



SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)
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Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai
Accredited by NBA & accredited by NAAC with 'A+' Grade, Recognized by UGC

5). Calculate the d of three important planes (100), (110), (111) of sc.

$$d_{100} = \frac{a}{\sqrt{1^2+0+0}} \Rightarrow \frac{a}{1}$$

$$d_{110} = \frac{a}{\sqrt{1^2+1^2+0}} \Rightarrow \frac{a}{\sqrt{2}}$$

$$d_{111} = \frac{a}{\sqrt{1^2+1^2+1^2}} = \frac{a}{\sqrt{3}}$$

6). The distance b/w (110) plane in a BCC structure is 2.03 \AA .
What is the size of unit cell,

$$d_{110} = 2.03 \text{ \AA}$$

$$d_{110} = \frac{a}{\sqrt{1^2+1^2+0}} \Rightarrow \frac{a}{\sqrt{2}}$$

$$2.03 \times 10^{-10} \times \sqrt{2} = a$$

$$\boxed{2.87 \text{ \AA} = a}$$

7). Show that for a sc $d_{100} : d_{110} : d_{111} = \sqrt{6} : \sqrt{3} : \sqrt{2}$

$$d_{110} = \frac{a}{\sqrt{1^2+1^2+0}} \Rightarrow \frac{a}{\sqrt{2}}$$

$$d_{100} = \frac{a}{\sqrt{1^2+0+0}} = a$$

$$d_{111} = \frac{a}{\sqrt{1^2+1^2+1^2}} = \frac{a}{\sqrt{3}}$$

R.H.S \times by $\sqrt{6}$

$$\frac{\sqrt{6}a}{\sqrt{2}} : \sqrt{6}a : \frac{\sqrt{6}a}{\sqrt{3}}$$

$\div a$

$$\sqrt{3} : \sqrt{6} : \sqrt{2}$$