Chemistry Update

Newsletter 337, 29 October 2021

Inside this Issue

Calendar of Events

Organic seminar
Speaker: Dr Amit Kumar, University of St Andrew's
Date: Wednesday 3 November
Time: 3pm—4pm
Location: C/A101

Physical seminar
Speaker: Dr Thomas Eykyn, King's College London
Date: Wednesday 17 November
Time: 1pm—2pm
Location: C/A101

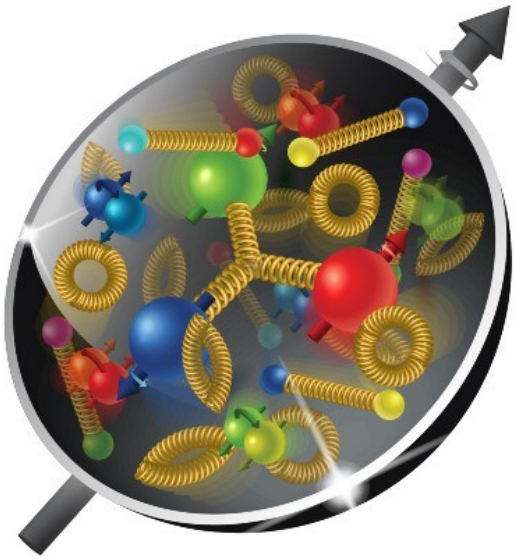
Chemistry research seminar
Speaker: Dr James Hodgkinson, University of Leicester
Date: Friday 19 November
Time: 11am—12pm
Location: C/A102

Equality & diversity seminar
Speaker: TBC
Date: Wednesday 24 November
Time: 1pm—2pm
Location: C/A101

Date of Next Issue:
26 November 2021

York physicists to help develop new detector technology for a new powerful particle collider

University of York scientists are part of a team developing new detector technology needed for the next powerful particle accelerator, the Electron-Ion Collider (EIC).



Electron-Ion Collider (EIC) experiments will offer insights into why quarks or gluons must transform into and remain confined within protons and nuclei. Credit: Brookhaven National Laboratory

With £3million of funding from the Science and Technology Facilities Council (STFC), nuclear and particle physicists in the UK will be leading preliminary work to help design the first particle detector at the new facility, to be built at Brookhaven National Laboratory in the United States.

Large particle accelerators are used for basic research in nuclear and particle physics, and the electron-ion collider (EIC) will allow physicists to address fundamental and unsolved questions in science about the nature of matter.

The new facility will allow scientists to image, in detail, the quarks and gluons found inside protons and atomic nuclei, and to study not only how they are distributed but also how they move and interact with one another.

Technologies

Researchers from the University of York will carry out a research and development programme to address some of the technological challenges in delivering the physics programme at the EIC.

They will transfer new technologies from chemistry and medical research to particle detector design, and develop new advanced simulation methods.

Technologies developed by the University of York's Centre for Hyperpolarisation in Magnetic Resonance (ChyM) - previously applied for use in medical research - will be utilised for the first time in a particle/ nuclear physics facility.

Polarimetry

The programme will exploit York's expertise in polarimetry – a technique used to measure the orientation of a particle's spin.

Professor Simon Duckett, from the Department of Chemistry, said "Back in the 1960s, the creation of spin-polarised probes provided us with a tantalising opportunity to study particle interactions. It is only now though, by harnessing a simple low-cost technology developed in York, we expect to be able to fully unlock this capability through the creation of a versatile polarised particle detector."

Professor Dan Watts, from the Department of Physics, said: "It is a very exciting time for hadron physics and it is great to be exploring the application of new technologies and methods for this next-generation facility".

Strong interaction

The science enabled by the EIC promises to revolutionise the understanding of the 'strong interaction', one of the fundamental forces of nature. This force governs the behaviour of hadrons – the family of subatomic particles that includes protons and neutrons – that is behind more than 99% of the visible mass of the universe.

Scientists will use the EIC to try to find out how the strong interaction works as a glue to hold matter together.

Over two and a half years, the funding will position the UK to lead the development of some of the cutting-edge detector technologies.

It is expected that construction of the accelerator and its detectors will commence around 2023/24, once the design is complete.

The first-year funding was approved under the UK Research and Innovation (UKRI) Infrastructure Fund.

New starters

Amber Yeoman, PDRA in Atmospheric Emissions
Room: C/G119; Ext: 1213; Email: amber.yeoman@york.ac.uk

Christopher Goult, PDRA in Ligand-based Reactivity
Room: C/E202 & C/E214; Ext: 2593; Email: christopher.goult@york.ac.uk

David Loades, PDRA (WACL)
Room: C/G119; Ext: 1220; Email: david.loades@york.ac.uk

Daniel Bryant, PDRA in Atmospheric Aerosol Chemistry
Room: C/G116; Ext: 4718; Email: daniel.bryant@york.ac.uk

Beth Nelson, PDRA in Ozone Photochemistry
Room: C/G116; Ext: 4759; Email: beth.nelson@york.ac.uk

Online Department suggestion box

The online Equality and Diversity suggestion box has been extended to be a suggestion box for the whole Department. You can submit your thoughts/suggestions/ideas for general Departmental matters as well as matters relating to Equality and Diversity. You can find the Google form at this link.

Technicians nominated for national awards

The technical staff in the Department of Chemistry, as part of the University of York Technician Team (multi-dept), have been nominated in the COVID-19 Recognition category of the Papin Prizes, to recognise the significant role played in the national response to COVID-19.

In addition, Bob Hide from the Physics electronic workshop, has been nominated for a Lifetime Achievement award.

The Papin Prizes are the UK's only award ceremony dedicated to celebrating technical excellence and innovation in higher education and research, and are the culmination of the Higher Education Technician Summit to be held on Wednesday 10 November at the University of Nottingham.

Professor Charlie Jeffery, Vice-Chancellor of the University of York, said: "We are enormously proud of our technicians and grateful for their skill and expertise, without which we would not be able to carry out our world-class research and teaching.

"The shortlisting recognises the commitment and dedication of our technical staff, going above and beyond to support the NHS and our country during the pandemic."

Dr Tom Webb to exhibit climate research at COP26

Dr Tom Webb, PDRA in Climate Data Analysis working with Professor Kevin Cowtan, will be attending the 26th UN Climate Change Conference of the Parties (COP26), taking place in Glasgow from 31 October to 12 November.

Tom will be attending as part of the International Cryosphere Climate Initiative (ICCI), which compliments his research on coastal climate in high latitudes.

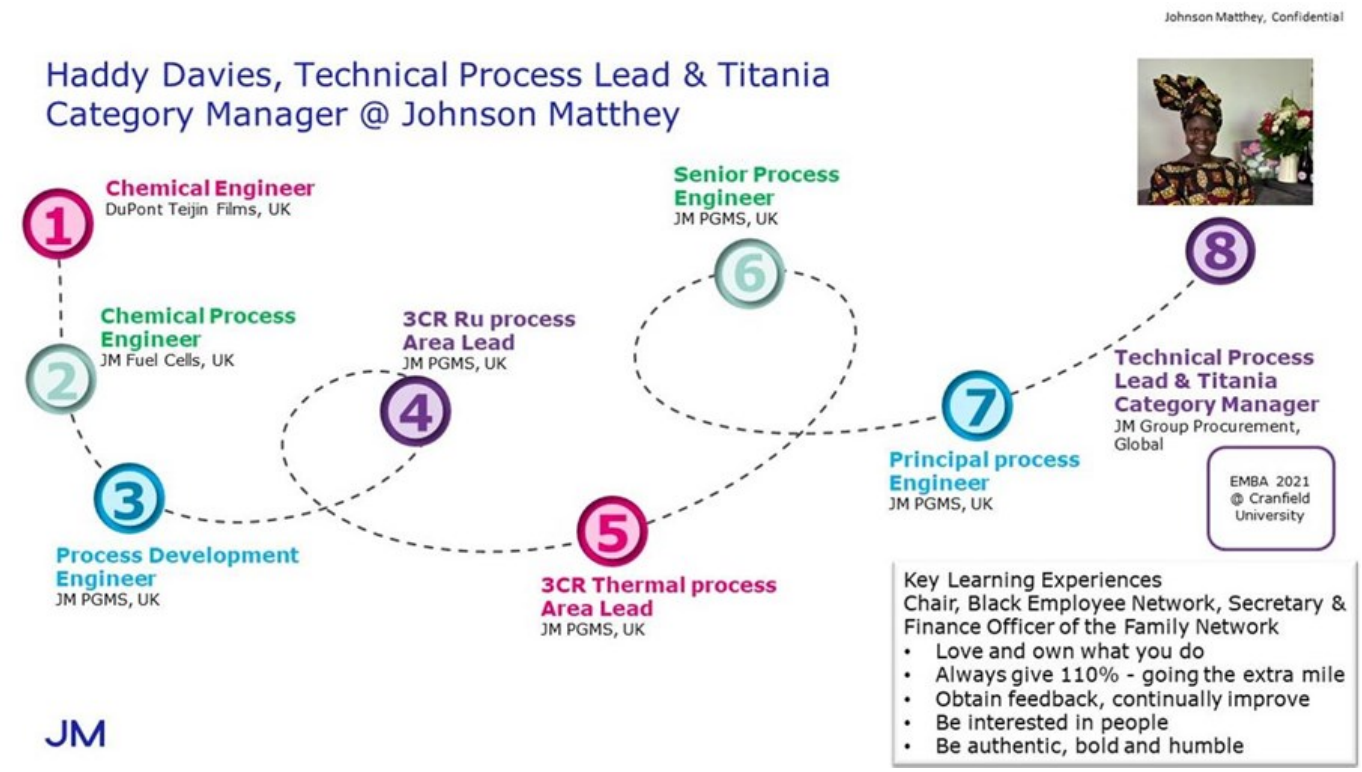
Tom's team will be based in the Cryosphere Pavilion in the Blue Zone where an excellent agenda of events are planned, including focus days, side events and evening cultural events. They will also be showcasing various aspects of climate change research in permanent exhibitions.

Trevor Dransfield

Earlier this month we learned the sad news that Trevor Dransfield passed away at the end of July. Trevor ran the mass spectrometry service as Experimental Officer from 1989 until his retirement in 2010. Before that he was a research technician in the labs of John Vernon. Those who met Trevor never forgot him and he was highly respected and appreciated for his mass spec skills.

Haddy Davies Johnson Matthey Seminar

If you missed the fantastic talk by Haddy Davies who is Johnson Matthey's Global Procurement Technical Process Lead and Titania Category Manager, then you can now access the recording through the VLE (York Staff and Students only) for a limited time. The talk is essential viewing for especially for anyone considering a career in industry (Johnson Matthey is one of our key employers) as well as precious metal fans, and EDI enthusiasts.



Professor Avtar Matharu hosted the virtual seminar as part of our activities to mark Black History Month this year. Haddy talked us through her career journey (shown in the image above) and spoke eloquently and openly about navigating the corporate world from a Black female's perspective. We were advised to hone-in and focus on our strengths: the projects we do with passion, to obtain feedback and to reflect on it honestly, to be bold and courageous.

As this year's theme is "Proud to Be", Haddy finished her talk with a project she was especially proud of - an impressive sustainable process development project improving the safety of a ruthenium refining process. If you have any issues accessing the recording please contact leonie.jones@york.ac.uk.

Coronavirus: Why should you wear a mask?

Professor Jacqui Hamilton has created a series of slides providing information around covid transmission and aerosols: Coronavirus: Why should you wear a mask? In particular, the slides illustrate the details of the science around why it's important to wear a mask to reduce your chances of catching or transmitting Covid.

Long Service Awards

A group of chemistry colleagues were awarded long service awards by the VC at two recent ceremonies. These events normally take place annually, but have been on hold during the pandemic. Here are the tributes paid to our colleagues at the ceremonies. We owe them all a huge vote of thanks for their service to the department over the years.

Edward Bergström (25 years): Ed joined the University in 1996 as a post-doctoral researcher in the group of Professor David Goodall. Ed moved to be a technician in the York Centre of Excellence in Mass Spectrometry (CoEMS) when it was established in 2008, and has remained there since. Ed is an expert in "getting instruments to work" and aside from his talent as an instrument fixer has supported scientists from across the University who have used CoEMS for their research. In this role, he's contributed to therapeutic protein discovery, post-genomic sciences, bioarchaeology, chemical catalyst discovery, and identification of environmental pollutants. This is truly interdisciplinary science. Ed has mentored generations of PhD students and post-doctoral researchers in the art of mass spectrometry, with complete patience and generosity.

James Clark (40 years): James joined UoY 40 years ago as a lecturer from the University of Exeter where he held a demonstratorship. He has spent his entire academic career at UoY rising from lecturer to professor and director of the GCCE. James is now world renowned as one of the global leaders in the field of green chemistry. He helped to establish the concept of making chemistry more sustainable and was the founding editor of the first international journal in the area 'Green Chemistry', published by the Royal Society of Chemistry and which now has an impactor >10. His research and commitments to Green Chemistry have been recognised by numerous international prizes and visiting professorships, most recently the 2020 EUChems sustainable chemistry award. James's research is wide ranging covering all aspects of sustainable chemistry, but a particularly notable recent development is the discovery of the green solvent 'Cyrene' which was originally made in the GCCE in collaboration with the Australian company Circa. Circa have just raised over 50M Euros to build the first full scale Cyrene production plant in France, based on James' discovery.

In addition to being a world-leading researcher, James commits substantial time and effort to enthusing and educating the next generation of chemists in the importance of making chemistry more sustainable. He holds visiting chairs at both Fudan and Sichuan universities in China, supports sustainable chemistry courses at other universities around the world and established a global network of green chemistry centres to facilitate the sharing of best practice. His efforts in this area have given the GCCE a substantial global presence, which has also reflected onto chemistry at York in general and indeed to the whole of UoY. He is a true ambassador for both Green Chemistry and the University of York.

Martin Cockett (25 years): Martin joined UoY 25 years ago as a lecturer from the University of Edinburgh, to join the then recently established York Centre for Laser Spectroscopy and Photochemistry. He is currently a Reader in Physical Chemistry. Martin's research specialism is high-resolution spectroscopy of exotic species such as ions and electrons, and he uses lasers to study the weak bonds that occur between pairs of molecules. As well as being an excellent researcher and teacher, Martin is an outstanding administrator who has served the Department of Chemistry and the wider university in a number of roles, including Chair of the Board of Studies, Deputy Head of Department, and Chair of the University Exceptional Cases Committee. He is an incredibly generous and modest colleague, who gets on with absolutely everyone he works with, and is the sort of person who truly makes the University tick. The Department of Chemistry has been very lucky to have 25 years of his service.

Simon Grist (25 years): Simon gained his first appointment in YSBL in 1996 and is now its chief wet laboratory technician. His consistent commitment to the laboratory has underpinned many of the successes that it has achieved over the years. In his role, he and his team have responsibility for some 30-40 researchers ranging from experienced senior visitors to undergraduate novices. Simon runs the lab very effectively solving equipment, safety and administrative problems before many of us are aware they existed. He will go to great lengths to help researchers and he is generous with his time to new recruits. At the same time, he expects high standards of conduct in the laboratory. Simon has a presence and it is widely known that he is not afraid to call out selfish behaviour and poor lab etiquette wherever he sees it. Few people misbehave twice. His wry good humour pervades the laboratory is he is very much one of the faces of YSBL.

Keith Wilson (25 years): Shortly after his first appointment here in Physics, Keith went on an extended secondment as Head of the European Molecular Biology Outstation (EMBL) at the synchrotron radiation source in Hamburg. His efficient running of data collection there and his team's development of image plate technology brought protein crystallographers from all over the world to Hamburg for data collection. Besides the first class scientific experience, trips to EMBL were memorable social occasions too and Keith became one of the most recognisable figures in protein crystallography worldwide. On his return to Chemistry at York, he took over leadership of the York Structural Biology Laboratory with a personal focus on crystallographic methods development. He had a leading role in CCP4 through which these methods were implemented and made accessible to researchers everywhere. Keith has always enjoyed his teaching and he has been an inspiring tutor and supervisor to many students. His strong presence makes him an ice-breaker at meetings and on committees and his booming voice makes him the Chair's friend in calming a chattering audience at a session opening.

Peter O'Brien (25 years) is an outstanding researcher, teacher, leader and mentor for colleagues and students alike. He has made world-leading contributions in asymmetric synthesis, and has been an academic who has always worked collaboratively with industry through his strong links to the pharmaceutical sector. As the past Academic Group Leader for the Organic Chemistry section, he played a pivotal role in developing a clear research strategy. Just as importantly, he has been renowned across the Department of Chemistry for the way in which he has mentored his section colleagues, allowing them to feel an equal sense of belonging, and empowering them to flourish in the design and execution of their research ideas. Peter is also a passionate teacher and was awarded a Vice-Chancellor's Teaching Award in 2015 and the University's Teacher of the Year in the York University Student Union Excellence Awards in 2019.

Duncan Macquarrie (25 years): Duncan joined UoY 25 years ago from Lonza in Switzerland where he had been working on scaling up the synthesis of pharmaceutical intermediates to tonne scale. He was awarded a Royal Society University Research Fellowship to return to the UK and establish his own research. From the start, Duncan has been interested in mesoporous materials, initially silicas, but more recently carbons where he led the scale up of the synthesis of Starbons – a sustainably sourced, biomass derived, mesoporous form of carbons developed in the GCCE. Thus his research has come full circle and the scale up work he was doing prior to coming to York gave him the skills and knowledge to facilitate the successful commercialisation of a material discovered and developed with the GCCE.

Away from chemistry, Duncan is a keen cyclist and linguist having completed a part time degree in Gaelic to complement his knowledge of other varied languages including Manx, Celtic, French and German. He is also proud of his Scottish ancestry and is always seen at GCCE Christmas dinners in full Scottish dress attire.