

Chemistry

Virtual Taster Lesson

Hello!
My name is
Mrs Lowe

I have been teaching Chemistry A level since 1984 – that's 36 years! All but the first two were at Our Lady's.

I taught both my two children at OLCC, Becca is now 25 and works for the Civil Service in London and Michael is 28 and is a doctor in Glasgow.

I love teaching A level and my experience means that I am aware of many misconceptions students have about chemistry and can tackle those to improve understanding.

I have been a senior examiner and moderator for OCR AS Chemistry for over 20 years and now I have moved to examine the A level papers.

This has given me a great insight into examination technique and mark schemes.



I will be teaching the majority of the course but a couple of lessons each fortnight will be delivered by Mr Bird. I will let him introduce himself....

Hello!

My name is Mr Bird

I have been teaching at Our Lady's for not quite as long as Mrs Lowe, 33 years fewer to be exact!

I am an ex-pupil of our school and was taught A-Level by Mrs Lowe and went on to study Chemistry at Lancaster University, completing my dissertation on organic photovoltaics.

I extremely enjoyed teaching Year 12 this year and it has been interesting seeing them go through the same things I did, giving them tips to keep on Mrs Lowe's good side!



Photo taken at Lancaster Uni,
picking up liquid nitrogen
when Mrs Lowe wasn't looking

We are very proud of our results in Chemistry

	OLCC 2019	National
Grades A* - A	36%	33%
Grades A* - B	73%	54%
Grades A* - C	100%	74%

Over the last three years, NO student studying Chemistry A Level has obtained a grade LOWER than Grade C.

Our 'Value Added Score' for chemistry is 1.28.

This means that, on average, the grades obtained by students at OLCC **are more than one grade higher** than other schools nationally.

Course Content

The course builds upon the chemical concepts introduced at GCSE.

AS and first year of A level (Year 12)

- Module 1 – Development of Practical Skills (continues into Year 13)
- Module 2 – Foundations in Chemistry
- Module 3 – Periodic Table and Energy
- Module 4 – Core Organic Chemistry

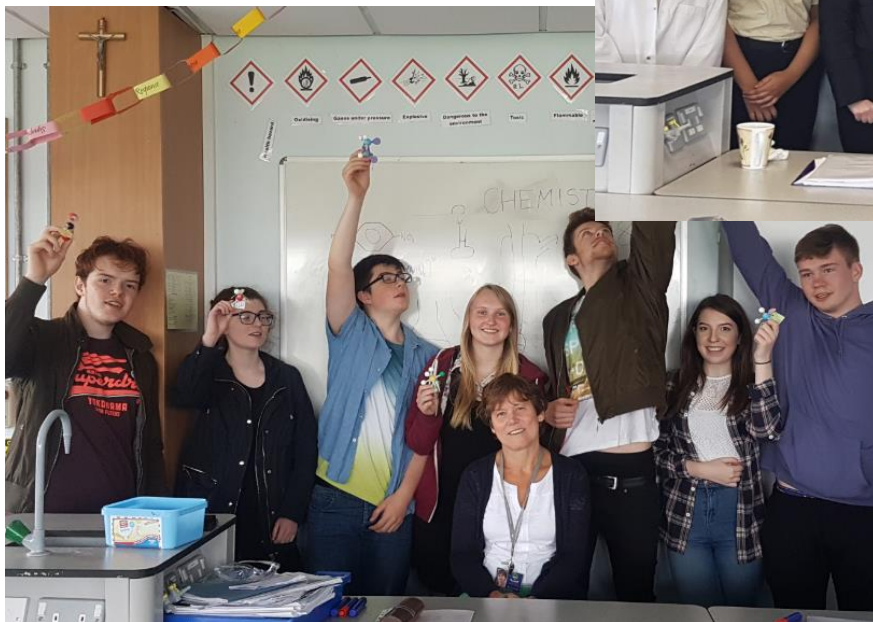
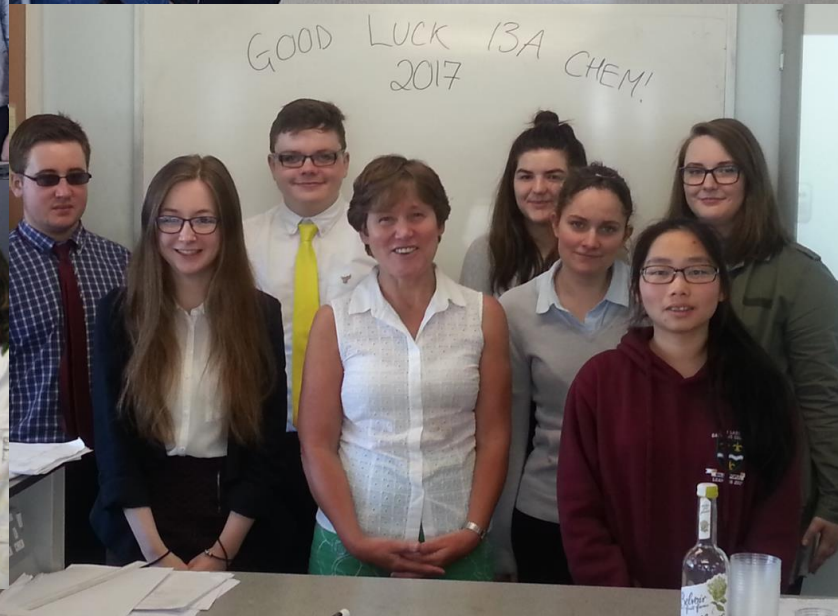
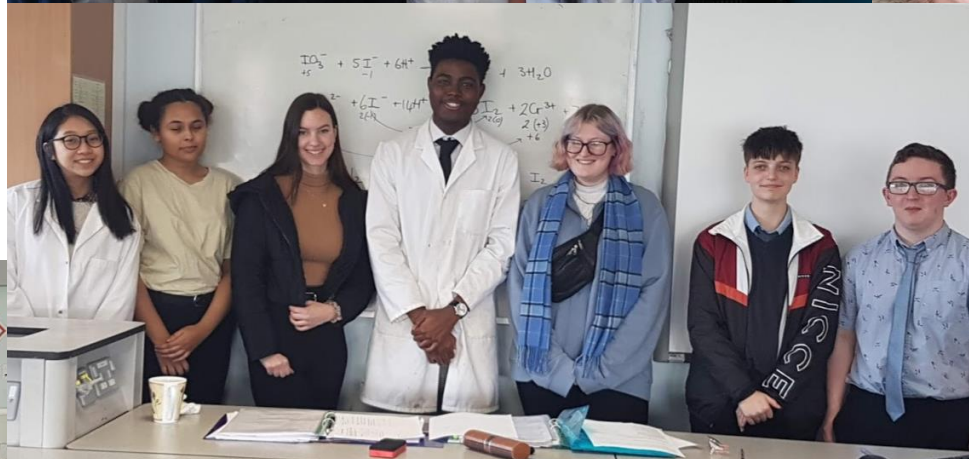
Second year of A level (Year 13)

- Module 5 – Physical Chemistry and Transition Elements
- Module 6 - Organic Chemistry and Analysis

How is Chemistry Taught at OLCC?

Small A level Groups

Our groups are small and we get to know each other well. Here are just a few past and present...



Lots of Practical Work

Our Laboratories are modern and very well equipped. We are fortunate to have sophisticated equipment which is often not available in all school laboratories



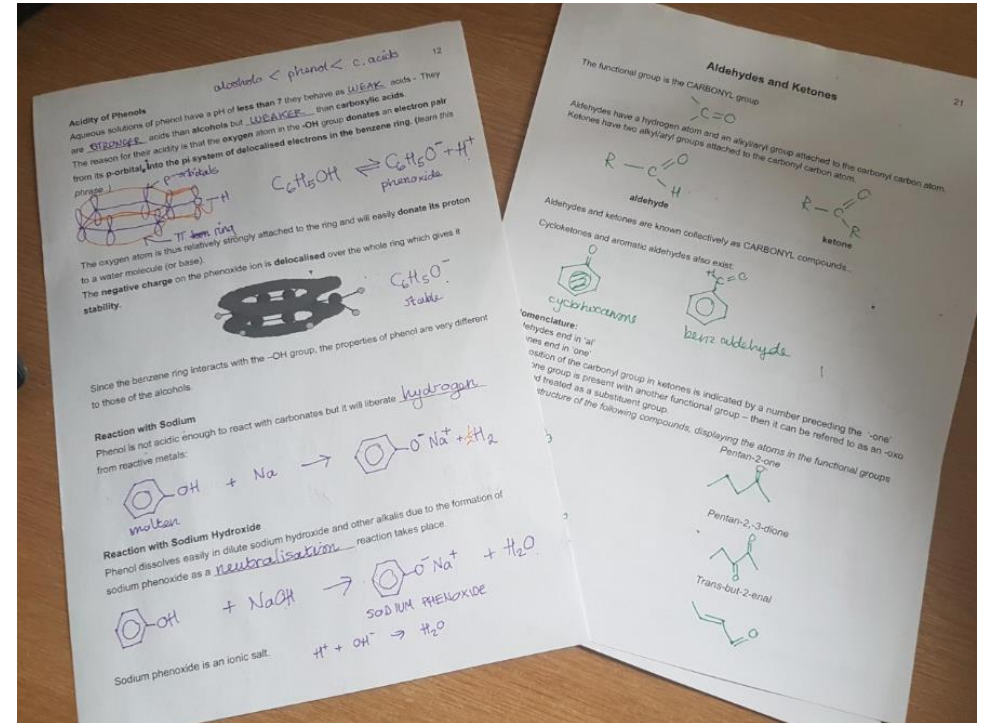
Pre-printed notes

All topics have page numbered worksheets.

Students complete exercise in these as they go along.

They help with organisation and revision.

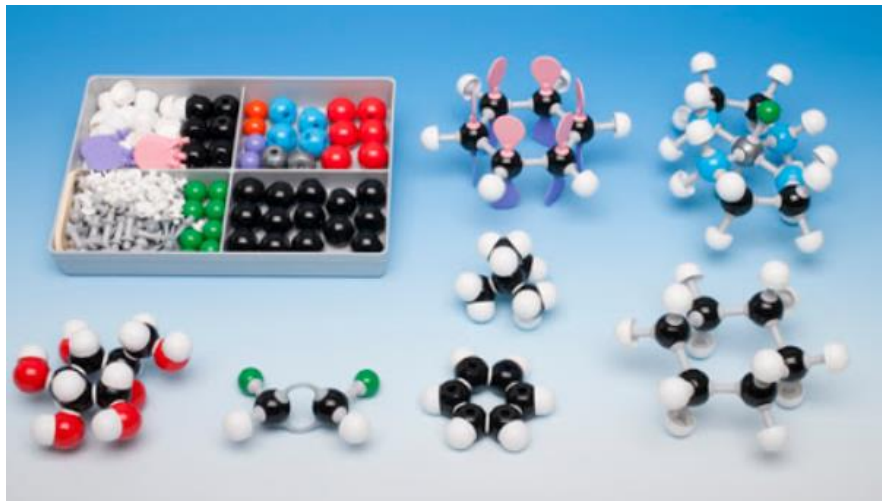
There is no dictating and little note-taking so that time can be spent ensuring the work is being understood by **everyone** in the class.





Molecular Models

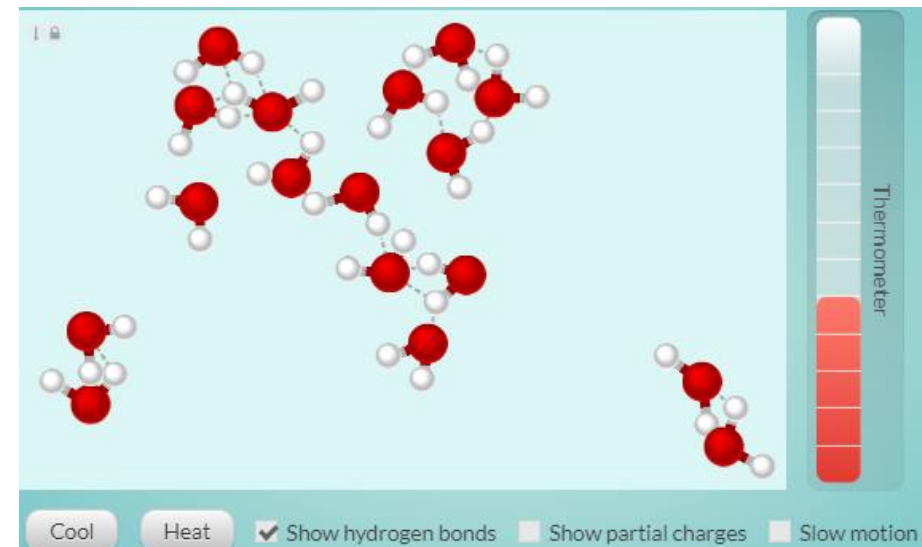
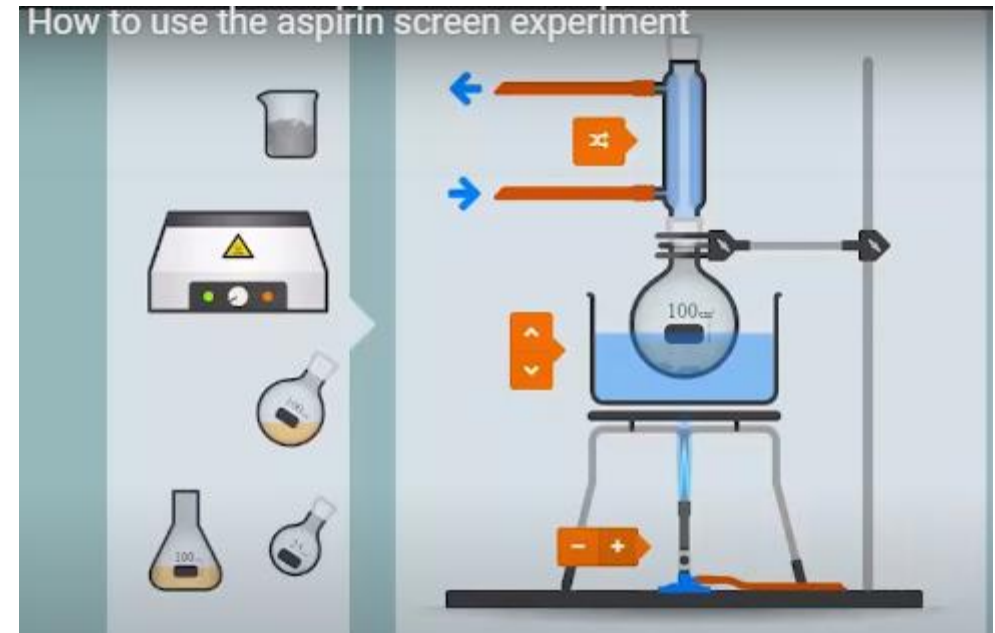
Each student has their own set of Molymods which we use on a regular basis to improve their understanding of chemical structures.



Software Programs

Chemistry simulations are very useful, particularly on a molecular scale.

The department uses a selection of programs and have invested in some software which helps explain the more challenging concepts of chemistry.



Spectroscopy in a Suitcase

Lecturers from Lancaster University bring equipment to school so we can experience it in our own lab.



Extra-Curricular Chemistry

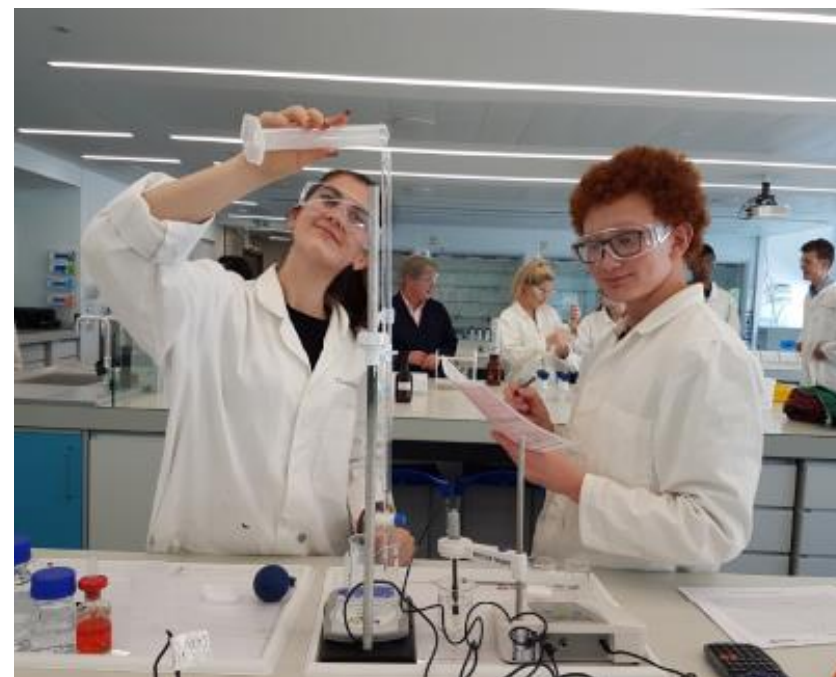
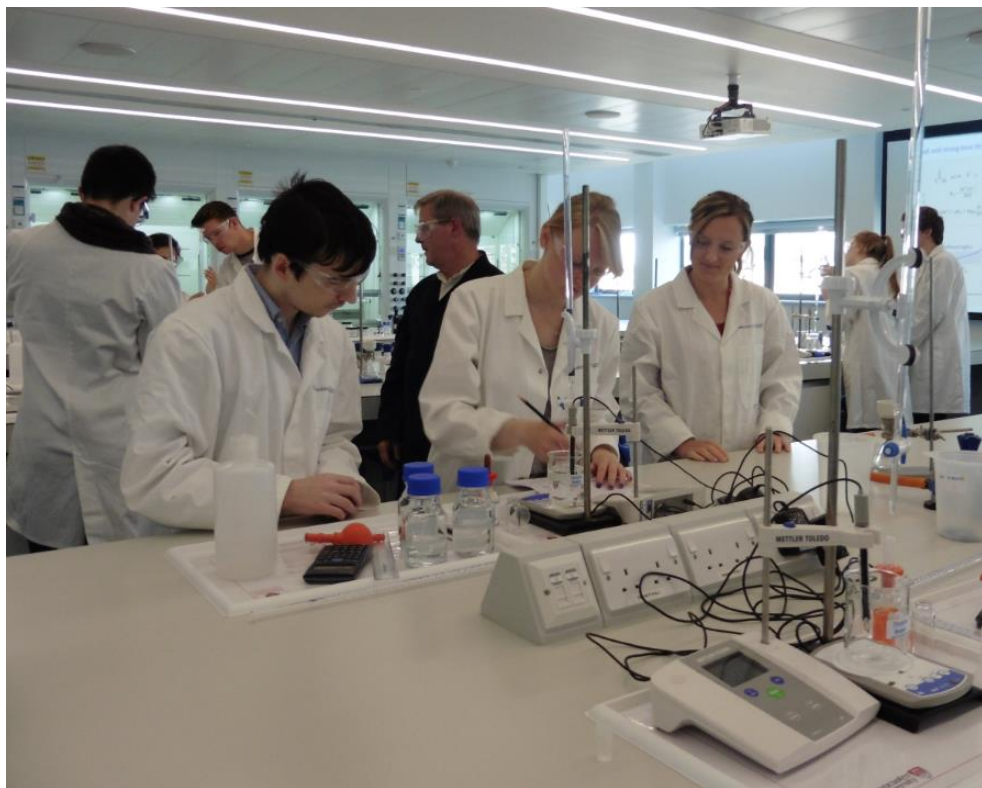
'Body in the Lab' at Lancaster University

This is our current Year 13 group who attended an analytical Forensic Chemistry Workshop at Lancaster University last year. They were able to experience working in a university lab and using equipment which is not available in schools.



'Analysis of Aspirin' at Lancaster University

This is another recent workshop in which students analysed aspirin using UV, IR and NMR Spectroscopy.



Liquid Nitrogen

Sixth Form students are trained to demonstrate the properties of Liquid Nitrogen alongside a teacher. We make ice cream and have some 'freezing fun' during Science Week and at School Open Evenings.



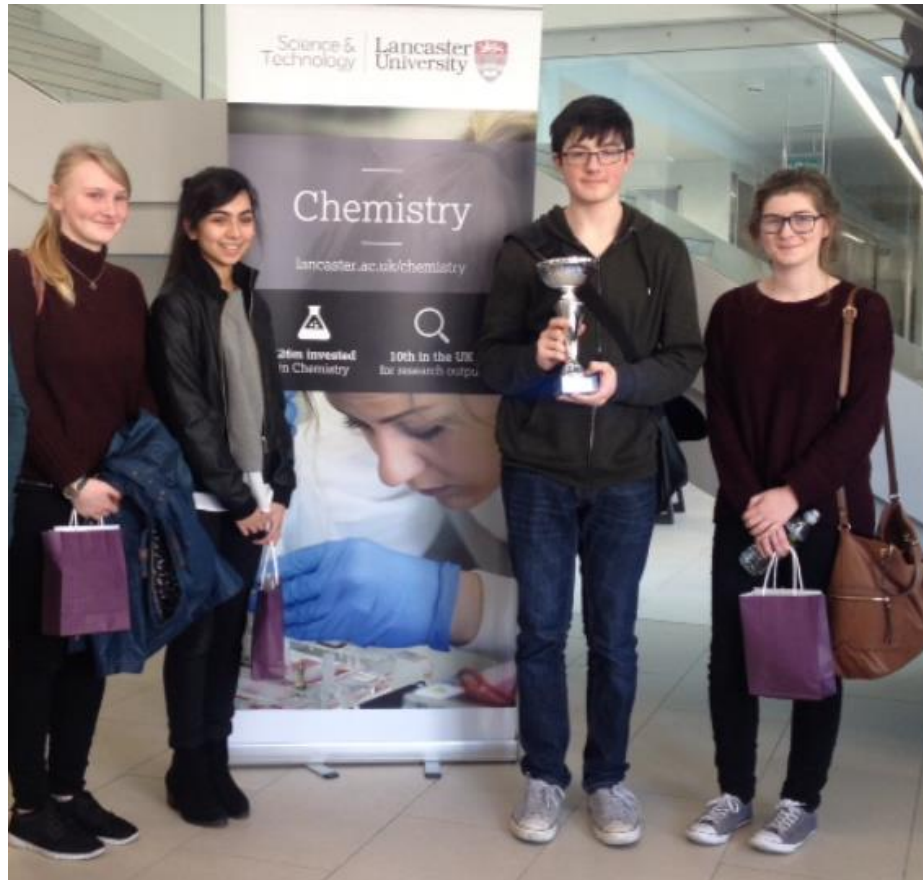
Chemistry in Uganda



A level chemistry students have accompanied me on 3 trips to Uganda and have assisted in the training of teachers and students in practical aspects of chemistry.

Mr Bird and I were due to go again this July with a group including 5 chemistry students but this has now been postponed until 2021.

Chemistry Competitions



Every year we enter teams of students for local chemistry competitions.

We sometimes win!

This group won 3 years ago, beating all the local schools.

So what can I do with chemistry?

Let's look at what some of our former students are doing in careers related to chemistry.

Trisha Valencia – studying Medicine at Imperial College, London



Chemistry was my favourite A Level subject as it combines problem solving, theory, and practical skills. It was also very well-organised - I still use the revision methods I learned with Mrs. Lowe (organising my notes and smartly tackling exam questions).

It was very satisfying to see topics I've learned in chemistry when I was studying oncology, biochemistry, and pharmacology.

As I look back and see how far I've come and how much I learned, I feel a deep sense of gratitude for the subject that cultivated my love for science and problem solving.

Hope it does so for the incoming students too!

Emma Ledgard – Quality Control Analyst

I studied Chemistry with Forensic Science at the University of Leicester. It was a very varied and interesting course which covered all branches of Chemistry, Forensic Science and Law! I even lived in Cornwall for a year while I completed a 'Year-in-Industry' where I gained valuable work experience which helped me get the job I have now.

I graduated 1st Class Masters Degree with Honours.

I am now working at Victrex as a Quality Control Analyst. I am responsible for testing the polymers which are produced in our on-site plants, to ensure they meet specifications for their end applications which include cars, aeroplanes and medical implants.

We follow a shift pattern of 3 days on – 3 off which give us lots of time off! It is a job that I love and hope to be doing for a very long time."



Aidan Banks – Industrial Chemist at Thermofisher Scientific

At Thermofisher Scientific we manufacture a range of chemicals and intermediates for use in many different industries. The majority of our work goes to the pharmaceutical industries for use in things like cancer drugs and drug delivery molecules. The huge variety in products and preps means that working in the lab is rarely boring, every day is vastly different. One week you could be making amino acids and the next could be big organic molecules with multiple aromatic rings. Working here has allowed me to use the skills learned throughout school and university and apply them on a much larger scale, making up to 10kilos of product per reaction. Seeing where the product which I make goes is very rewarding, which makes the early starts a lot easier.



Aidan graduated from Glasgow University with a Chemistry Degree in 2019

Dr David Townsend – Scientific Researcher



I studied my undergraduate BSc in Biochemistry at the University of Liverpool. I then studied for my PhD in Chemistry at Lancaster University. I continued working in academia as a postdoctoral researcher studying the inhibition of Alzheimer's and Heart Disease. I now work as an Innovation Fellow with Lancaster University's Centre for Global Eco-Innovation, combining academic research with business consulting.

My research has been published in high impact research journals as well as receiving international media coverage in 2018 (including CBS morning news) for the effects of green tea on heart disease. My most recent publication in June 2020 involves repurposing the asthma drug Salbutamol as an inhibitor of Alzheimer's disease.

Farai Daka

I am a Pre-registration Pharmacist currently working with Cohens Chemist in a Primary Care Centre. My day to day job involves checking doctors' prescriptions for their appropriateness, consulting patients on how to get the best out of their medications and treating minor illnesses over the counter. Pharmacists are experts in medication and can work in different sectors ranging from Hospitals and Laboratories.

An aspect of chemistry that I did not realise was so prevalent in the real world is molar calculations. Throughout university placements and my current job I come across these calculations almost daily. It is usually in the form of calculating doses for doctors and other healthcare professionals to use on their patients or working out how many mmols of sodium/potassium/etc someone should receive in their diet.



James Waggett – Undergraduate Chemistry Student



I enjoyed chemistry A level because the balance between theory and practical meant you could apply what you had learnt. A lot of the time the practical helped us become more confident in the calculations because we would calculate based on our own findings.

The practical side wasn't the only good part though. The theory was very steadily built up from what we'd learnt at GCSE. Over the two years we gradually increased our knowledge and by exam time most of it had become second nature. It didn't feel overwhelming, but we had learnt a great deal over a short space of time.

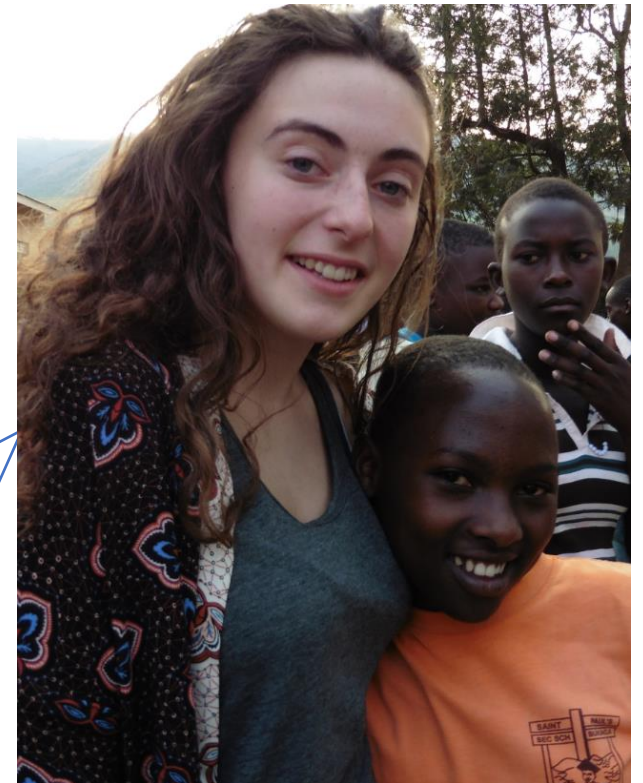
Continuing studying chemistry at university has been fantastic. I enjoy working in the labs because we use a wide range of chemicals that often have interesting properties and need careful handling.

Ruby O'Loughlin – Studying Medicine at Leeds University

In my first and second year I learned more about the science of the body, in which my great chemistry and biology teaching from OLCC gave me an advantage. We learnt about the anatomy of a body and the chemistry of how the body works. From then on my teaching took place more in the hospital than in a lecture hall, looking at procedural skills such as taking bloods.

If you want a degree in which you can expand your scientific knowledge, but spend everyday talking to and helping people then medicine is the degree for you.

The one thing that being taught at OLCC gave me more than anything else was the confidence to apply and succeed in medicine. I can't recommend studying the sciences enough to any aspiring medic, not only is chemistry essential, it's a very interesting rewarding topic to study.



Mohammed Dalal – studying Chemical Engineering at Lancaster University



I am currently studying chemical engineering and I am enjoying the course a lot.

We gain knowledge on all aspects of engineering and apply it to lab experiments or reports based on real life scenario. I like the hand on practical experience using specialised equipment and learning techniques from experts.

The course is great for learning about varying types of industry and processes used in manufacturing nearly anything.

Looking forward to you joining our lessons in September!

Don't forget the Bridging Work on the OLCC web-site.

If you have any questions, please do not hesitate to contact me:
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