

Clerk to the Enterprise and Culture Committee

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## **Enterprise Committee inquiry into the impact of England's university fees on Scottish Higher Education**

**30.9.03**

### **The Royal Society of Chemistry**

The Royal Society of Chemistry (RSC) is the learned society for the chemical sciences and the professional body for chemical scientists in the UK with a membership of 45,000. The RSC is the largest of the learned and professional bodies in the sciences comprising chemical scientists from industry, public service, academe and schools. The RSC represents the core central science. With a long tradition of fostering research and supporting education and training at all levels, the RSC is well placed to offer constructive comment to the Committee's inquiry.

The development and application of the chemical sciences are fundamental to society. Chemistry is the enabling science that underpins the rest of science and technology. Environmental protection, healthcare, energy and the conversion of materials into manufactured goods are all dependent upon an understanding of processes at the molecular level. Continuing prosperity requires a well educated citizenry able to deal with issues arising from the opportunities and challenges of scientific advances, with a significant proportion being able to contribute to the development of the chemical sciences, and utilise chemical knowledge and skills in a very wide variety of situations. The chemical and pharmaceutical industries alone (themselves being only a small proportion of economic activity based on the chemical sciences) make a net £5b export surplus.

The RSC recognises the distinctive features of Scottish undergraduate education which it wishes to see continue.

### **Student numbers**

Over the last seven years Scotland has seen reductions in the numbers choosing to study science at higher grade and on into higher education. While numbers of pupils studying science at Standard Grade remains steady there has been a fall of up 15% in the number of pupils opting for Higher Grade biology, physics or chemistry. There

have also been reductions of up to 34% in applications for places and of intake into degree courses in the sciences.

### **Research excellence**

The 2001 Research Assessment Exercise showed significant increases in the proportion of chemistry research units rated as 4, 5 or 5\* in Scotland. In the 1992 exercise 2 institutions out of 10 were rated as grade 4 or above, in 1996 3 out of 8 were rated as 4 or above, and in 2001 5 out of 6 institutions were rated 4 or above. The RSC feels strongly that the 2001 figures accurately reflect the true international standing of UK research in chemistry as shown by bibliometric measures.

### **Chemistry in Higher Education**

However it is worth noting that the number of chemistry cost centres in Scotland has fallen from 10 to 6 since 1992. Abertay, Dundee, Paisley and Napier Universities no longer have research cost centres; only Paisley and Dundee still offer chemistry degrees. Apart from the declining numbers the main reason for the reduction in departments is the cost of running chemistry. The funding provided by SHEFC for teaching chemistry students does not meet the real costs of providing such courses. Chemistry courses by their very nature are more expensive and require more space on campus which forces University administrations to put the financial squeeze on departments which host such courses.

### **The Scottish economy**

The Scottish Executive's "Smart, Successful Scotland" strategy is widely accepted and that Scotland's 40,000 scientists are vital to the success of that strategy. Also, there have always been particularly strong and economically beneficial links between science and engineering in Scotland. However significant barriers to commercialisation of research still exist. The UK lags well behind on industrial R&D spending compared with the average of our leading competitors—translating to £6 billion less each year. Despite a recent increase of over 30%, Scotland's industrial R&D record is even worse accounting for only 3.5% of the total UK investment. Recent increases in spending on science by the Scottish Executive and UK Government have helped to reverse that position but there is still a long way to go to bring Scotland up to the level of the rest of the UK and even further to match our G8 competitors.

## **Tuition fees**

The RSC notes the rejection of tuition fees by all the Scottish political parties. However, this will lead to chronic under funding and differences between parts of the UK could lead to a further contraction of chemistry in Scotland.

There are many examples of Scottish scientists leaving the country to take up positions in US departments where preferential funding is available. UK based companies are increasingly spending their research budgets outside the UK, a trend that could be accelerated in Scotland unless the funding gap is bridged. This staff emigration could be followed by a student emigration who would wish to follow the best staff and be attracted by better funded departments.

It easily follows that if the best staff and students vacate the Scottish chemistry benches then the aims of the “Smart, Successful Scotland” strategy will be more a distant aspiration than a reality in the near future.

## **Solutions**

The issues facing chemistry, and science, teaching and research in Scotland are already grave and are likely to be exacerbated by an additional financial pressure from south of the border. The RSC believes that the subject weighting factors for chemistry for teaching and research are inadequate and should be subject to urgent review. The RSC is willing to contribute data to that review.

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