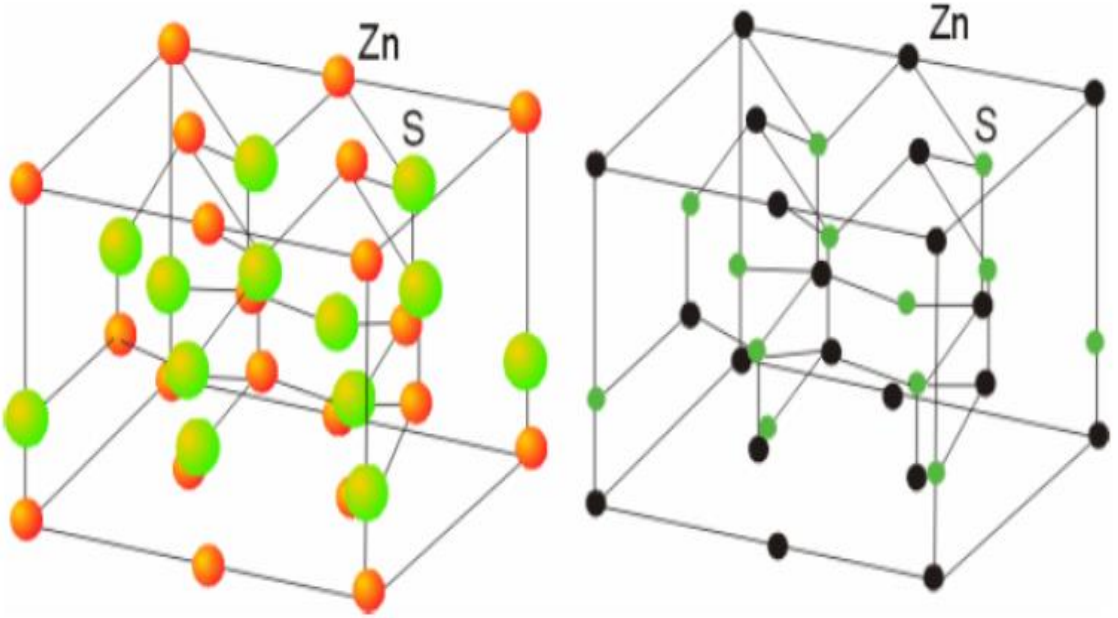
AB type

Unit Cell of Hexagonal Zinc Sulfide (Wurtzite)



S^{2-} at hcp

Polymorph of ZnS

Zn^{2+} at ½ Td holes

AB type Cesium Chloride (CsCl) Structure

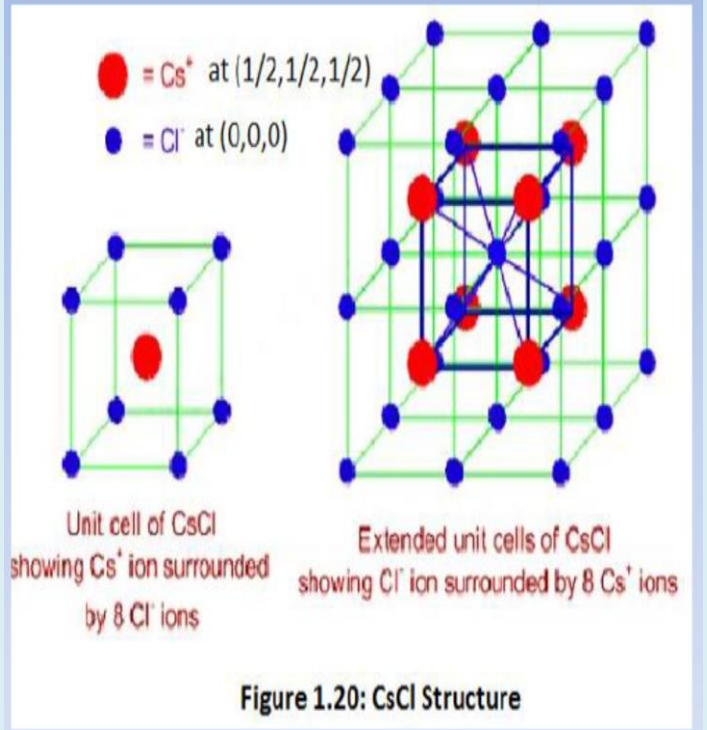


Figure 1.20: CsCl Structure

- Cesium chloride (CsCl) structure type is AX at anion packing is body centered cubic.
- two primitive cells in a cubic unit cell. each unit cell has two molecule (basis) of CsCl.
- Positions of Cl ion is at (0, 0, 0) and Cs ion is at (1/2, 1/2,/1/2).
- The Cs is situated at body center and 8 Cl ions at the corner of unit cell. Similarly if we extend the unit cell we can see a Cl ion is surrounded by 8 Cs ions. Thus the coordinate number of CsCl is 8.
- The other examples of CsCl type structure are RbCl, LiHg etc.
-

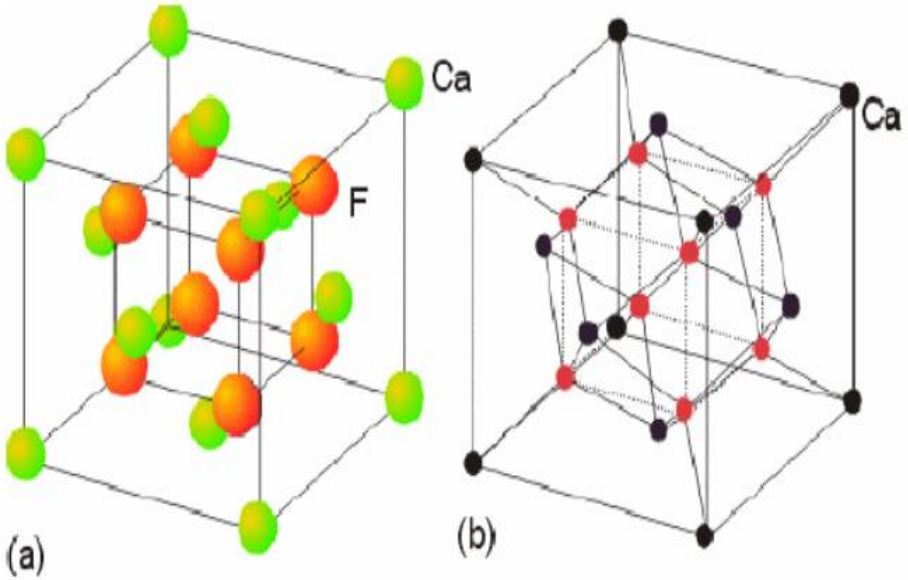
Ionic compound of AB2 type

- Fluorite Structures

Crystal structure	Brief description	Coordination number	No. of atoms per unit cell	Examples
Fluorite (CaF_2 type)	Ca^{+2} ions in ccp, F^- ions occupy all tetrahedral voids	$Ca^{+2} = 8$ $F^- = 4$	4	CaF_2, SrF_2, BaF_2, $BaCl_2$, $SrCl_2$, CdF_2, HgF_2

AB_2 type

Unit Cell of Fluorite Structure (Calcium Fluoride)



Ca^{2+} at fcc

F^- at Td holes

Coord. #: Ca^{2+}: 8; F^-: 4

atom/ unit cell

Ca: F= 4: 8 = 1: 2 $\Longrightarrow$ CaF_2