DEPARTMENT OF CHEMISTRY

UNIVERSITY OF OXFORD

Outreach Newsletter: June 2024

Welcome to the June 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.

Thank you for reading!

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Future Events:

KS5 Autumn Chemistry Conference [REPEAT]

We'll be holding our fifth Autumn Chemistry Conference on **Thursday 26th September 16.00-18.00 BST** at the **Inorganic Chemistry Laboratory, Department of Chemistry** (and streamed online). This will be open to all Year 12 and 13 students (or equiv., 16-19 yrs) and their teachers interested in finding out more about the cutting-edge currently research happening in the field of chemistry.

Students are welcome to attend in-person unaccompanied by a teacher provided that they are aged 16 or over on the day of the event and have provided emergency contact details. Priority will be given to local state schools. In-person registrations must be submitted by **11:00 BST** on **Tuesday 10th September**.

REGISTER HERE!

About the speakers:

Calum Patel is a DPhil student with the Gouverneur Group at the University of Oxford, Department of Chemistry. He completed his Master's degree in Chemistry at Imperial College London and has also studied and worked at F. Hoffman La Roche in Basel, the University of British Columbia, and the SBM CDT in Oxford.

Here is an introduction to Calum's talk:

Shaking up fluorine chemistry

From toothpaste to Teflon, fluorochemicals are important molecules widespread in society. Fluorine plays a critical role in medicines, fertilizers and in the production of Li-ion smartphone batteries. But where does the fluorine come from? For over 200 years, the first step in accessing all fluorochemicals has been the energy-intensive conversion of the mineral fluorspar (calcium fluoride) into toxic and corrosive hydrogen fluoride (HF) gas. Handling and transporting HF to prepare fluorochemicals requires strict safety regulations, and – unfortunately - HF spillages have occurred, often with fatal consequences and detrimental environmental impact. For the first time, we have generated fluorochemicals without hazardous HF gas. Grinding fluorspar rocks with a phosphate salt using steel balls leads to fluoride release for fluorination chemistry. This mechanochemical approach is a breakthrough and enables the synthesis of critical fluorochemicals, bypassing HF entirely. This talk will focus on the research journey underpinning this breakthrough from one of the lead authors.

Associate Professor Amy Styring is a Professor of Archaeological Science at St. Cross College and Head of the Stable Isotope Lab. Her research focuses on carbon and nitrogen isotope analysis of human and animal bones and charred plant remains recovered from archaeological sites and use the carbon and nitrogen isotope values of individual amino acids in their proteins to improve predictions of human and animal diet.

Here is an introduction to Amy's talk:

Science and archaeology – how chemistry can tell us about the human past

"Chemistry and Archaeology… how does that work?" is a common response when Associate Professor Amy Styring tells people of her research into archaeological chemistry. To answer this question, this talk will present some of the insights that scientific techniques can reveal into life in the past, with a particular focus on reconstructing what people were eating and where they lived at various points in their lives. The early medieval cemetery excavated in 2015 in Milton, Oxfordshire, provides an interesting local case study, revealing insights into the people living in Oxfordshire more than a thousand years ago.

Top of the Bench Thames Valley Regional Heats 2025 [REPEAT]

Registration is now open for the Thames Valley section regional heat of the 2025 RSC Top of the Bench competition, taking place at the **Chemistry Teaching Laboratory, University of Oxford** on **Wednesday 15th January 2025**.

The competition is free to enter and is open to teams of 4 pupils (two from Year 9 and one each from Years 10 and 11). The day will involve a practical lab challenge and a careers talk. The winning team will go through to represent the Thames Valley region in the national finals.

There are bursaries available to support state school attendance. The programme will take place during the school day and lunch will be provided. Teams need to be accompanied by an adult (this does not have to be chemistry teacher).

Please apply using this form (use this link to check if your school is in the Thames Valley region).

Oxford College Workshops [REPEAT]

You are warmly invited to request a **College Workshop** when arranging a group visit with a College. Find out about your link colleges here. *If you do not hear back from your link college within 14 days, do get in touch directly with us.*

Unlock the OxBox – Graffiti Game

A new puzzle box workshop for Year 9 (13-14 yrs), featuring a series of practical and theoretical problems. Minimum of 12 students, state schools please.

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, state schools please.

"It is fantastic for the students to have this opportunity to apply their knowledge to a problem-solving activity and so enjoyable for them." – Teacher

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 six studying Chemistry A level, or equivalent), state schools please.

You can mix and match Graffiti Game, Poison Puzzle and Lab Lurker puzzle boxes for groups including Year 9, KS4 and KS5 students, as long as there is a minimum of 12 students in total (a minimum of three from a Key Stage is required).

School / Community Workshops [UPDATE]

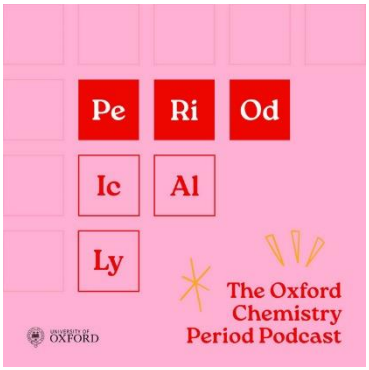
Online Primary Workshop: Plastic Fantastic?

This workshop is for a class of students in Years 5/6 (England and Wales), P5/6 (Scotland) and P6/7 (NI) in a UK primary school. Co-led with the class teacher, the students will interact with Oxford Chemistry ambassadors via MS Teams or Zoom, whilst undertaking small-scale investigations using materials which have been sent to the school in advance.

Our programme of workshops has concluded for this academic year. Dates for the 2024-25 academic year will be released in due course.

Other Opportunities:

PERIODically Podcast [REPEAT]



PERIODically is a podcast created by undergraduate and postgraduate Chemistry students at the University of Oxford to discuss their experiences of how having a period has affected their time studying Chemistry. The podcast aims to discuss how the physicality and intensive nature of chemistry study can be affected by symptoms of periods (such as cramps, mental health and medical issues) and seeks to shed light on these problems, tackle stereotypes and misconceptions, and start a conversation on how study can be improved for those with periods.

Season 1 is available to listen to now, with episodes from Season 2 now launching weekly. You can find further information and links to listen here.

RSC Women in Chemistry [REPEAT]

In-between our scheduled RSC Women in Chemistry events, a reminder that there are lots of exciting opportunities to participate in practical work, including Science Clubs. Do keep an eye on our website and Twitter for further information on future events and activities!

International Women in Engineering Day [NEW]

The Department of Engineering Science will be hosting a day of activities for International Women in Engineering Day on Friday 21st June, 9:00-14:30. State school students from Years 10-12 are invited to attend for a day of STEM workshops, talks by women engineers and lunch at an Oxford college. Registration can be found here, places are limited and first-come-first-served.

St Hilda's Outreach Roadshow [NEW]

St Hilda's will be visiting schools across their link regions of Hampshire and Sussex in July. Sessions are available for Year 10/11s and Year 12 students at local venues, offering an insight into higher education (including the University of Oxford) and information, advice and guidance on the applications process.

Dates and locations of workshops and links to book can be found here.

Science Wonder Garden Party 2024 [NEW]

Begbroke Science Park will be hosting their annual Science Wonder Garden Party on Saturday 13th July 11:00-16:00. Fun hands-on activities for all ages will be on offer, including experiments, lab tours, interactive talks, trails, science carnival games and art and science workshops showcasing the research and invention happening at Begbroke Science Park and Oxford University in 2024.

Free buses will be provided from Kidlington, Yarnton and Begbroke and limited free lunch will be available. Register here to receive future updates on the day's events.

Work experience [REPEAT]

It is with regret that we are unable to offer work experience placements in the 2023-24 academic year. We do understand that many students are keen to undertake work experience having had these opportunities severely curtailed in the pandemic. We are hopeful to be able to offer placements in the future, which will be advertised via our website. Please do not send us unsolicited requests for work experience opportunities in the meantime, thank you.

Learning Resource: 19th Century Medicine Chest [REPEAT]

While researching the 19th century as part of the *Into the Blue* theme of our Building Bridges project this year, we stumbled upon this fascinating artefact housed at the History of Science Museum in Oxford. DPhil in Biological Sciences Sophie Andrews shows us the typical contents of such a 19th century medicine chest – including 'Bark Powder' - one variant of which contained willow bark (a nice fact for your A level chemists to contemplate!) - as well as the opioid-based laudanum, smelling salts and apothecary weights. You can explore the contents here.