Outreach newsletter: November 2021

Welcome to the November edition of our Outreach newsletter!

Please do pass this on to anyone who may be interested in receiving this bulletin. They are very welcome to subscribe using this link. If you wish to be removed, please email outreach@chem.ox.ac.uk.

With best wishes,

Dr Malcolm Stewart (Director of the Chemistry Teaching Laboratories), Saskia O’Sullivan (Educational Outreach Officer) and Matt Fifield (CTL Administrator)

Contents

Click to view

Upcoming events:
KS5 Chiral Chemistry Workshops [REPEAT]
KS5 Explore Chemistry [UPDATE]
Ask A Chemist [NEW]

Future events:
School / Community / Oxford College Workshops [REPEAT]
Chemistry Teaching Laboratory Workshops [REPEAT]
Teacher and Technician Conference [NEW]

Learning Resources:
Featured resource: The Chemistry of All Hallows' Eve and Bonfire Night [NEW]

Competitions
Waste Age exhibit at the Design Museum, London [NEW]
RSC Women in Chemistry [REPEAT]
RSC Top of the Bench Regional Heats [REPEAT]
Upcoming events:

**KS5 Chiral Chemistry Workshops** [REPEAT]

Our Chiral Chemistry workshops will continue in the Autumn term of the 2021-2022 academic year. This is our online workshop for UK state school KS5 Chemistry students and teachers, which is delivered by our Department Ambassadors. Dates and times have been designed to avoid interruption of lessons. The session focuses on 3D shapes, chirality, the role of chirality in biological systems and the resources available to research chemists looking at proteins, such as the main protease in SARS-CoV-2, the latter being an active area of research in our Department. There is also an opportunity to ask our Ambassadors questions about their research and their academic careers to date.

Students may attend without a teacher, provided we have a teacher contact.

The workshop will be delivered on the following dates/times:

- **Thursday 2\textsuperscript{nd} December 2021** 16:00-17:00
- **Tuesday 11\textsuperscript{th} January 2022** 16:00-17:00
- **Wednesday 9\textsuperscript{th} February 2022** 16:00-17:00
- **Monday 14\textsuperscript{th} March 2022** 16:00-17:00
- **Thursday 28\textsuperscript{th} April 2022** 16:00-17:00

Please note, places are limited to students from state schools in the UK, Isle of Man and Channel Islands, and where we are oversubscribed, we will prioritise places for students who meet our widening participation and access criteria. Further information about this can be found at [https://www.ox.ac.uk/about/increasing-access](https://www.ox.ac.uk/about/increasing-access)

**Explore Chemistry – A super-curricular series** [UPDATE]

KS5 UK state school students and their teachers are invited to sign up for this series of talks and Q&As. There will be a week to watch a pre-recorded talk (posted online), reflect and note any questions before joining a 45-minute online live Q&A session with the researcher presenting the talk. Our next talk and Q&A features DPhil Jack Ren (Ben Davis Group) on chemical
biology and proteins. The talk is currently live and the Q&A will follow on the 18th November, 16:30-17:15.

Following on from this, our next talk and Q&A will feature Toby Johnson (Langton Group) on Gatekeepers and Hijackers: synthetic proteins and the artificial cell. The talk will be released on the 13th January 2022, with the Q&A following on the 20th January, 16:30-17:15.

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Ask a Chemist: Conversations around careers for chemists – Dr Marcin Majewski [NEW]

These sessions are open to all interested students of any age, and teaching staff who are invited to submit questions in advance or during the session. Sign up to receive reminders and updates about this series.

Our next Ask a Chemist session will be on the 14th December 2021, 13:00-14:00, and will be with Dr Marcin Majewski from the Harry Anderson Group. Marcin is a specialist in building novel nanoring structures incorporating porphyrin building blocks which have potential applications for medicine, electronics and engineering. He obtained his PhD about novel hydrocarbon-based compounds at the University of Wrocław (Poland) with Prof. Stępień, continuing his work as a Post-Doctoral Research Associate in that group, before joining the Harry Anderson Group at the Department of Chemistry at the University of Oxford in 2020 through a Marie Skłodowska–Curie Fellowship.
Future Events:

**School / Community / Oxford College Workshops** [UPDATE]

Visits to Oxford Colleges have re-started and you are warmly invited to request a College Workshop when arranging a group visit with a College. Find out about your link Colleges here.

**Thinking 3D**
A workshop is for KS4 (14-16 yrs) and is designed to showcase the importance of maths and geometry in chemistry through a circus of activities. Most suitable for students who are interested in maths. Minimum of 20 students.

**Unlock the OxBox - Poison Puzzle**
This is for KS4 (14-16 yrs) and is a series of practical and theoretical chemistry problems. Minimum of 12 students.

**Unlock the OxBox - The Lab Lurker**
A series of practical and theoretical chemistry problems for KS5 (16-19 yrs) students. Would suit a class where at least half of the students are studying A level (or equivalent) in Chemistry. Minimum 12 students (at least 6 studying Chemistry A level, or equivalent).

You can mix and match puzzle boxes for groups including KS4 and KS5 students, as long as there is a minimum of 12 students in total (including 3 of each Key Stage).

Visits to Schools/Community venues are still suspended due to rising Covid infections.

**Chemistry Teaching Laboratory (CTL) Workshops** [REPEAT]

Despite an easing of lockdown restrictions, we now do not anticipate a return to CTL visits until Jan 2022. As soon as availability is confirmed, dates will be posted on our website and publicised through the usual channels. Please note, that building works will continue to disrupt the availability of workshops in the CTL for the foreseeable future.
Teacher and Technician Chemistry Conference [NEW]

Our next Teacher and Technician Chemistry Conference will take place on **7-8th July 2022**, co-hosted by St Anne's College and the Chemistry Teaching Lab. Further details on booking and presenters will be announced in due course.

Learning Resources

**Featured resource: The Chemistry of All Hallows' Eve and Bonfire Night**

Join Saskia O’Sullivan (Oxford Chemistry) and Tim Harrison (Bristol ChemLabS) as they explore the underlying chemistry of two of our most popular celebrations. This lecture-demonstration was recorded at Bristol ChemLabS in October 2021 by Dr Jonny Furze (Bristol ChemLabS). Watch the video here: [https://www.youtube.com/watch?v=KmPvbBtNh44](https://www.youtube.com/watch?v=KmPvbBtNh44)

Waste Age exhibit at The Design Museum, London [NEW]

Work by the Williams Group is currently featured at The Design Museum London in the exhibition “Waste Age: What can design do?“. The exhibit demonstrates how polymers can be made from waste CO2 and citrus peel (limonene oxide). These polymers could be useful contributors to a future circular economy where our waste can be utilised to make new, high performance materials. In an accompanying film, Prof. Charlotte Williams discusses how our chemistry might contribute to a sustainable future for plastics. The exhibition is open until 20 February 2022.

This may also be of interest to any of your colleagues in D.T. You can find more information [here](#).
RSC Women in Chemistry: Making the Difference

This project includes a number of engaging practical challenges suitable for after-school, classroom and home use, as well as resources around the research behind the challenges and the female chemists involved. These will be available throughout 2021–2022, with more to come.

**Power UP!** - Set by a team at Oxford Chemistry, the first challenge highlights the importance of battery technology and the quest for safer, longer-lasting, efficient and more powerful portable energy stores.

**Dig it UP!** - Set by Wolverhampton University, this involves investigating the degradation of “biodegradable” plastic and paper bags supplied from popular supermarkets. It provides an opportunity to explore control variables, and observe any visible degradation between the bags, comparing which look to have degraded more within the time period. The research showcases the Green Chemistry agenda at Wolverhampton and the pioneering work being done to repurpose plastic waste into high-value materials in agriculture, medicine and household items.

**Light UP!** - Set by the University of Warwick: a chance to investigate the Chemistry of Light! Participants make their very own Camera Obscura, view light diffraction, observe LED lights flickering faster than the eye can see alone, and investigate the UV protecting qualities of sunscreens.

**Link UP!** – Set by the University of Durham, exploring the fascinating process of gelation. Gels are formed when molecules link together to form networks, producing materials with interesting and useful properties. Participants make their own gels which mimic those produced by some strains of bacteria, and explore the use of (wo)man-made gels in healthcare applications, such as the delivery of drugs.

**Proteam UP!** – Set by Imperial College London and exploring the importance of proteins in our lives: what proteins are, the atoms of which they are made, how to extract proteins from biological matter and to visualise real proteins with the power of computational chemistry.

**Look UP!** Set by the Atmospheric Chemistry Research Group (ACRG) at the School of Chemistry, University of Bristol, exploring air quality and its importance in our lives: air quality, examining real air quality data and create a research presentation.

Please do share the website link as you see fit. The challenges, resources and events are designed for young people aged approx. 10–14 years (Upper KS2–KS3) and their supporters of any age!

https://makingthedifference.web.ox.ac.uk/home
Competitions

RSC Top of the Bench Regional Heats [REPEAT]

We are delighted that the 2021-2022 Thames Valley RSC Top of the Bench Regional Competition will go ahead this year, taking place in January 2022. The competition, which is set by the University of Oxford, will be based in each participating school and take place between the 10th – 24th January 2022, allowing teachers and technicians to schedule the competition as best fits their timetables. Teams of four, made up of two Year 9, one Year 10 and one Year 11 will take on a construction and analytical challenge as well as participate in an online quiz. Participants will need to use technology to collaborate and complete the challenge and to present their findings. The winning teams will be judged on their findings, collaboration and quiz score.

Please note, we anticipate the competition will take approximately 4 – 5 hours in total, however, this does not need to be scheduled all at once, and it is perfectly possible for the competition to be split up into shorter periods allocated across the fortnight. Participating schools will receive a competition pack with almost all of the required materials. There may be an expectation that the school provides a small number of low cost consumables (e.g. deionised/distilled water).

Interested teachers should contact thames.valley.rsc@gmail.com to register your team.