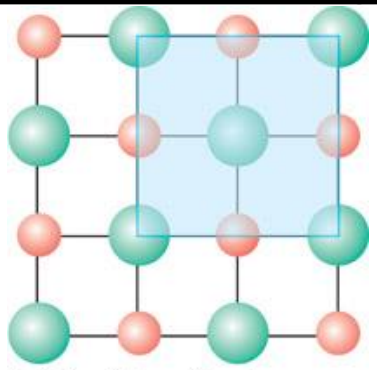
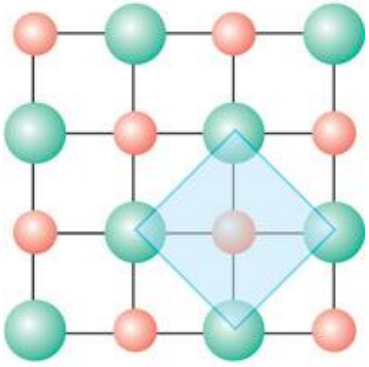
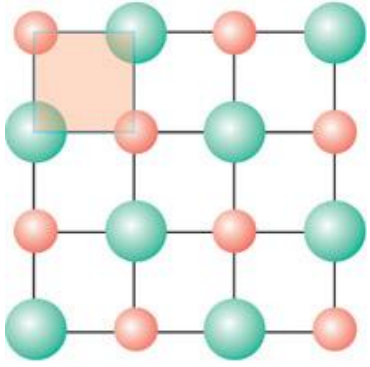
Structures of Simple Solids



(a) Possible unit cell



(b) Preferred unit cell choice

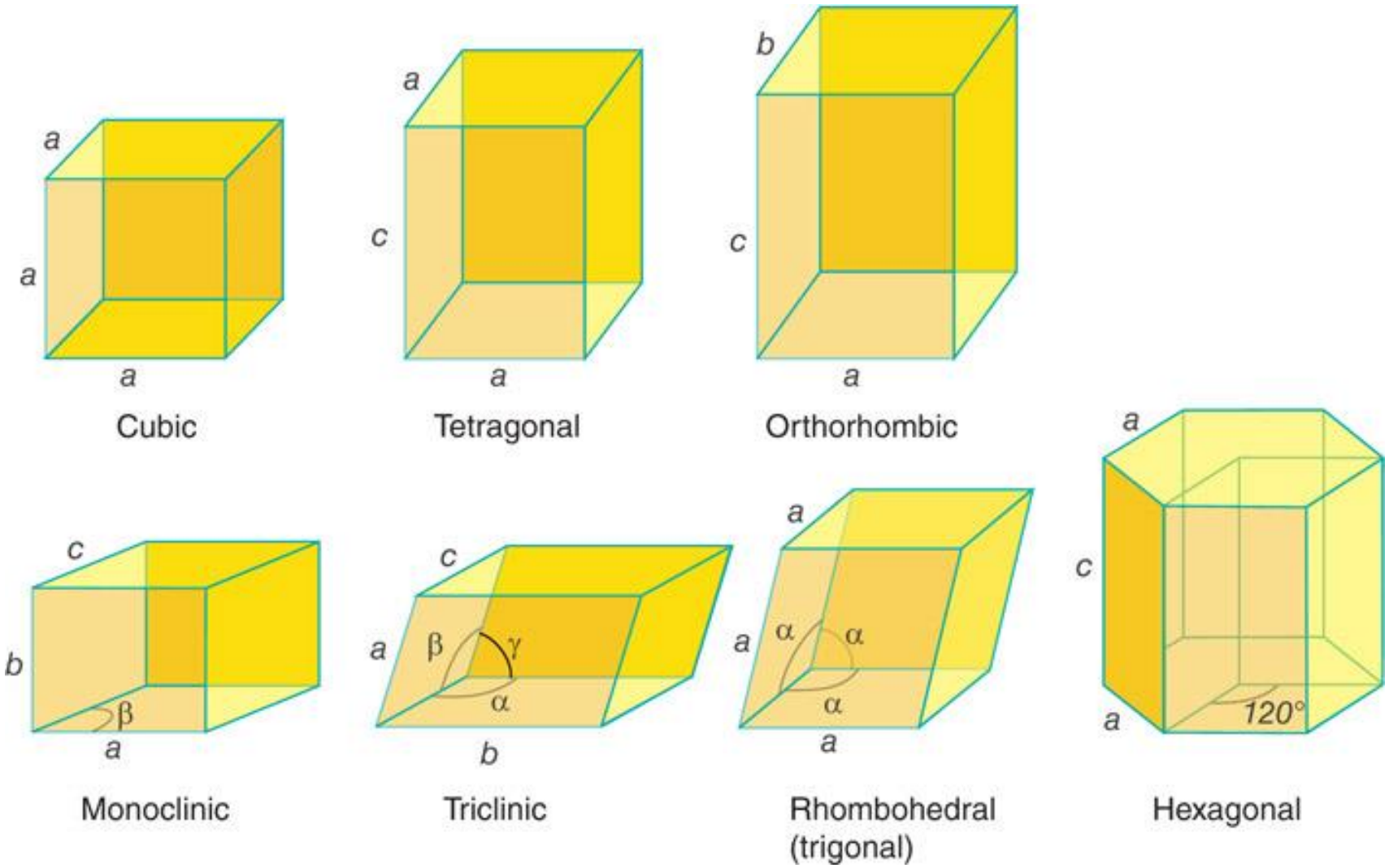


(c) Not a unit cell

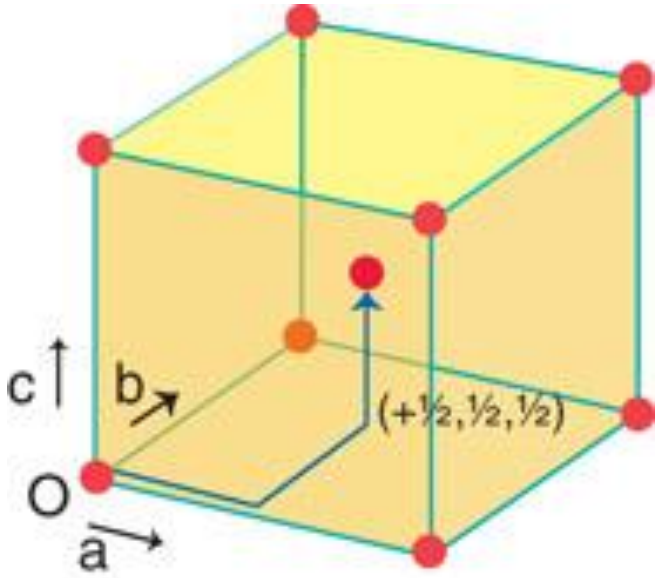
Structures of Simple Solids

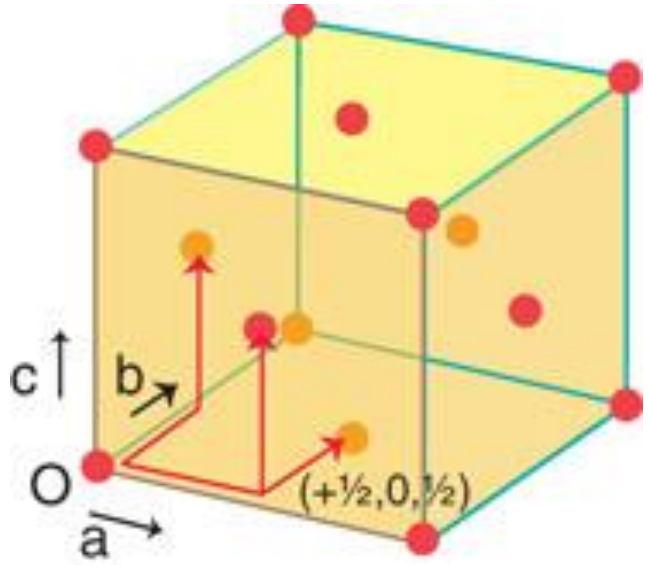
System	Relationships between lattice parameters	Unit cell defined by	Essential symmetries
Triclinic	$a \neq b \neq c$, $\alpha \neq \beta \neq \gamma \neq 90°$	$a\ b\ c\ \alpha\ \beta\ \gamma$	None
Monoclinic	$a \neq b \neq c$, $\alpha = \gamma = 90°$, $\beta \neq 90°$	$a\ b\ c\ \beta$	One two-fold rotation axis and/or a mirror plane
Orthorhombic	$a \neq b \neq c$, $\alpha = \beta = \gamma = 90°$	$a\ b\ c$	Three perpendicular two-fold axes and/or mirror planes
Rhombohedral	$a = b = c$, $\alpha = \beta = \gamma \neq 90°$	$a\ \alpha$	One three-fold rotation axis
Tetragonal	$a = b \neq c$, $\alpha = \beta = \gamma = 90°$	$a\ c$	One four-fold rotation axis
Hexagonal	$a = b \neq c$, $\alpha = \beta = 90°$, $\gamma = 120°$	$a\ c$	One six-fold rotation axis
Cubic	$a = b = c$, $\alpha = \beta = \gamma = 90°$	a	Four three-fold rotation axes tetrahedrally arranged

Structures of Simple Solids

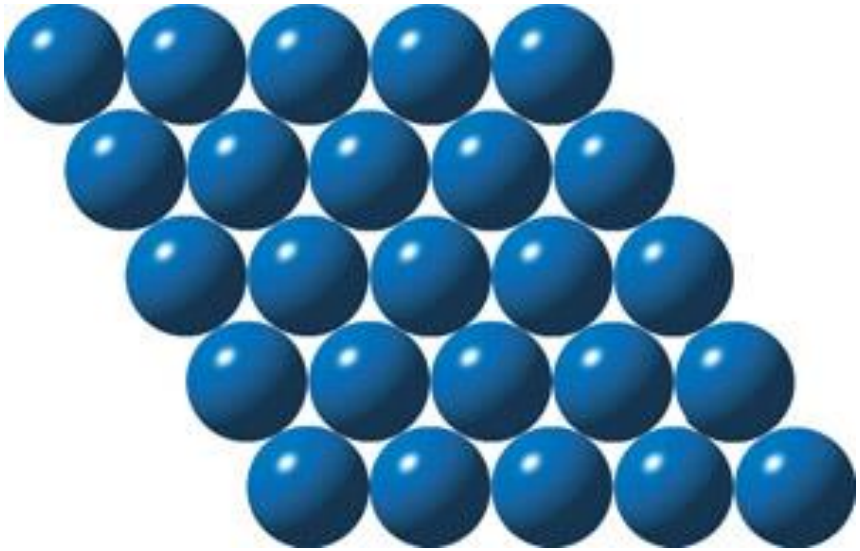


Structures of Simple Solids

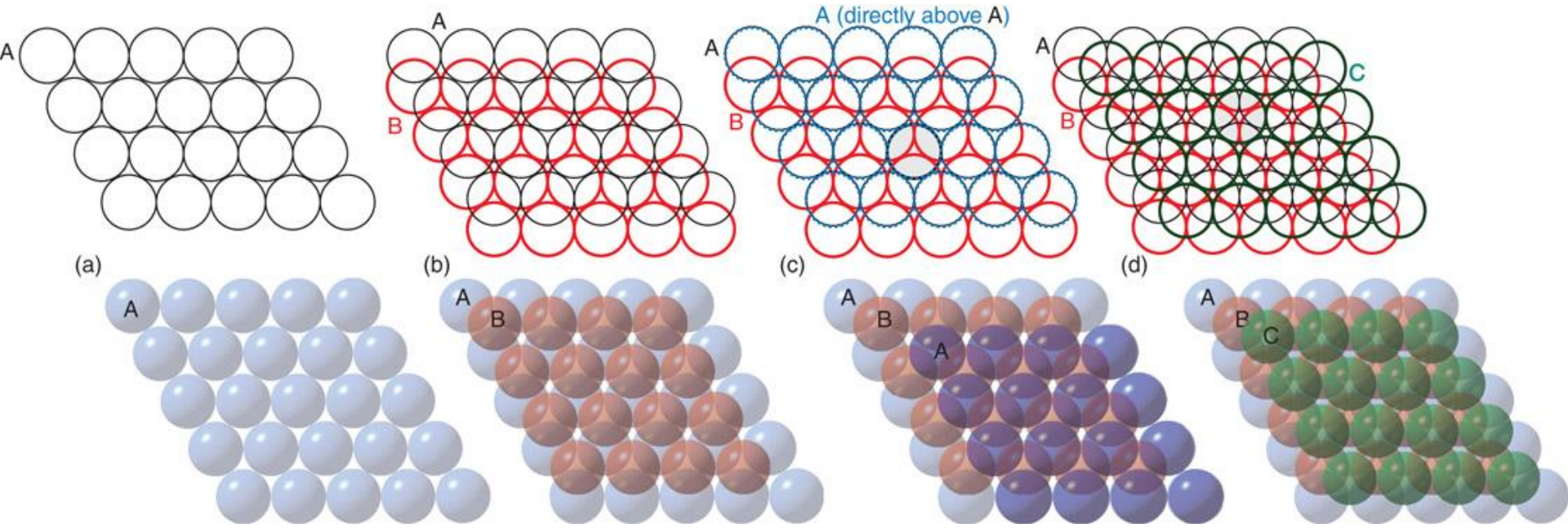




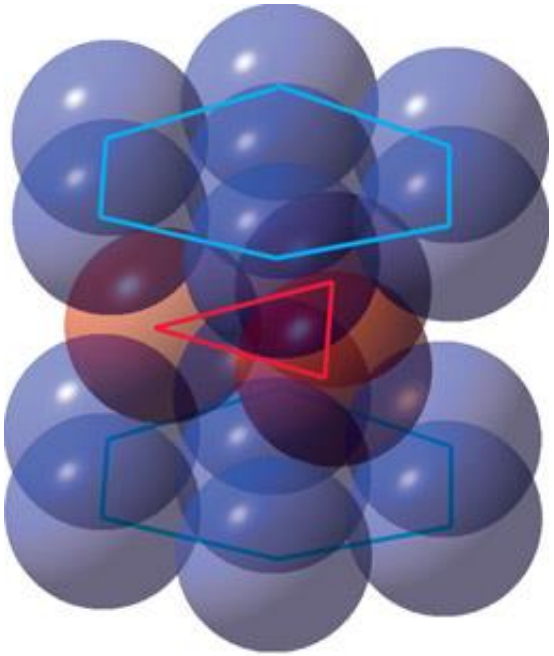
Structures of Simple Solids

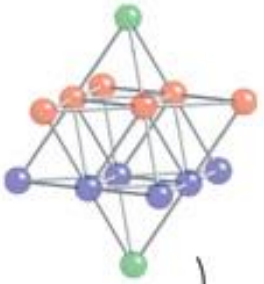


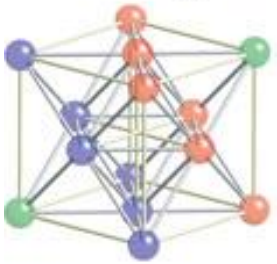
Structures of Simple Solids

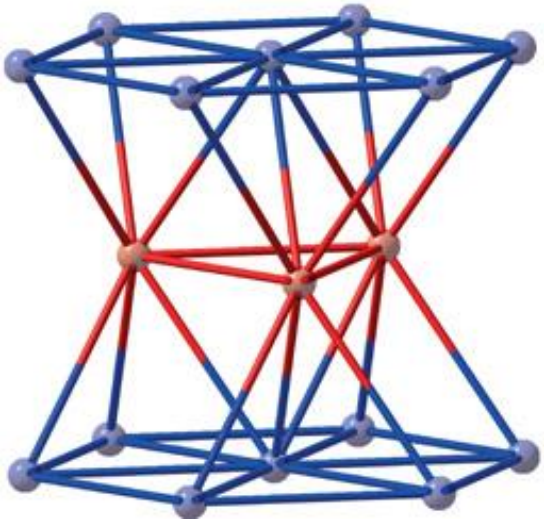


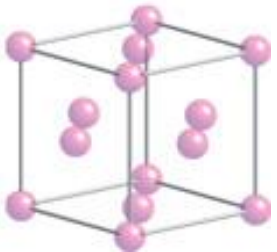
Structures of Simple Solids











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