**Dr.Manoj Kumar**

**Associate professor**

**Department of Chemistry**

**Raja Singh College,Siwan**

## Tetrahedral Voids

## A void or empty space in a lattice which is surrounded by four spheres is called a tetrahedral void.For example the void B are tetrahedral voids because they are surrounded by four sphees three in first layer and the fourth in the second layer.

##  Tetrahedral Voids

## Octahedral Voids

## A void which is surrounded by six spheres,is called the octahedral void.The voids c in fig are octahedral; oids because ,they are surrounded by six spheres,there in the first layer and three in the second layer.these voids are shown in.

##  Otahedral void

**Bragg’s equation**

 Let the horizaontal line be the parallel planes in a crystal having interplanar distance,d.A beam of X-ray falls on the crystal at an angle of $θ$.Some of these rays are reflected by the upper plane at an angle of $θ$,while some others are absorbed and reflected by successive planes.Let AB & DE be the perpendiculars drawn on the incident and reflected beams then waves will be in the same phase provided the difference of path length [LN+LM] of waves reflected from the first two planes will be equal to the whole number (n) multiple of wavelength ($λ$) of X-rays.

 LN+NM = n$ λ$

A D

B E

 O

 $θ$
 L $θ$ M

 N

Since Δ OLN and OMN are congruent,therefore LN=NM

$∴$ n$ λ$ = 2LN

Sin$θ$ = $\frac{LN}{ON}$=$\frac{LN}{d}$

LN= d Sin$θ$

OR, n$ λ$ = 2dsin$θ$