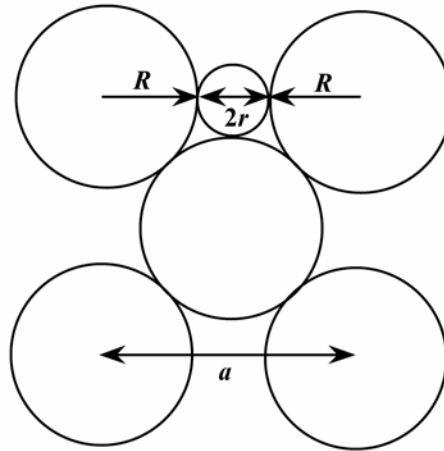


4.5 In the drawing below is shown the atoms on the (100) face of an FCC unit cell; the interstitial site is at the center of the edge.



The diameter of an atom that will just fit into this site ( $2r$ ) is just the difference between that unit cell edge length ( $a$ ) and the radii of the two host atoms that are located on either side of the site ( $R$ ); that is

$$2r = a - 2R$$

However, for FCC  $a$  is related to  $R$  according to Equation 3.1 as  $a = 2R\sqrt{2}$ ; therefore, solving for  $r$  from the above equation gives

$$r = \frac{a - 2R}{2} = \frac{2R\sqrt{2} - 2R}{2} = 0.41R$$

A (100) face of a BCC unit cell is shown below.