December 2025

Science Department Bulletin

Dear Learners, Parents and Guardians,

We've had a temporary absence from the newsletter due to technical issues, but we are now back! We are nearing the end of this half term. And our students are making fantastic progress. There has been loads of activity going on in the department, from our Year sevens, who are now moving on to studying cells, our Year 9s who are also studying cells and electricity, our year 10s who are really getting to grips with their GCSE content, studying bioenergetics, chemical changes, and waves. Our Year 11s have completed their mocks now, apart from a few catchups- we are full of pride and confidence in them and their ability to succeed with hard work. Many of you will be preparing for Christmas and there was a lot of excitement recently about the great Bridgnorth Christmas light switch on. The temperature is gradually dropping as the days approach their shortest and everywhere I go people are wrapped up in many layers against the cold. But why do we wrap up warm when it's cold outside? This is particularly of interest to our Year 10 Biologists, who are learning about the control of body temperature!

When it's cold outside, your body is much warmer than the air, so heat escapes quickly. The bigger the temperature difference, the faster this energy transfer happens. Warm clothes help by trapping layers of air, which slow down heat loss. This keeps your body warm and comfortable, even when the weather is freezing.

How energy is transferred

- **Conduction**: Heat moves from your skin to colder objects you touch.
- **Convection**: Cold air moves around you, carrying heat away.
- **Radiation**: Your body emits infrared radiation into the surroundings.

When it's very cold, all these processes speed up because the gradient is large.

How warm clothes help

Warm clothes act as **insulators**:

- They trap layers of air, which is a poor conductor of heat.
- They reduce convection by limiting air movement near your skin.
- They reflect some radiated heat back toward your body.

This slows down the rate of energy transfer, keeping you warmer for longer.

Revision Sessions – Keep It Up!

We are very proud of all the work our Year 11s are putting into their mocks. Please remember our revision sessions will continue during the mocks and beyond, although there will be no Biology revision of Friday, 18th December.

- Monday after school - Chemistry
- Wednesday lunchtime - Physics
- Friday after school - Biology

Year 10s are also welcome to attend as many of the topics covered will be relevant to them.

Please remember that you were sent an email about revision resources recently Y11 students and parents- this has a link to all the school revision resources (although only students can access these on Sharepoint).

All students in Y11 have also been given a copy of the full syllabus for all 3 sciences in the form of a checklist to support their learning.

Meet the Science Department!

This week is Mr Laycock, who joined us nearly a year ago as Maternity cover. We will soon bid a sad farewell to Mr Laycock as Ms Humphreys returns soon, which gives us a chance to thank him and celebrate his achievements at OWS.

Mr A. Laycock

Role
Science Teacher

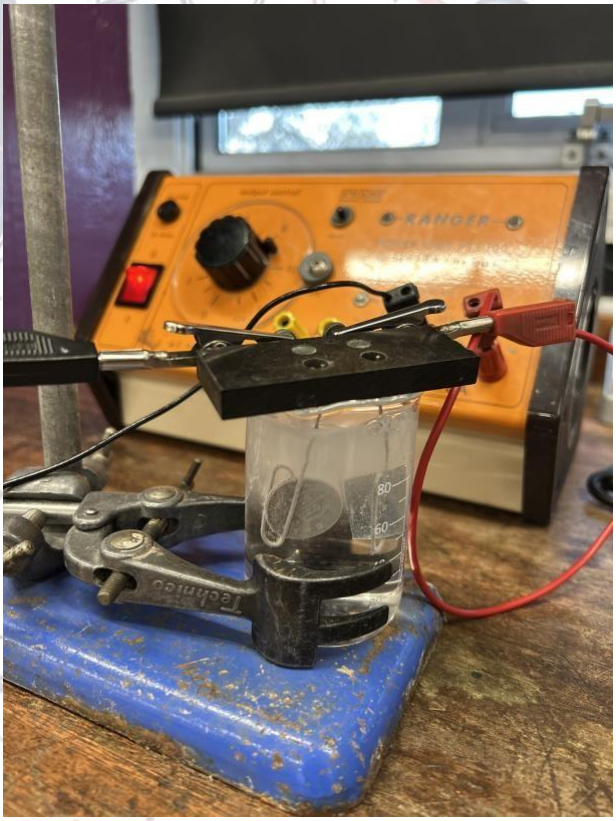
Specialism
Chemistry

Education and experience
Studied Medicinal & Pharmaceutical Chemistry at Loughborough University. 20 years working in education. Also a director of an electronics company

Favourite book
The Godfather by Mario Puzo

Ask me about
Anything!

Hobbies/interests
I play cricket and the guitar. I also help fund raise by compiling and hosting THE BEST quizzes



Clubs & Enrichment

KS3 Science Club

Last week the intrepid investigators learned about electrolysis and how it is used in the jewellery industry to electroplate metals. They even had the chance to electroplate coins to take home!

This week we learnt about circuits by completing a working LED Christmas card- perhaps you will be the recipient of one over the coming weeks?! On Tuesday 16th we will have a further opportunity to complete a card and will be making Christmas decorations using petri dishes- unused ones!!!

KS3 Science Club takes place every Tuesday after school in E63 - all KS3 students are welcome!

STEM Club

We have made lots of progress with our painting and have relaid the track to allow use to have gaps between the 3 boards the track is laid on. We'll be having a running session soon to make sure everything is working properly. STEM club is on Wednesday Lunchtime in E15 and is open to all students.

Roll Models (Games Club)

This week we learnt the rules of Warhammer 40k Kill team and took part in an introductory skirmish. After 2 turning points (rounds) the game was neck and neck, with the brave Veteran Guardsmen resisting the cunning Ork Kommandos. We're looking forward to concluding this game next week.

In the new year we are hoping to get a big Dungeons and Dragons campaign started so anyone interested should pop along to E30 this Thursday.

Roll Models is open to all students and takes place on Thursday Lunchtimes and after school. Please note there will be no after school session on Thursday, 18th December due to staff availability.

Science News!

By Mr. Luke, Science Technician

The Black Death was the first wave of the second plague pandemic and is considered one of the largest human disasters in pre-modern times.

A study published in the scientific journal Communications Earth & Environment proposes that volcanic activity may have contributed to the rapid movement of the Black Death across medieval Europe.

According to researchers Martin Bauch (Leibniz Institute for the History and Culture of Eastern Europe, Leipzig, Germany) and Ulf Büntgen (Department of Geography, University of Cambridge, Cambridge, UK), cooling associated with this volcanic eruption triggered a period of famine. In response, Italian city states began bringing in grain from the Black Sea region, and those shipments may have carried the plague bacterium, Yersinia pestis. Read more: https://www.nature.com/articles/s43247-025-02964-0

More Science News!

By Mr Cox

Amazing news from Chernobyl, site of the world's worst Nuclear accident. Scientists have found evidence of life adapting to high levels of radiation, including fungi that seem to thrive in radioactive conditions. This should be of great interest to our year 11s who are moving onto studying evolution after the mocks.

https://www.bbc.co.uk/future/article/20251125-the-mysterious-black-fungus-fromchernobyl-that-appears-to-eat-radiation

Science Podcast

Mr Johnson was really interested to listen to this new podcast The Rest Is Science, a collaboration between Goalhanger Podcasts and Cancer Research UK. It addressed the reasons why cancer is difficult to cure, which many students ask about, and goes on to explain all about Gravity which is fascinating! Give it a listen:

https://www.cancerresearchuk.org/our-research/rest-isscience?utm_source=google&utm_medium=cpc&utm_campaign=therestisscience&gclsrc=aw.ds&gad_source=1&gad_campaignid=23293383992&gbraid=0AAAADczdbSzsIPnaVioOLRphl7hj4arq&gclid=Cj0KCQiA0KrJBhCOARIsAGIy9wDIvAIPQc2SshJKIw1q_0av6mra7imbwt-2oaWJ7F5yQeklmVAAw5EaAgGIEALw_wcB

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Science Quiz

Have fun completing this quiz with your family. Answers at the end (No cheating!!)

1. What is the freezing point of water in degrees Celsius?
a) 0°C
b) 32°C
c) -10°C
d) 100°C

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2. Which gas is most commonly used in refrigerators to keep things cold? a) Oxygen
b) Carbon dioxide
c) Refrigerant (like Freon)
d) Nitrogen

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3. What happens to the particles in a substance when it is heated?
a) They slow down
b) They stop moving
c) They move faster
d) They disappear

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4. Which planet in our solar system is the hottest?
a) Mercury
b) Venus
c) Mars
d) Jupiter

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5. What is the process called when ice changes directly into water vapor without becoming liquid first? a) Condensation
b) Sublimation
c) Evaporation
d) Freezing

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6. Which part of the human body helps regulate temperature like a thermostat? a) Heart
b) Hypothalamus
c) Lungs
d) Kidneys

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7. What is the boiling point of water in degrees Celsius?
a) 50°C
b) 75°C
c) 100°C
d) 150°C

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8. Why do we wear light-coloured clothes in hot weather?
a) They absorb more heat
b) They reflect heat
c) They make us sweat more
d) They trap heat

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9. Which material is a good conductor of heat?
a) Wood
b) Plastic
c) Copper
d) Rubber

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10. What is the name of the scale used to measure temperature in Kelvin? a) Celsius scale
b) Fahrenheit scale
c) Absolute scale
d) Kelvin scale

That's all for this week - all in the Science department hope you have a lovely weekend and a very Merry Christmas!

The Science Team

Quiz Answers

- **a) 0°C** – Water freezes at 0°C.
- **c) Refrigerant (like Freon)** – Refrigerants absorb heat to keep things cold.
- **c) They move faster** – Heating increases particle energy and speed.
- **b) Venus** – Venus is hotter than Mercury because of its thick atmosphere trapping heat.
- **b) Sublimation** – Ice can turn directly into vapor without becoming liquid.
- **b) Hypothalamus** – This part of the brain regulates body temperature.
- **c) 100°C** – Water boils at 100°C at normal atmospheric pressure.
- **b) They reflect heat** – Light colors reflect sunlight, keeping us cooler.
- **c) Copper** – Copper is an excellent conductor of heat.
- **d) Kelvin scale** – The Kelvin scale measures absolute temperature.