

Welcome to A Level Chemistry – Transition Pack

Get ready for A Level!

This guide will give you ideas on how to
prepare for your A Level Chemistry course

This pack contains a programme of activities and resources to prepare you to start an A Level in Chemistry in September. It is intended to be used after you complete your GCSE, throughout the remainder of the summer term and over the Summer Holidays to ensure you are ready to start your course in September.

Activity 1:

We are keen that you develop a passion for Chemistry and to show us what interests you! Complete ONE of the following tasks below. There are various suggestions at the end of this guide but do feel free to choose your own!

1. Choose something to **read** – this could be a book (see list below), a magazine/journal/newspaper article relating to chemistry. Write an interesting summary of what you have found out (*work to be displayed*).
2. Choose something to **watch** – this could be a documentary (see list below) or movie relating to chemistry. Write an interesting summary of what you have found out (*work to be displayed*).
3. Choose something to **research** – there is a list of possible research topics below or you could research something else of your own. You can make a 1-page summary for each one you research using Cornell notes (*work to be displayed*).
4. Choose somewhere to **visit** – there is a list of possible places to visit (*physically or virtually*) but you may also have somewhere else in mind. Write an interesting summary of where you have been and what you have found out (*work to be displayed*).

Activity 2:

We know that lots of you found Quantitative Chemistry a challenge at GCSE but you're not yet finished with equations!

Complete the booklet '**Calculations in Chemistry**' and self-assess using the mark scheme. Focus on setting out your calculations in a really clear way – this is such an important skill for A Level and beyond.

Activity 3:

Prepare for a Transition Test in late September/early October (*date to be confirmed*) on GCSE topics that are important foundations for your A Level Chemistry course.

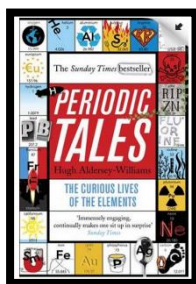
In particular, make sure that you feel secure on the following areas:

- Structure of the atom
- Ions and ionic bonding
- Covalent bonding
- Writing balanced symbol equations
- Energy profile diagrams
- Collision theory (rates of reaction)
- Structure and naming of alkanes and alkenes

ctd.



BOOK RECOMMENDATIONS

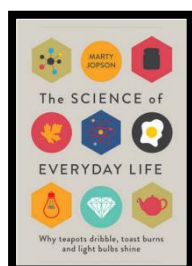


Periodic Tales: The Curious Lives of the Elements (*Paperback*) Hugh Aldersey-Williams

ISBN-10: 0141041455

<http://bit.ly/pixlchembook1>

This book covers the chemical elements, where they come from and how they are used. There are loads of fascinating insights into uses for chemicals you would have never even thought about.

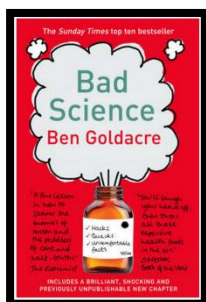


The Science of Everyday Life: Why Teapots Dribble, Toast Burns and Light Bulbs Shine (*Hardback*) Marty Jopson

ISBN-10: 1782434186

<http://bit.ly/pixlchembook2>

The title says it all really, lots of interesting stuff about the things around you home!

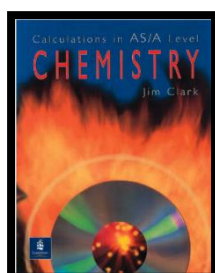


Bad Science (*Paperback*) Ben Goldacre

ISBN-10: 000728487X

<http://bit.ly/pixlchembook3>

Here Ben Goldacre takes apart anyone who has published bad / misleading or dodgy science – this book will make you think about everything the advertising industry tries to sell you by making it sound ‘science-y’.

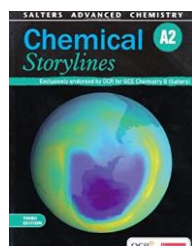


Calculations in AS/A Level Chemistry (*Paperback*) Jim Clark

ISBN-10: 0582411270

<http://bit.ly/pixlchembook4>

If you struggle with the calculations side of chemistry, this is the book for you. Covers all the possible calculations you are ever likely to come across. Brought to you by the same guy who wrote the excellent chemguide.co.uk website.



Salters' Advanced Chemistry: Chemical Storylines

Do not feel you need to buy the latest edition; you can pick up an old edition for a few pounds on eBay. This gives you a real insight into how chemistry is used to solve everyday problems from global pollution through feeding to world to making new medicines to treat disease.

VIDEOS TO WATCH ONLINE

Rough Science – The Open University [34 episodes available]

Real scientists are 'stranded' on an island and are given scientific problems to solve using only what they can find on the island. Great fun if you like to see how science is used in solving problems. There are six series in total:

<http://bit.ly/pixlchemvid1a>

http://www.dailymotion.com/playlist/x2igjq_Rough-Science_rough-science-full-series/1#video=xxw6pr

or

<http://bit.ly/pixlchemvid1b>

<https://www.youtube.com/watch?v=IUoDWAt259I>

A Thread of Quicksilver – The Open University

A brilliant history of the most mysterious of elements – mercury. This program shows you how a single substance led to empires and war, as well as showing you come of the cooler properties of mercury.

<http://bit.ly/pixlchemvid2>

<https://www.youtube.com/watch?v=t46lvTxHHTA>

10 Weird and Wonderful Chemical Reactions

10 good demonstration reactions, can you work out the chemistry of... any... of them?

<http://bit.ly/pixlchemvid3>

<https://www.youtube.com/watch?v=0Bt6RPP2ANI>

CHEMISTRY IN THE MOVIES

Dante's Peak [1997] *volcano disaster movie*

Use the link to look at the science of acids and how this links to the movie.

<http://www.open.edu/openlearn/science-maths-technology/science/chemistry/dantes-peak>

<http://www.flickclip.com/flicks/dantespeak1.html>

<http://www.flickclip.com/flicks/dantespeak5.html>

Fantastic 4 [2005 & 2015] *superhero movie*

Michio Kaku explains the "real" science behind Fantastic Four

<http://nerdist.com/michio-kaku-explains-the-real-science-behind-fantastic-four/>

<http://www.flickclip.com/flicks/fantastic4.html>



RESEARCH ACTIVITIES

Use your online searching abilities to see if you can find out as much about the topic as you can. Remember if you are a prospective A Level chemist, you should aim to **push your knowledge**.

You can make a 1-page summary for each one you research using

Cornell notes:

A guide to Cornell note taking

<http://coe.jmu.edu/learningtoolbox/cornellnotes.html>

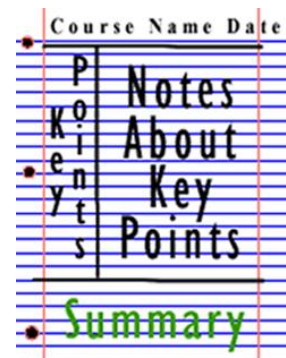


Figure 1: <http://coe.jmu.edu/learningtoolbox/images/noteb4.gif>

Task 1: The chemistry of fireworks

What are the component parts of fireworks? What chemical compounds cause fireworks to explode? What chemical compounds are responsible for the colour of fireworks?

Task 2: Why is copper sulfate blue?

Copper compounds like many of the transition metal compounds have got vivid and distinctive colours – but why?

Task 3: Aspirin

What was the history of the discovery of aspirin, how do we manufacture aspirin in a modern chemical process?

Task 4: The hole in the ozone layer

Why did we get a hole in the ozone layer? What chemicals were responsible for it? Why were we producing so many of these chemicals? What is the chemistry behind the ozone destruction?

Task 5: ITO and the future of touch screen devices

ITO (*indium tin oxide*) is the main component of touch screen in phones and tablets. The element indium is a rare element and we are rapidly running out of it. Chemists are desperately trying to find a more readily available replacement for it. What advances have chemists made in finding a replacement for it?

PLACES TO VISIT

1. Go outdoors!

Have you actually spent any time observing the geology of the area you live in? What rocks or minerals are found in your area? Does your area have a history of extracting minerals? If so, what were they, what were they used for, how did they obtain them? Are there any working or remains of mineral extraction industries?

2. Local Businesses

Are there any chemical or chemistry-based businesses in your area? A big ask, but one that could be really beneficial to you, write them a letter/email explaining that you are taking A Level Chemistry and you want to see how chemistry is used in industry and you would like to visit / have some work experience. You never know, this could lead to great things!

3. Local Universities

You could also try writing to / searching for your nearest university to see if they are running any summer schools for chemistry – they are usually free and give you the opportunity to experience the laboratories in a university.

4. Science Museums

You could visit your nearest science museum.

They often have special exhibitions that may be of interest to you.

https://en.wikipedia.org/wiki/List_of_science_museums#United_Kingdom

5. Somerset Earth Science Centre

<http://www.earthsciencecentre.org.uk>

6. The UK Association for Science and Discovery Centres (ASDC)

This association brings together over 60 major science engagement organisations in the UK

<http://sciencecentres.org.uk/centres/weblinks.php>

