Ionisation energy

1st Ionisation energy is the removal of 1 mole of a gaseous atom.

Factors

- **Nuclear charge**
  - +ve charge due to protons in the nucleus
  - Greater nuclear charge means greater Ionisation energy.

Shielding

- Inner shells of e⁻s repel. The more e⁻ the greater shielding effect.
- Therefore lower IE lesser attractive force

Atomic radius

- As the number of electron shells increase the atomic radius increase
- As the number of electrons in the outermost shell increases, the atomic radius decreases as the electrostatic attraction between nucleus and outer electrons increase.

1st Ionisation Energy trends

- Down group (decrease)
  - New shells
  - attraction of nucleus to valence e⁻s decreases
  - Shielding effect increases

Across period (increases)

- shell number remains the same
- proton number increases
- Effective nuclear charge increases
- Atomic radius decreases