

## GCSE Chemistry

**Chemistry is important** because everything you do is **chemistry!** **Chemical** reactions occur when you breathe, eat, or just sit there reading. All matter is made of chemicals, **so the importance of chemistry** is that it's the study of everything.

# Physical ← Inorganic → Organic

**Physical chemistry** is the branch of **chemistry** that deals with the **physical** structure of **chemical** compounds, the way they react with other matter and the bonds that hold their atoms together.

## Inorganic

Inorganic chemistry deals with the synthesis and behaviour of inorganic compounds. **Inorganic chemistry** is used to study and develop catalysts, coatings, fuels, surfactants, materials, superconductors and drugs

**Organic chemistry is important** because it is the study of life and all of the **chemical** reactions related to life.

### Quantitative Chemistry

This looks at the maths behind Chemistry. It can be related to industry where we look at the yield of products, or calculating how much reactant is needed or how much product can be made. We can use formulas to find unknown values

### Rate and extent of change

We can calculate the rate of a reaction and predict outcomes using mathematical formulas. We can analyse data and represent it in graphical form which allows us to draw conclusions about the reaction. We can make changes to chemical reactions to speed them up or slow them down. We can talk about how reaction conditions can be altered in order to change yield.

### Structure and bonding

We look at how the atoms is put together and all the information that this gives us. We can use structure and bonding to explain reactivity and how atoms interact with each other. We also explain how the structure leads to their properties.

### Periodic table

The periodic table is a massive source of information. We look at how this can be utilised to link knowledge of elements we are familiar with unknown elements based on their position in the table. We look at the development of the periodic table and how ideas surrounding it's format have evolved.

### Earth's resources and using resources

We look at substances and talk about how they can be formed and how their properties are linked to their uses. We look at metals and their extraction using the reactivity series, at how water can be made safe enough to drink and at how we can manage and sustain the resources the Earth has. We look at how further knowledge and enhancing technology can be harnessed.

### Chemical change and analysis

We learn about the reactions that can happen and what products they result in. This enables us to write reactions as word equations and symbol equations. We also look at how we can use chemical testing to identify unknown substances

### Carbon fuels

The extraction of crude oil and all the processes it undergoes to refine it in order to be used as a fuel. We look at how this impacts the environment and how the atmosphere has changed over time.

### Chemical groups

Within the massive topic of organic chemistry we learn about the key features and reactions that groups of chemicals undergo. The processes we learn enable us to systematically name and draw and therefore know facts about substances based on the group they are part of.

Some groups in particular can undergo polymerisation which can be used to synthesise plastics and occurs naturally in the form of DNA and amino acids.

Our learning takes place in a variety of ways, some lessons are theory based lessons where students are presented with new information and key facts within concepts. Students also learn well through practical experiments as they get hands on evidence and experience of these ideas in action. Students benefit from engaging lessons that link these key principles to the world around them. We try to prepare students for the external exams they will take (2 papers of 1 hr 45mins) by completing regular assessment using past paper questions within our schemes of work. Every half term students undergo a synoptic test to check their progress and time is spent feedback to them and completing reflection tasks so that they learn from their mistakes.