**Preparing for A Level Chemistry or want to just develop your Chemistry further?**

Whether you want to study Chemistry at A Level or if you are just interested in furthering your understanding of the subject you have studied at GCSE, here’s some things you can do:

1. **Developing as a chemist** – through general reading around / watching videos / listening to podcasts etc. to develop your geographical knowledge and understanding

2. **Preparing for the A Level Course** Starting to explore the topics and their foundations which will be studied in the A Level course.

To be a great chemist you need to develop your ability to think synoptically, being able to see the greater overview and how everything begins to link together. Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. Many people think of chemists as being white-coated scientists mixing strange liquids in a laboratory, but the truth is we are all chemists. Understanding basic chemistry concepts is important for almost every profession. Chemistry is part of everything in our lives.

At GCSE you have covered a lot of the foundations of the underpinning concepts; atomic structure, particle theory and the energy in reactions. GCSE has provided a breadth of study, whereas A Level will now enable you to gain greater depth by exploring topics in greater detail but also encouraging you to see and explore the links between topics.

This guide has been designed for you to be able to dip in and out of, from looking at general chemistry and developing your ability to think like a chemist, through to starting to explore some of the topics we will be looking at in Year 12 and 13 so you can do some valuable background reading.

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**DEVELOPING AS A CHEMIST**

Below includes, websites, books, podcasts, documentaries and even films which provide a great way of staying inspired and engaging with geography.

**ONLINE NEWS ARTICLES**

**THE CONVERSATION.COM** <http://theconversation.com/uk>

It provides up-to-date articles from academics and specialists in the field written in a way that is accessible to all, summarising key points in short but insightful articles.

**BBC NEWS** <https://www.bbc.co.uk/news>

An excellent source of up-to-date articles – explore the key headings such as Science, as well as the UK, World and other stories.

**NEWSPAPER WEBSITES SUCH AS The Guardian** <https://www.theguardian.com/uk> **and iNews** <https://inews.co.uk/>

Many useful articles and logically ordered – keep an eye on the Environment, Science, Society, Global Development stories in particular

**PODCASTS**

Now is the time to broaden your geographical understanding! Stick your headphones in and listen to some of the following…

**Chemistry Podcasts** – There are some great podcasts here to pick from on a wide variety of chemistry (from Royal Society of Chemistry) <https://www.chemistryworld.com/podcasts>

many topics, including amongst others...Chemistry for Life, Elements and Clinical Chemistry etc.)

**A level Chemistry Podcasts-** <https://www.podbean.com/podcast-detail/u3vaq-3814b/A-Level-Chemistry-Revision-Podcast> - podcasts helping students understand some of the topics within the course

**BOOKS**

**H2O: A Biography of Water Paperback** by Philip Ball

The extent to which water remains a scientific mystery is extraordinary, despite its prevalence and central importance on Earth. Whether one considers its role in biology, its place in the physical world (where it refuses to obey the usual rules of liquids) or its deceptively simple structure, there is still no complete answer to the question: what is water? Philip Ball's book explains what, exactly, we do and do not know about the strange character of this most essential and ubiquitous of substances.

H20 begins by transporting its readers back to the Big Bang and the formation of galaxies to witness the birth of water's constituent elements: hydrogen and oxygen. It then explains how the primeval oceans were formed four billion years ago; where water is to be found on other planets; why ice floats when most solids sink; why, despite being highly corrosive, water is good for us; why there are at least fifteen kinds of ice and perhaps two kinds of liquid water; how scientists have consistently misunderstood water for centuries; and why wars have been waged over it.

**The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements Paperback** by Sam Kea

From *New York Times* bestselling author Sam Kean comes incredible stories of science, history, finance, mythology, the arts, medicine, and more, as told by the Periodic Table.

Why did Gandhi hate iodine (I, 53)? How did radium (Ra, 88) nearly ruin Marie Curie's reputation? And why is gallium (Ga, 31) the go-to element for laboratory pranksters?

*The Periodic Table* is a crowning scientific achievement, but it's also a treasure trove of adventure, betrayal, and obsession. These fascinating tales follow every element on the table as they play out their parts in human history, and in the lives of the (frequently) mad scientists who discovered them. *The Disappearing Spoon* masterfully fuses science with the classic lore of invention, investigation, and discovery -- from the Big Bang through the end of time.

Though solid at room temperature, gallium is a moldable metal that melts at 84 degrees Fahrenheit. A classic science prank is to mould gallium spoons, serve them with tea, and watch guests recoil as their utensils disappear.

**Why Does Asparagus Make Your Wee Smell? : And 57 other curious food and drink questions** by Andy Brunning

Why does cooking bacon smell so good? Can cheese really give you bad dreams? Why do onions make you cry?

Find out the answers in this illustrated compendium of amazing and easy-to-understand chemistry. Featuring 58 different questions, you will discover all sorts of wonderful science that affects us on daily basis. Andy Brunning opens up the chemical world behind the sensations we experience through food and drink - popping candy, hangovers, spicy chillies and many more. Exploring the aromas, flavours and bodily reactions with beautiful infographics and explanations, WHY DOES ASPARAGUS MAKE YOUR WEE SMELL? is guaranteed to satisfy curious minds. And did you know that nutmeg can make you hallucinate? Prepare to be astounded by chemical breakdown like never before.

**CHEMISTRY DOCUMENTARIES**

**The Mystery of Matter: “UNRULY ELEMENTS”**

<https://www.youtube.com/watch?v=wbuDmY5gpXQ>

**Fundamentals of Chemistry Documentary - The Best Documentary Ever**

<https://www.youtube.com/watch?v=0PFw6P8rPzU>

**Everything and Nothing: What is Nothing? (Jim Al-Khalili)**

<https://www.youtube.com/watch?v=rKPv8zApee0>

**PREPARING FOR A LEVEL CHEMISTRY AT WASELEY HILLS HIGH SCHOOL**

At Waseley we follow the AQA A Level.

Subject content:

**3.1 Physical chemistry**

3.1.1 Atomic structure

3.1.2 Amount of substance

3.1.3 Bonding

3.1.4 Energetics

3.1.5 Kinetics

3.1.6 Chemical equilibria, Le Chatelier’s principle and Kc

3.1.7 Oxidation, reduction and redox equations

3.1.8 Thermodynamics (A-level only)

3.1.9 Rate equations (A-level only)

3.1.10 Equilibrium constant Kp for homogeneous systems (A-level only)

3.1.11 Electrode potentials and electrochemical cells (A-level only)

3.1.12 Acids and bases (A-level only)

**3.2 Inorganic chemistry**

3.2.1 Periodicity

3.2.2 Group 2, the alkaline earth metals

3.2.3 Group 7(17), the halogens

3.2.4 Properties of Period 3 elements and their oxides (A-level only)

3.2.5 Transition metals (A-level only)

3.2.6 Reactions of ions in aqueous solution (A-level only)

3.3 Organic chemistry

**3.3.1 Introduction to organic chemistry**

3.3.2 Alkanes

3.3.3 Halogenoalkanes

3.3.4 Alkenes

3.3.5 Alcohols

3.3.6 Organic analysis

3.3.7 Optical isomerism (A-level only)

3.3.8 Aldehydes and ketones (A-level only)

3.3.9 Carboxylic acids and derivatives (A-level only)

3.3.10 Aromatic chemistry (A-level only)

3.3.11 Amines (A-level only)

3.3.12 Polymers (A-level only)

3.3.13 Amino acids, proteins and DNA (A-level only)

3.3.14 Organic synthesis (A-level only)

3.3.15 Nuclear magnetic resonance spectroscopy (A-level only)

3.3.16 Chromatography (A-level only)

You will have three exams. Here is some reading/videos if you want to get exploring.

***Mrs Eades starts with Atomic Structure and then Bonding.***

***Mrs Jackson starts with Amount of Substance.***

3.1.1 Atomic Structure

<http://www.a-levelchemistry.co.uk/topic-1---atomic-structure-and-the-periodic-table.html> click on the link for notes and videos

3.1.2 Amount of substance

<http://www.a-levelchemistry.co.uk/topic-2---amount-of-substance.html> click on the link for notes and videos

3.1.3 Bonding

<http://www.a-levelchemistry.co.uk/topic-3---structure-bonding-and-the-periodic-table.html> click on the link for notes and videos