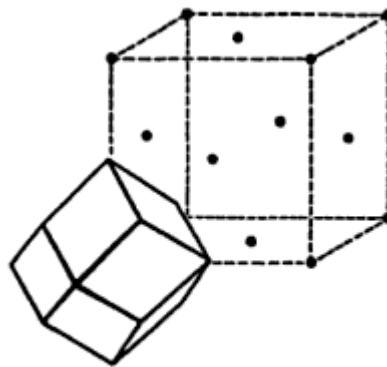


plane cristaline succesive din familia $\{1\ 1\ 1\}$



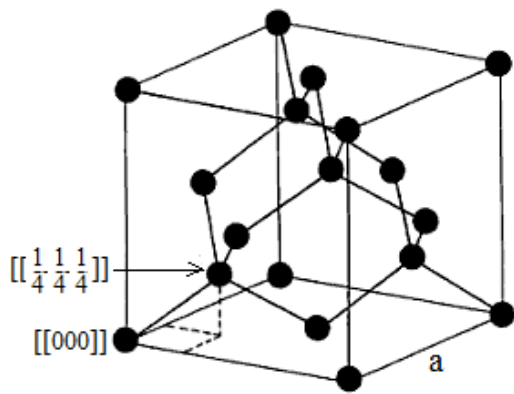
celula Wigner-Seitz

➤ Structura CFC de tip diamant

$N = 8$ atomi/celula elementara

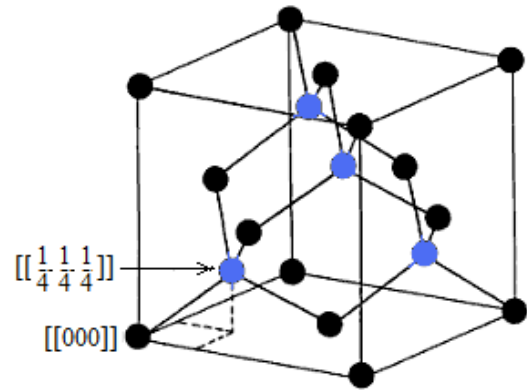
$N_1 = 4$ vecini de ordinul intai, la distanta $d_1 = (a\sqrt{3})/4$

Coeficientul de compactitate (impachetare) = 36%



structura diamantului

● atomi de carbon



structura blendei de zinc ZnS

● atomi de zinc

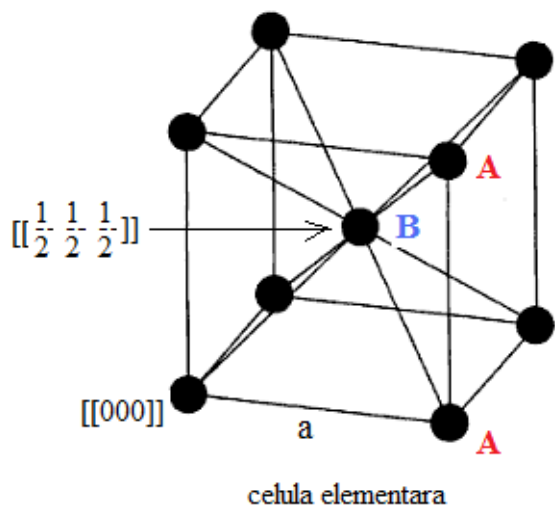
● atomi de sulf

➤ Structura cubica cu volum centrat CVC

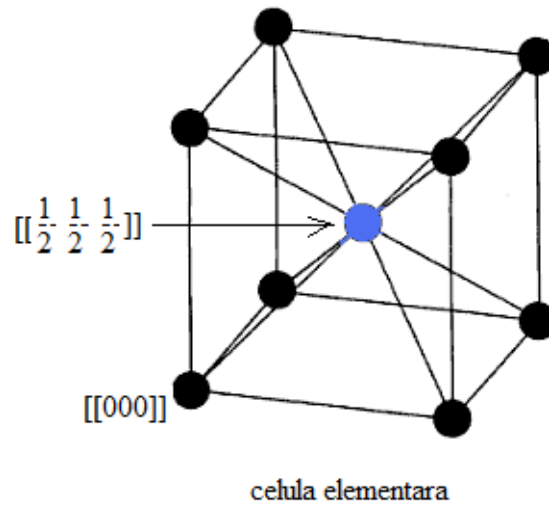
$N = 2$ atomi/celula elementara

$N_1 = 8$ vecini de ordinul intai, la distanta $d_1 = (a\sqrt{3})/2$

Coeficientul de compactitate (impachetare) = 68%



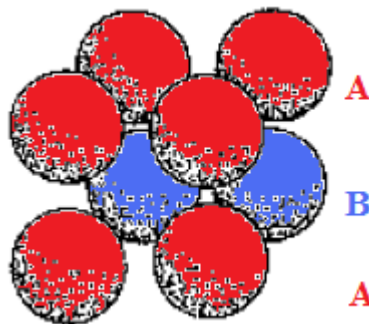
de exemplu, ● Fe



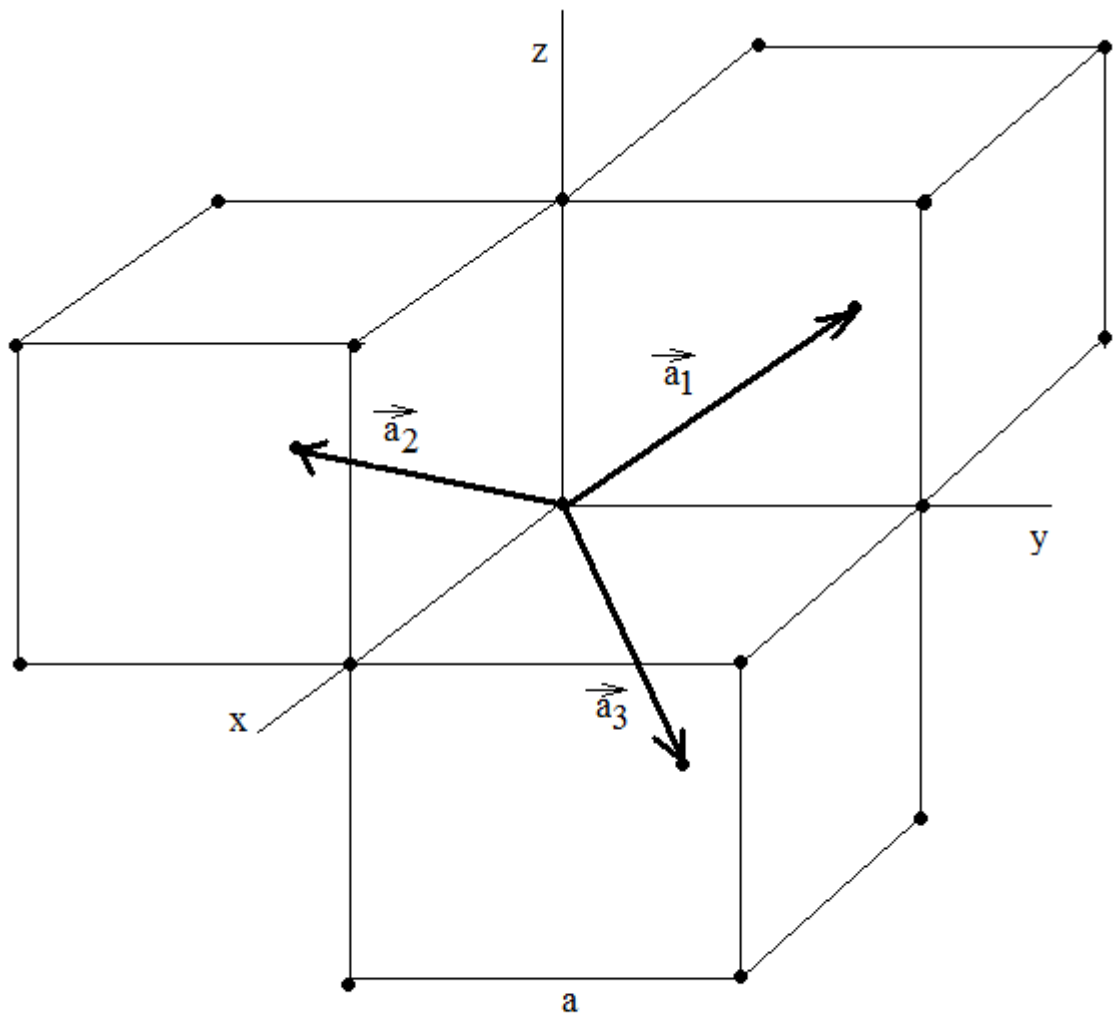
structura CsCl

● Cl

● Cs



Sucesiunea stratutilor de atomi in structura CVC (ABA...

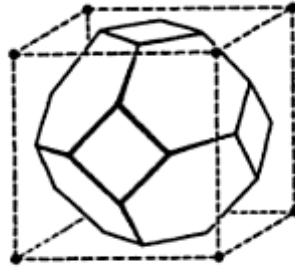


$\vec{a}_1 \quad \vec{a}_2 \quad \vec{a}_3$ vectorii primitivi

$$\vec{a}_1 = \frac{a}{2}(-\hat{x} + \hat{y} + \hat{z})$$

$$\vec{a}_2 = \frac{a}{2}(+\hat{x} - \hat{y} + \hat{z})$$

$$\vec{a}_3 = \frac{a}{2}(+\hat{x} + \hat{y} - \hat{z})$$



celula Wigner-Seitz

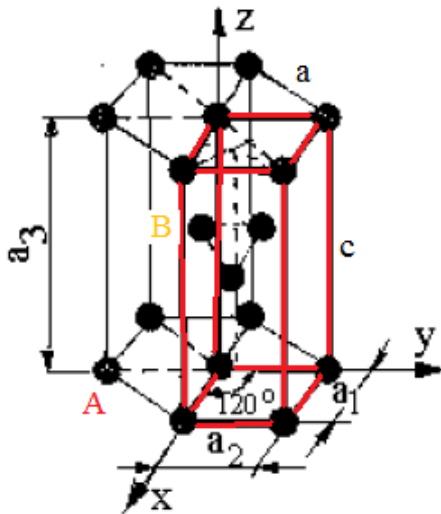
➤ **Structura hexagonal compacta HC**

$N = 2$ atomi/celula elementara (sau *celula primitiva* cu baza formata din 2 atomi)

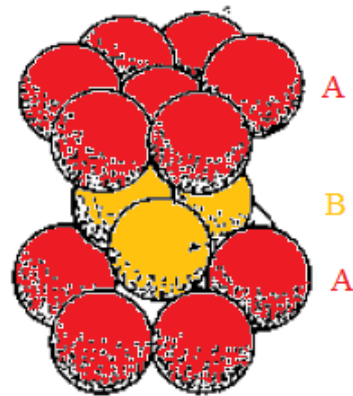
$N = 6$ atomi/celula elementara hexagonala

$N_1 = 12$ vecini de ordinul intai, la distanta $d_1 = a$

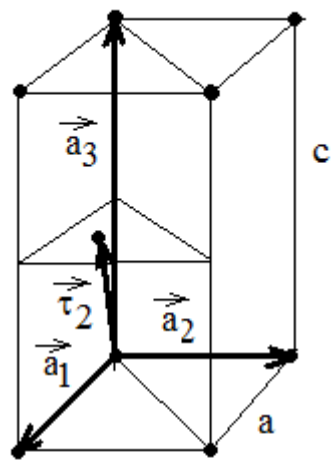
Coeficientul de compactitate (impachetare) = 74%



celula elementara a structurii HC



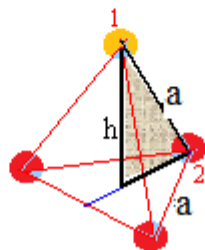
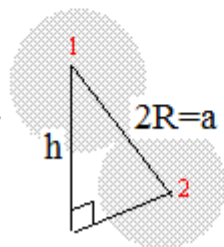
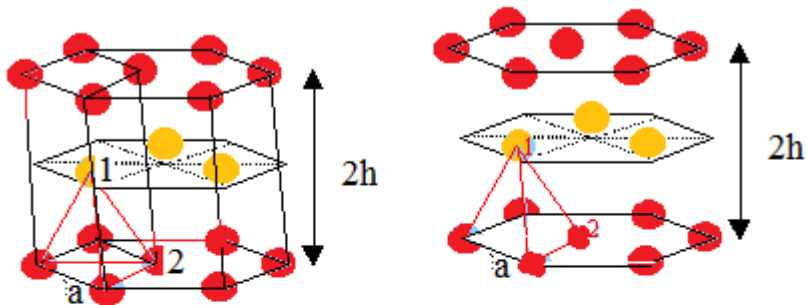
succesiunea planelor de atomi in structura HC (ABA...)



celula primitiva
baza formata din 2 atomi

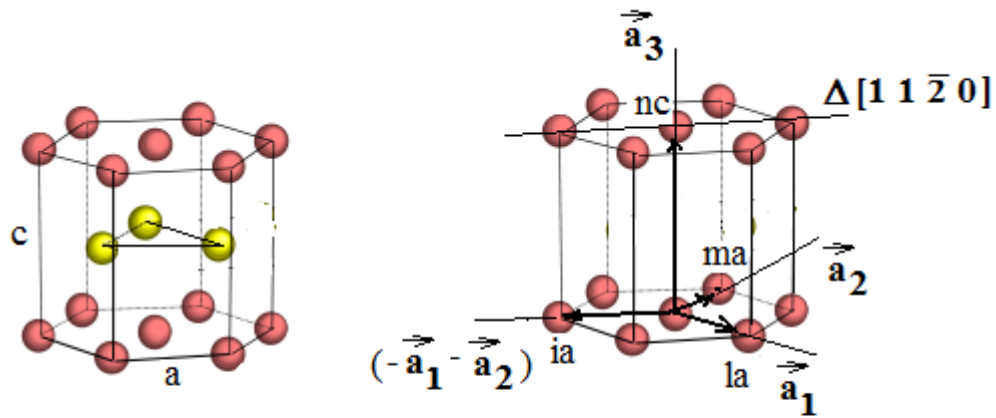
\vec{a}_1 \vec{a}_2 \vec{a}_3 vectorii primitivi

$\vec{\tau}_1 = \vec{0}$ $\vec{\tau}_2 = \frac{2}{3}\vec{a}_1 + \frac{1}{3}\vec{a}_2 + \frac{1}{2}\vec{a}_3$ vectorii bazei



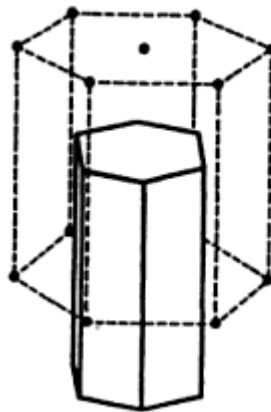
$$h = a \sqrt{\frac{2}{3}}$$

$$2h = c = 2a \sqrt{\frac{2}{3}}$$



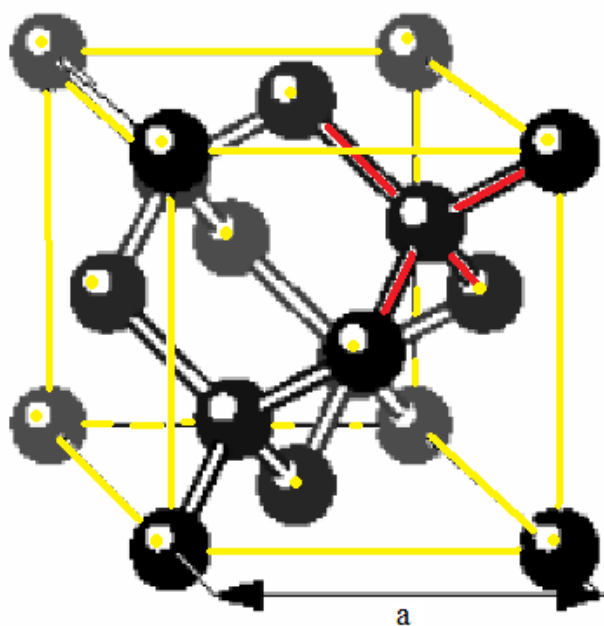
$$\Delta [l\ m\ n] ; i = -(l+m)$$

indexarea directiilor in structura hexagonala

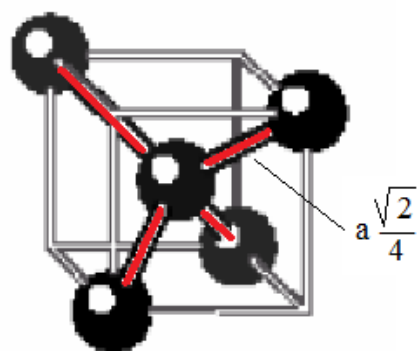


celula Wigner-Seitz

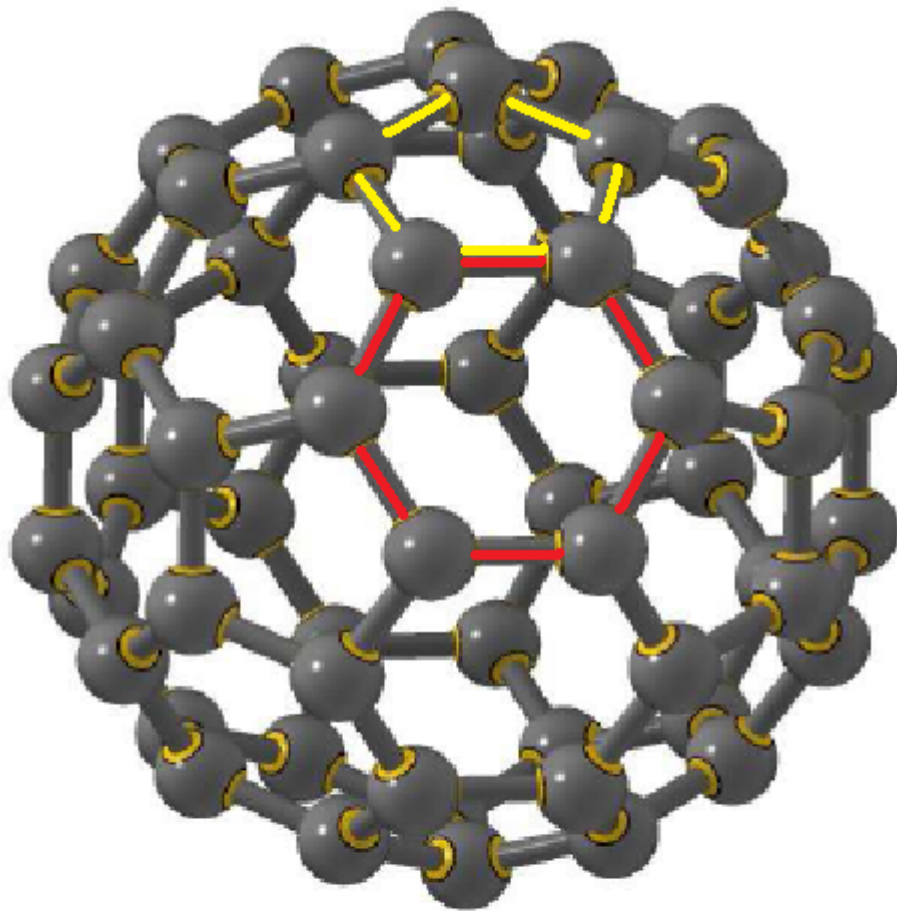
➤ Faze structurale cristaline ale carbonului



Structura diamantului
CFC



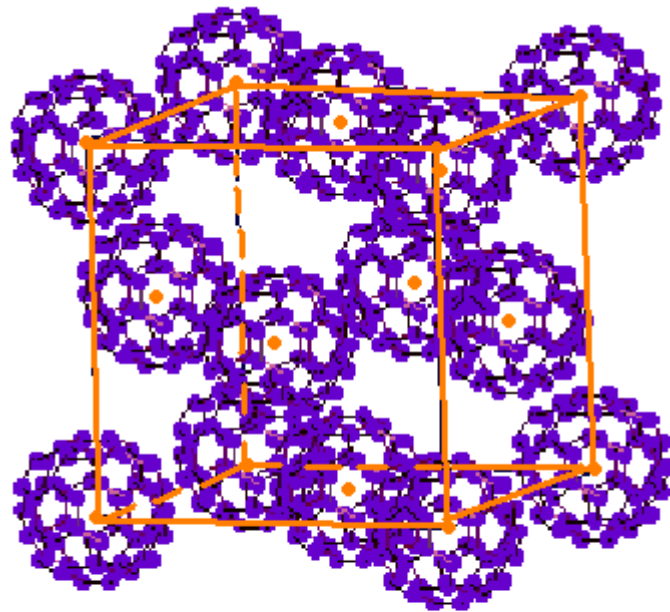
Vecinii de ordinul intai
(invecinarea tetraedrica)



Molecula fullerenei C_{60}

— hexagon

— pentagon



Buckminsterfullerene

— structura CFC a fullerenei C_{60}