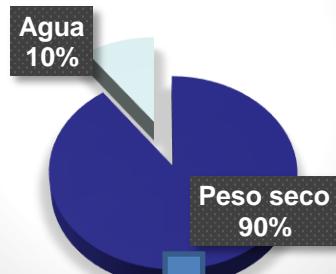


Hidroxiapatita.

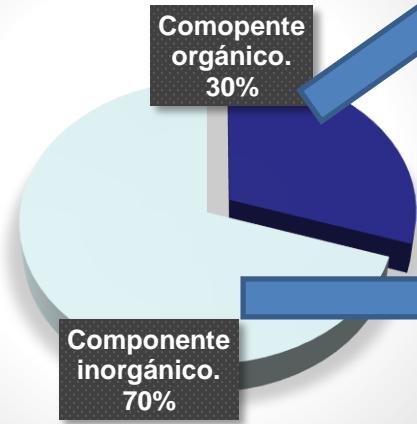
Cátedra de Bioquímica y Biofísica
Facultad de Odontología

Componentes de la matriz ósea

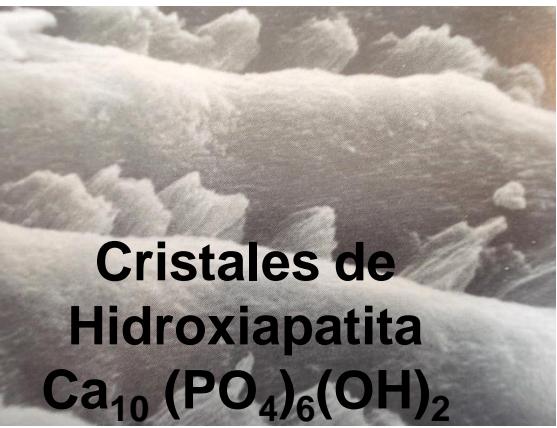
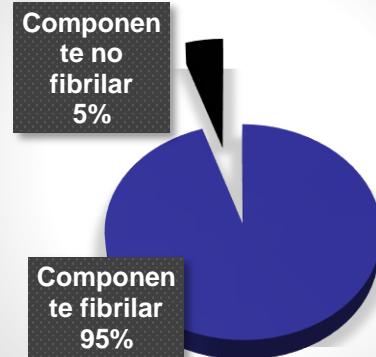
Composición del tejido óseo.



Peso seco

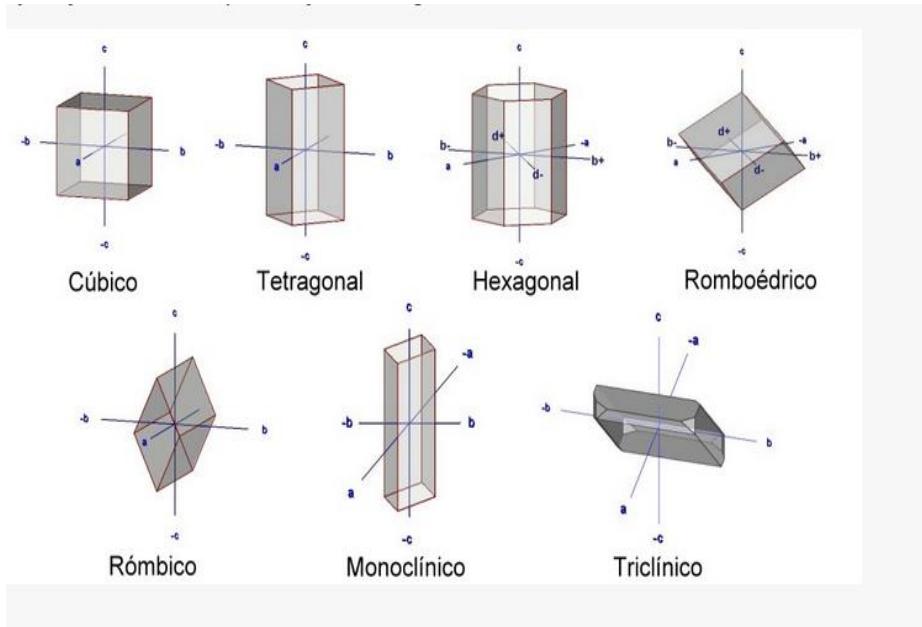
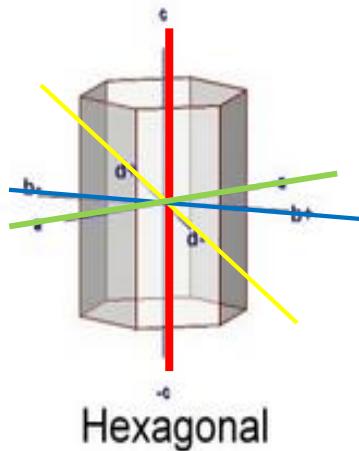


Componente orgánico.



Características generales de las apatitas.

- Son compuestos iónicos.
- Formula empírica general : A_5B_3C
- Pertenecen al sistema cristalino hexagonal.
- con eje c de simetría senaria con tres ejes a idénticos que forman 120° entre sí.



Simetría senaría

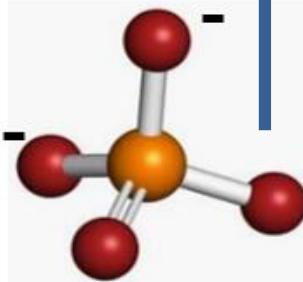
Celdilla unitaria de hidroxiapatita.



10

6

2

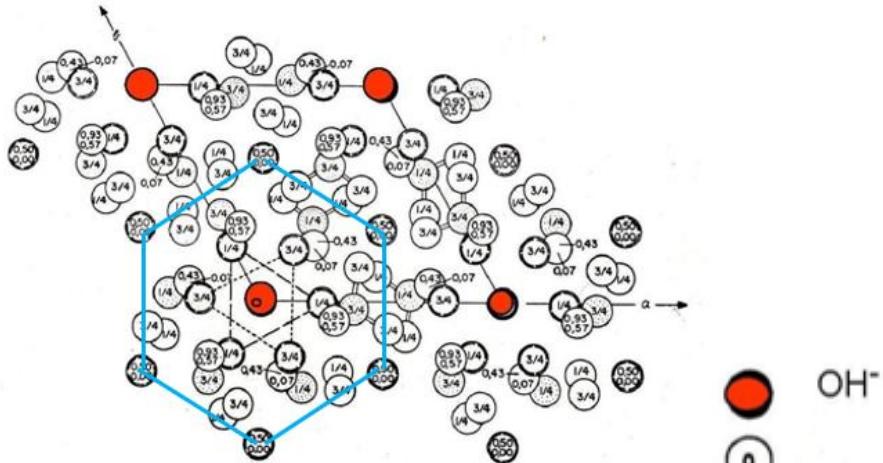


20 cargas +

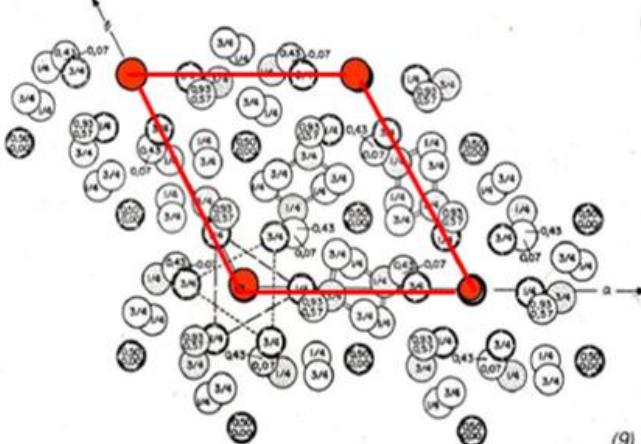
18 cargas -

2 cargas -

Celdilla Hexagonal.

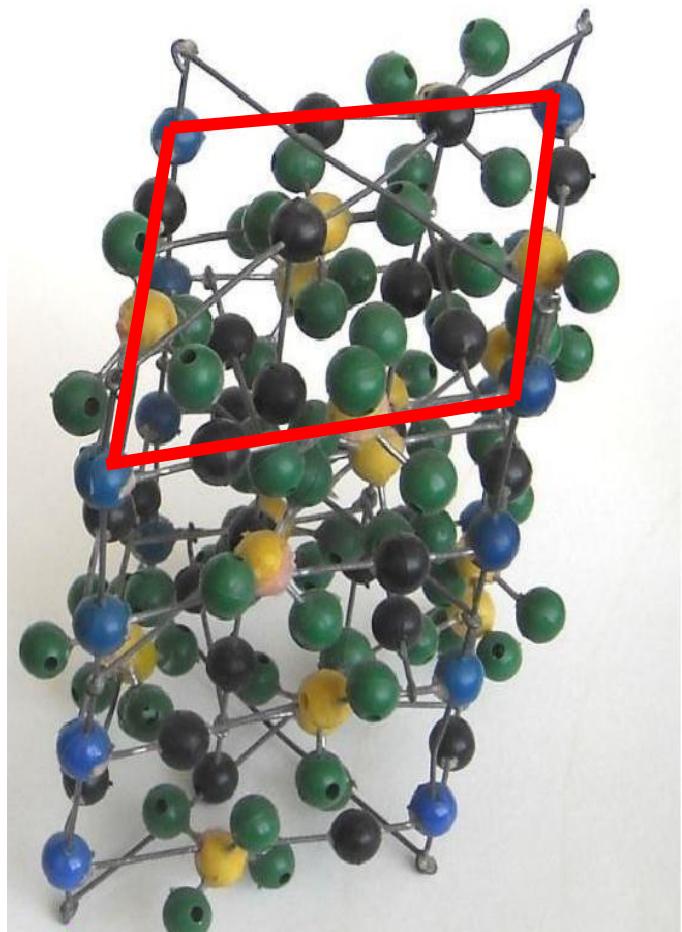
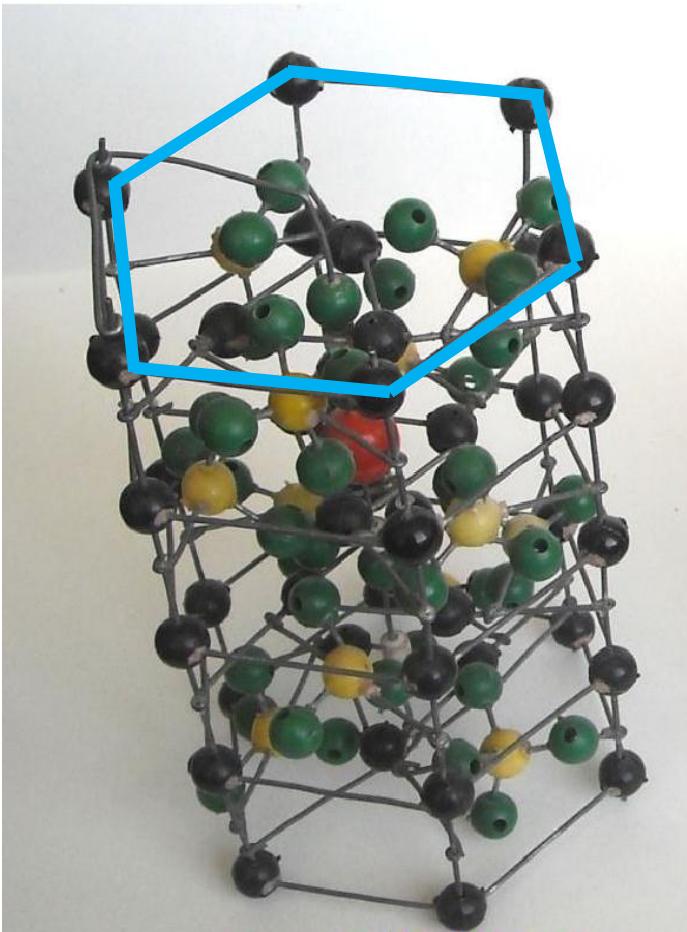


Celdilla Romboidal.

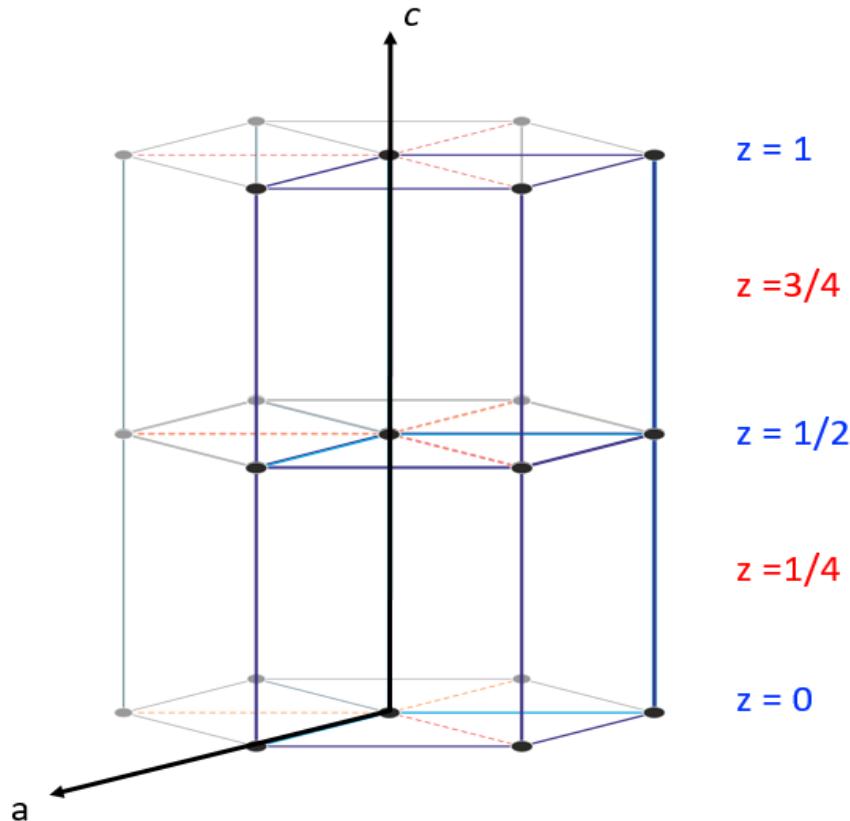


(9)

Celdilla unitaria de hidroxiapatita.



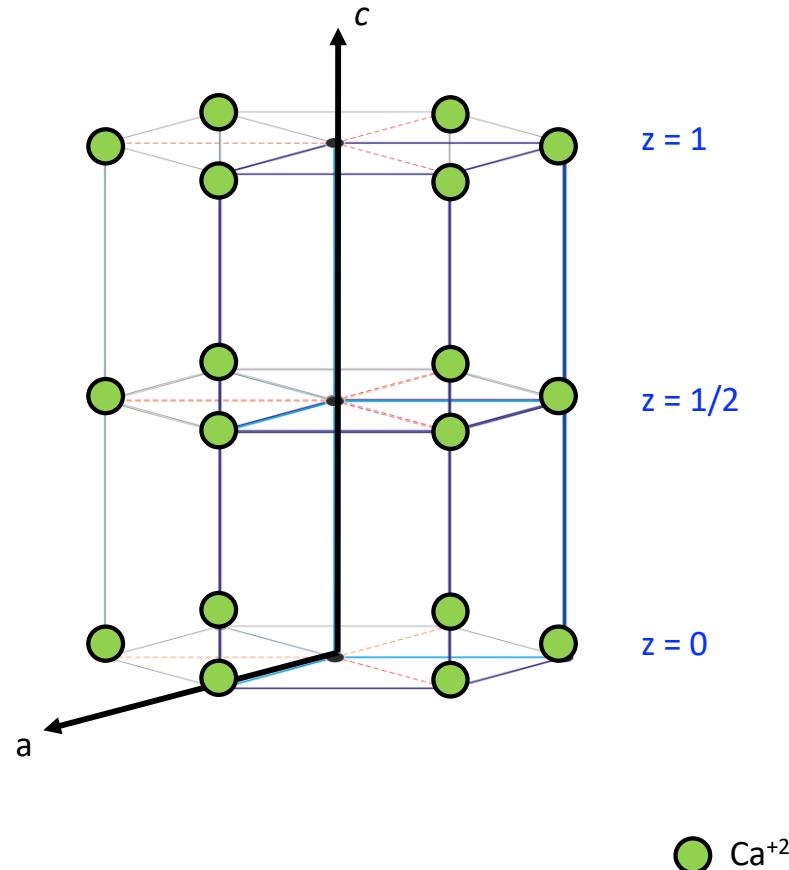
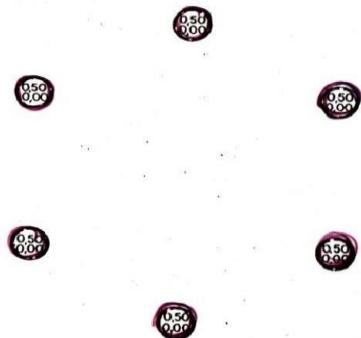
Celdilla de base hexagonal.



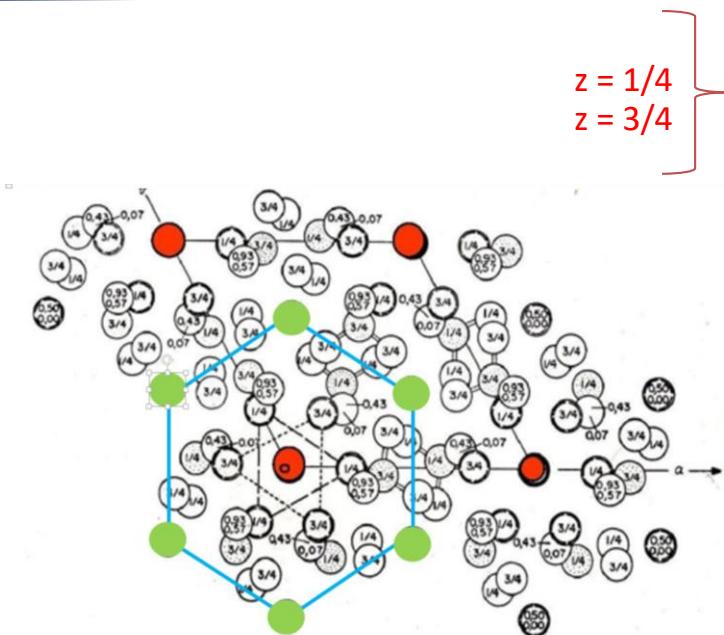
Niveles $Z=0$, $\frac{1}{2}$ y 1

$z = 0$
 $z = \frac{1}{2}$
 $z = 1$

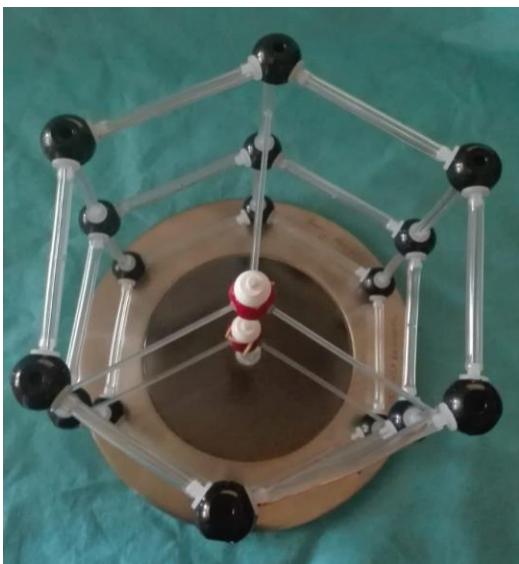
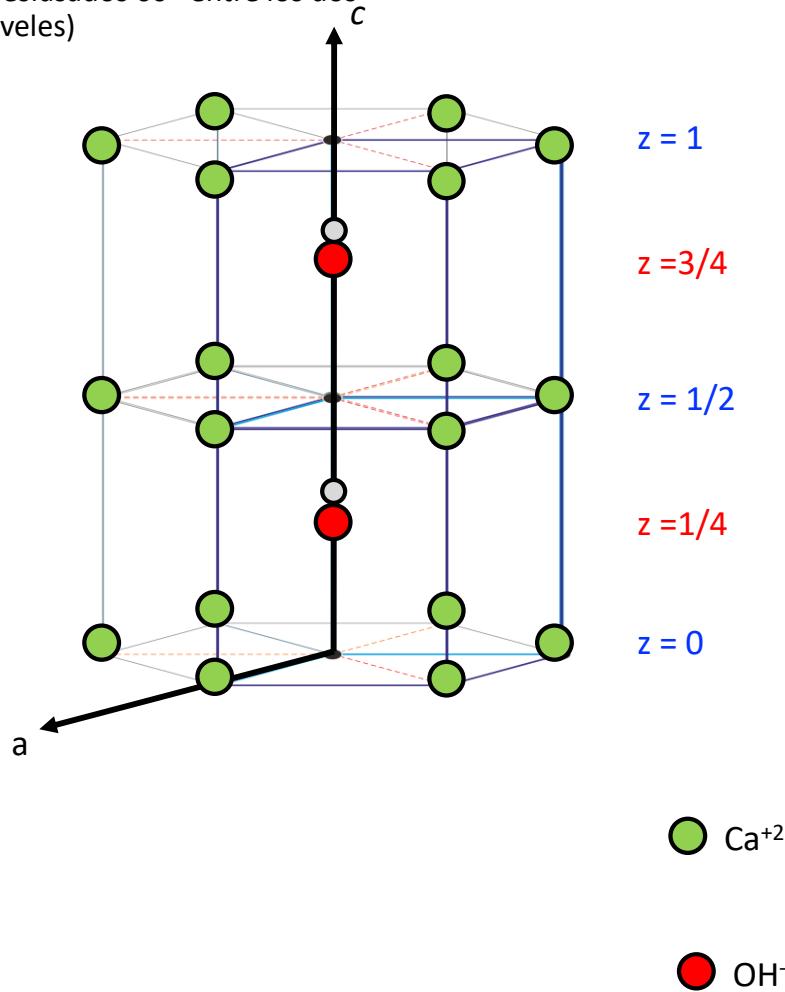
- Hexágonos de Ca^{+2} tipo I



Niveles $Z = \frac{1}{4}$ y $\frac{3}{4}$



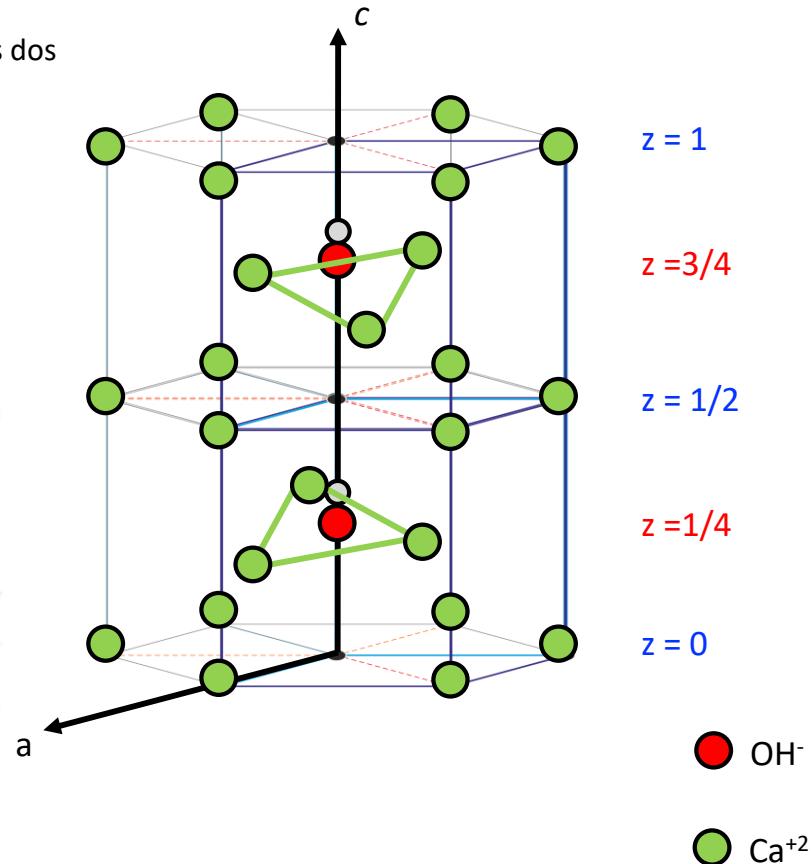
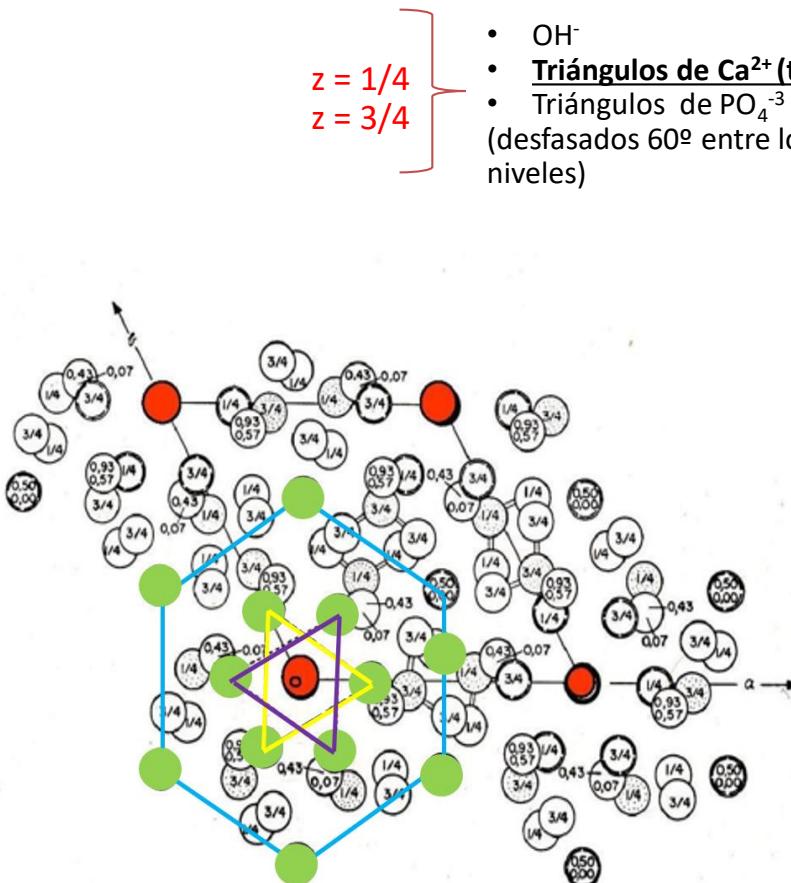
- OH^-
- Triángulos de Ca^{2+} (tipo II)
- Triángulos de PO_4^{3-}
(desfasados 60° entre los dos niveles)



● Ca^{+2}

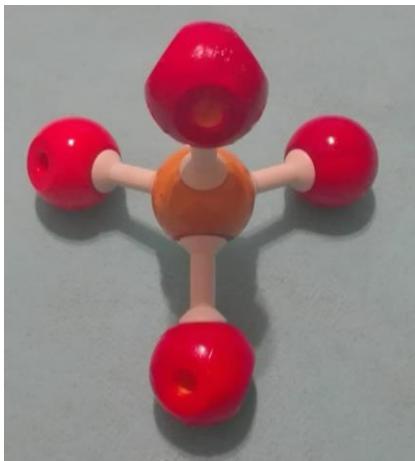
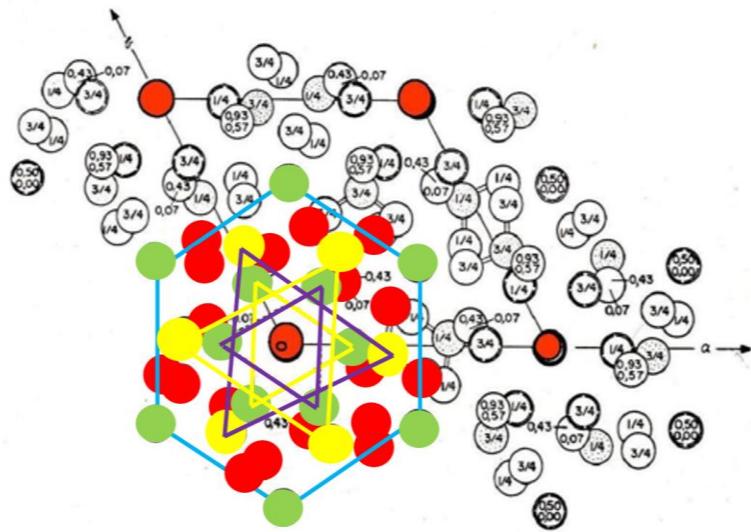
● OH^-

Niveles $Z = \frac{1}{4}$ y $\frac{3}{4}$



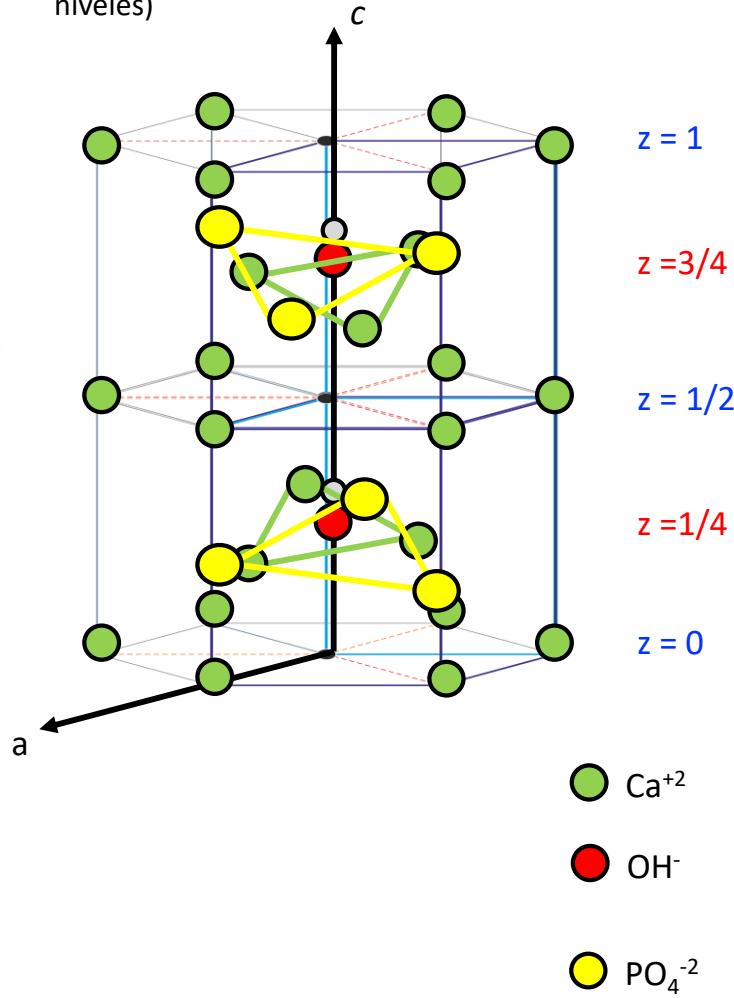
Triangulo $\frac{1}{4}$ amarillo.
Triangulo $\frac{3}{4}$ violeta.

Niveles $Z = \frac{1}{4}$ y $\frac{3}{4}$

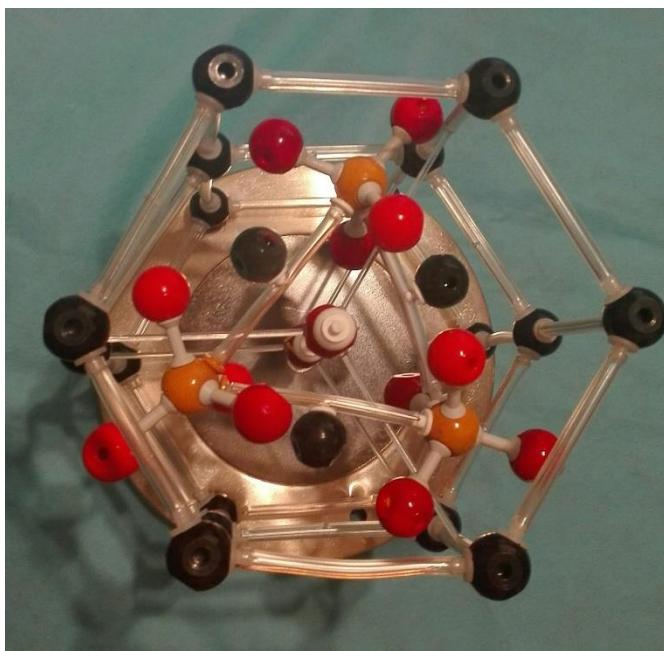
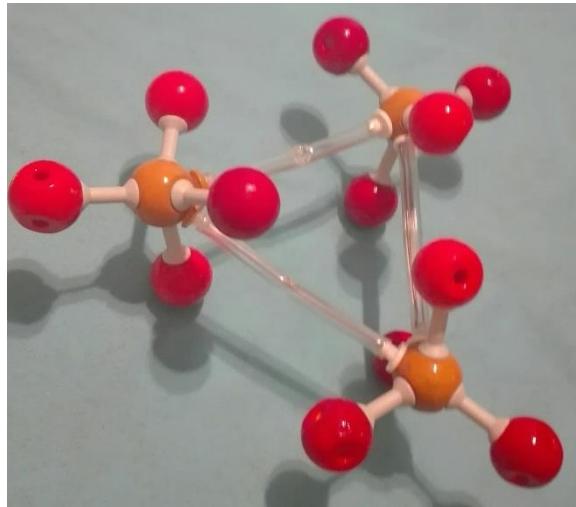


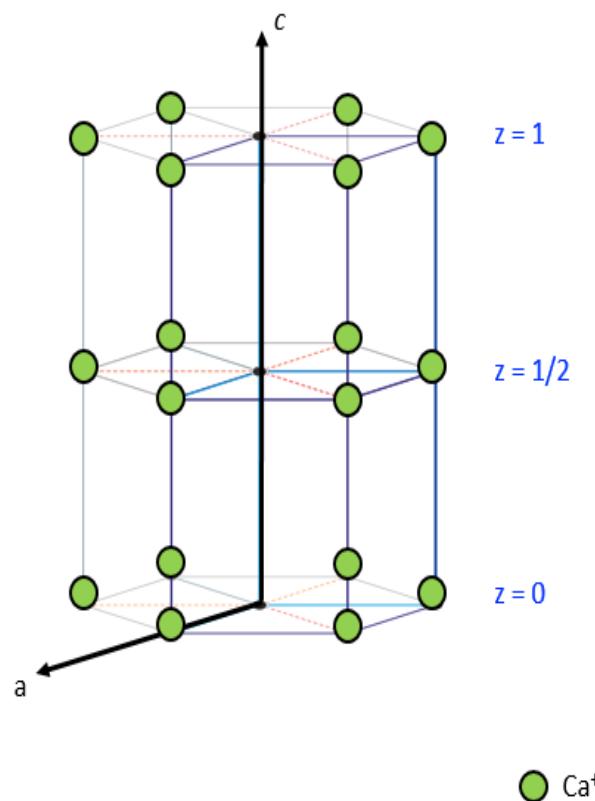
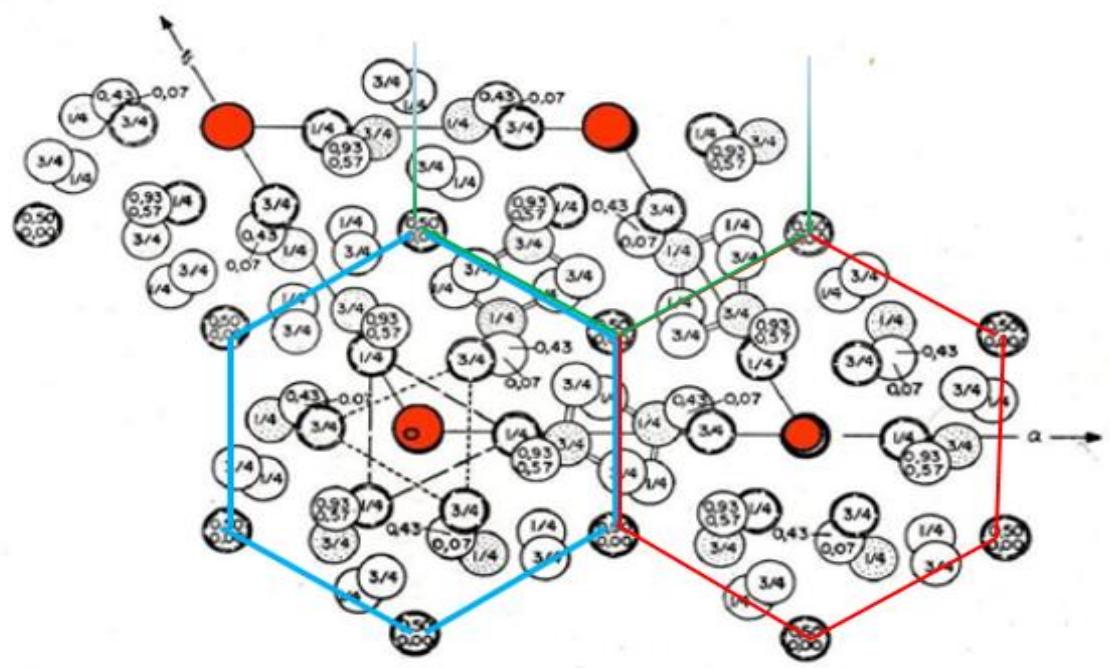
$z = \frac{1}{4}$
 $z = \frac{3}{4}$

- OH^-
- Triángulos de Ca^{2+} (tipo II)
- Triángulos de PO_4^{3-}
(desfasados 60° entre los dos niveles)



Celdilla de base hexagonal.



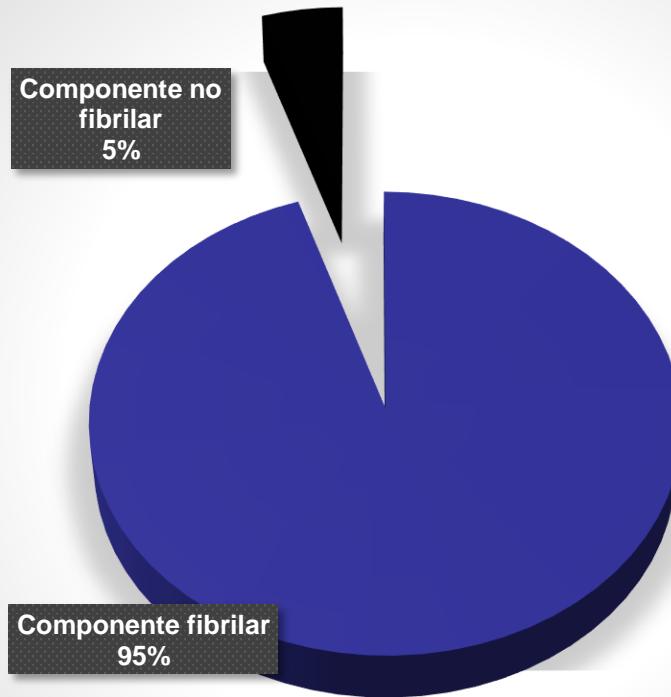


Componentes de la matriz ósea

Compo

Ag
10

Componente orgánico.

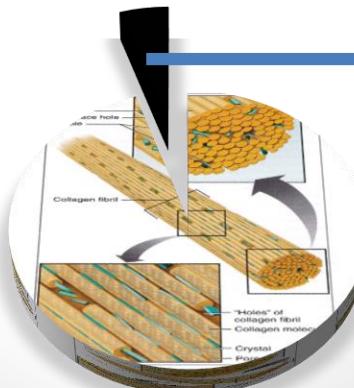


70%

$\text{Ca}_{10}(\text{PO}_4)6(\text{OH})_2$

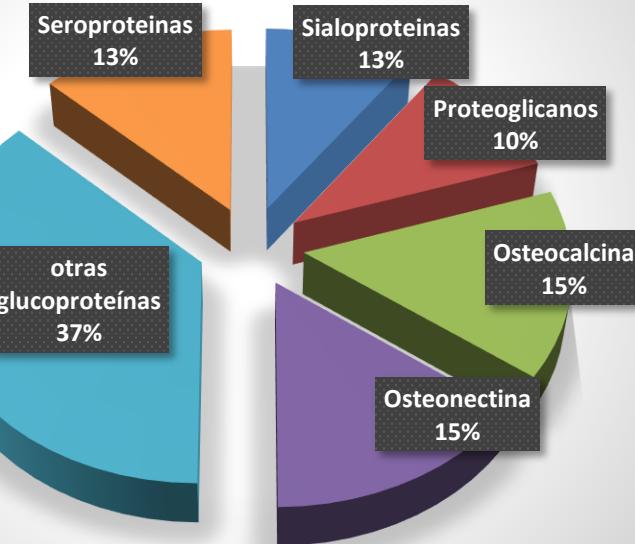
Componente orgánico.

Componente no fibrilar
5%

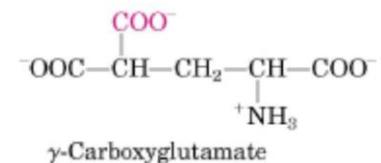
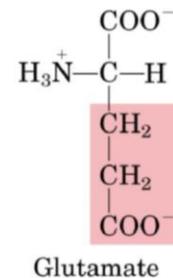
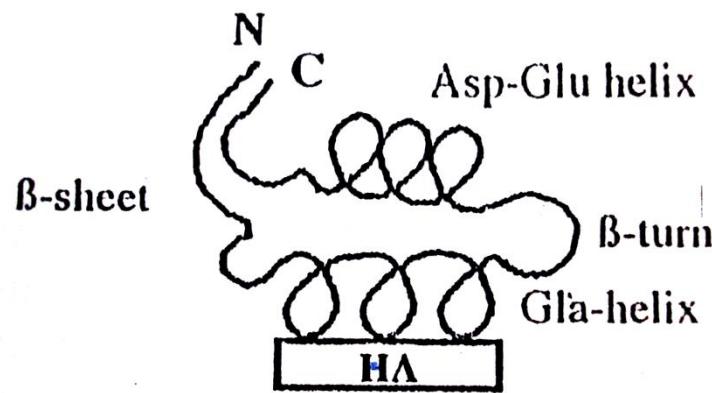


Componente fibrilar
95%

Proteinas Ácidas No Colágenas

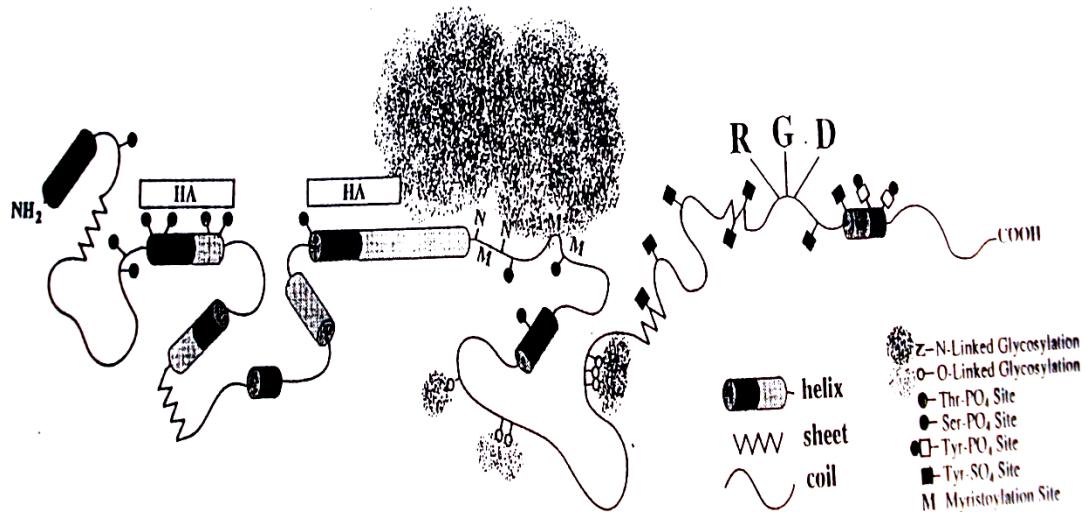


OSTEOCALCINA



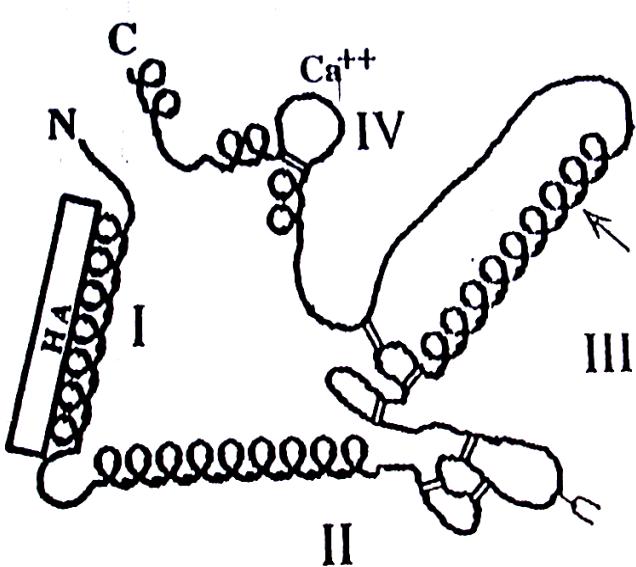
- reclutamiento y activación de los osteoclastos.
- participación en el remodelado óseo.
- los grupos Gla se unen fuertemente al Ca++.

SIALOPROTEÍNA ÓSEA



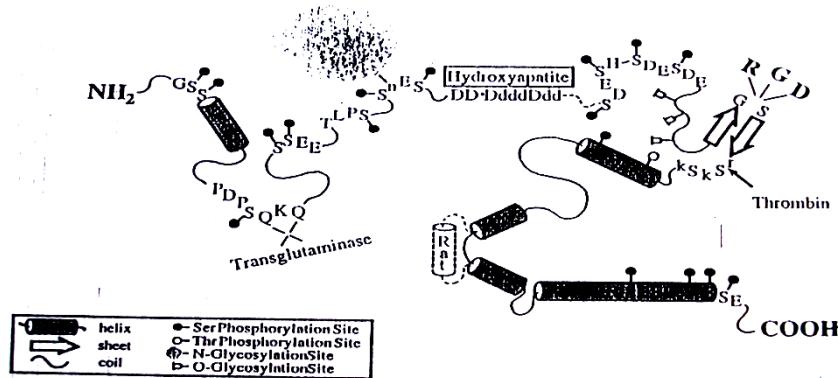
- **Nucleador de HA y posible inhibidor del crecimiento de los cristales de HA.**
- **Promueve adhesión de osteoclastos en recambio óseo y mitosis de preosteoblastos.**
- **Se cree que existe unión covalente entre BSP y colágeno.**

OSTEONECTINA



- El dominio I es responsable de la inhibición el crecimiento cristalino.
- La proteína completa participaría en la adhesión y proliferación celular durante la embriogénesis.

OSTEOPONTINA



- **Inhibe la nucleación de HA.**
- **media la adhesión celular, migración celular, quimiotaxis y señalización intracelular**

Proteoglucanos

- Todos contienen condroitinsulfato (CS,) unido a una única cadena polipeptídica.
- Decorina
- Biglucano.
- Versicano.

