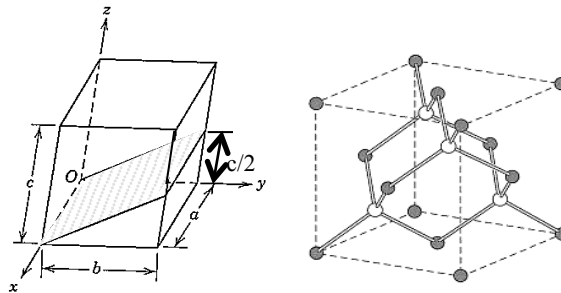


1. What is the Bravais lattice? List all cubic Bravais lattice structures. How many lattice points per (conventional) unit cell in each of these lattices?
2. The fraction of the space occupied by atoms in a unit cell (lattice constant a) is known as atomic packing fraction (APF); or simply packing fraction; *i.e.*, the ratio of the volume of the atoms occupying the unit cell to the volume of the unit cell relating to that structure. Calculate APF for BCC, FCC, and HCP structures.

3. Determine the Miller indices for the shaded plane in the following figure (left)



4. List the point coordinates of both the zinc and sulfur atoms in the zinc blende structure with respect to the conventional lattice vectors and also to the primitive lattice vectors (figure above, right).
5. Kittel, Chap. 1. Problem 2
6. Kittel, Chap. 1. Problem 3