

Prof. Sir Martyn Poliakoff CBE FRS – Hon. DSc

Chancellor Dharker

Martyn Poliakoff is one of the leading research scientists of this generation, a pioneer of sustainability and green chemistry, an educator of the highest standing, a promotor of global dialogue, and – he may or may not cringe to hear it – an Internet sensation.

At this congregation for our graduates in Education, Communication and Language Sciences, parts of this citation may sound exotic. To read and view Martyn Poliakoff's work is to revel in the language of chemistry. Terms that are perhaps mundane to chemists are to the outsider mysterious, ambiguous or alluring – 'isolation', 'supercritical', 'degeneracy' and (as a verb) 'sublime'. In his work Martyn seeks to bridge gaps of language and understanding. This, then, will be a story of languages and laboratories, and Language Laboratories.

Martyn Poliakoff was born in 1947 into a family with a rich tradition of innovation and creativity in science on his father's side and in theatre on his mother's. He feels he was destined for science and from the age of about 14 was confident that he would be a chemist.

He completed his PhD at Cambridge in 1973 under the supervision of J J Turner. When Jim Turner became Professor of Inorganic Chemistry here at Newcastle, Martyn joined the University as a Research Officer working on matrix isolation, a technique in which reactive compounds are trapped in an inert material so that they can be studied. The research was cutting edge, but the environment wasn't – much of it was going on in a 'prefab' building on what is now the Herschel car park. In 1979, Martyn moved with Turner to Nottingham University, where he has worked for over 40 years. Promoted to a Chair in 1991, his work turned towards green chemistry.

Modern materials – from fabrics to pharmaceuticals – come at an environmental cost in energy and hazardous waste. Green chemistry systematically questions every aspect of a chemical process: how we source materials, how we transform them, the by-products and their disposal. Martyn's research has shown the potential of green chemistry, particularly by substituting dangerous solvents by highly compressed supercritical fluids that combine the properties of gases and liquids, and by researching the use of light or electricity to promote specific chemical transformations. But the green chemist's horizons are wider than just the chemical reactions. No surprise then that Martyn has pioneered the DICE project - 'Driving Innovation in Chemistry and Engineering', which has broadened collaboration between chemists and chemical and environmental engineers.

For Martyn, research and education go hand in hand. Indeed, he is one of the most innovative educators in science today, famous for his role in the Periodic Table of Videos that have educated and inspired worldwide, but it started much earlier.

Emeritus Professor Bill Clegg tells me that Martyn's interest in educational technology began during his time in Newcastle in the 1970s, if not before. Having used the University Language Labs to follow a tape-plus-booklet course on "German for Chemists", Martyn and Bill wrote scripts to help chemistry students with maths topics they found difficult. They recorded these on tape, prepared accompanying materials and encouraged students to use them in the language labs at their own pace. Maybe some of us thought 'blended learning' was a new thing!

Martyn says that, had he not been a scientist, he would have wanted to work in TV advertising. Telling a story quickly in a striking visual way is central to his teaching, whether he is employing well-judged graphs or using squeaky dog toys to illustrate the structure of chemical bonds. He took to video so well that in 2008 journalist Brady Haran suggested they produce a short about each element in the periodic table. In a few weeks they had recorded all 118 elements, and they have been maintaining and extending the videos ever since. Think of the collection as a family album, each video a tribute to an element with its inherited characteristics and its individual quirks, presented with wit and a natural unscripted flow. The series has not only brought fame to Martyn but to his exceptional technical and academic colleagues too. Their videos reflect the reality of what brings many of us into science: the thrill of discovery, rigour in thinking, playfulness and joy in working as a team. The YouTube channel has 1.5 million subscribers – about five times as many as Newcastle United. But their fans are serious. Offered a choice between fluorine or Viagra as the subject of the next video, they chose fluorine.

Aside from the global reach of the Periodic Videos, Martyn has worked internationally throughout his career. For five years he was Foreign Secretary and Vice-President of the Royal Society, representing UK and Commonwealth science around the world. He is Honorary Professor at Moscow State University and at Beijing University of Chemical Technology. He holds honours and fellowships from the chemical societies and national academies of Ethiopia, Russia and China, the USA, Academia Europaea and the World Academy of Science. He was elected a Fellow of the Royal Society and of the Royal Society of Chemistry in 2002. Tellingly, he has also been elected to fellowships of the Institution of Chemical Engineers and the Royal Academy of Engineering. He was created CBE in 2008 and knighted in 2015 for services to the Chemical Sciences. Despite his global profile, he acts local, for example campaigning with his wife Janet on the environment and greening of Beeston in Nottinghamshire, where they live, leading to his elevation a couple of weeks ago to be a Freeman of Broxtowe. In a step of which we should all really be envious, a tram was named after him in Nottingham on his 74th birthday.

Martyn wears his honours lightly – so lightly in fact that he reportedly fastens his coat up to cover his medals when they don't need to be seen, and he's said that "Nobody in their right mind" would use his full title. Well, he's among friends here and I don't mind what he thinks of me ...

Chancellor Dharker, in recognition of his achievements as a pioneer of green chemistry, an inventive communicator, an inspiring educator, and above all as a catalyst bringing people together across boundaries of nationhood and culture in a shared appreciation of science and engineering, I present to you Professor Sir Martyn Poliakoff, for admission to the degree of Doctor of Science *honoris causa*.

Prof. J S Fitzgerald

Public Orator

5th December 2022