

Properties	Group	Period
(a) Atomic Radius : Distance from the centre of the nucleus to the outermost shell containing electrons.	Increases	Decreases
(b) Electron Gain Enthalpy : Energy released when a neutral isolated gaseous atom accepts an electron from anion.	Becomes less negative	Becomes more negative
(c) Ionization Energy: The minimum amount of energy required to remove the electron from the outermost orbit of an isolated atom in gaseous state.	Decreases	Increases
(d) Electronegativity : Tendency of an atom to attract the shared pair of electrons towards it "Group"self.	Decreases	Increases
(e) Electron Affinity	Decreases	Increases
(f) Valency: Number of univalent atoms which combine with an atom of given element.	No Change	Increase from 1 to 4 and then decrease from 4 to 0.
(g) Metallic Character:	Increases	Decreases
(h) Non-Metallic Character:	Decreases	Increases

To ease out difficulty in studying individually the chemistry of all the elements and their compounds.

Purpose

Genesis of Periodic Classification

IUPAC Nomenclature of Elements with Atomic numbers > 100:

Classification of Elements and Periodicity in Properties

Derived from the atomic number of element using numerical roots for 0 and numbers 1-9 and "ium" is added at the end.

Periodic Trends in Properties of Elements

Properties of Elements based on Electronic Configuration

Periodic Table Classification based on Types of Elements

f-Block: Elements

d-Block: Elements

p-Block: Elements

s-Block: Elements

- Also called as Inner Transition Elements.
- Contains Lanthanoids and Actinoids.
- Outer configuration is $(n-2) f^{1-14} (n-1) d^{1-10} ns^{0,2}$
- All are metals.
- Actinoids are radioactive.

- Group 3-12
- Outer configuration is $(n-1) d^{1-10} ns^2 np^6$
- Forms coloured ions.
- Exhibit variable valence, paramagnetism.
- Also called as Transition elements.
- Some are used as catalysts.

- Group 13 to 18.
- Also called as representatives or main group elements.
- Outermost configuration varies from ns^1 to $ns^2 np^6$
- At the end of period are low reactive noble gases.
- Halogens and Chalcogens have high negative electron gain enthalpies.
- Metallic character increases down the group.

- Group 1 (alkali metals) and Group 2 (alkaline earth metals)
- Outermost configuration is ns^1 or ns^2
- Reactive with low IE.
- Metallic character and reactivity increases down the group.

- Electronic Configuration is the distribution of electrons into orbitals of an atom.
- In periods: Number of elements in each period is twice the number of atomic orbitals available in the energy level that is being filled.
- Group wise: Elements in same group have similar valence shell electronic configurations. Same number of electrons in outer orbitals and similar properties. These are classified into four blocks i.e., s-block, p-block, d-block and f-block.