Chemistry Unit 1 Cheat Sheet

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Empedocles (500 B.C)

All matter is made up of **water**, **earth**, **air** & **fire**

Democritus (300 B.C)

Known as *The Laughing Philosopher*

Atoms are **indivisible**, **indestructible**, **in motion** & **differs in shapes and sizes**

John Dalton (Early 1800s)

Billiard Ball Model / Solid Sphere Model

Atoms can't be **destroyed**, **subdivided** or **created**

Atoms of the same element have **identical properties**; Atoms from different elements have **different properties**

During chemical reactions, atoms can be **rearranged**, **separated** or **created**

Atoms are combined in **simple whole number ratios**

J.J Thompson (Late 1800s)

Plum Pudding Model

Discovered that **electrons** are stuck in a **positively charged matter**

Conducted the **cathode-ray experiment**; Beta particles were attracted to the positively charged magnets

Ernest Rutherford (1911)

Nuclear Model / Rutherford's Model

Dense, **tiny positively charge** in the centre of an atom

Several **spaces** in an atom

Most of the **mass** is in the nucleus

If J.J Thompson's discovery was accurate, the particles would've had **minor deflects**, but there were **major deflects**

Gold foil was used b/c it is the most **malleable** metal

Niels Bohr (1913)

Planetary Model / Bohr's Model

Electrons emit **photons** (quantum of light) jumps up or down to other shells and doesn't spiral into the nucleus while emitting **photons**

Max Planck

Proposed that particles can emit a certain amount of **electromagnetic radiation**

Electrons need to obtain the amount of energy before emitting it

Analogy: Similar to a bank machine...you can only receive multiple of $20.00, although other amounts exit (e.g. $32.00)

Werner Heisenberg's Uncertainty Principle

It's impossible to know both the **position** (location) & the **momentum** (speed) of a particle at any given moment

Erwin Schrodinger (1926)

Quantum Mechanical Model

Mathematically predicted the **regions of space** where electrons can be found

De Broglie

Quantum Mechanical Model

Electrons behave like **waves** & **particles**

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