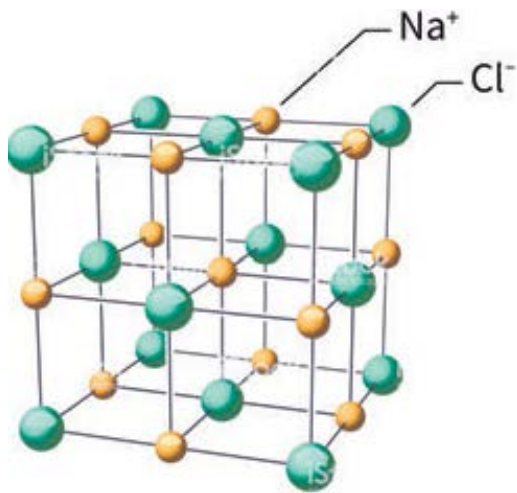


Classification of crystalline solids

Ionic solids:

The structural units of an ionic crystal are cations and anions. They are bound together by strong electrostatic attractive forces.



Covalent solids:

In covalent solids, the constituents (atoms) are bound together in a three dimensional network entirely by covalent bonds.



Molecular solids:

In molecular solids, the constituents are neutral molecules. They are held together by weak van der Waals forces. Generally molecular solids are soft and they do not conduct electricity. These molecular solids are further classified into three types.

(i) Non-polar molecular solids:

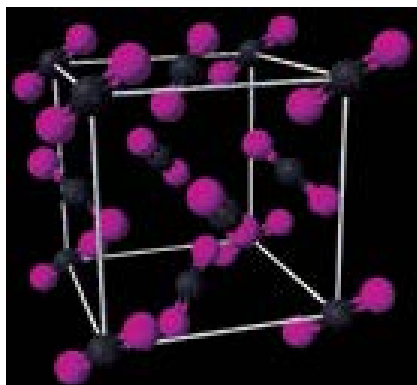
In non polar molecular solids constituent molecules are held together by weak dispersion forces or London forces.

(ii) Polar molecular solids

The constituents are molecules formed by polar covalent bonds. They are held together by relatively strong dipole-dipole interactions.

(iii) Hydrogen bonded molecular solids

The constituents are held together by hydrogen bonds. They are generally soft solids under room temperature. Examples: solid ice (H_2O), glucose, urea etc.,



Metallic solids:

In metallic solids, the lattice points are occupied by positive metal ions and a cloud of electrons pervades the space. They are hard, and have high melting point. Metallic solids possess excellent electrical and thermal conductivity. They possess bright lustre.