

# *The Chemical Engineer*

## Supporting the chemical engineers of the future

Article by Anthony Tomei



New prizes launched for early-career chemical engineers who help inspire the next generation

**INDUSTRY** has a large stake in school science education, and a vital role to play in supporting it and shaping its future. It can do so in many ways, including engaging directly with children and teachers in schools, exemplifying how science and technology are central to modern life, and by becoming involved in planning and developing what is taught.

At the Salters' Institute we want to identify young chemists and chemical engineers who will be future leaders in industry and invite them to join us in our mission to support and improve science education in our schools, for the benefit of industry and the country as a whole. To that end, and to mark our centenary year, we have launched a new scheme that will offer awards of £2,500 each to outstanding young chemists and chemical engineers.

## What is the Salters' Institute?

The Salters' Institute, the flagship charity of the Salters' Company (one of the London Livery companies) is one of the best known organisations working in school science education in the UK. Founded in 1918, the Institute for many years supported chemistry at university level, but in the 1970s it shifted to supporting school science education, which it has done ever since. Working principally with the University of York we have been a leading influence in curriculum development for nearly 40 years. Today we support a suite of three Salters' A-level science courses and a GCSE course. A new suite of resources for 11–14 year olds is in development. Over a million pupils have taken these courses and their predecessors.

Each year we run more than 50 Salters' Festivals, in which 11- and 12-year-old pupils spend a day in a university, working in chemistry laboratories doing experiments and investigations that they could not do their schools. For some of these 3,000 pupils, from over 800 schools, it is a life-changing experience. A variant of

these festivals has been developed in India, and is taking off in a big way there.

The core of the Salters' approach is to put the relevance and the applications of science at the heart of science teaching. Salters' courses begin by looking at applications of science and lead from there to the relevant concepts. Not only is this an effective way of teaching science, but it shows the pupils that science is not just something that happens in a school laboratory, encouraging wider and long term interest. Our strong links with industry flow naturally from this approach.



Festivals of Chemistry: life changing

# Why is school science education important? How good (or bad) is science education in the UK?

Readers of *The Chemical Engineer* will need no reminding that skills shortages are a worrying and ever-present feature of life in the STEM industries. A **recent study** found that nine out of ten STEM employers have, in the last year, found it difficult to hire staff with the required skills, creating a shortfall of over 173,400 workers. Almost half of STEM businesses are looking abroad to find the right skills, while unsurprisingly two thirds of employers believe Brexit will make things worse. Limited awareness of available STEM jobs amongst students and teachers and lack of meaningful work experience opportunities are often cited as key barriers to young people considering STEM careers.

All of this begins in schools, where attitudes to science are mainly formed. So how well is science education in the UK doing? The short answer is: “not badly, but not well enough”. The definitive source of information comes from the PISA (Programme for International Student Assessment) studies carried out by the OECD (Organisation for Economic Co-operation and Development). These are conducted every three years, with reading, mathematics or science as the major focus. In 2015, science was the focus. Over half a million 15-year-old students from 72 countries participated<sup>1</sup>.

The results are published to intense political and media interest, and invariably give rise to shrill headlines of the: “UK sinks in league

tables” variety. The truth, inevitably, is more nuanced. In the test of scientific knowledge England ranked 15<sup>th</sup>. (The other countries of the UK did less well.) The upper end of the table is dominated by Pacific Rim countries, with Singapore coming top. But the PISA study measures other important qualities, including understanding the nature of science and how it works, and attitudes to science, in particular whether students expect to work in a science-related occupation. The UK was one of just seven countries that scored above average on all three of these measures. The others were Singapore, Canada, Slovenia, Australia, Ireland and Portugal.

Overall the UK is not in the top rank but we do better than many other countries of similar size and wealth. Our schools on the whole have well-equipped labs; the national curriculum means there is continuity; there is balance across the three main sciences; and we have a strong and well respected tradition of development and research. We also have a strong tradition of the involvement of industry and it is this that we want to acknowledge and build on.

## What are the Salters’ Centenary awards? What will the award holders do?

In addition to the Festivals and its curriculum work, the Institute makes awards to recognise outstanding achievement. Each year we make ten awards to final-year students in chemistry and chemical engineering. These are given to academically outstanding students who are planning careers in industry. (The chemical engineers tend to go straight from university into industry while the chemists often

do a PhD first.) To celebrate its Centenary the Institute has decided to offer four new awards, of £2,500 each, to recognise and support individuals who are in the early stages of their careers in industry, have demonstrated the potential to make an outstanding long-term contribution, and are the leaders of tomorrow.

Interviewing the candidates for these awards is an exhilarating experience. Their intelligence and dedication are inspiring, as is the sheer breadth of their achievements. Our award holders are academically outstanding, but they are not just scholarly 'nerds'. We meet people who speak several languages, sports enthusiasts of all kinds, people who love to cook, to dance, to play music, to act, and to travel. They are exactly the kinds of people industry looks for, and exactly the role models our schoolchildren need, so it is encouraging to see how many of them share our belief in the importance of school education and are already involved in supporting schools and young pupils.

There is huge potential here and we are beginning to develop an alumni network to help us realise it. We are bringing together award holders from different backgrounds and different vintages to meet and learn from each other, to meet distinguished senior figures from industry, and to recruit their help and ideas in developing our work with schools. It is early days, but we see this as a long-term investment that will produce dividends for our award holders, for the Institute and for the wellbeing of UK science and industry.



The Salters' Institute is no stranger to rewarding young, outstanding talent

## What can you do?

The closing date for nominations for this year's round of awards is 13 July. If you are a young engineer and our vision appeals to you why not apply? You will need to get a senior colleague to nominate you and you need to be able to attend an interview in London on Tuesday 18 September.

**Details of how to apply** for a Salters' Centenary award can be found on the Salters' Institute website.

If you are a more senior person why not look round your younger colleagues and nominate one of them? The core requirements are simply that candidates should:

- be working in the chemical or allied industries in the UK
- have between 3–5 years in industry
- have a degree in either chemistry or chemical engineering at Bachelor's/Master's/Postgraduate level

We are looking for:

- evidence of commitment to an industrial career
- understanding of challenges and opportunities facing industry and a vision of how they can contribute
- ability to communicate their interest and enthusiasm to a wider audience
- willingness and ability to take part in the Institute's activities

And if your young colleague is successful in winning an award (and even they aren't) the other important thing we ask is that you should support them and provide encouragement. One of my best memories of last year was when one of our young award holders was accompanied to the award ceremony by their manager, who was clearly as proud and enthusiastic as their young colleague.

We look forward to seeing you at the award ceremony at Salters' Hall next December!

# Reference

1. PISA 2015, "Findings and Some Implications for UK Science Education", Jonathan Osborne and Robin Millar, *School Science Review*, Vol 98 number 365, June 2017, pp31–40).

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