  - "Other" for "Main activity after graduation" corresponds to Main activity: Caring for someone (unpaid); Developing a creative, artistic or professional portfolio; Running my own business; Self-employment/freelancing; Taking time out to travel - this does not include short-term holidays; Voluntary/unpaid work for an employer; Doing something else)

## Supplementary data

| Ethnicity | Undergraduate students | PhD students | Non-professorial staff | Professors | UK population % |
|---|---|---|---|---|---|
| White | 10695 | 1840 | 2315 | 575 | 87.2 |
| Asian | 2250 | 175 | 525 | 35 | 6.9 |
| Black | 710 | 30 | 30 | 0 | 3 |
| Mixed | 695 | 65 | 70 | 0 | 2 |
| Other | 245 | 30 | 75 | 5 | 0.9 |
| Unknown* | 175 | 70 | 305 | 40 | – |

Table 1: FTE numbers by ethnicity for chemistry students and staff at UK universities, and ethnicity percentages for the UK population. *Unknown ethnicity students and staff are not included in percentage calculations. Sources: HESA[1] 2019/20 student and staff records, and 2011 UK census[2].

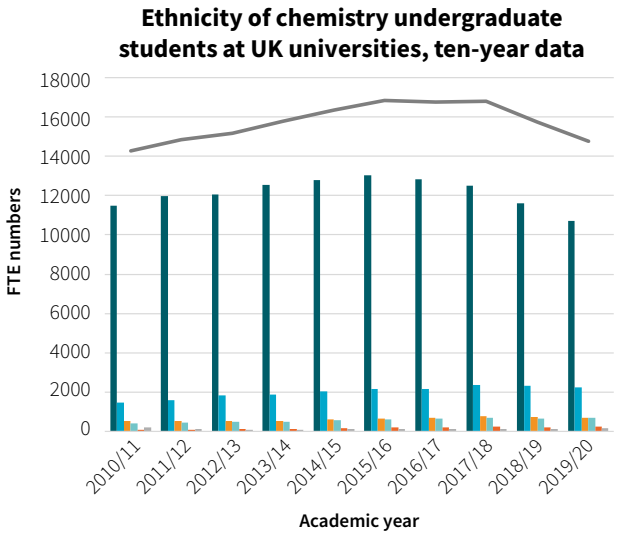


Figure A: FTE numbers for chemistry undergraduate students at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 student records. See also Table 2.

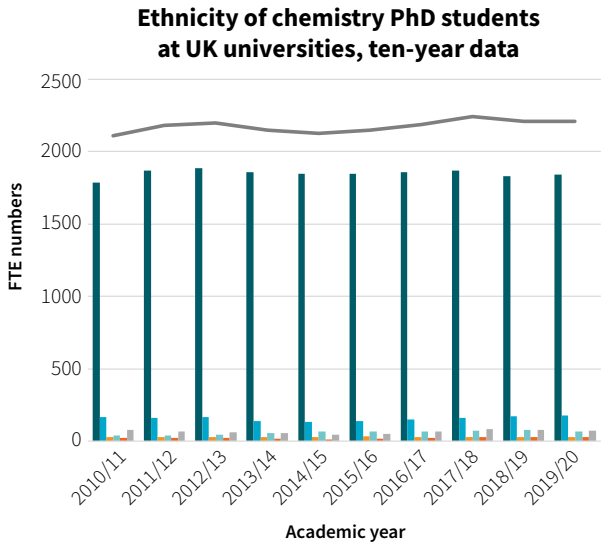


Figure B: FTE numbers for chemistry PhD students at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 staff records. See also Table 3.

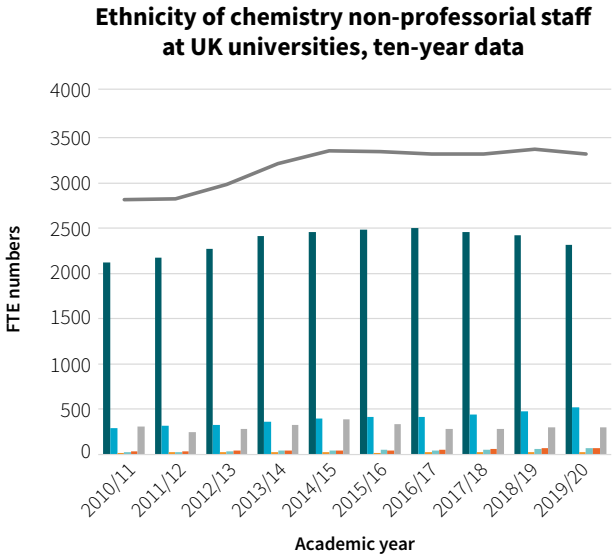


Figure C: FTE numbers for chemistry non-professorial staff at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 staff records. See also Table 4.

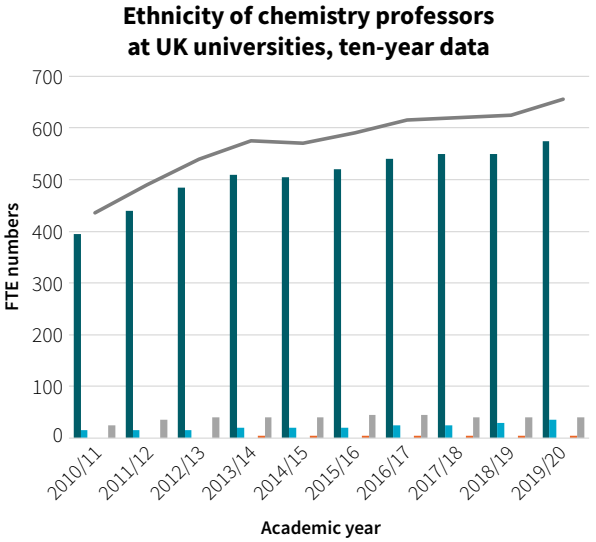


Figure D: FTE numbers for chemistry professors at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 staff records. See also Table 5.


| Academic year | Undergraduate students | | | | | | |
|---|---|---|---|---|---|---|---|
| | White | Asian | Black | Mixed | Other | Unknown | Total |
| 2010/11 | 11495 | 1490 | 545 | 420 | 110 | 200 | 14260 |
| 2011/12 | 11970 | 1605 | 545 | 465 | 100 | 155 | 14840 |
| 2012/13 | 12055 | 1830 | 545 | 485 | 140 | 110 | 15165 |
| 2013/14 | 12535 | 1870 | 560 | 520 | 155 | 115 | 15755 |
| 2014/15 | 12780 | 2065 | 620 | 565 | 190 | 120 | 16340 |
| 2015/16 | 13015 | 2175 | 670 | 625 | 210 | 120 | 16815 |
| 2016/17 | 12840 | 2190 | 710 | 670 | 220 | 120 | 16750 |
| 2017/18 | 12510 | 2390 | 805 | 705 | 260 | 135 | 16805 |
| 2018/19 | 11590 | 2315 | 750 | 675 | 235 | 155 | 15720 |
| 2019/20 | 10695 | 2250 | 710 | 695 | 245 | 175 | 14770 |

Table 2: FTE numbers for chemistry undergraduate students at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 student records.

| Academic year | PhD students | | | | | | |
|---|---|---|---|---|---|---|---|
| | White | Asian | Black | Mixed | Other | Unknown | Total |
| 2010/11 | 1785 | 165 | 25 | 40 | 20 | 75 | 2110 |
| 2011/12 | 1870 | 160 | 25 | 40 | 20 | 65 | 2180 |
| 2012/13 | 1885 | 165 | 25 | 45 | 20 | 60 | 2200 |
| 2013/14 | 1855 | 140 | 30 | 55 | 15 | 55 | 2150 |
| 2014/15 | 1845 | 130 | 30 | 65 | 10 | 45 | 2125 |
| 2015/16 | 1845 | 140 | 35 | 65 | 15 | 50 | 2150 |
| 2016/17 | 1860 | 150 | 25 | 65 | 20 | 65 | 2185 |
| 2017/18 | 1870 | 160 | 30 | 70 | 25 | 85 | 2240 |
| 2018/19 | 1830 | 170 | 30 | 75 | 25 | 80 | 2210 |
| 2019/20 | 1840 | 175 | 30 | 65 | 30 | 70 | 2210 |

**Table 3: FTE numbers for chemistry PhD students at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 student records.**

| Academic year | Non-professorial staff | | | | | | |
|---|---|---|---|---|---|---|---|
| | White | Asian | Black | Mixed | Other | Unknown | Total |
| 2010/11 | 2125 | 295 | 20 | 30 | 35 | 310 | 2815 |
| 2011/12 | 2180 | 315 | 25 | 30 | 35 | 245 | 2830 |
| 2012/13 | 2275 | 330 | 25 | 35 | 40 | 280 | 2985 |
| 2013/14 | 2415 | 365 | 30 | 40 | 40 | 325 | 3215 |
| 2014/15 | 2460 | 400 | 30 | 45 | 40 | 385 | 3360 |
| 2015/16 | 2485 | 415 | 20 | 50 | 45 | 335 | 3350 |
| 2016/17 | 2500 | 420 | 25 | 45 | 55 | 280 | 3325 |
| 2017/18 | 2460 | 445 | 30 | 50 | 60 | 280 | 3325 |
| 2018/19 | 2425 | 480 | 30 | 60 | 75 | 305 | 3375 |
| 2019/20 | 2315 | 525 | 30 | 70 | 75 | 305 | 3320 |

**Table 4: FTE numbers for chemistry non-professorial staff at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 staff records.**

| Academic year | Professors | | | | | | |
|---|---|---|---|---|---|---|---|
| | White | Asian | Black | Mixed | Other | Unknown | Total |
| 2010/11 | 395 | 15 | 0 | 0 | 0 | 25 | 435 |
| 2011/12 | 440 | 15 | 0 | 0 | 0 | 35 | 490 |
| 2012/13 | 485 | 15 | 0 | 0 | 0 | 40 | 540 |
| 2013/14 | 510 | 20 | 0 | 0 | 5 | 40 | 575 |
| 2014/15 | 505 | 20 | 0 | 0 | 5 | 40 | 570 |
| 2015/16 | 520 | 20 | 0 | 0 | 5 | 45 | 590 |
| 2016/17 | 540 | 25 | 0 | 0 | 5 | 45 | 615 |
| 2017/18 | 550 | 25 | 0 | 0 | 5 | 40 | 620 |
| 2018/19 | 550 | 30 | 0 | 0 | 5 | 40 | 625 |
| 2019/20 | 575 | 35 | 0 | 0 | 5 | 40 | 655 |

**Table 5: FTE numbers for chemistry professors at UK universities over ten years, by ethnicity. Source: HESA[1] 2010/11 through 2019/20 staff records.**

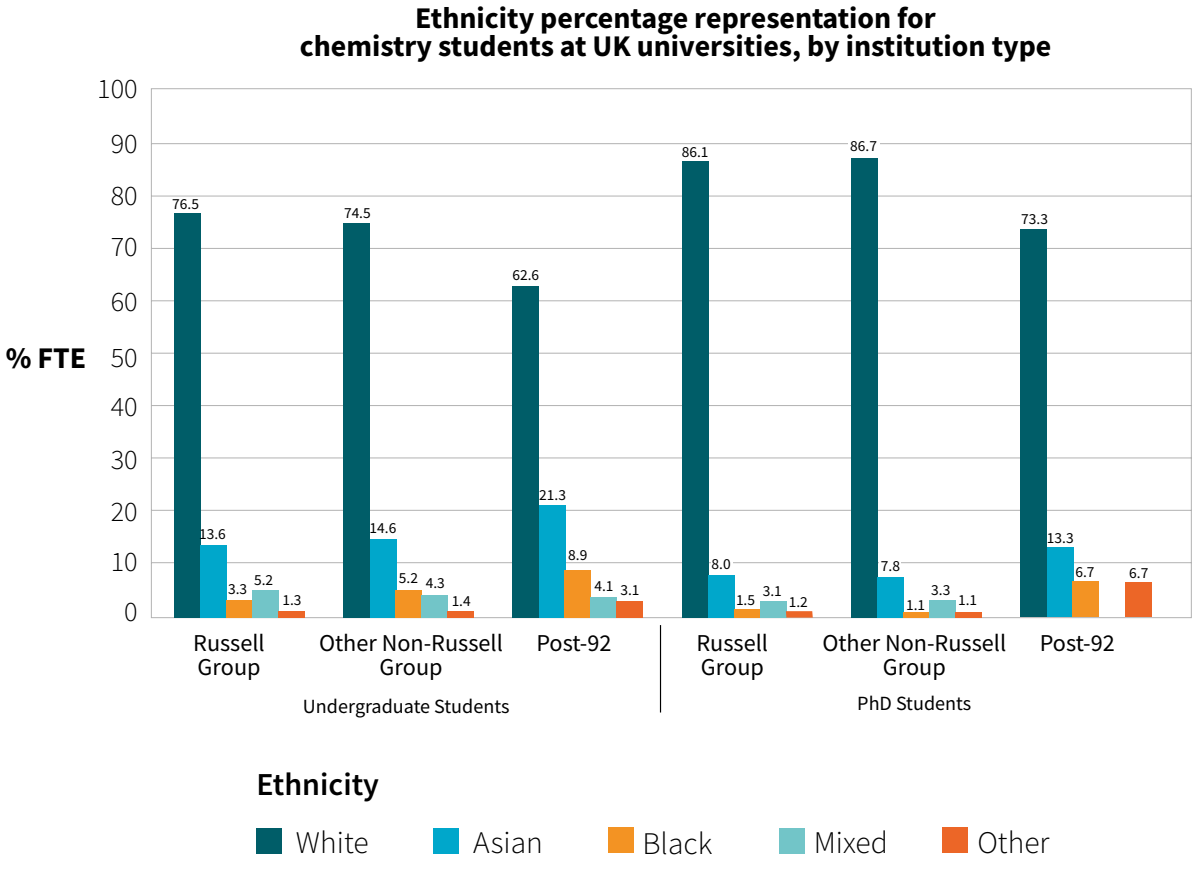


**Figure E: Ethnicity breakdown for chemistry undergraduate and PhD students at UK universities, by institution type, as percentages of FTEs of known ethnicity. Source: HESA[1] 2019/20 student records. See also Table 6.**

| Ethnicity | Undergraduate students | | | PhD students | | |
|---|---|---|---|---|---|---|
| | Institution type | | | | | |
| | Russell Group | Other Non-Russell Group (Pre-92) | Post-92 | Russell Group | Other Non-Russell Group (Pre-92) | Post-92 |
| White | 6200 | 2670 | 1825 | 1390 | 390 | 55 |
| Asian | 1105 | 525 | 620 | 130 | 35 | 10 |
| Black | 270 | 185 | 260 | 25 | 5 | 5 |
| Mixed | 425 | 155 | 120 | 50 | 15 | 0 |
| Other | 105 | 50 | 90 | 20 | 5 | 5 |
| Unknown* | 115 | 45 | 25 | 50 | 20 | 0 |

**Table 6: FTE numbers for chemistry undergraduate and PhD students at UK universities, by ethnicity and institution type. *Unknown ethnicity students are not included in calculations of percentage representation (Figure E). Source: HESA[1] 2019/20 student records.**

| Ethnicity | Class of first degree obtained | |
|---|---|---|
| | 2:1 or higher | 2:2 or lower |
| White | 785 | 1325 |
| Asian | 145 | 230 |
| Black | 40 | 70 |
| Mixed | 35 | 60 |
| Other | 10 | 15 |

**Table 7: Full-Person Equivalent (FPE) numbers for chemistry graduates, by ethnicity and class of first degree obtained (grouped). Source: HESA[1] 2018/19 graduate outcomes records.**

| Ethnicity | Main activity after graduation | | | |
|---|---|---|---|---|
| | Study or research | Paid by employer | Unemployed | Other |
| White | 655 | 1720 | 185 | 170 |
| Asian | 105 | 265 | 50 | 40 |
| Black | 30 | 95 | 15 | 10 |
| Mixed | 25 | 70 | 15 | 10 |
| Other | 15 | 15 | 5 | 0 |

**Table 8: Full-Person Equivalent (FPE) numbers for chemistry graduates, by ethnicity and main activity (grouped) after graduation. Excludes students with "Class of first degree"="Unclassified". Source: HESA[1] 2018/19 graduate outcomes records.**

| Ethnicity | Undergraduate students | | | PhD students | | |
|---|---|---|---|---|---|---|
| | Female | Male | Other | Female | Male | Other |
| White | 4535 | 6155 | 5 | 675 | 1160 | 5 |
| Asian | 1165 | 1085 | 0 | 90 | 85 | 0 |
| Black | 430 | 280 | 0 | 20 | 15 | 0 |
| Mixed | 320 | 380 | 0 | 25 | 40 | 0 |
| Other | 135 | 105 | 0 | 10 | 15 | 0 |
| Unknown | 50 | 125 | 0 | 30 | 40 | 0 |
| **Ethnicity** | **Non-professorial staff** | | | **Professors** | | |
| | Female | Male | Other | Female | Male | Other |
| White | 735 | 1575 | 0 | 75 | 495 | 0 |
| Asian | 150 | 375 | 0 | 5 | 25 | 0 |
| Black | 5 | 25 | 0 | 0 | 0 | 0 |
| Mixed | 25 | 50 | 0 | 0 | 0 | 0 |
| Other | 25 | 50 | 0 | 0 | 5 | 0 |
| Unknown | 105 | 200 | 0 | 5 | 35 | 0 |

**Table 9: Gender breakdown by ethnicity for chemistry students and staff at UK universities. Source: HESA[1] 2019/20 student and staff records.**

| Ethnicity | Affiliate | AMRSC | MRSC | FRSC |
|---|---|---|---|---|
| White | 73% | 67% | 88% | 88% |
| Asian | 14% | 13% | 7% | 9% |
| Black | 11% | 14% | 3% | 1% |
| Mixed | 0% | 2% | 1% | 1% |
| Other | 0% | 4% | 1% | 1% |

**Table 10: Ethnicity breakdown of Royal Society of Chemistry membership, by member category. Source: RSC Diversity Data Report 2020[27]. Due to rounding and/or removal of data sets that risk individuals' identification (less than 5) the sum of all data is not 100%.**

# Appendix: Methodology

**We worked with Firetail, a consulting firm focused on achieving social progress, to develop this report.**

### Evidence landscape review

We conducted a desk review of relevant data and evidence relating to racism and ethnic inequalities in the UK, higher education, STEM and the chemical sciences. This included drawing on our own previous research, including our recent report on how belonging enables inclusion and diversity (*A sense of belonging in the chemical sciences*[15]).

We also reviewed good practice responses from other organisations and observations and evidence shared during our Inclusion and Diversity Forum in 2020 and in 2021 and a range of other events.

### Qualitative research

We conducted interviews with more than 20 stakeholders and conducted four focus groups with chemists working in academia, industry, students, funders of research and I&D specialists from other organisations.

These interviews and focus groups were facilitated independently by Firetail, a consulting firm focused on achieving social progress.

We had open conversations about what influences progression and retention in the chemical sciences for people who identify as Black or from a minoritised ethnicity. We took a participatory and iterative approach so that we could include and honour people's lived experiences as fully as possible.

## Breakdown of research activities

| Research activity | Participants | Details |
|---|---|---|
| **In-depth interviews** | Key stakeholders in the chemical sciences landscape including representatives from academia, funding agencies, industry, inclusion and diversity specialists and policymakers. | In-depth conversations that followed a semi-structured discussion guide. |
| **Focus groups** | Mixed groups of students, chemical scientists in academia and industry, policymakers and funders, including UK as well as international perspectives (Africa, Caribbean, North America). | Facilitated discussion groups exploring the personal experiences of participants and their views on the barriers and opportunities for change. |
| **Learnings from the RSC Inclusion and Diversity (ID) Forum** | Speakers from various sectors in the chemical sciences, inclusion and diversity specialists, policy makers, funders and publishers, and an audience of over 800 registrants worldwide. | Informal discussions on presented topics and facilitated breakout discussions on various themes related to racial and ethnic inequalities. |
| **Desk research and review of available secondary research and evidence** | N/A | More than 80 publications and reports from a range of organisations and sources. Notes and observations from related RSC activities including industry roundtable meetings, associated research on ***A sense of belonging in the chemical sciences***[15], the ID Fund special call for projects for community-driven projects that support the inclusion and retention of Black people in the chemical sciences, and analysis of learnings from the 2020 and 2021 ID Forums. |

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