

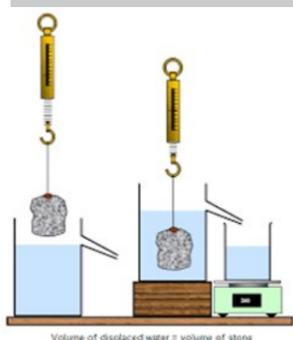
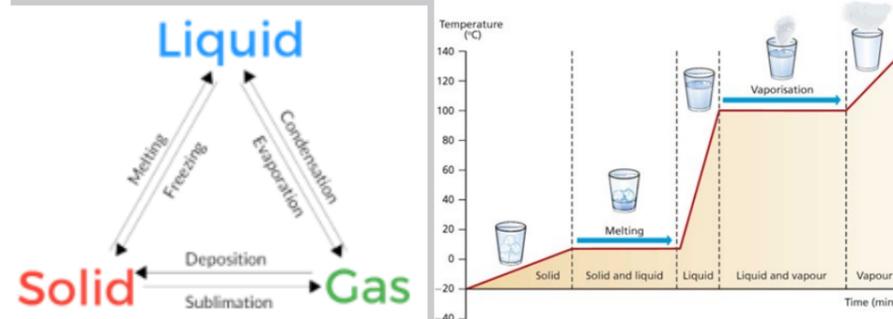
The Particle Model

Solid		Most dense. Particles in fixed positions. Vibrations only
Liquid		Moderately dense. Particles still touch but move randomly past each other
Gas		Least dense. Particles move randomly and quickly

Atomic structure

Subatomic particle	Relative Mass	Relative Charge
Proton	1	+1
Neutron	1	0
Electron	0.0005	-1

Density and Change of State



Changing State & Density

- Atom** - The smallest particle of a chemical element that retains its chemical properties.
- Proton** - The positively charged subatomic particle found within the atomic nucleus.
- Neutron** - The neutral subatomic particle found within the atomic nucleus.
- Electron** - The negatively charged subatomic particle found within the shells surrounding the atomic nucleus.
- Density** - Density tells us how much mass there is in a certain volume.
Density = mass ÷ volume
- Volume** - The amount of space atoms in a substance/ object take up.
- Temperature** - A measure of the average kinetic energy of the particles in a system. Measured with a thermometer using °C or K
- Specific latent heat** - The energy needed to change the state of 1kg of a material. The units are J/kg.
Energy = mass x SLH
- Specific heat capacity** - The energy needed to change the temperature of 1kg of a material by 1°C. The units of measurement are J/kg°C.
Energy = m x SHC x ΔT
- Gas pressure** - A force on a container caused by the collision of particles with the container walls. Higher temperatures lead to higher pressure
- Eureka can** - Equipment used to measure the volume of an irregular objects.
- Sublimation** - A change of state from a solid to a gas.

History of the Atomic Model

SOLID SPHERE MODEL

JOHN DALTON

Dalton thought atoms were **small indestructible spheres**. All atoms of the same element are identical to each other.

PLUM PUDDING MODEL

J.J. THOMSON

Thomson discovered the **electron**. He created the **plum pudding model** which shows negative electrons equally spread through positive matter.

NUCLEAR MODEL

ERNEST RUTHERFORD

Rutherford fired positively charged alpha particles at **gold foil**. Most passed through, some were deflected at small angles and some at large angles. This shows that most of the atom is **empty space** with a **small positively charged dense nucleus**.

PLANETARY MODEL

NIELS BOHR

Bohr modified Rutherford's model by stating that electrons move around the nucleus in fixed orbits.



Trinity TV

For more help, visit Trinity TV and watch the following videos:

Trinity TV > Year 9 > Science > Term 2