

**HINT FOR DIAMOND LATTICE PACKING FRACTION (PF):**

There are 2 interpenetrating FCCs for diamond lattice, displaced by  $a/4$ . To find the nearest neighbor, use a cube of size  $a/2 \times a/2$ , in the center of which lies a Si atom. Now draw a diagram of this cube showing a triangle for the center atom that has these sides:  $a/4$ ,  $a\sqrt{2}/4$ ,  $x$ . Use  $x=2r$ , and from knowing  $r$  we can now find PF.