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**Law of rational indices:**

**Weiss indices:** According to the law of rational indices we know that the intercept of any plane of a crystal along crystllogaphic axes are simple multiple of unit intercepts.

Z

N

C

O B M Y

A

L

X

Unit intercepts are shown as (a,b,c) .The OA=a ,OB=b and OC=c are the unit intercept ,A crystal plane LMN has intercepts OL,OM and ON alongX,Y and z axis where OL=2a ,OM=4b and ON=3c.

The coefficients of unit intercepts of a crystal plane are called Weiss indices o a plane.

**Miller indices**

Miller indices of a crystal plane are obtained by taking reciprocal of Weiss indices and multiplying throughout by the lowest possible number in order to make all reciprocals as integers. For NLM crystal plane we have,

I. Intercept : 2a 4b 3c

II. Weiss Indices : 2,4,3

III.Reciprocalsof Weiss Indices ½ ,1/4 ,1/3

iv.Multiplying by 12:6:3:4

i.e.Miller indices

**Radius ratio**

The radius ratio rule gives relationship between the radius, co-ordination number and the structural arrangement of molecules in an atom. Its defined as the ratio of the radius of cation to the radius of anion.

Radius Ratio = Radius of Cation / Radius of Anion

**Co-ordination number:**

The coordination number of an atom in a molecule is the number of atoms bonded to the atom.It's more difficult to determine chemical bonding in solid-state crystals, so the coordination number in crystals is found by counting the number of neighboring atoms.