

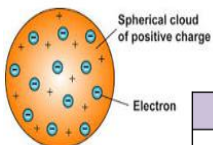
C1 – Atomic Structure

Development of Atomic Model

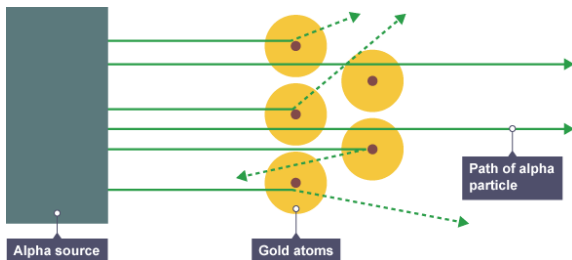
Dalton – atoms can't be divided



JJ Thompson discovered electrons – Plum pudding model



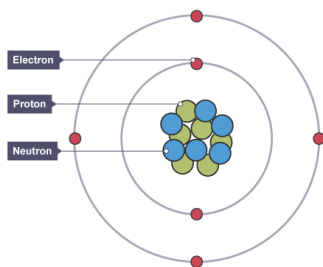
Rutherford's alpha-scattering experiment – Nuclear model



Bohr – electrons in shells



Chadwick discovered the neutron



	Mass	Charge	Location
Proton	1	+	nucleus
Neutron	1	0	nucleus
Electron	Very small	-	shells

This evidence led Rutherford to suggest the nuclear model:

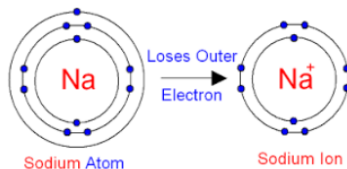
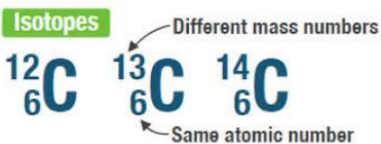
- the mass of an atom is concentrated at its centre
- the nucleus is positively charged

Ions and Isotopes

Number of protons(+) = Number of electrons (-)

Number of neutrons = mass number – atomic number

Atoms lose or gain electrons to form ions



C2 – The Periodic Table

In the 1860s, scientists began to try to sort the known elements into a logical sequence. The work of John Newlands and Dmitri Mendeleev led to the development of the modern periodic table.

Mendeleev arranged the known elements **in order of atomic weight**. He put elements with similar reactivities into **groups**. He **left gaps** where elements did not fit the pattern.

The Group 1 elements are called the alkali metals. They are placed in the vertical column on the left-hand side of the periodic table.

In Group 1 reactivity **increases** down the group. Larger atoms have **more shells**, so electrons on the outer shell are **less attracted to the nucleus** and **easier to lose**.

The Group 7 elements are called the halogens. They are placed in the vertical column, second from the right, in the periodic table.

In Group 7 reactivity **decreases** down the group. Larger atoms have **more shells**, so electrons on the outer shell are **less attracted to the nucleus** and **harder to gain**.

Mixtures and solutions can be separated using different methods.

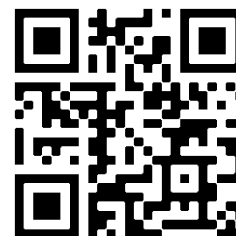
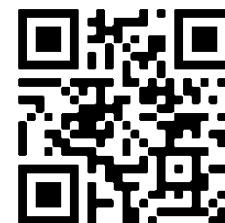
Method	Used to separate	Apparatus used	Examples
filtering (filtration)	solids from a suspension (i.e. large pieces of solids that have not dissolved in a liquid)		• sand from a mixture of sand and water
evaporation	solid substances from a solution or colloid		• salt from a salt solution
distillation (evaporation followed by condensation)	liquid from a mixture		• pure water from a salt solution
chromatography	individual solutes from a mixture of solutes in a solvent		• colours found in ink

Vocabulary:

Word	Meaning
electron	A tiny particle with a negative charge. Electrons orbit the nucleus of atoms or ions in shells.
neutron	A tiny particle found in the nucleus of an atom. It is electrically neutral, carrying no charge.
proton	A tiny positive particle found inside the nucleus of an atom.
ion	A charged particle produced by the loss or gain of electrons.
isotope	Atoms that have the same number of protons but different number of neutrons, i.e. they have the same atomic number but different mass numbers.
atomic number	The number of protons (which equals the number of electrons) in an atom. It is sometimes called the proton number.
relative atomic mass	The average mass of the atoms of an element compared with carbon-12 (which is given a mass of exactly 12). The average mass must take into account the proportions of the naturally occurring isotopes of the element.
subatomic particle	A tiny particle that is found inside an atom. These are either protons, neutrons or electrons.

Word	Meaning
element	A substance made up of only one type of atom. An element cannot be broken down chemically into any simpler substance.
alkali	A water-soluble base, that dissolves to form hydroxide ions (OH ⁻). Its solution has a pH value more than 7.
halogen	An element found in Group 7 of the periodic table.
reactivity series	A list of elements in order of their reactivity.
filtration	The technique used to separate substances that are insoluble in a particular solvent from those that are soluble.
evaporation	Separation of a soluble solid from a solution, by allowing the solvent to evaporate.
distillation	Separation of a liquid from a mixture by evaporation followed by condensation.
chromatography	The process whereby small amounts of dissolved substances are separated by running a solvent along a material such as absorbent paper.

Videos



Quizzes

