With 303.8 billion vehicle miles covered each year in Britain, there’s a clear need for clean exhaust fumes. Usually a costly process, cutting-edge chemistry can offer more affordable approaches to emission control. A recent knowledge link-up between UCL and industry giant Johnson Matthey, as part of the EPSRC Knowledge Transfer Secondment scheme, took us another step closer to cheaper clean air.

Catalysts such as those used in the automotive industry are one of the key areas of research for Professor Sankar and his team in UCL’s Department of Chemistry. He explained, “The application of fundamental scientific knowledge to industrial catalyst performance in the automotive industry, through the synthesis, characterisation and catalytic properties of nanoporous materials, can help to develop emission control technology to extract toxic gases from auto-exhausts.

“Currently, the majority of catalysts contain expensive metal ions such as platinum and gold to convert toxic gases to benign ones. A recent trend in this area is to use less expensive and benign materials, in particular copper or iron.”

Sharing expertise
In early 2011 Kerry Simmance, completing her PhD at UCL’s Department of Chemistry, was using advanced X-ray, nuclear magnetic resonance and infrared characterisation methods to investigate the potential of industrially important nanoporous materials, such as small pore silicoaluminophosphates. Her expertise seemed ideal for UCL’s Knowledge Transfer Secondment scheme.

Prof Sankar explained, “Kerry was looking at zeolitic solids, testing their stability as catalysts for long-term usage. We submitted a proposal to Matthey highlighting the expertise she had developed during her PhD in making and characterising these materials, and the potential applications of these skills within the company. They were interested in funding a secondment.”

Kerry said, “I spent 12 months at Johnson Matthey, working with two different divisions. One was the analytical division, where I worked on characterisation methods. The other was the emissions control technology department, where I was synthesising a variety of catalysts with potential for industrial use.”

Success for industry, success for UCL
The secondment was highly beneficial for both Johnson Matthey and UCL. Professor Sankar said, “The secondment was extremely successful, I believe, because the company really appreciated Kerry’s contribution to research and production. But it really was a two-way process. It’s not just that they got information from us – we got a better appreciation of industrial applications through them. They have experience in the practicalities of using these chemical catalysts, which we may not necessarily understand as purely academic researchers. So knowledge transfer takes place in both directions.”

For more information see:
www.ucl.ac.uk/enterprise
About UCL

UCL (University College London) was established in 1826 and is ranked as one of the world’s top-ten universities. The university is a modern, outward-looking institution, with more than 4,000 academic and research staff committed to engaging with the major issues of our times. It has a global reach, with 34% of its students coming from outside the UK, from almost 140 countries.

www.ucl.ac.uk

About UCL Enterprise

UCL Enterprise provides UCL’s structures for engaging with business for commercial and societal benefit. It includes three units: UCL Advances, UCL Business and UCL Consultants.

www.ucl.ac.uk/enterprise

About Placements

UCL is committed to exchanging the knowledge of its talented graduates and university expertise to businesses via its knowledge transfer placement programmes.

The EPSRC Knowledge Transfer Secondment (KTS) scheme has been one of these programmes, aimed at supporting the flow of skilled people both into and out of the University ensuring the real-world application of research. The scheme ran from 2009-2012, supporting 19 secondments to a wide range of sectors, and including large companies, SMEs, a charity and governmental organisations. Benefits include upskilling of people and organisations, progress of scientific discoveries towards use, and improved employment prospects for the secondee.

UCL Enterprise continues to offer funding for secondments leading to effective knowledge transfer from its EPSRC Impact Acceleration Account and other schemes.

About us

There are also benefits in terms of future research. Professor Sankar added, “Through this secondment Matthey have seen the real value in the expertise we can offer. And based on this, they have agreed to fund a PhD studentship in this area. So we benefit from stronger ties to an internationally renowned chemical company, one of the top FTSE 100 chemical companies in the UK. There is lot to gain for the university, and of course for the future of science in this field.”

A career boost

For Kerry, the experience has proved invaluable. She said, “The secondment gave me the opportunity to perform fundamental science research on industrially important samples, with access to the latest technology. In industry this is very difficult because the business often focus leaves little room for in-depth pure science studies.

“The other important outcome for me personally was two job offers, one from each of my managers at Matthey. I was able to fully recognize the differences between academic and industrial research, allowing me to make an informed decision as to where I wanted to take my career.”

Professor Sankar hopes that future collaborations will be equally successful, “The Knowledge Transfer Secondment scheme has so many plus points, for everyone involved – there would be nothing negative I could say about it! I hope to be involved in more in future.”

More information

Johnson Matthey www.matthey.com
UCL Department of Chemistry www.ucl.ac.uk/chemistry
Engineering and Physical Sciences Research Council www.epsrc.ac.uk
UCL Enterprise secondments www.ucl.ac.uk/enterprise/funding/enterprise-secondments