

107

normal metals. Therefore, stronger force of attraction act-

(ii) d-d transition :-

In transition metal d-subshell available due to d-d transition metal (T.M) become harder which is not possible in normal metal.

* Ionic Solid :-

These solid in which constituent particles are cation and anion is called ionic solid.

OR

Those solid which is made up of cation and anion is called ionic solid. In ionic solid cation is surrounded by the definite number of anion and the anion is surrounded by the definite number of cation.

The no. of anion which is attached to a cation is called its coordination number.

Larger the coordination number, more will be the efficient force of attraction. In ionic solid, the electrostatic force of attraction

In metallic solid two types of force, acting are

(i) Metal ion electron attraction force

(ii) d-d transition.

Therefore, transition metals are hard and normal metals are soft. In metallic solid metal cations are fixed in their crystal, and electrons are mobile, therefore, metallic solids are good conductor of electricity.

* Properties of metallic solid :-

(i) metallic solids are hard, have metallic lustre, ductile, sonorous, malleability

(ii) It has high melting and boiling points.

(iii) It is good conductor of heat and electricity.

Q. Transition metals (Iron, nickel, cobalt) are generally hard, whereas normal metals like sodium, aluminium etc are soft. why?

→ In transition metals there are two types of force acting

(i) metal ion electron attraction force. as we know transition metals have higher valence electron than the

108

metallic solid / Atomic solid

metallic solid

Atomic solid

ionic solid :-

Solid which is made up of metal ions only is called metallic solid. Aluminium, Copper, Silver, Iron, etc In metallic solid metal ions are held by electron and electrons are delocalized by metal ions. In metallic solid metal ions are held together by electrostatic force of attraction between metal cations and metal ions.

M → ne⁻

M⁺ ne⁻ M⁺ ne⁻ M⁺ ne⁻

ne⁻ M⁺ ne⁻ M⁺ ne⁻ M⁺ ne⁻

M⁺ ne⁻ M⁺ ne⁻ M⁺ ne⁻

ne⁻ M⁺ ne⁻ M⁺ ne⁻ M⁺ ne⁻

- (i) Metallic Solid. / Atomic solid
- (ii) Ionic solid
- (iii) Co-valent solid
- (iv) Molecular solid.

* Metallic Solid:-

The solid which is made up of metal atom only is called Metallic solid.

Eg - Aluminium, Copper, Silver, Iron, etc.

In Metallic Solid metal ions are surrounded by electrons and electrons are surrounded by metal ions. Or metal ions are surrounded by metal ions.

In metallic solid metal ions are dropped into the sea of electrons in which there is a strong electrostatic force of attraction between metal cation and electrons hold them together, which is called metallic bond.

