

Periodicity in Properties.

"The repetition of similar electronic configuration after a definite period is the cause of periodicity of the properties of elements."

It can be explained with the help of electronic arrangement of elements. According to the modern views, the valency of an element is indicated by the number of electrons present in the outermost orbit. The chemical properties of elements are dependent on valency electrons. Variation in electronic arrangement leads to the variation in properties. After a definite interval, recurrence of similar electronic arrangement takes place when the number of valency electrons is the same. Thus, there is a regular gradation and repetition in the properties of elements.

For example:

Alkali metals		Halogens	
Li ³	2, 1	F ⁹	2, 7
Na ¹¹	2, 8, 1	Cl ¹⁷	2, 8, 7
K ¹⁹	2, 8, 8, 1	Br ³⁵	2, 8, 18, 7
Rb ³⁷	2, 8, 18, 8, 1	I ⁵³	2, 8, 18, 18, 7
Cs ⁵⁵	2, 8, 18, 18, 8, 1	At ⁸⁵	2, 8, 18, 32, 18, 7

Therefore, in group IA all elements possess one valency electron and they have a tendency to lose this electron. They are all monovalent and electropositive having similar chemical properties. Same is the case with halogens. They had seven electrons in their outermost orbit and, have a tendency to gain one electron. Therefore, they are all monovalent and electronegative and resemble each other in chemical properties. Thus, it is observed that the same electronic arrangement of outermost orbit is repeated after regular intervals and that accounts for the periodicity of the properties of the elements.

Periodic properties are directly or indirectly related to their electronic configuration and show a regular gradation on moving from left to right in a period or from top the bottom in a group. Some period or from top to bottom in a group. Some important periodic properties are: oxidation number, shielding effect, atomic radii, ionization energy, electron affinity, electronegativity, valency, density, m.pt. and b.pt.

