ACS STEM NEWSLETTER

ALPERTON COMMUNITY SCHOOL

Issue: Spring edition 2024

Masterclass with UCL Associate Professor Dr Potts

04 March (Year 10 Triple Science)

Dr Potts, Associate Professor at University College London and former lecturer of our science teacher Dr Mahmud, visited our school on 4 March and delivered an inspiring masterclass to our Year 10 triple science students.

Dr Potts spoke about his research, university life and about various career opportunities for chemistry graduates, both within academia, such as researcher, and careers within other sectors, such as finance or IT. He also shared with the students more information about what a chemistry degree entails, as well as various societies students can join at UCL.

Towards the end, students also took part in a 15 minutes QA session.

"On 4 March, our science teacher, Dr Mahmoud, arranged an inspirational and motivational talk with university professor Dr Stephen Pott. It was a really enriching experience for us. Dr Pott discussed in detail the different careers and pathways in chemistry. The workshop was extremely helpful and gave us the opportunity to learn more about the variety of careers and research available in chemistry." (Yr10 Student)

"The workshop Dr Potts delivered was very informative and it was interesting to learn about the various different things chemistry can be used for. In addition to learning about different STEM pathways, I am now more aware of how university life works and what to expect. Overall, this experience was very useful" (Nikki, Yr10)

"Dr Potts's presentation was very informative and enjoyable. It gave us a wider understanding of how studying chemistry at A levels is like and it was great to be able to ask questions to a professor at UCL" (Student, Yr10)

University of Nottingham: Physics Levelling Up Programme

Who wouldn't jump at the opportunity to explore a subject at undergraduate level at a Russell Group university? A glimpse into a world that most of us have spent years working towards is too exciting to miss! The University of Nottingham is one of a few universities that offers a *Levelling Up Programme* for either Physics or Chemistry, which ultimately explores the content of an A-Level Science subject in further depth. The programme seeks to develop the integral life skills of problem solving - the key to unlocking any door in life - to mathematical application and opportunities to collaborate with other students. Nearly all of the sessions take place online so you can learn from the comfort of your own home! The programme sessions revolve around content exploration, unique problems and further tutoring. It also involves some on-site explorations of the prestigious University of Nottingham at the beginning and end of the course. The *Levelling Up Programme* in itself becomes a metonym for Poseidon's trident: one prong for A-Level success, the second for university preparation, and the third, for a thrilling time! (Tariq, Yr12)

British Science Week celebrations at ACS

08/03/24 to 15/03/24

Trip to St Helens Independent School
ACS physics team got 2nd place in a competition with 22 other schools

I am delighted to share the wonderful experience our team took part in during the recent physics competition. Through dedication, perseverance, and a passion for physics, our team won the first place in the calculation contest. We also dominated the escape room challenge with an incredible fast time of around 10 minutes, finishing first in our group. This achievement was a testament to our team's collective knowledge and expertise. Furthermore, I am proud to announce that our outstanding performance secured us the second place overall in the competition. It is with heartfelt gratitude that we extend our appreciation to our mentors for their guidance and support throughout this journey. As we reflect on this remarkable accomplishment, let us remain steadfast in our commitment to excellence and continued growth in the field of physics. (Dishoory, Yr11)

On the 8th of March, I had the opportunity to attend St Helens Independent School for a physics tournament. I'm really grateful I was selected, as the trip was very engaging. I thoroughly enjoyed the various challenges that took place throughout the day and the career talk delivered by a very successful student. It was a great learning experience and also an opportunity to connect with students from other schools. We worked as a team of four and we ended up coming second in the competition. For me, the best part of the day was definitely the calculations race and the escape room. I would highly recommend the challenge to other

students as it is an amazing opportunity to learn and have fun while working as a team. (Student Year 11)

The competition was amazing and I wish to thank the school for giving us the opportunity to take part in it. The experiment challenge wasn't too difficult, but it was challenging and required problem solving skills in maths, which I enjoyed. I also enjoyed the escape room activity which was very interactive and not too difficult either. The calculation race was very tense and I was excited to hear that we had finished first in our room. The career talk provided a lot of insights into how physics can shape your academic journey and how it can be applied in many different areas, and it made me reconsider my A-Level options. I am really glad we won the second place and grateful to have had the opportunity to represent the school in the competition.
(Student, Year 11)

Y9 Celebrating British science week by making slime

08/03/24

To kick start our British Science Week, Dr Mahmoud organised a special workshop for a group of year 9 students, getting them to learn how to make slime. Below are some examples of the work they produced, including a model that changes colour from pink to white, depending on the temperature. Afterwards, the students spent the next hour working on their poster for the British Science Week Poster Competition. Some of the ideas they've explored were the importance of time in space travel and human evolution. (Dr Mahmoud)

Yr12 Physics Senior Physics Olympiad Challenge

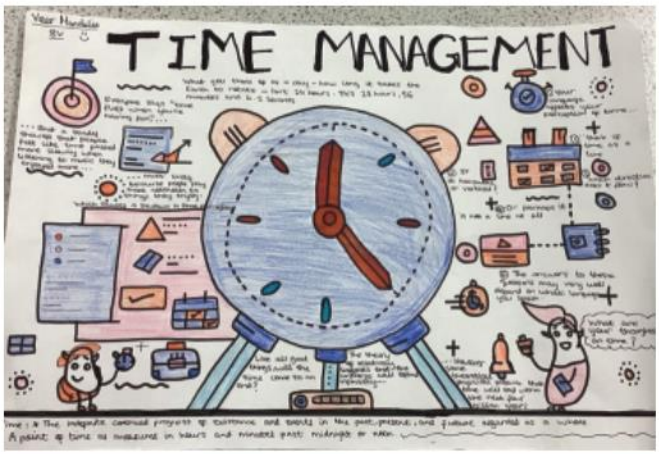
08/03/24

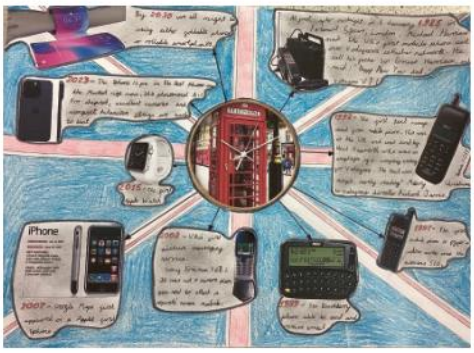
On Friday 8th of March, seven of our Year 12 students sat for the very first time the challenging physics Olympiad paper, organised by one of the top universities in the world. It was a great way to celebrate British Science Week! The students said they found the experience challenging, but are happy they took part in the competition and are looking forward to the results.

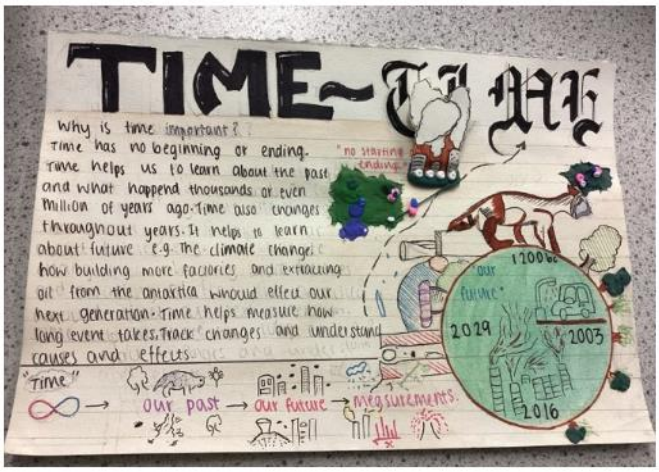
British Science Week Poster Competition

08/03/24

The poster competition was organised by the science department for our Year 7-9 students across the British Science Week, and we had a large number of entries. The winning entries received a certificate, a science kit and a trophy, in addition to having their posters submitted for the national poster competition. Below you can see some of the wonderful entries students have submitted.







Professor Neuberg Masterclass on Geophysics

12/03/24

The Masterclass led by Professor Neuberg was very inspiring and has allowed me to get a better understanding on the topic. It has shown us how the study of Geophysics covers much more than tectonic plates and Earthquakes, and allowed us to enrich our understanding of various topics, such as the structure of the Earth, how volcanoes work, how to utilise 3D models and how we can use this information to recommend actions in case of emergency. (Tomasz Year12)

Professor Neuberg's lecture on geophysics was very useful as it revealed to us just how vast the topic is and the numerous areas it can be applied, both in the real world and in terms of employability. Coming from Leeds University, which is the 3rd leading university for geophysics in the UK, the professor explained how geophysics is merely the application of physics on Earth. For example, we came to understand how the outer core of the Earth, made of molten iron, acts as a self-sustaining geo-dynamo, generating the magnetic field that protects the Earth from the sun's solar flares. In addition to this, the professor delved into his speciality, volcanology, and talked about the effects of pyroclastic flows and how geophysics allows for both the relative prediction, and study, of volcanic eruptions.

At the end of the lecture, I was so elated by the experience and the new knowledge I had acquired, that I was very keen to have a photo taken with the professor. Overall, the experience was very informative and enlightening and I am really glad I attended the masterclass. (Student, Year12)

Workshop with radio pharmacist Mr Harri

12/03/24

On 12 of March, Mr Harris, a practitioner in radiopharmacy, visited our school and delivered a two-hour workshop to our year 10 students, speaking about his background in biomedicine and what it takes to study biomedicine at university. He also spoke about his career as a compounder and as a radiopharmacist. The workshop was very inspiring and helped students get a better understanding of radiopharmcy and what careers are available in this field.

Review for Physics magazine

14/03/24

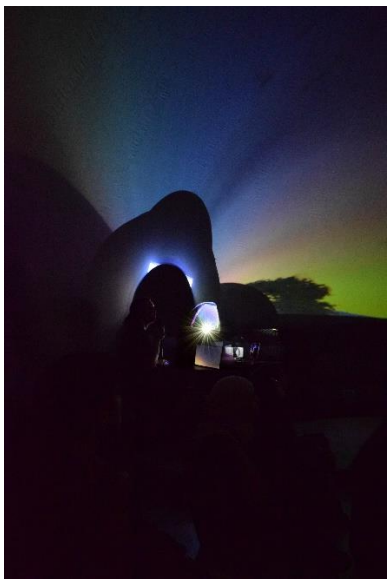
In the second edition of the Physics Review survey sent out to the students of Alperton Community School, a riveting article on Spintronics, *Two Kinds of Electron,* explored how electrons have the ability to spin about an axis. This may begin to help us process how a tennis ball flippantly defies gravity and falls upwards. Electrons are one dimensional, so how can they spin about an axis? The article introduces complex theories such as Quantum Superposition and Heisenberg's Uncertainty Principle to explain this, before going on to highlight the importance of an electron's spin. Ultimately, the spin proves that there are only two types of electrons: spin up and spin down. (Tariq, Yr12)

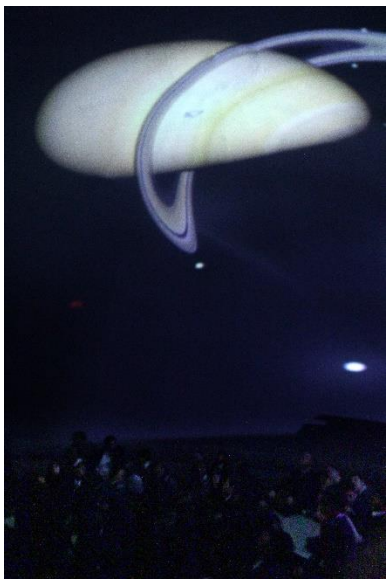
The article is concise and long enough to explain the concepts in sufficient depth, however, not too long to become tedious and difficult to read. Overall, it was an enjoyable read which explained the properties of electrons and how they work, and allowed me to deepen my knowledge on the topic. (Tomasz, Year12)

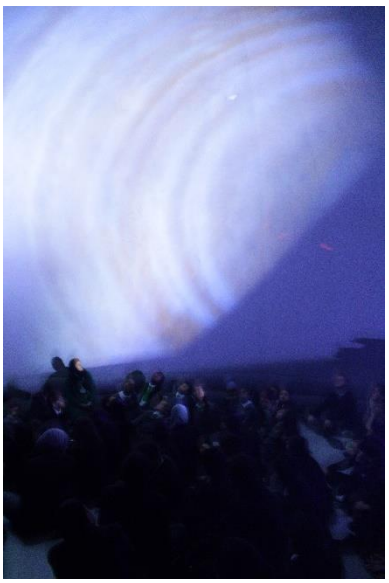
Year 8 students - British Dome

13/03/24

On Wednesday13 March, Mr Lakhani and Dr Mahmoud organised a whole day event for the entire Year 8 group to celebrate British Science Week. Each form had the opportunity to take part in a one-hour session in a huge Dome installed in our Main Hall at Ealing Road, giving the students the opportunity to learn in an engaging way about space and the wonders of the galaxy, including a James Webb Space Telescope. The hour consisted of various events, including a Q&A session towards the end, for students to ask questions about the workshop and space in general.





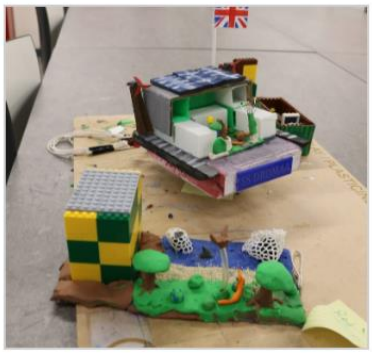


April Proto-maker challenge at makerspace with Imperial College London

08/04/24 – 11/04/2024

Participating in the Imperial College's Proto-Maker Challenge was an unforgettable experience. On our first day, as we waited for the coach, our group delved into our prompt, "New Age of Food", that we received the previous day and which we researched diligently. Amidst the brainstorming, we came up with our final idea, which was to produce a vertical farm prototype. During the next couple of days, we created and refined our ideas and craftsmanship. The sense of teamwork among participants was palpable as we exchanged ideas, shared knowledge, and supported each other along the way. All of our team members worked really hard and committed wholeheartedly into making the vertical farm prototype. The culmination of our efforts brought elation beyond words when we were announced as the winners. Yet, more than the victory, it was the journey itself that left an indelible memory. I am immensely grateful to have had the opportunity to be a part of this experience. The kindness and encouragement of everyone involved made it truly remarkable. I am filled with gratitude for the memories made, the lessons learned, and the friendships forged."
(Sumera, Year 9)

"From Monday 08th April to Thursday 11th April 2024, several Year 9 students were given the fantastic opportunity to take part in the Imperial Proto-Maker Challenge. The challenge is a mini version of the actual Maker Challenge run by the university and it is a STEM-based activity.
During the program, we were able to design and create (as a group) our own unique prototype, as a solution to a problem presented to us, having at our disposal a variety of complicated, but fascinating machines, equipment and materials we could use. The ambassadors at Imperial were also very helpful and supportive. At the end of the competition, I was very glad that the prototype created by our group was selected as the winner.
During these sessions, we were able to improve and develop our STEM skills, but also our teamwork, organisational and presentational skills. Overall, all of us had a wonderful time and we really enjoyed the experience." (Swati, Year 9)


Royal Society of Chemistry Olympiad Challenge

April 2024

Four of our Year 13 chemistry students recently participated in the Royal Society of Chemistry Olympiad Challenge. They completed an extremely challenging 2-hour written paper that required them to apply their understanding of chemistry to real-world situations and concepts, pushing their problem solving skills to the limit. We are delighted to announce that our students performed exceptionally well, achieving one gold (top 8.3% nationally), two silver (top 25% nationally), and one bronze award (top 36.8% nationally).

The UK Chemistry Olympiad Challenge is designed to challenge and inspire students, enabling budding chemists to push themselves further and excel in the subject. Students develop critical problem-solving skills, learn to think more creatively, and get a chance to test their knowledge in new, real-world situations.

We would like to extend a huge congratulations to all of our students for their outstanding achievements. (Ms Saini)

Yr9-10 Biology Olympiad

07/05/24

On Tuesday 7 May a group of our year 9 students took part in the Biology Olympiad which was sat under exam conditions. Pupils had to complete two 25-minute online papers that quizzed them on their current knowledge in Biology, as well as general knowledge, which they developed from reading the weekly scientific articles posted on their STEM-dedicated google classroom. The results breakdown are as follows:

- 70% 3 students
- 60% 5 students
- 50% 9 students
- 35-48% 3 students

We also had one entry in year 10 and out student average score was 73% (92% for paper 2).

We are extremely proud of these excellent results and well done to everyone who took part in the Biology Olympiad. **(Dr Mahmoud)**