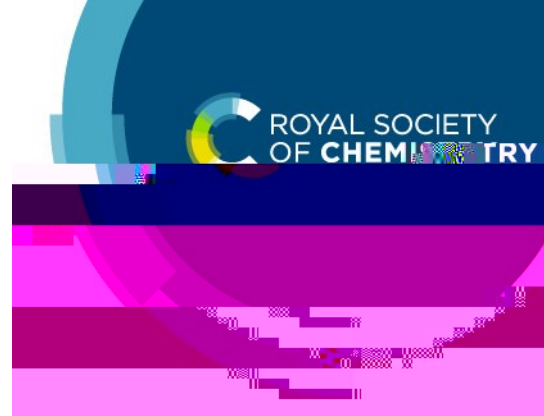


Comprehensive Spending Review



scientists, supporting and representing our members and bringing together chemical scientists from all over the world. Our members include those working in large multinational companies and small to medium enterprises, researchers and students in universities, teachers, and regulators.

Introduction

Throughout the pandemic we have all looked to science to provide the answers, and science has delivered time and time again. The sector has shown the importance of investing in long-

society. A future talent pipeline of skilled chemists will be needed to achieve net zero ambitions and tackle other challenges, for example in health.

This submission develops these areas further and suggests several specific policy actions we would ask HM treasury to include in the upcoming Comprehensive Spending Review.

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The Arts and Entertainment sector, which contributed £7.9 billion to GVA in 2019, saw a 60% decline in output in 2020 because of the pandemic. To help understand the transmission risk from professional musicians, the team measured aerosol emissions as part of the DCU and PHE funded PERFORM study. Their analysis confirmed that singing produced similar aerosol concentrations to talking at the same distance.

-year Horizon 2020 framework programme.

UK researchers have collaborated with groups in 160 countries²² and received £6.65bn in funding via the programme. UK businesses – especially SMEs – have benefitted from the funding and collaborative opportunities the EU offers, receiving £1.16bn in funding through Horizon 2020, 85% of which went to SMEs. For the chemical sciences, this amounted to more than £730m for research and innovation as a whole and £104m for chemical sciences SMEs

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The Government must set out a clear approach to allocating funding to welcome association to Horizon Europe for its duration, whilst protecting the domestic science budget. An explicit financial provision to cover association to Horizon Europe would allow this to happen. **K**

Case study: Smart Separations Ltd

Dr Hugo Macedo arrived in the UK as an ERASMUS student and started his company, Smart S Ltd, on his kitchen table in 2013. The company was founded on the back of an InnovateUK SMA award, which provided the initial funding to develop the technology. Hugo and Smart Separations leverage to secure an additional InnovateUK Industrial Strategy grant, which provided the funding to develop the technology. Dr. Macedo noted: "The technology was initially conceptualised in my kitchen, to manufacture the membranes. The company is growing fast, with state-of-the-art facilities in London and Portugal and a team of 25. We have developed two technology platforms: an innovative microfiltration technology based on ceramic membranes and a technology for the separation of pharmaceuticals from wastewater."

activities, including the key drivers and barriers to innovation. Emerging findings are indicating that chemistry deep-tech SMEs are a particularly innovative population but that they face some significant barriers. They need greater and better-targeted support across Government, funders, and the private sector in areas such as access to finance, availability of suitable premises, access to networks and to entrepreneurial, leadership and management skills.

This piece of research is due to complete towards the end of October. We would like to brief Treasury officials on the emerging findings on SME needs at the earliest opportunity.

As part of the Government set out in section 1.1 of this submission it should invest in a major R&D programme in digital age molecular and materials innovation. We need to attract the brightest minds and business interests to ensure the UK leads at the next frontier in designing

The detailed case for this investment in subject-specific CPD is made in the Institute of
Subjects Matter report²⁹ as well as their submission to the Department for Education
ahead of this comprehensive spending review **Driving excellence in science teaching a
pathfinder programme for systematic provision of subject-specific CPD in the sciences** and the
Science education for a research and innovation economy from the DfE.
This is a cost-effective way of addressing some of the most significant problems within the
education system, as well as supporting Government ambitions to level up opportunity and

The pandemic has put science and scientists front and centre in the race to tackle the global health crisis. And chemistry has been essential at every stage of the world's response to the virus. Chemical scientists of the future will be the ones we look to when tackling the world's health, societal and environmental problems. This is why we must do everything we can to ensure that school students have access to the best possible chemistry education.

A great teacher will have the ability to nurture a young person's passion for science and chemistry. But, for those at the very beginning of their teaching career, the pandemic has had a profound impact on their learning and development. The lockdown restrictions, social distancing and other measures that were in place to slow the spread of the virus meant that teacher training between 2019 and 2021 was significantly disrupted. The lack of opportunities to hone their skills, like teaching practical science lessons and managing student behaviour, has the potenti

provide the greatest benefit, the urgency of the situation means that we would welcome a sum that would work for all parties whilst still delivering for educators.

The Government needs to work with higher education institutions to provide the support needed to ensure excellent chemistry teaching and research, for example through recurrent teaching grant allocations for high-cost subjects and QR funding. Whilst chemistry is one of the higher cost subjects to teach, it also returns high value to the economy and society through a highly skilled workforce whose economic contribution and role in solving a range of societal challenges are noted in the introduction to this submission. Chemistry needs to be taught and often researched in well-

The Government has set firm and ambitious targets to achieve net zero by 2050. We need to

A new UK Chemicals Agency must have the expertise to lead and act as the primary UK point of technical and regulatory cooperation and collaboration with other chemicals agencies of similar standing in the world. This will take targeted action and investment from Government to enable high standards of regulation to be maintained transparently and on sound scientific advice.

In order to deliver on these ambitions and those of the upcoming chemicals framework, we believe there is also a need for Government investment in a