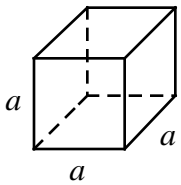
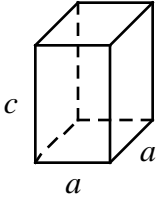
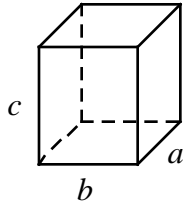
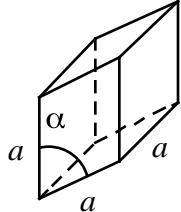
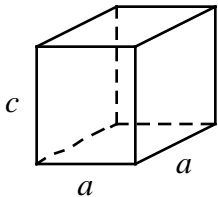
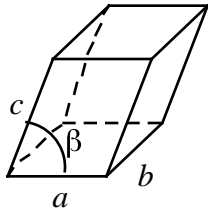
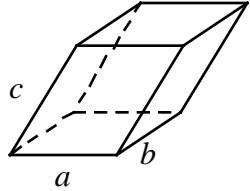
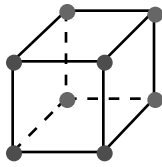


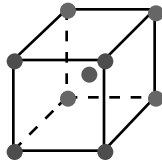
### Geometrical characteristics of the seven crystal systems.

System	Axial lengths and angles	Unit cell geometry
cubic	$a = b = c, \alpha = \beta = \gamma = 90^\circ$	
tetragonal	$a = b \quad c, \alpha = \beta = \gamma = 90^\circ$	
orthorhombic	$a \quad b \quad c, \alpha = \beta = \gamma = 90^\circ$	
rhombohedral	$a = b = c, \alpha = \beta = \gamma \neq 90^\circ$	
hexagonal	$a = b \quad c, \alpha = \beta = 90^\circ, \gamma = 120^\circ$	
monoclinic	$a \quad b \quad c, \alpha = \gamma = 90^\circ, \beta \neq 90^\circ$	
triclinic	$a \quad b \quad c, \alpha \neq \beta \neq \gamma$	

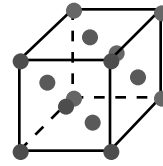
# Bravais Lattices



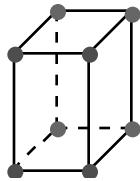
simple cubic



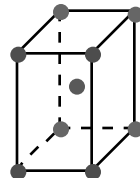
body-centered  
cubic



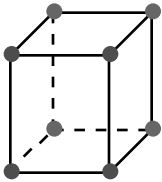
face-centered  
cubic



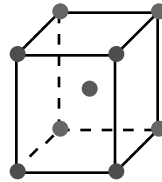
simple  
tetragonal



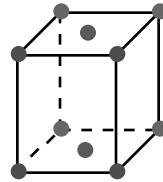
body-centered  
tetragonal



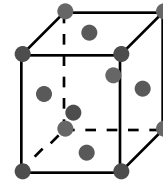
simple  
orthorhombic



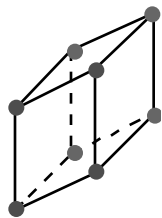
body-centered  
orthorhombic



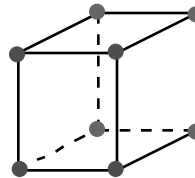
base-centered  
orthorhombic



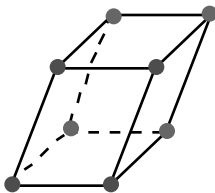
face-centered  
orthorhombic



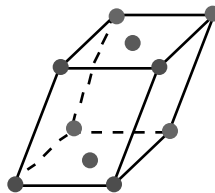
rhombohedral



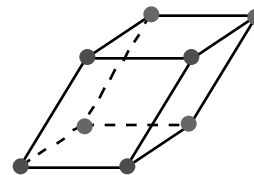
hexagonal



simple  
monoclinic

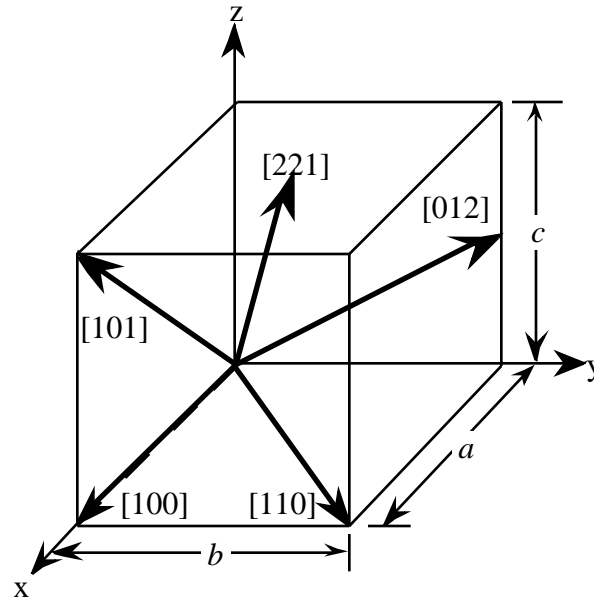


base-centered  
monoclinic

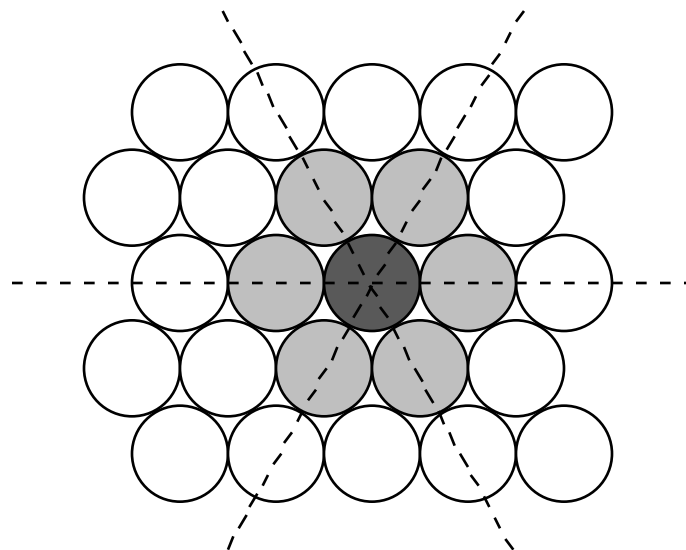


triclinic

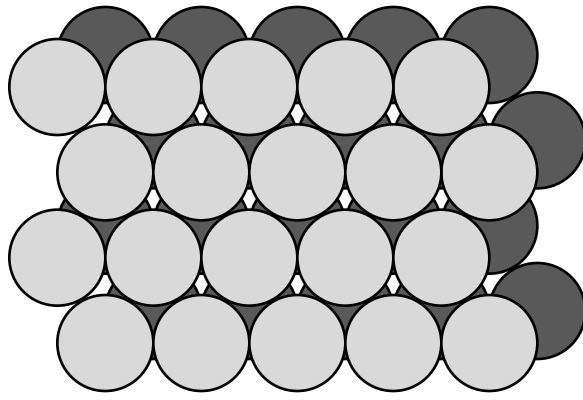
Some common directions in a cubic unit cell. The dot indicates the point where the vector exits the unit cell



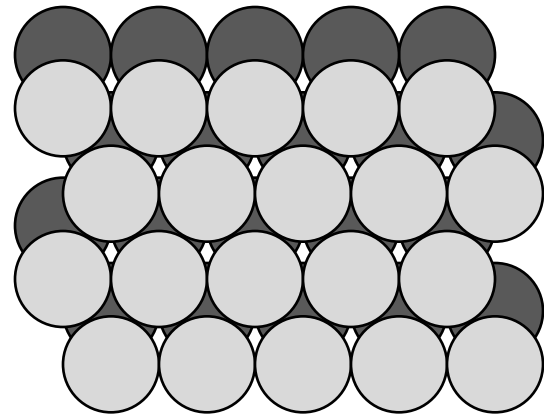
Schematic representation of a close packed layer of equal sized spheres. The close packed rows (directions) are shown by the dashed lines.



Schematic representation of two close packed layers arranged in A (dark grey) and B (light grey) positions. The alternative stacking of the B layer is shown in (a) and (b)

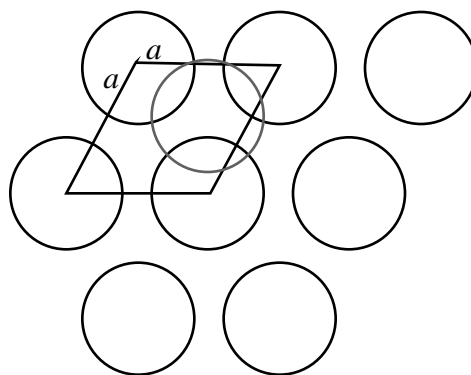


(a)



(b)

A schematic projection of the basal plane of the hcp unit cell on the close packed layers



**Schematic representation of the three close packed layers in a cubic close packed arrangement: A (dark grey), B (medium grey), and C (light grey).**

