Though the straight bonding between Ethylene-molecule's C-C and C-H is strong covalent bonds, the bonding occurs between adjacent sections of the long Ethylene-molecule chains is a weak secondary bonding (van der Waals bonding), which leads to the low strength and low melting points for the Ethylene-molecule. By contrast, diamond has covalent bonding between each adjacent pair of the C atoms, which leads to an exceptional high hardness and a high melting point.

Aluminum is an FCC structure
\[ R = 0.143 \text{nm} \]
\[ a = 4R/\sqrt{2} = 0.4045 \text{nm} \]
\[ \text{Vol} = a^3 = (0.4045 \times 10^{-9})^3 = 6.6184 \times 10^{-29} \text{ m}^3 \]

No of atoms / cell = 8 x \( \frac{1}{8} \) = 1 atom
\[ R = 0.126 \text{nm} \]
\[ a = 2R = 0.126 \times 2 = 0.252 \text{ nm} \]
\[ \text{Vol} / \text{unit cell} = a^3 = 0.252 \times 10^{-9})^3 = 1.6003 \times 10^{-29} \text{ m}^3 \]
\[ \text{Na} = 6.023 \times 10^{23} \text{ atoms/mol} \]
\[ \text{atomic mass} = \frac{\text{Weight}}{\text{Na}} = \frac{70.4 \times 10^{-3} \text{ (kg/mol)}}{6.023 \times 10^{23} \text{ (atoms/mol)}} = 1.1689 \times 10^{-25} \text{ kg} \]
\[ \text{Density} = \frac{\text{No. of atoms / cell x atomic mass}}{\text{Unit cell volume}} = \frac{1 \times 1.1689 \times 10^{-25}}{1.6003 \times 10^{-29}} = 7,304.3 \text{ kg/m}^3 \]

If a cubic system will have a face atom on its base and top only, it will lose the cubic symmetry \( a = b \neq c \) and becomes a simple tetragonal structure.

Noting the footnote for table 3.1, we see that, when \( \beta = 90^\circ \), the monoclinic system becomes orthorhombic.