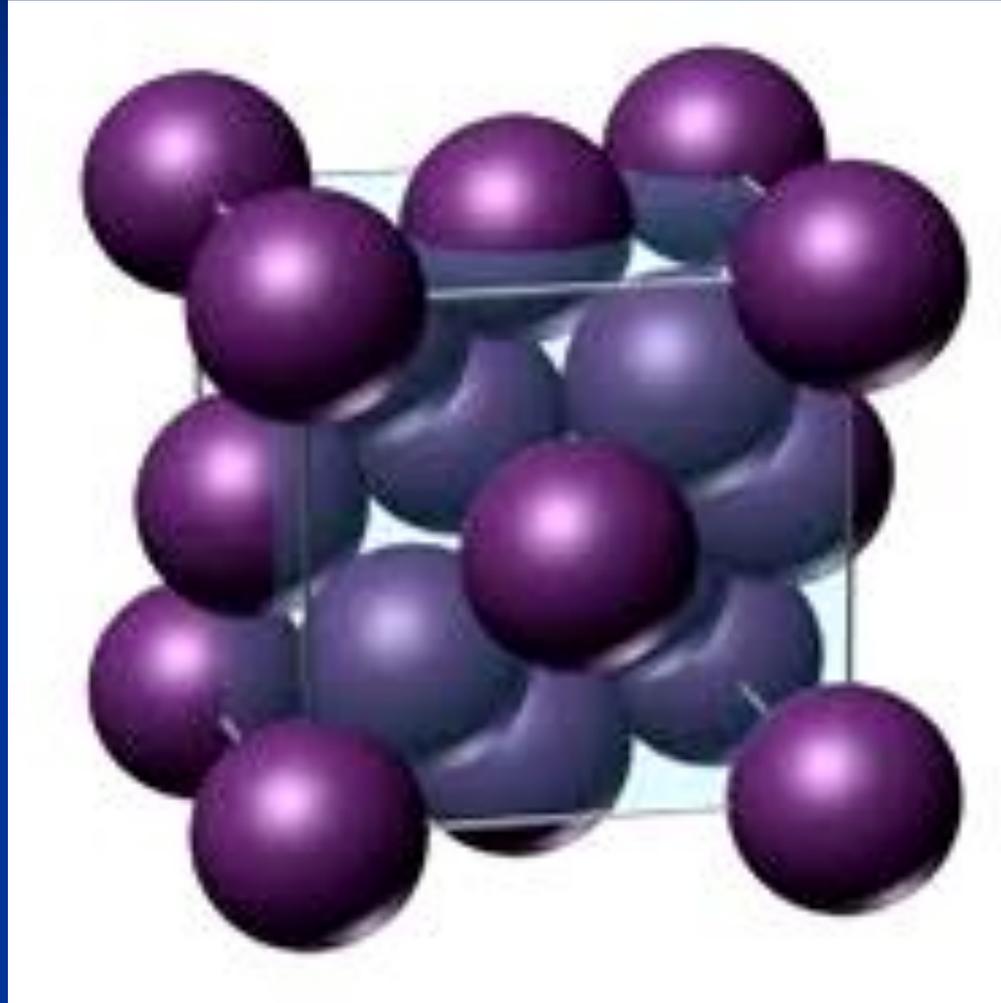
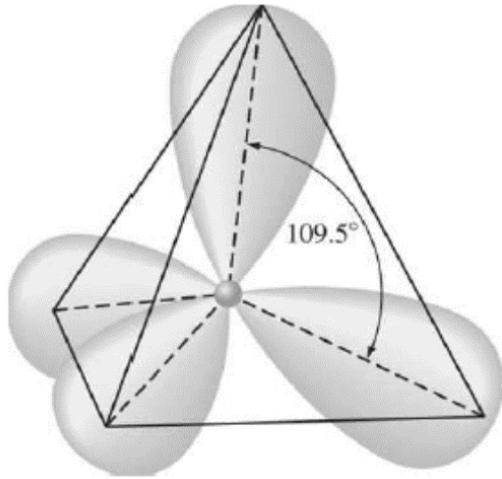


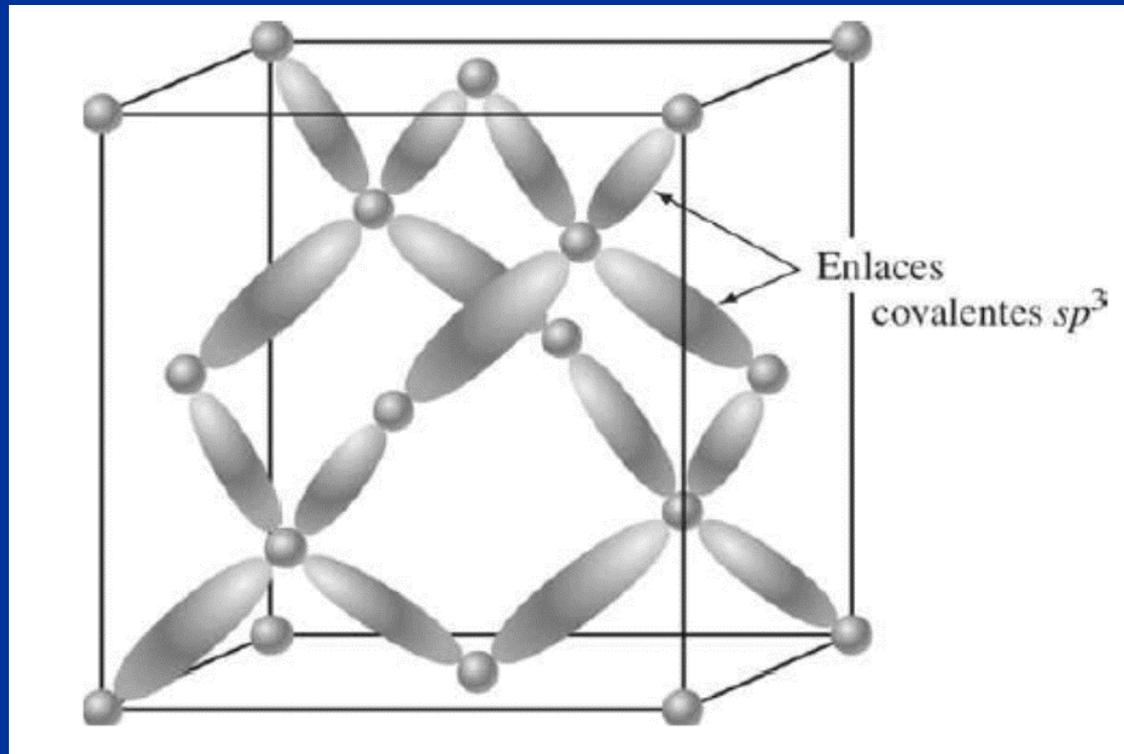
# Estructura cúbica diamante



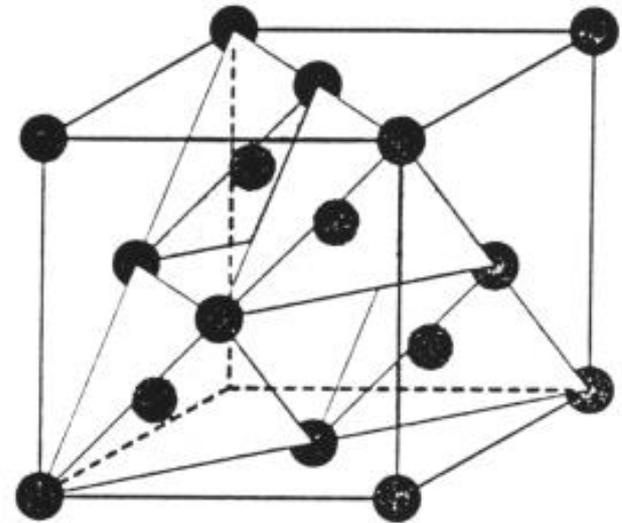
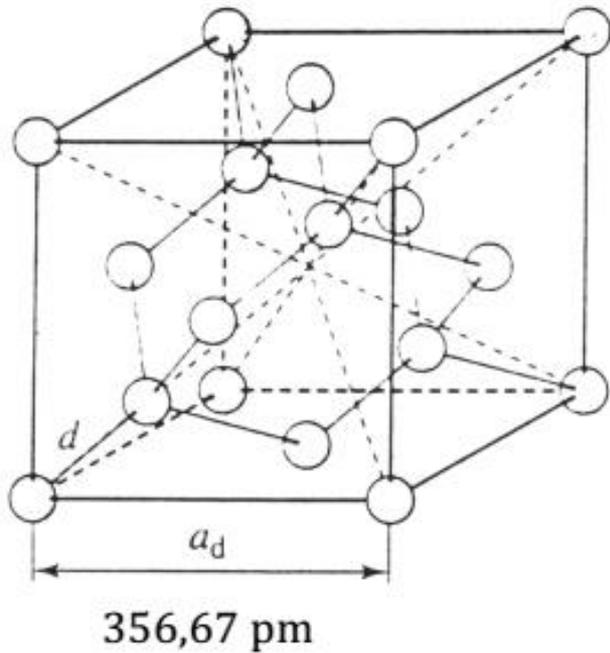
## Enlace covalente átomos C



Átomo de C con 4 orbitales  $sp^3$  equivalentes, dirigidos a los vértices de un tetraedro

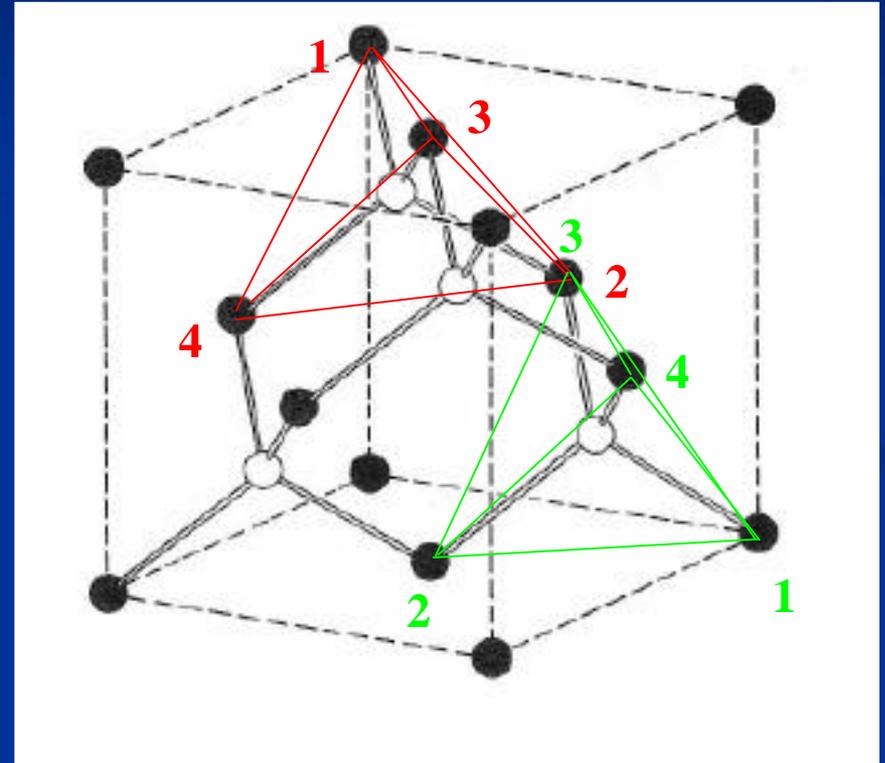
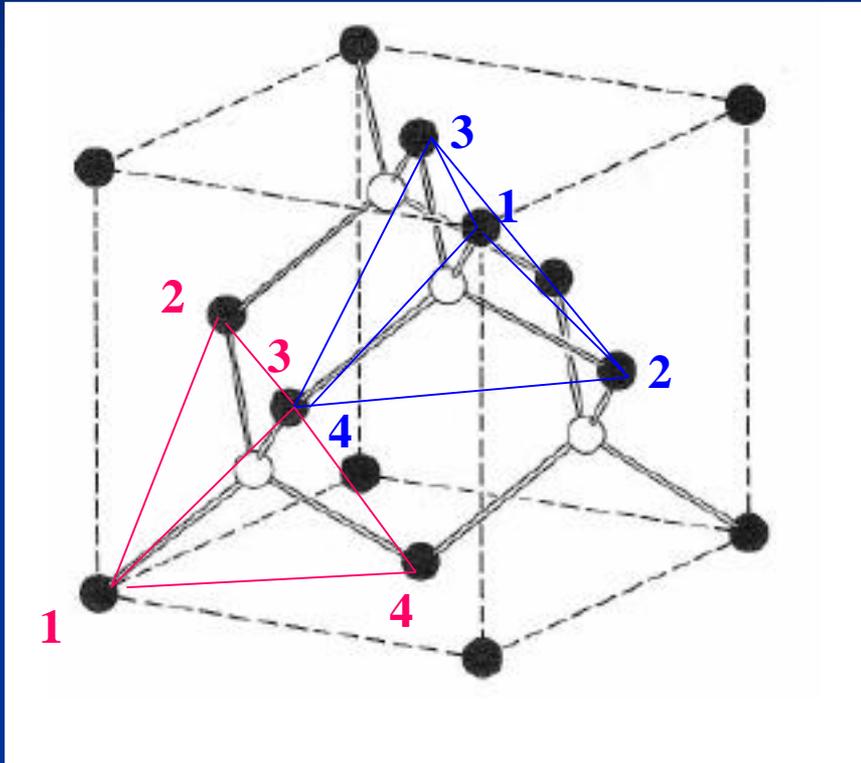


# Estructura carbono diamante



Índice de coordinación: 4

# Estructura carbono diamante



**8 átomos de C / celda FCC: 4 de la celda y 4 tetraédricos.**

# Densidad del carbono diamante

$$\rho_{\text{material}} = \frac{M_{\text{atómica}}}{V_{\text{celda}}} = \frac{n_{\text{átomos}} \cdot P_{\text{atómico}} / N}{(a_{\text{celda}})^3}$$

$$\rho_{\text{C}} = \frac{(8 \text{ átomos} \cdot 12 \text{ g/mol}) \cdot (1 \text{ mol} / 6,023 \cdot 10^{23} \text{ átomos})}{(3,568 \cdot 10^{-8} \text{ cm})^3} = 3,5 \text{ g/cm}^3$$

# Grado de llenado red CD

$$f_{\text{llenado}} = \frac{V_{\text{ocupado átomos}}}{V_{\text{celda}}} = \frac{n_{\text{átomos}} V_{\text{átomo}}}{V_{\text{celda}}}$$

$$V_{\text{atómico}} = \frac{4}{3} \cdot \pi \cdot r^3$$

$$r_{\text{C}} = 0,77 \text{ \AA} ; a = 3,57 \text{ \AA}$$

$$f_{\text{llenado}} = \frac{8 \cdot \frac{4}{3} \pi (0,77)^3}{(3,57)^3} = \underline{\underline{0,34 (34\%)}}$$