

Postgraduate training should provide the skills for those students who will go on to work in these sectors, not just in research and development but also in the business and interpersonal skills necessary for innovation. Research into current chemistry intensive SMEs has revealed that a lack of business and leadership skills can be a barrier to company growth and productivity.⁶ Other key skills postgraduates may wish to invest in developing include digital skills. All chemistry PhDs will have baseline computational, mathematical and statistical competence, but there is value for future job roles in developing experience in new digital tools for chemical sciences discovery and application.⁷

Interdisciplinary research skills - Many PhD programmes, particularly in Doctoral Training Centres, have recognised the value of interdisciplinary research skills, both for strengthening the doctoral research project and the -PhD. Chemists have told us that an interdisciplinary research approach improves insight into the materials and technologies they develop, as well as instilling a collaborative mindset to research.⁸ We would encourage the expansion of this skills base that all postgraduate students gain, to recognise that modern postgraduate training can lead to a wealth of varied paths and strong future research performance in both academia and industry.

Retaining Black and minority ethnic chemists - The Royal Society of Chemistry has developed a significant evidence base on access to chemistry and how to increase diversity in the subject. This gives insight into all levels of a chemistry career, including postgraduate study. We are losing Black chemists after undergraduate level at an alarming rate, while people from other minority ethnic backgrounds also remain underrepresented at senior levels in chemistry. 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, to just 1.4% of postgraduate chemistry students.¹⁰ Anecdotally, we understand that recruitment panels can lack diversity, which may then have an impact on acceptance or progress due to unconscious bias. 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

sciences, but

conditions, a demographic which promises to increase in number in the wake of the pandemic.¹⁶ Similarly, long-term mental health conditions can require ongoing changes to work patterns that need flexibility of funding and working arrangements to accommodate.

Building inclusive cohorts It is also critical that any postgraduate with a long-term physical or mental health condition is still able to feel an equal and active member of their research student cohort. Postgraduate training programmes need to ensure strong and flexible irogt-2.992 (i9dl)5 (ex)-32 841.92 rej6 Tf04 (du

(70%) and developing the skills needed for future employment (67%).¹⁸ These answers represent difficulties in all the key focuses for postgraduate training that UKRI are investigating in this consultation collaboration, employability, and work conditions. Rigid funding and deadline restrictions mean students may not be able to make up for lost time. Postgraduate training funding and conditions should include flexibility to allow students to achieve full benefit from their PhD experience regardless of external difficulties.

Expanding industrial links via CASE studentships - Research studentships in scientific disciplines,