

Alotropia

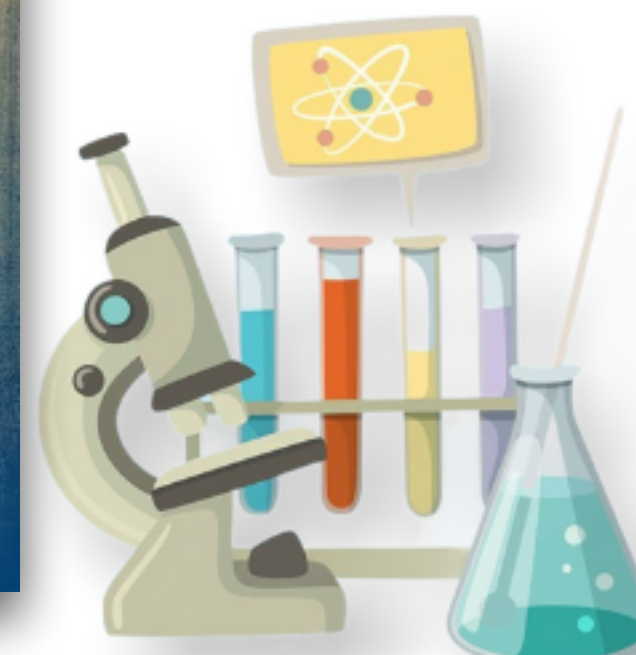
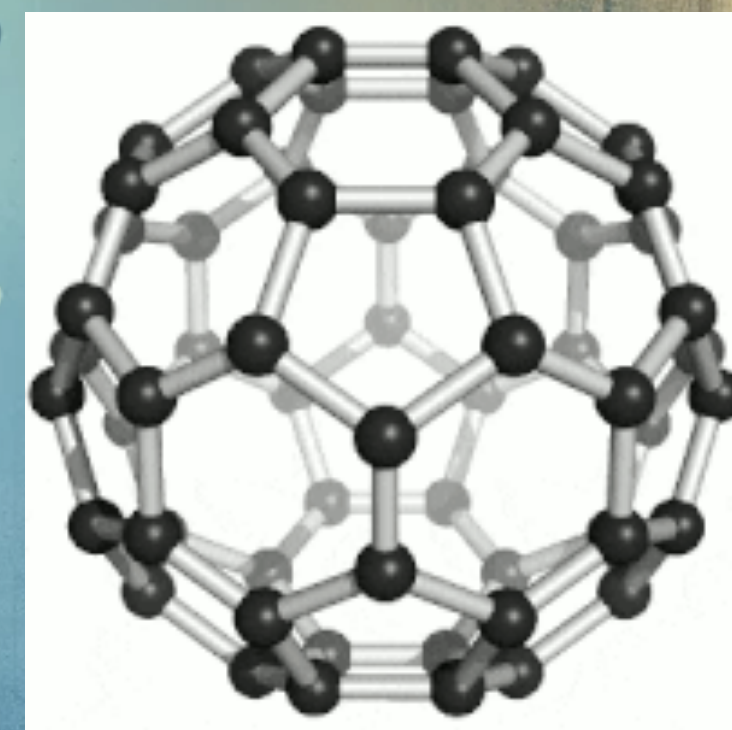
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Conceito

Alotropia é a propriedade química que permite a formação de uma ou mais substâncias simples diferentes a partir de um mesmo elemento químico.

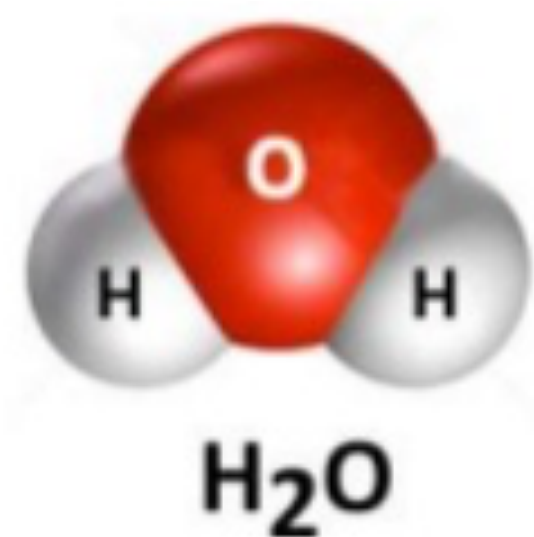
A diferença entre essas variedades alotrópicas pode ocorrer por dois motivos principais, sendo que o primeiro remete à **quantidade de átomos** (atomicidade) e a segunda característica que diferencia as variedades alotrópicas é o **arranjo espacial** dos átomos.

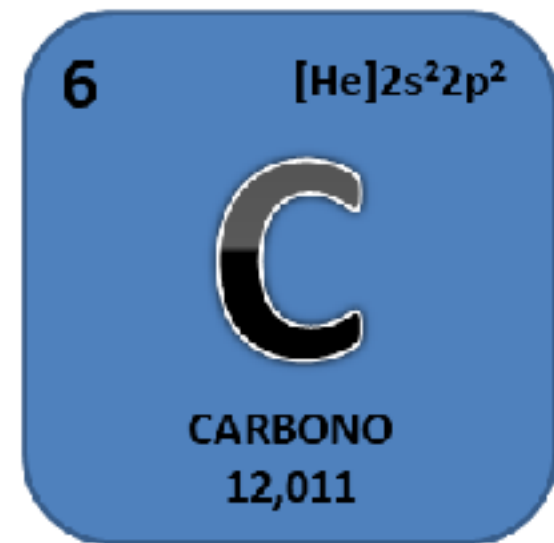




As **substâncias moleculares** são aquelas que se formam quando átomos se ligam por meio de ligações covalentes, originando moléculas de número determinado de átomos.

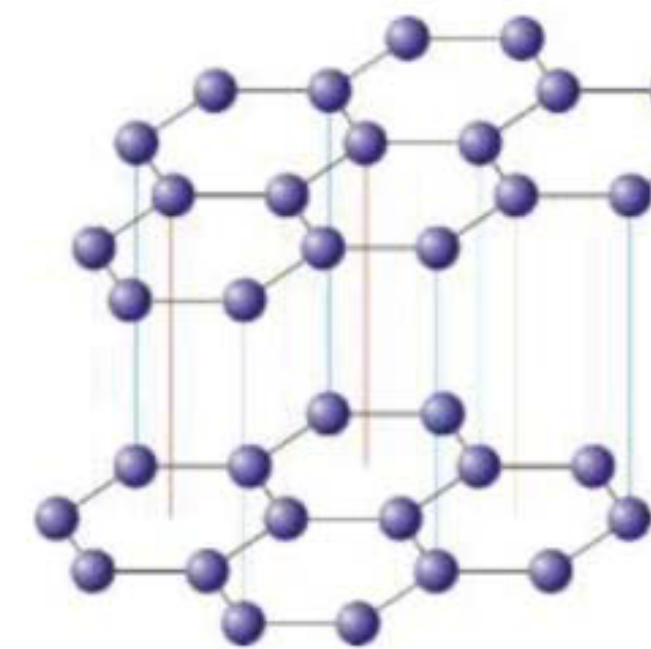
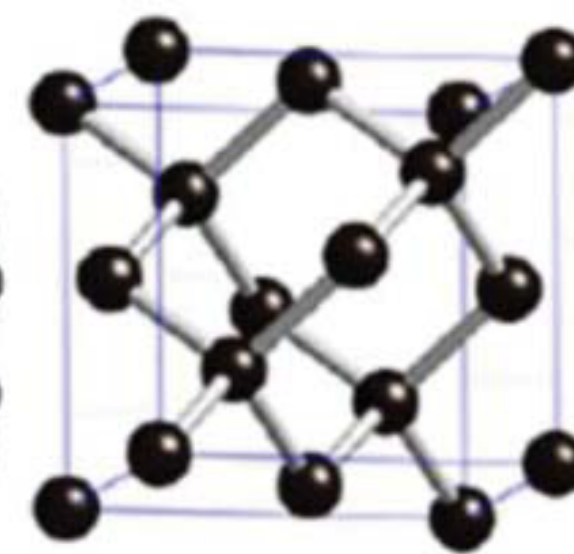
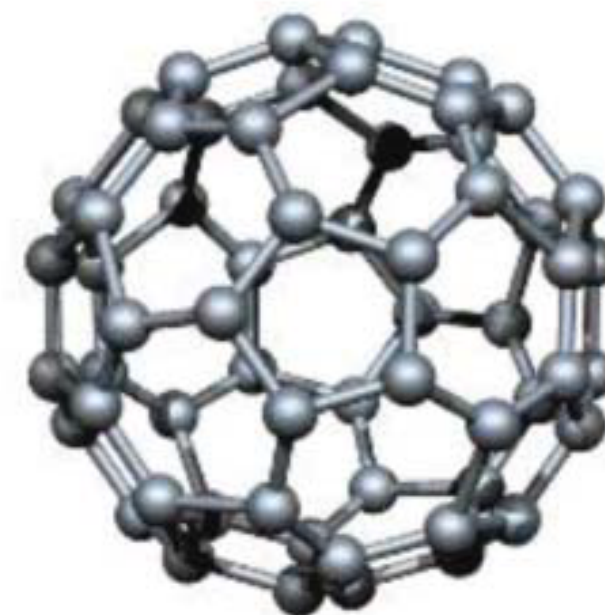
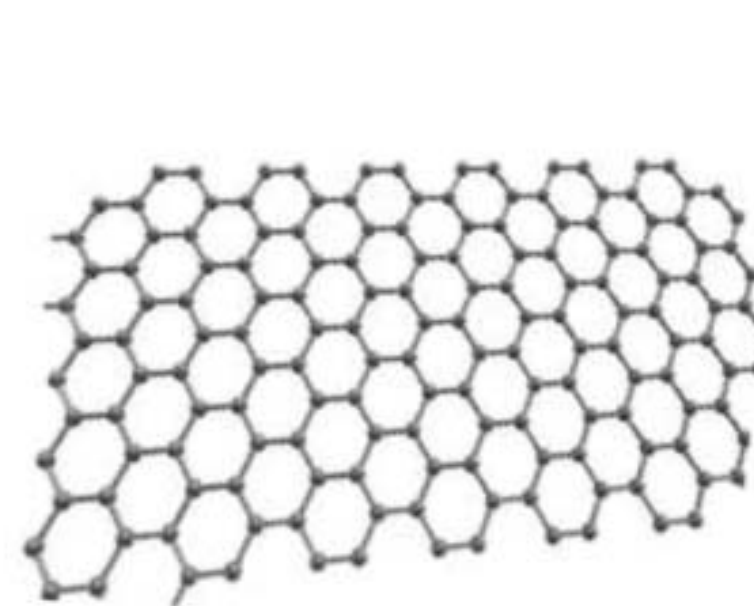
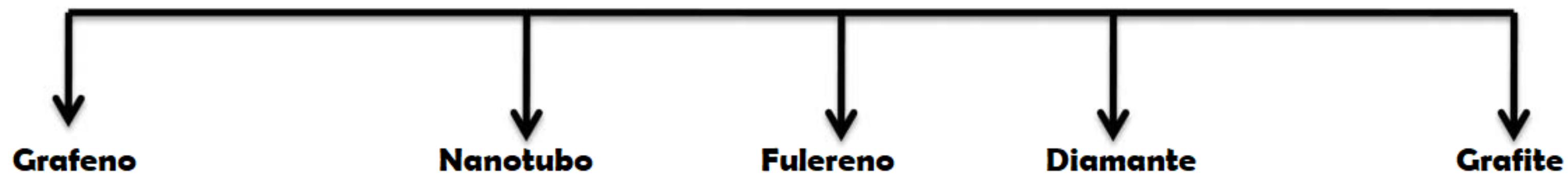
Entretanto, a ligação covalente pode originar também compostos em uma estrutura de rede com um número muito grande e indeterminado de átomos, que são macromoléculas. Tais substâncias são denominadas de **compostos covalentes** ou **sólidos de rede covalente**.



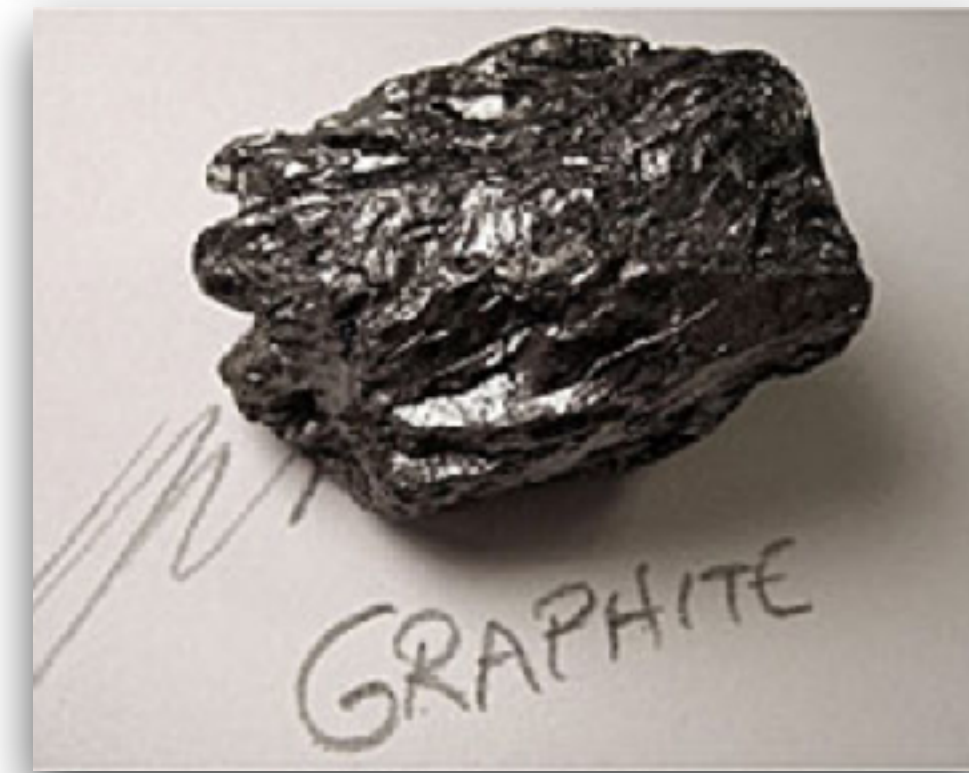
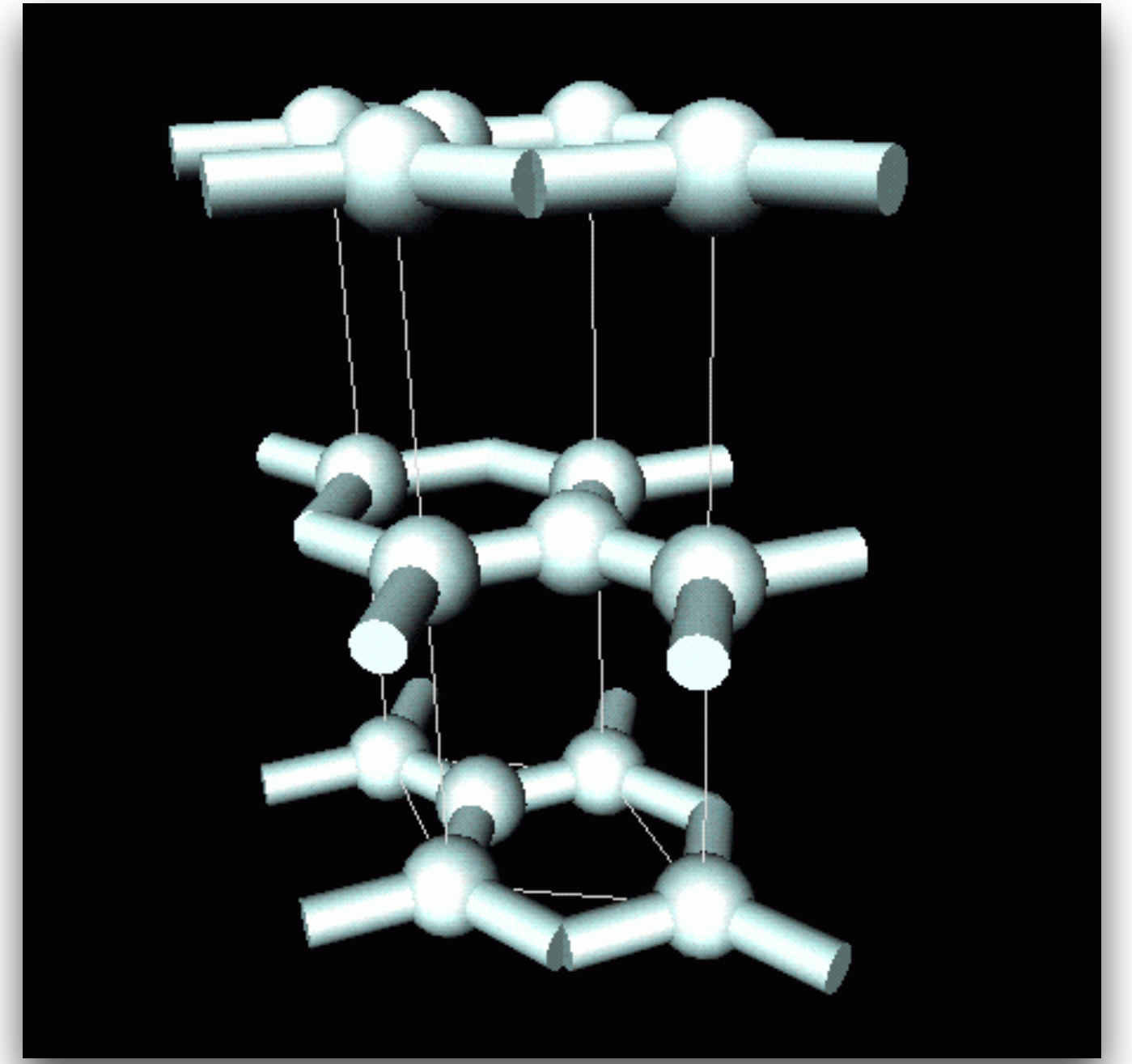
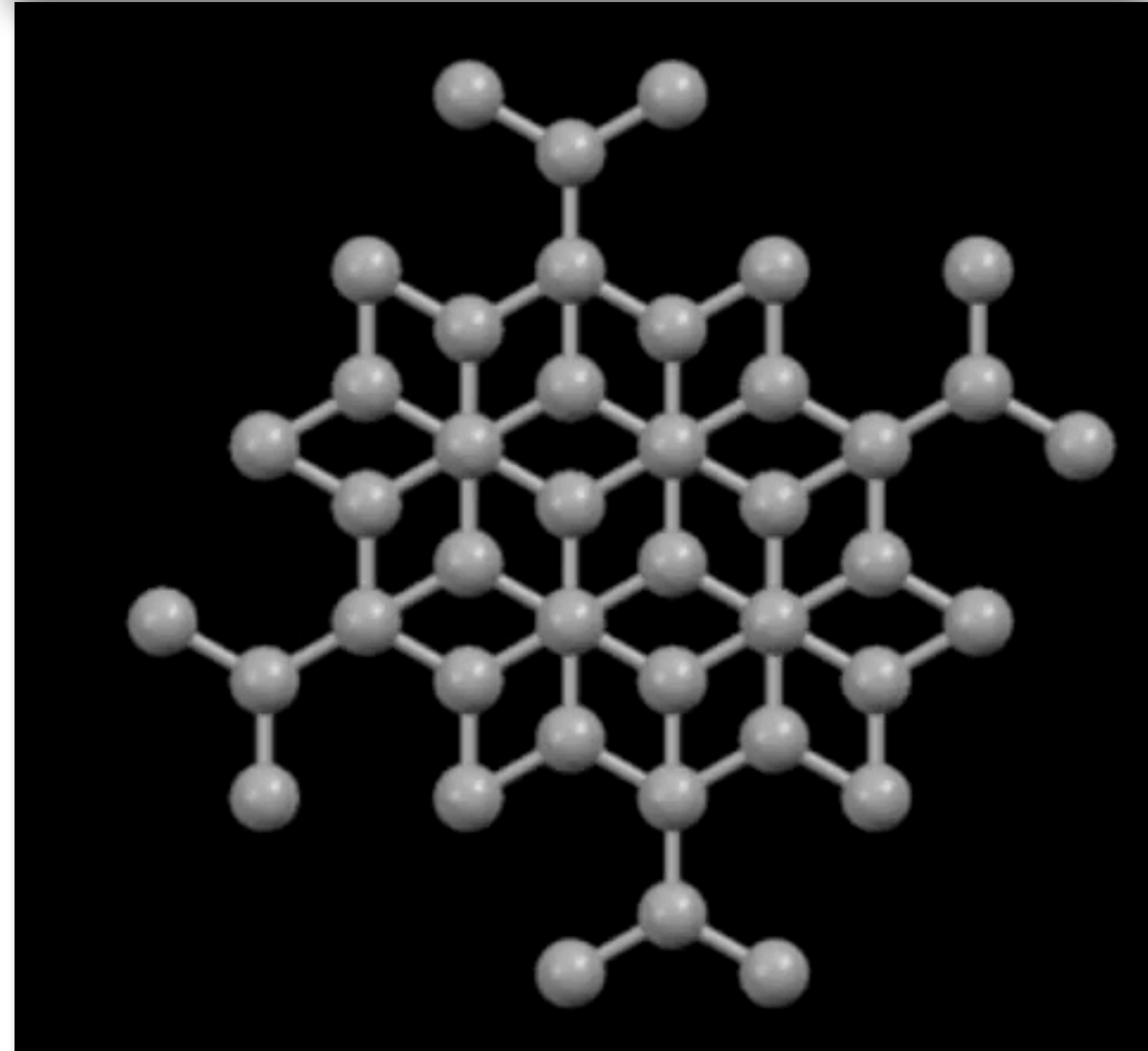
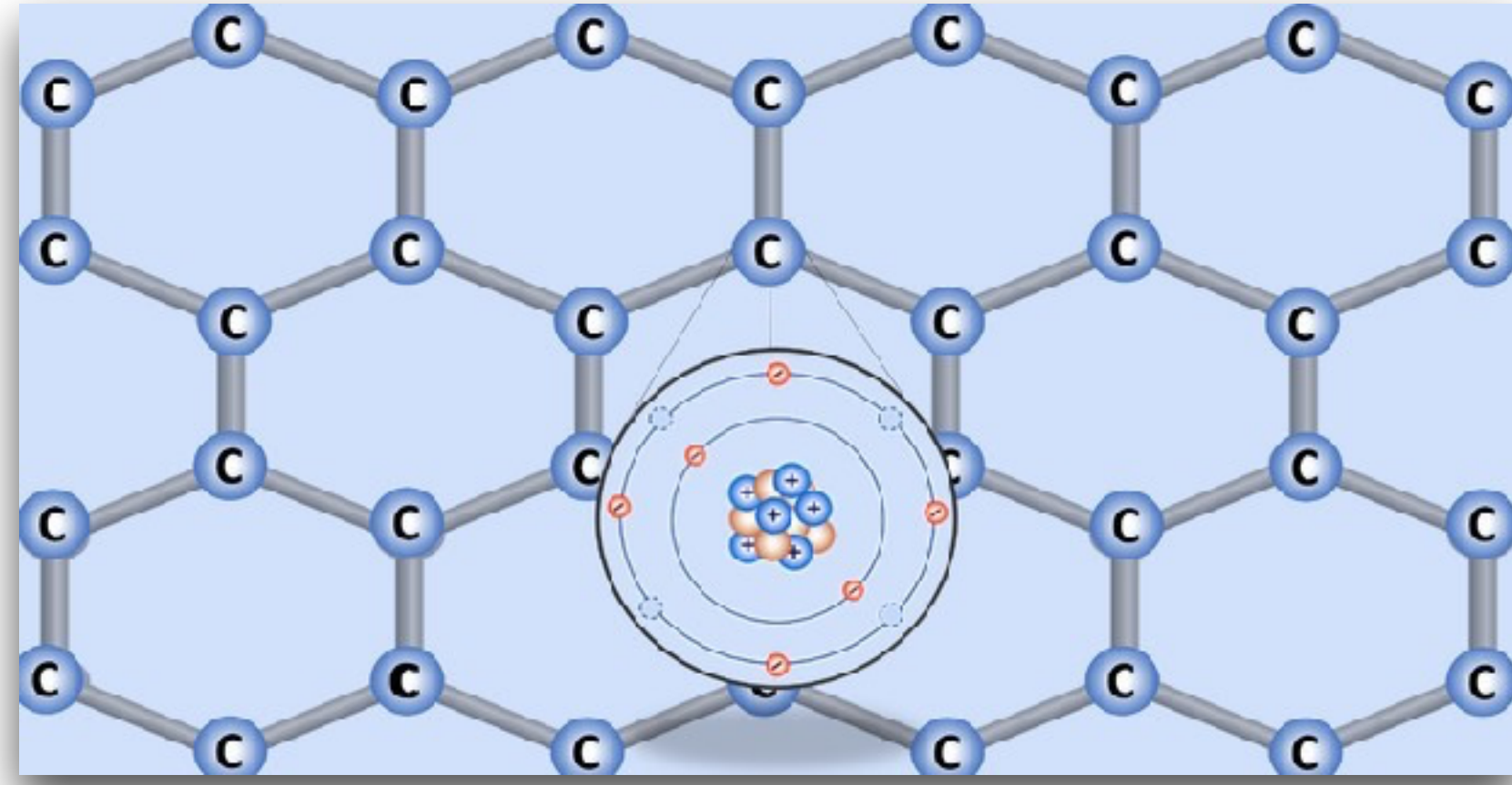
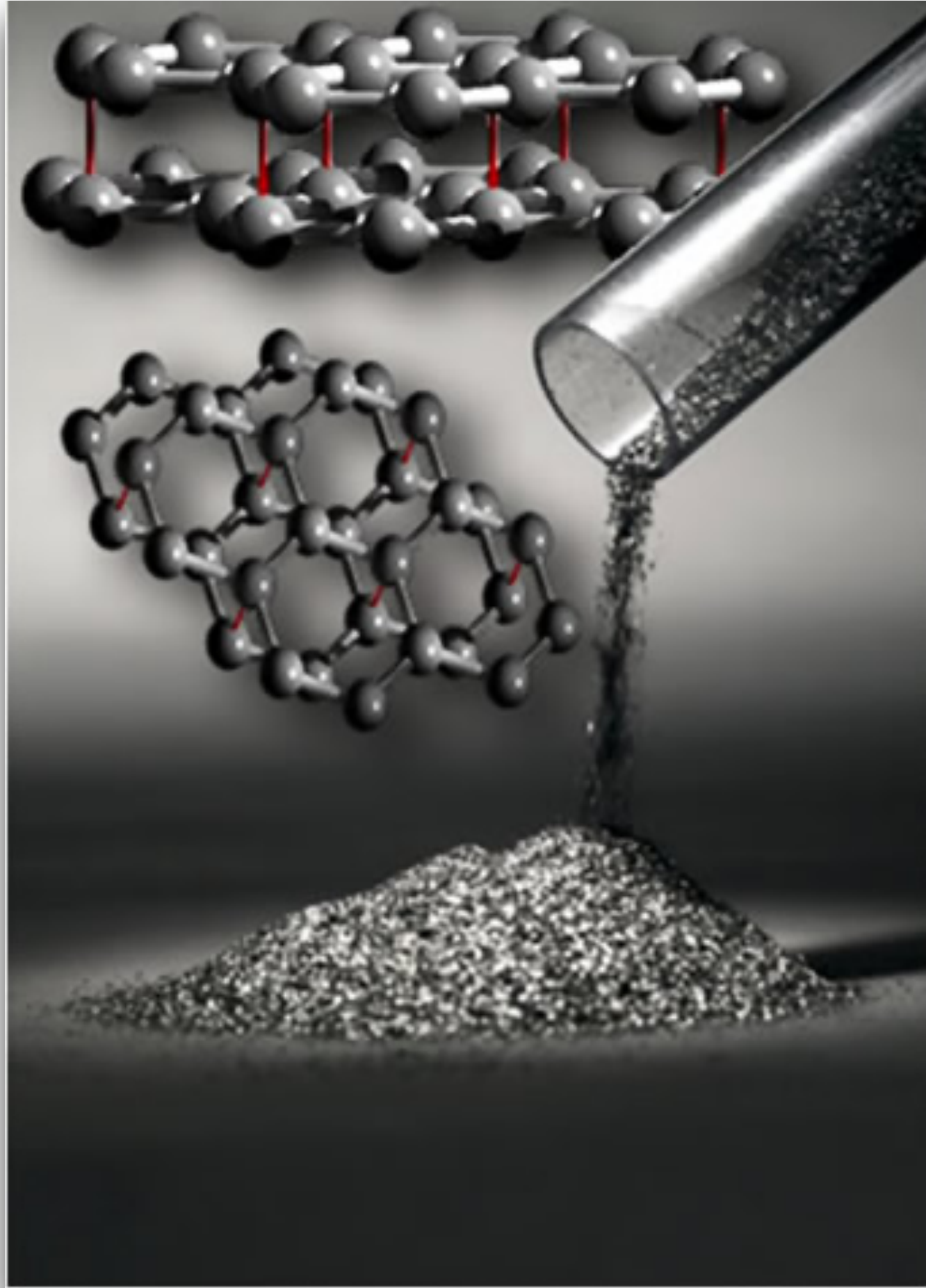


Carbono

O diamante, o grafite e os fulerenos são os principais alótropos do carbono e se diferem pelo arranjo geométrico.

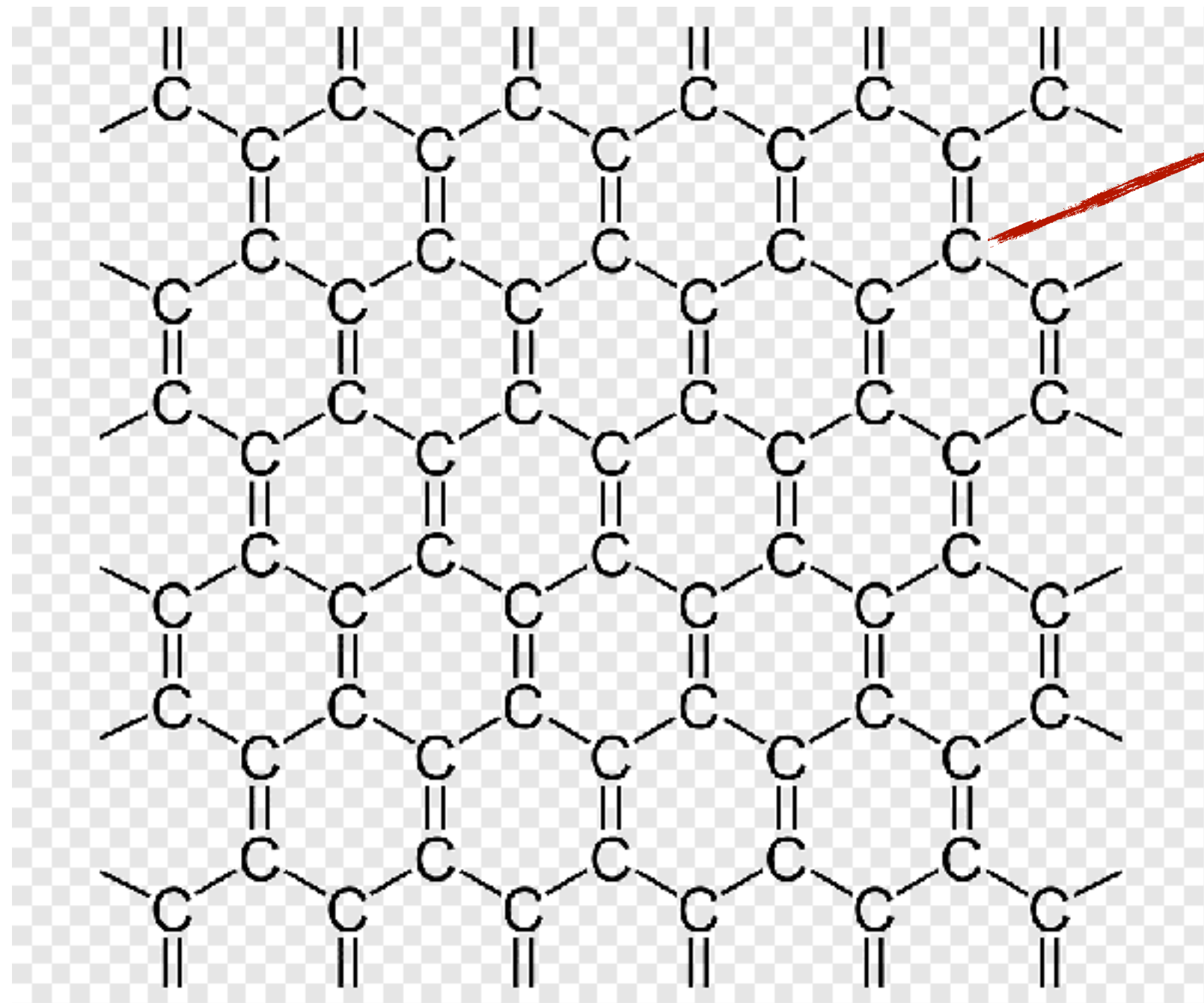


Grafitite

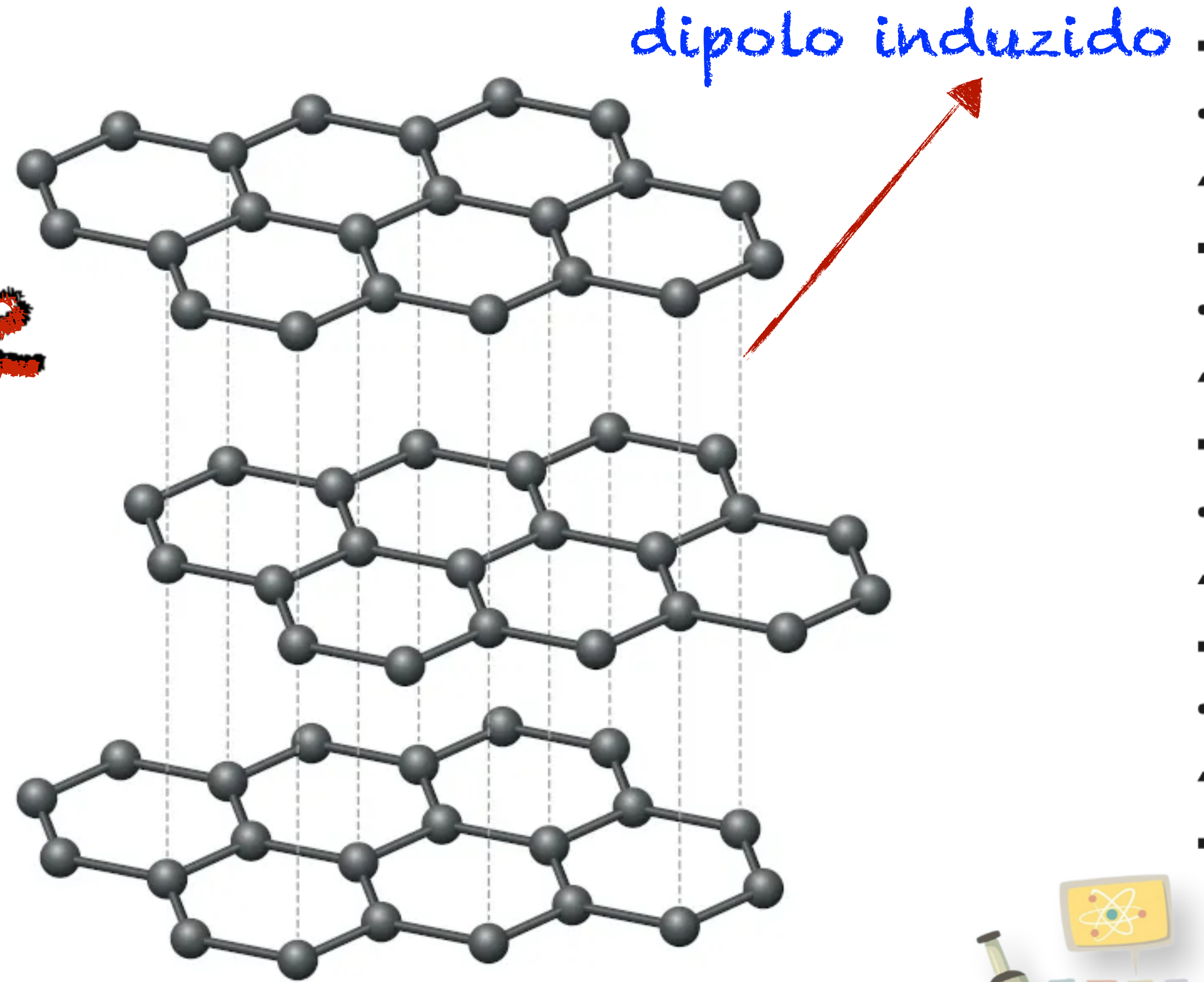




Grafite



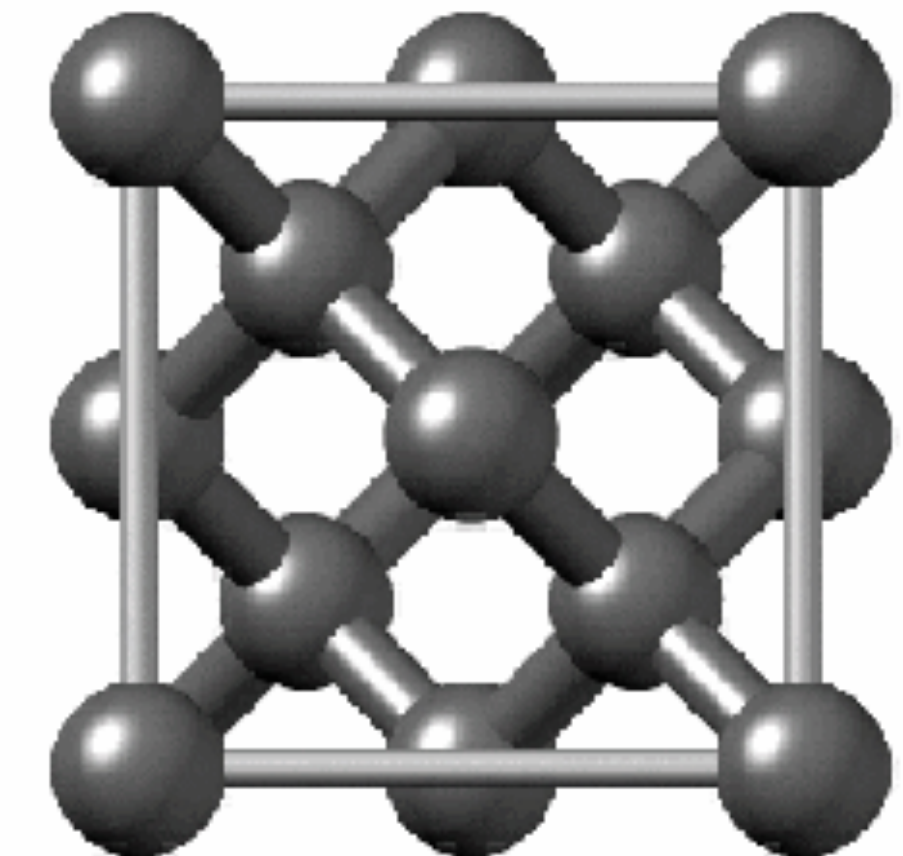
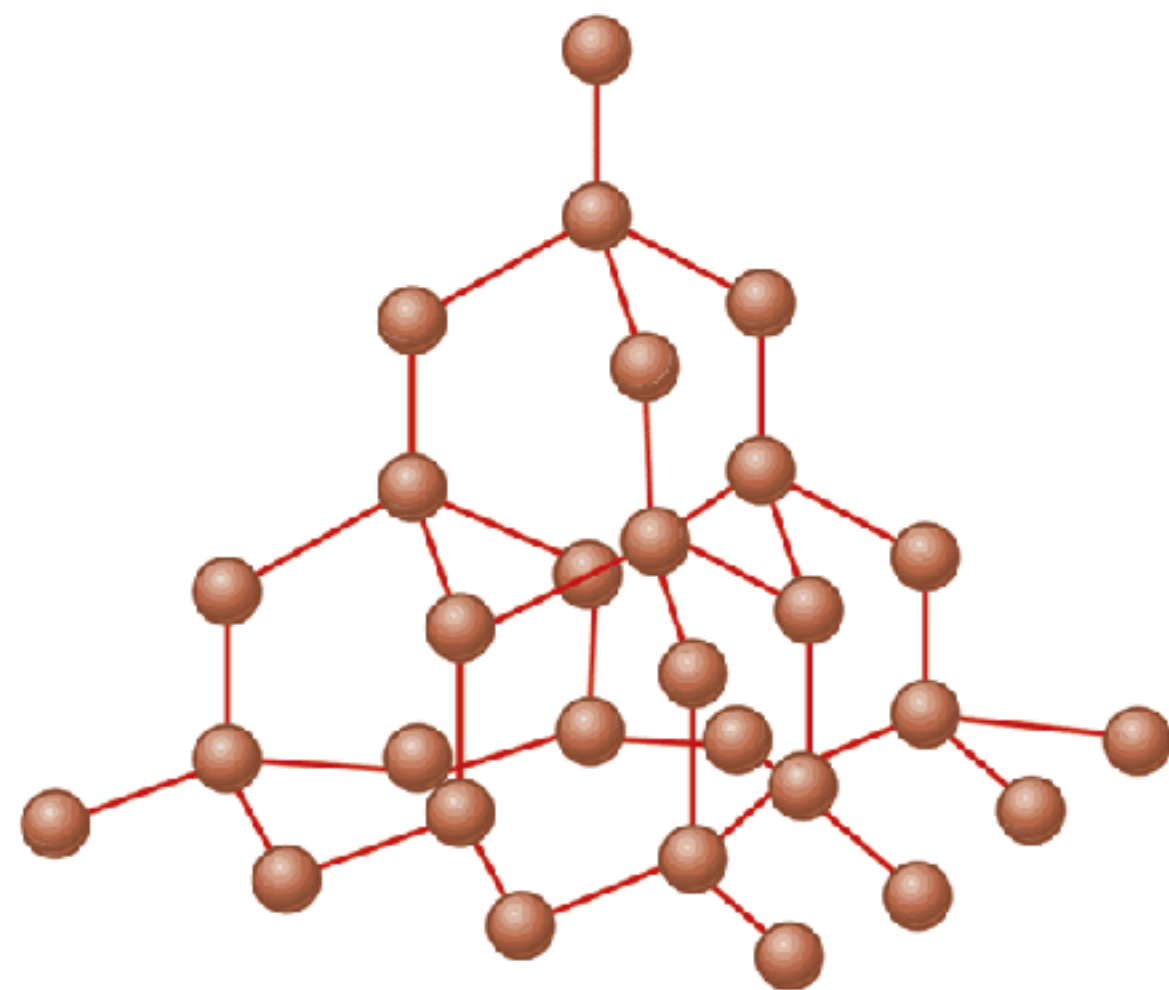
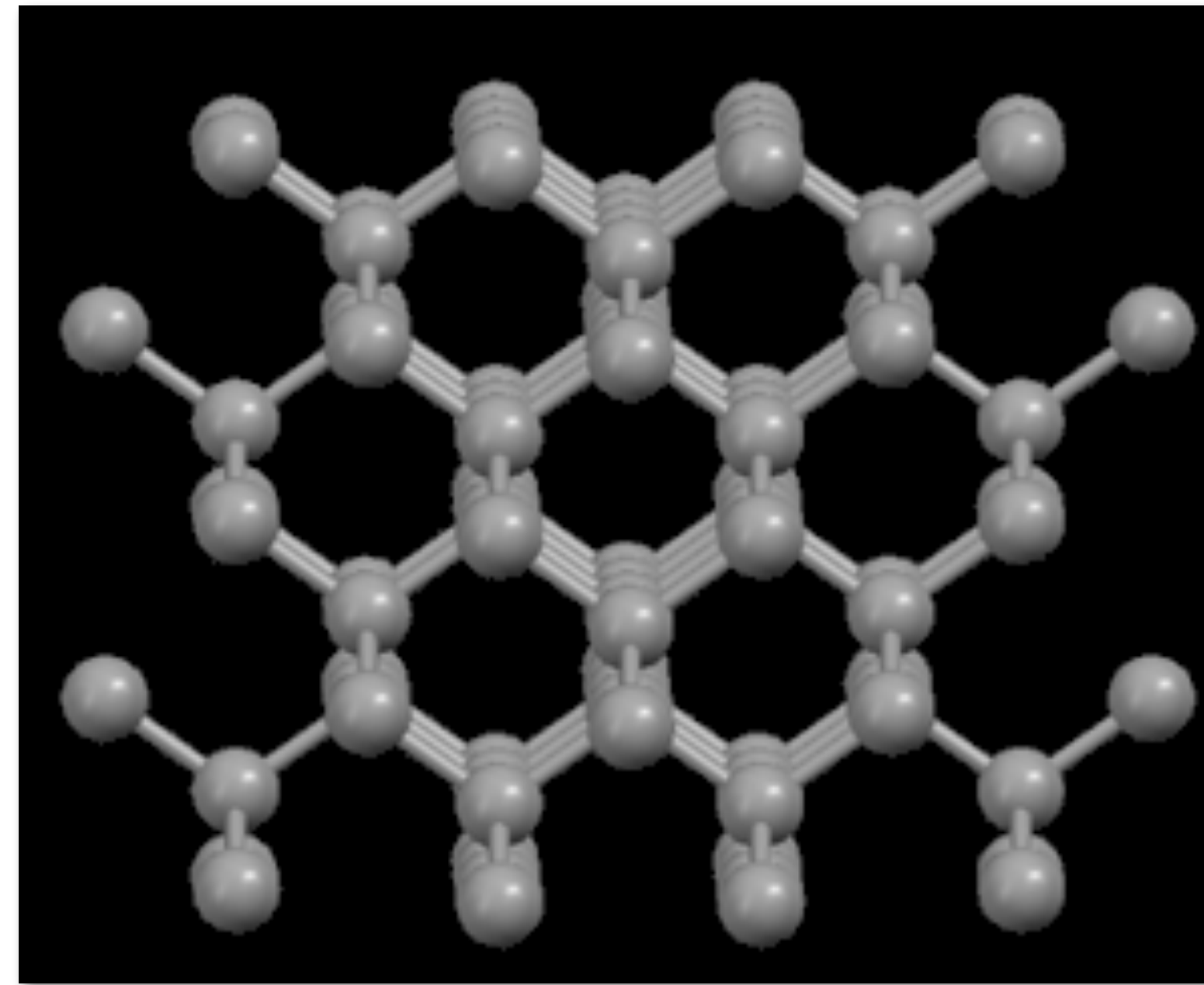
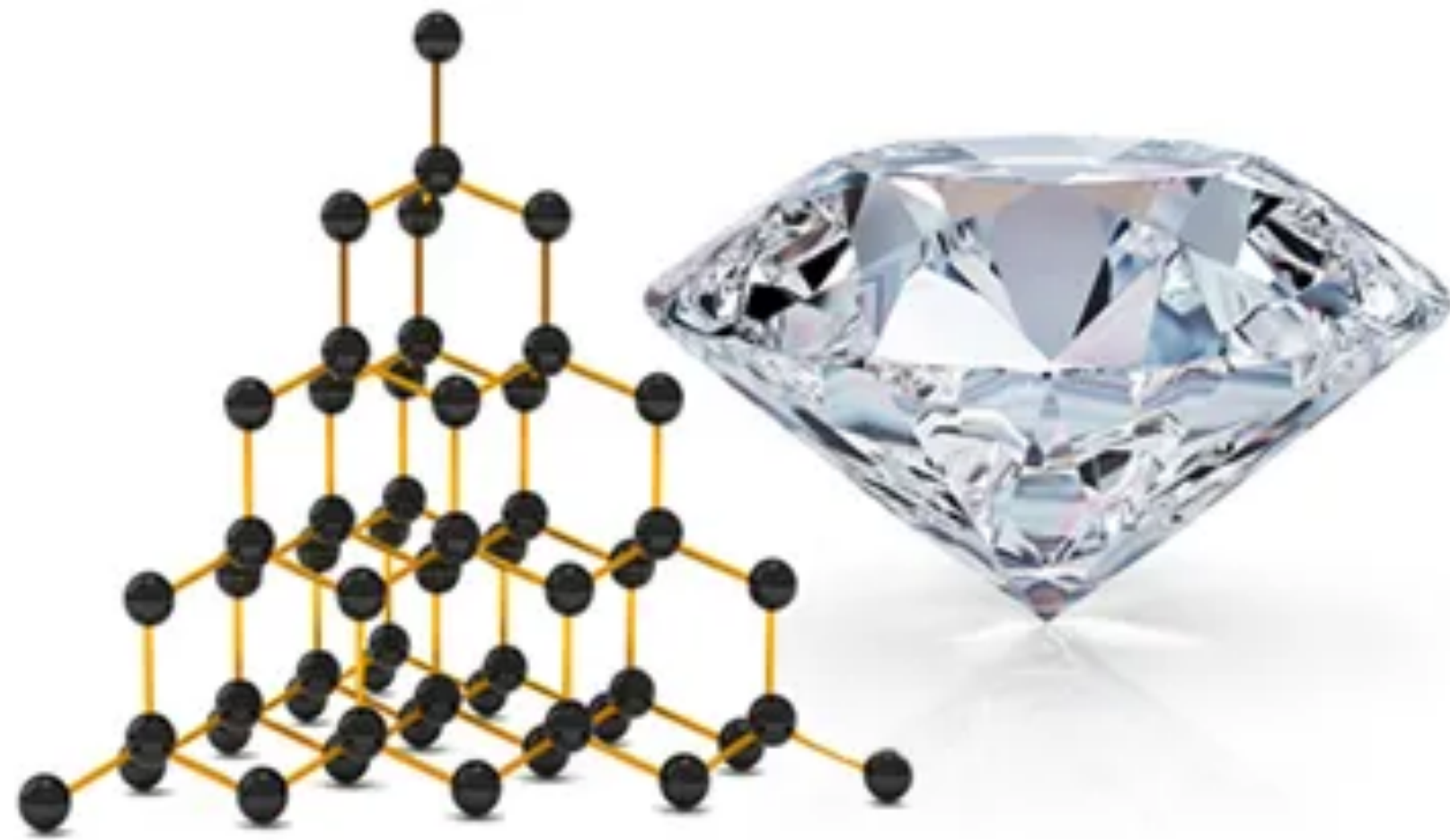
sp^2



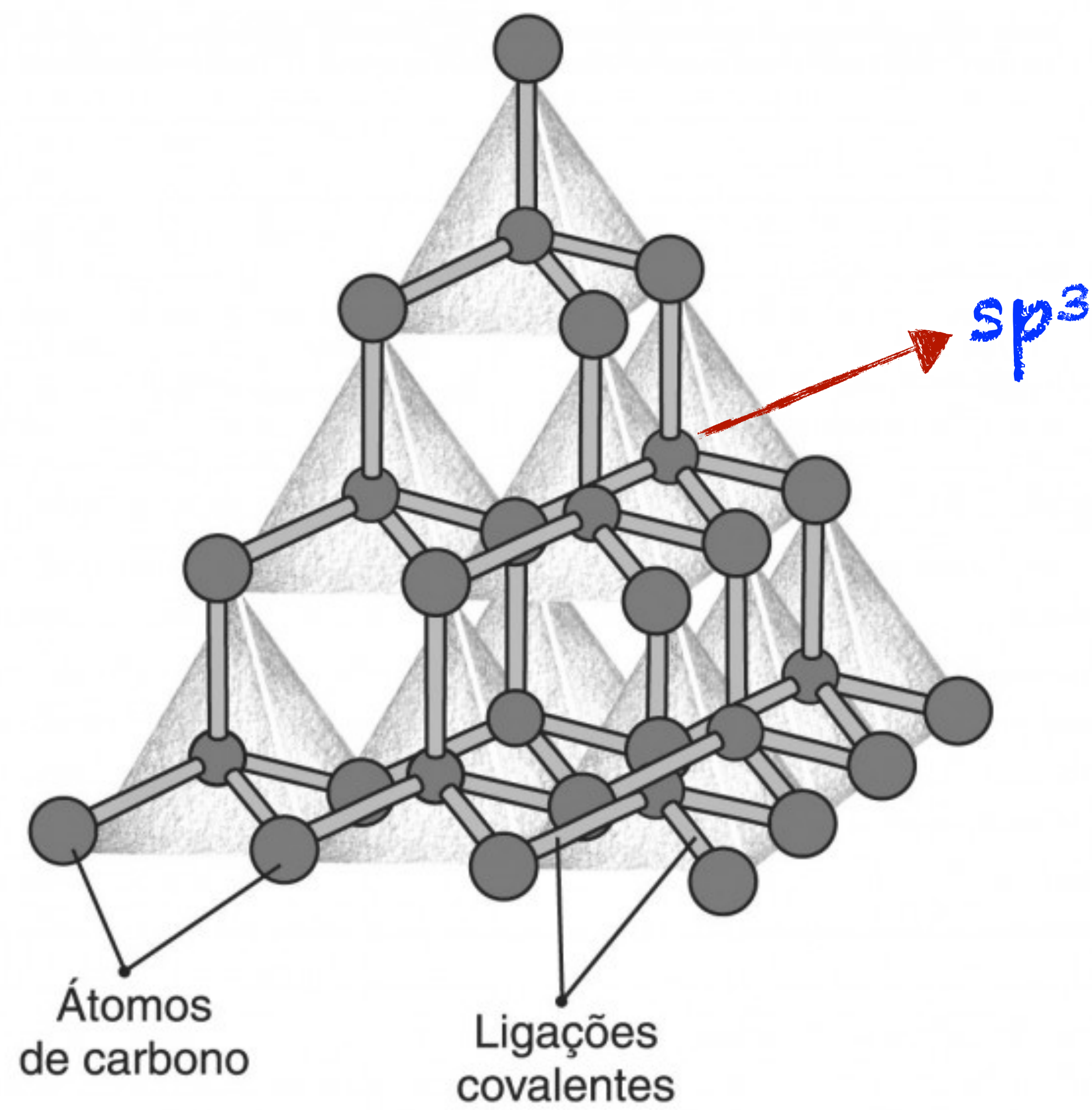
dipolo induzido



Diamante

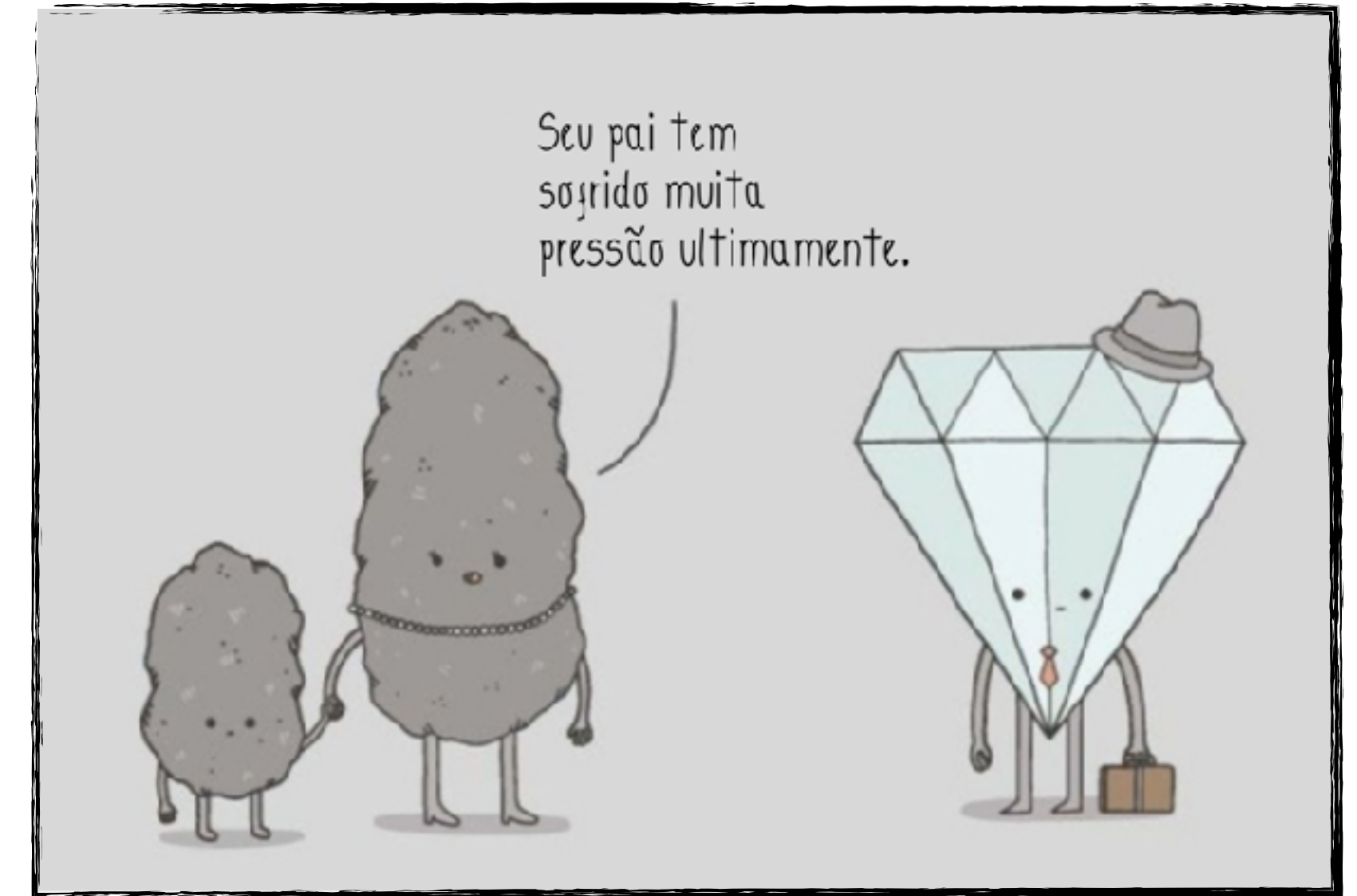
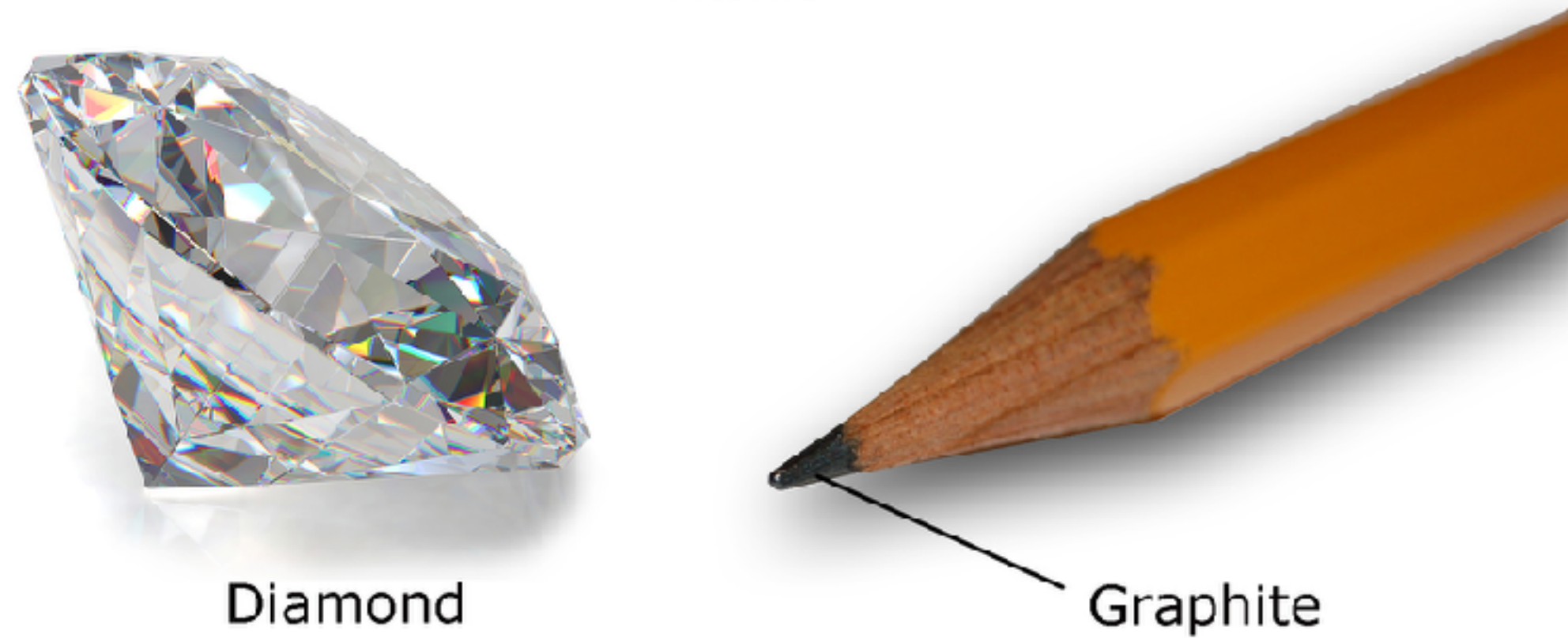
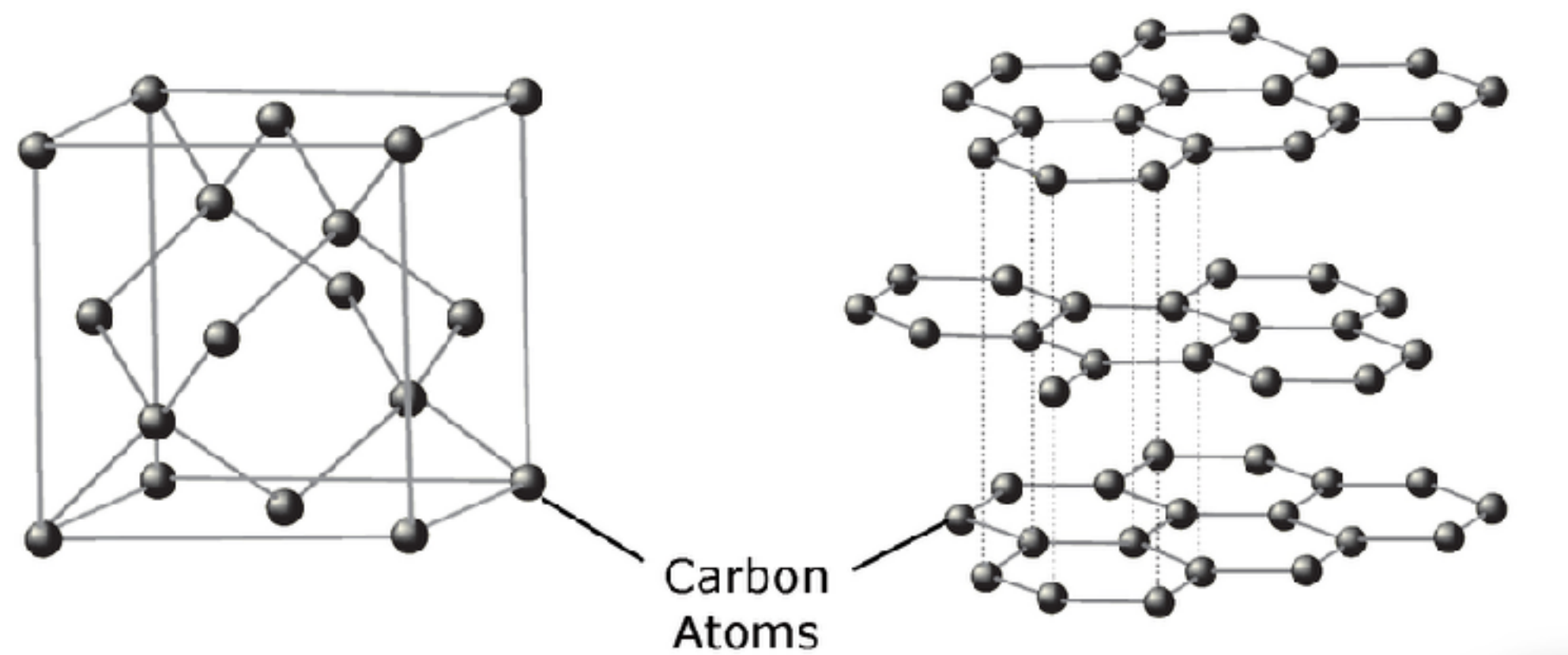


Diamante

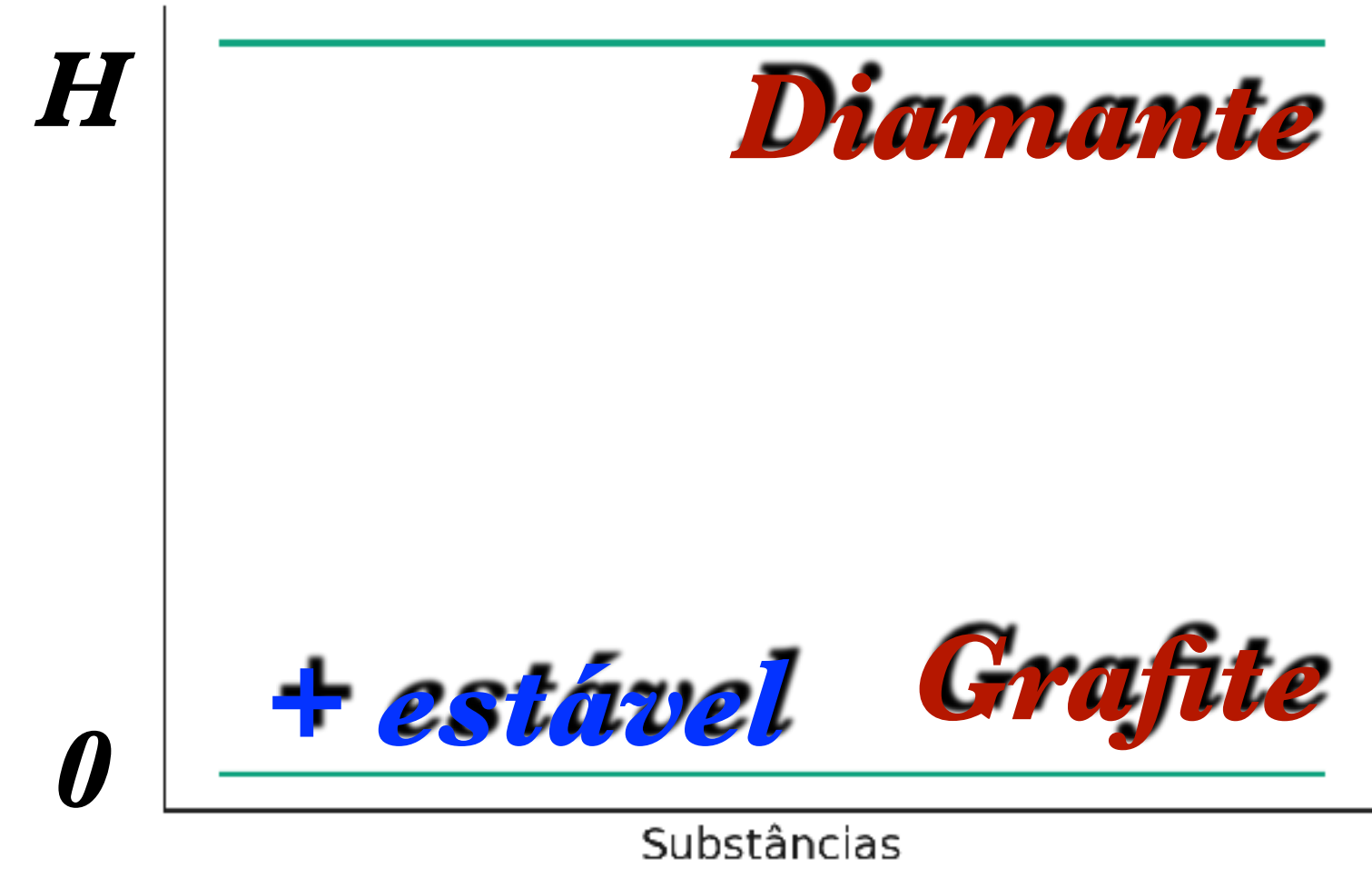


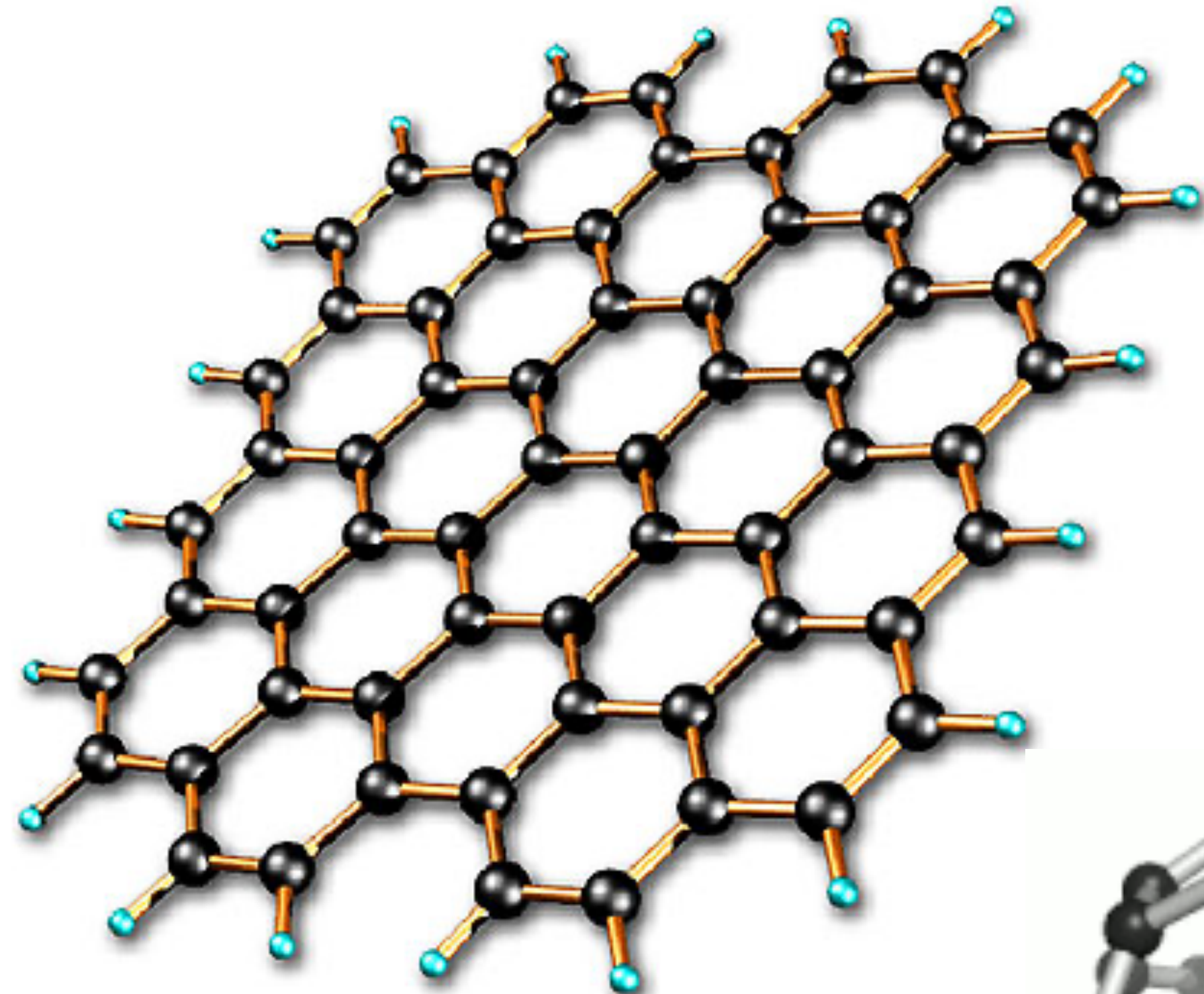
Estabilidade

Carbono:

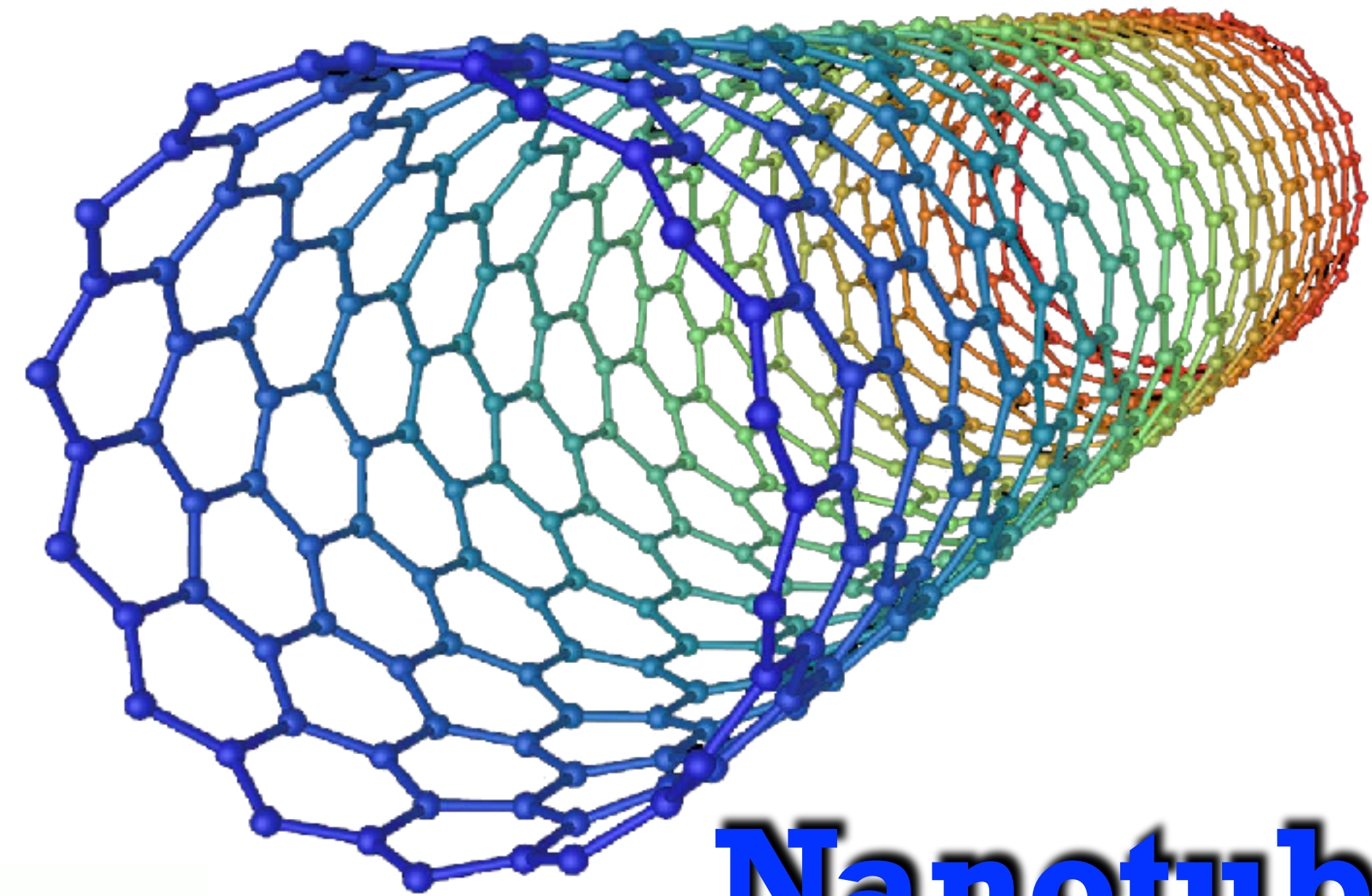


Comparação de Entalpia: Grafite vs Diamante

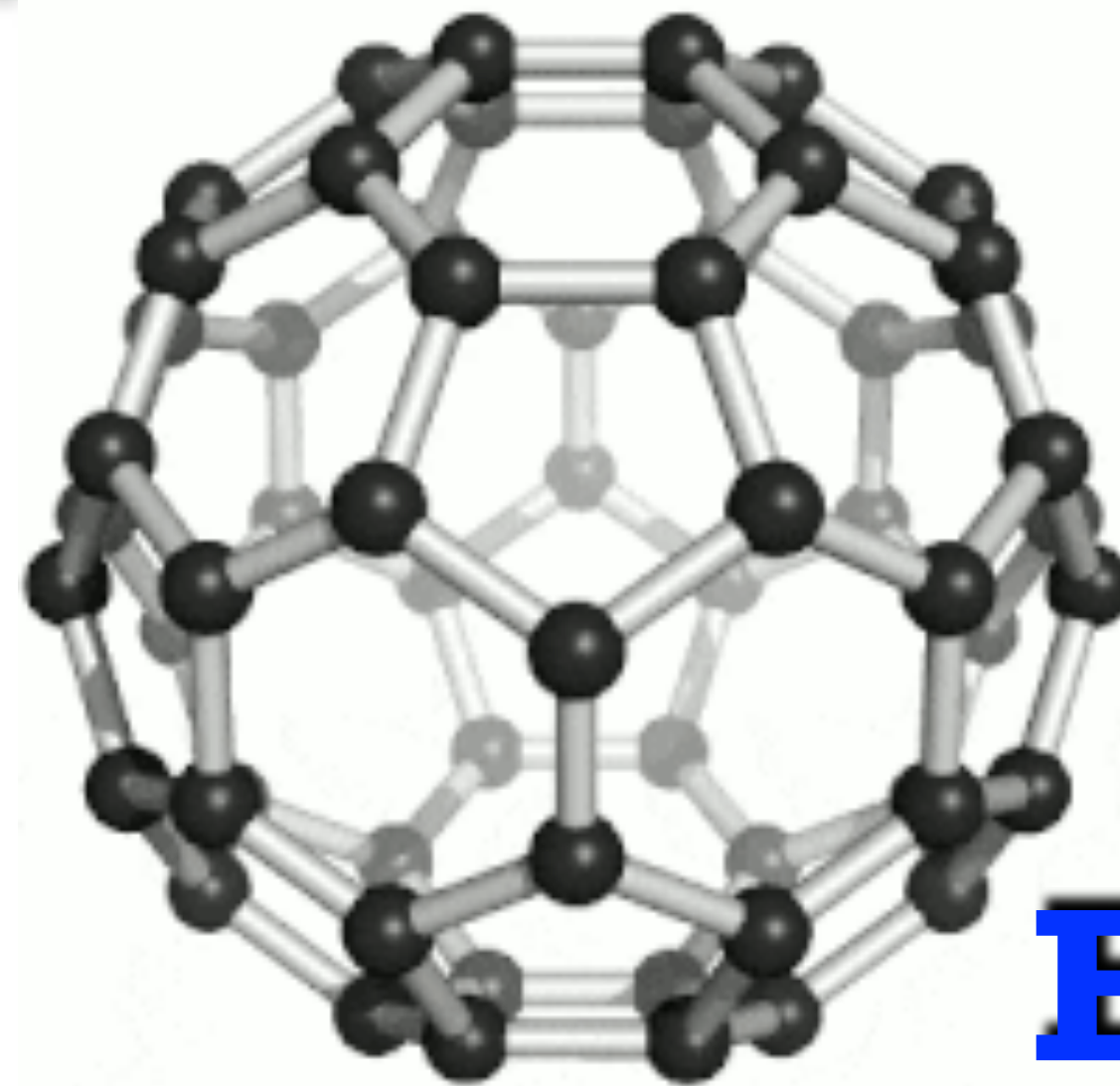




Grafeno

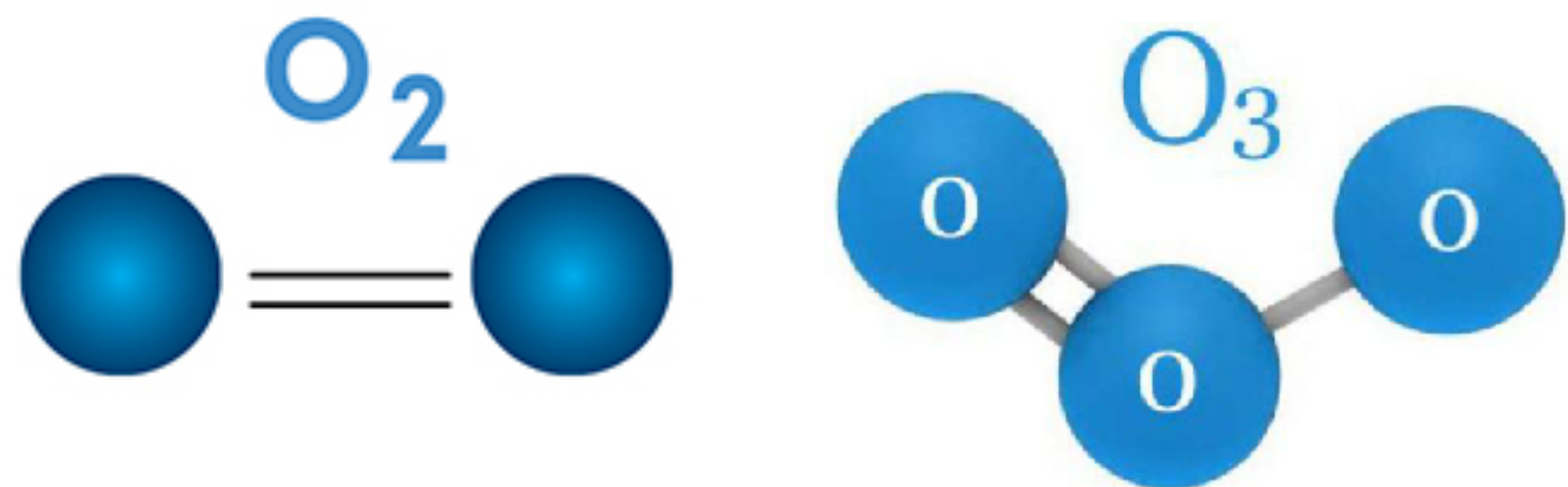


Nanotubo



Fulereno



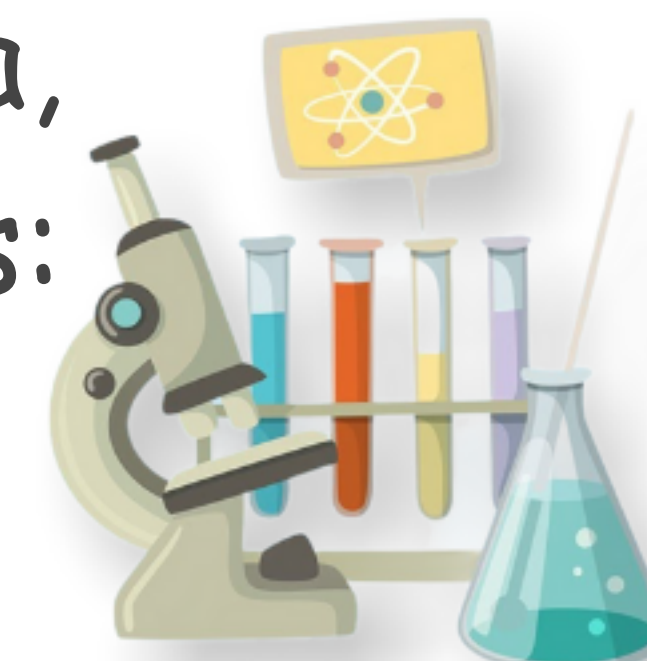


Oxigênio

As duas formas alotrópicas (O_3 , O_2) estão no estado gasoso e constituem gases presentes na atmosfera terrestre.

Gás oxigênio: é o mais estável e está presente no ar que respiramos, se apresenta como um gás incolor e inodoro.

Gás ozônio: é mais instável e nos protege da radiação ultravioleta, através da chamada "camada de ozônio". Características físicas: possui coloração azul e um cheiro desagradável.

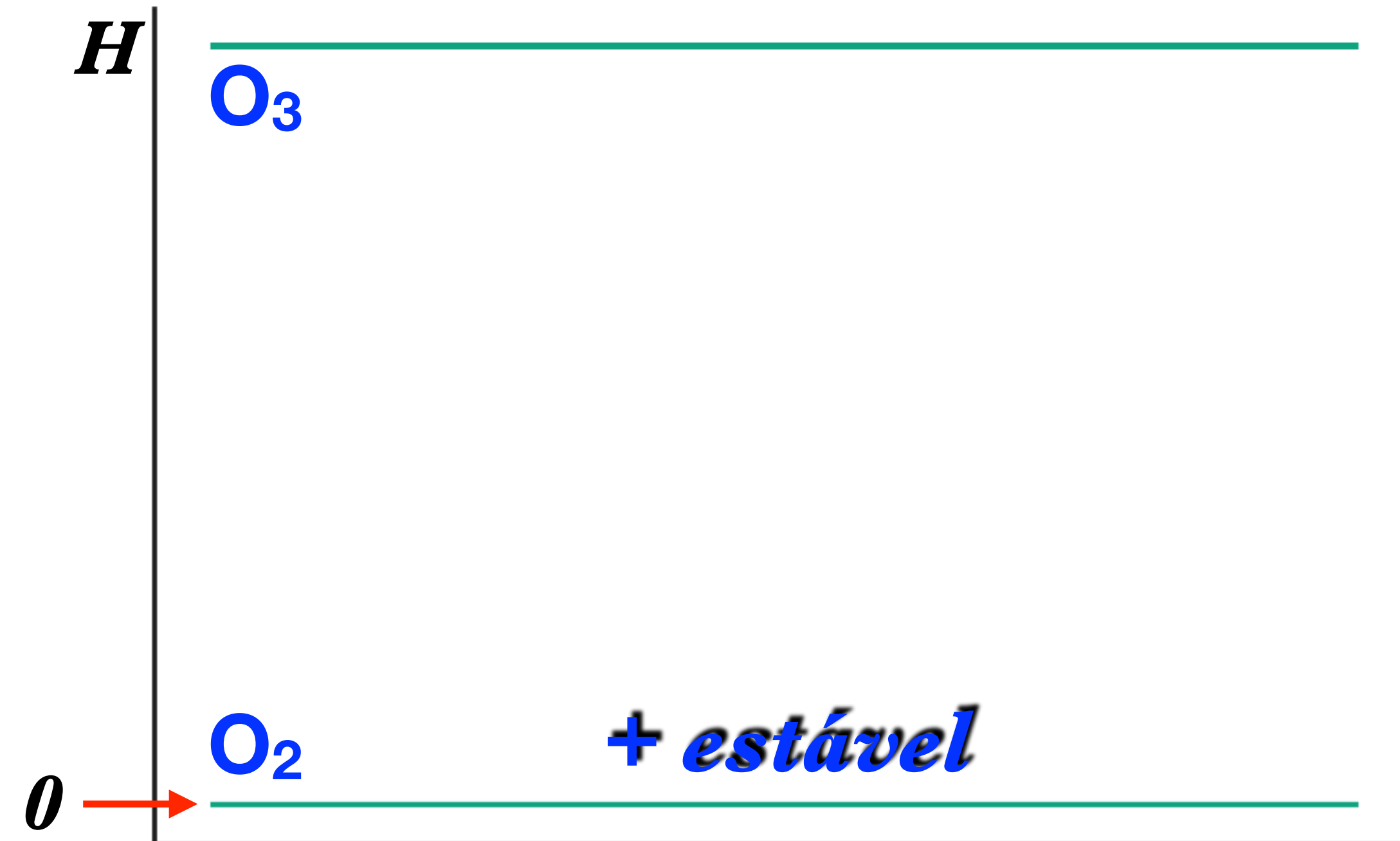


Estabilidade

Oxigênio:



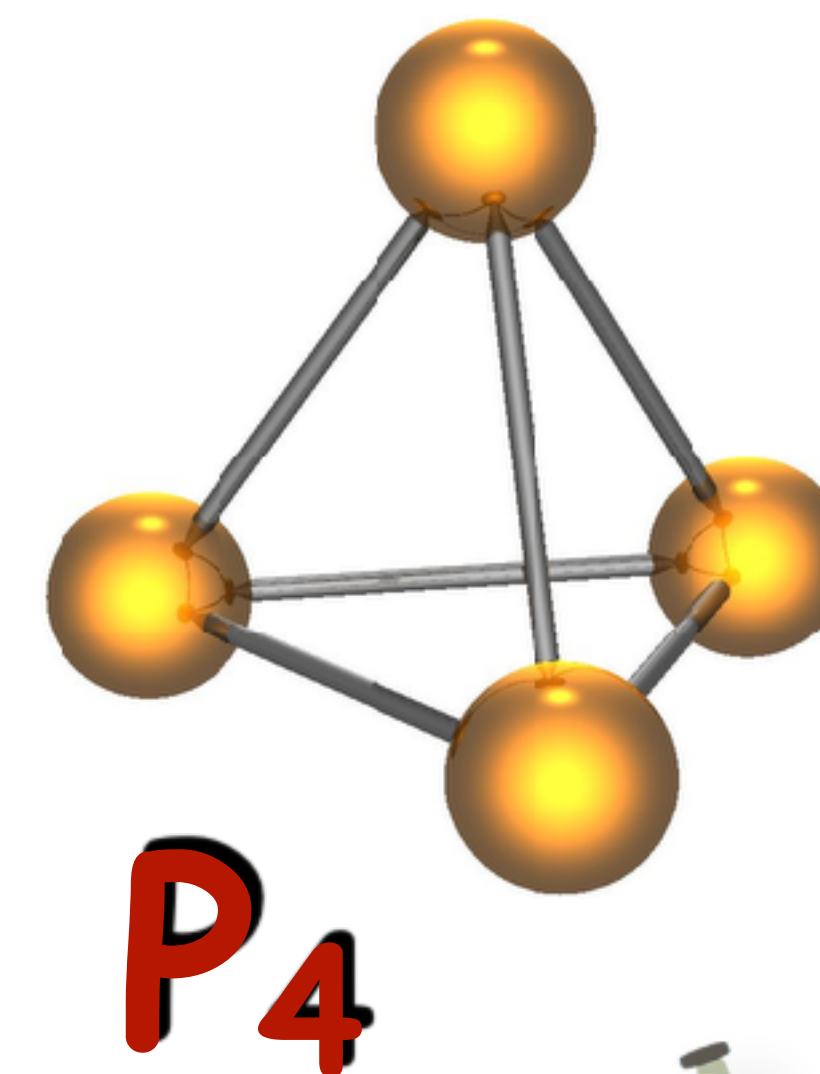
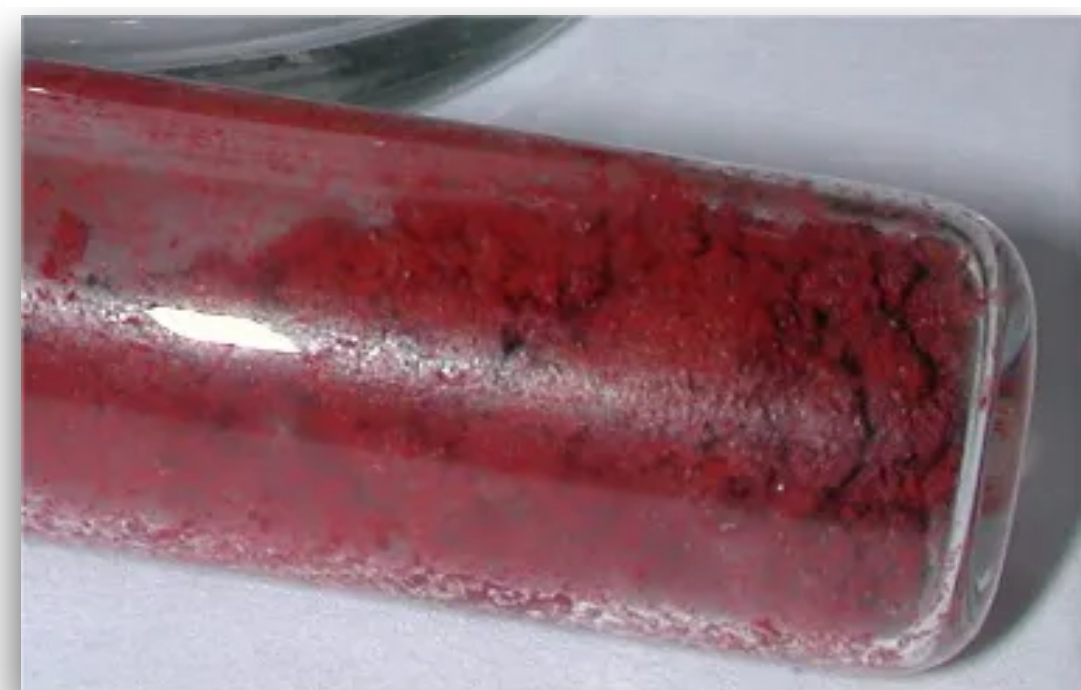
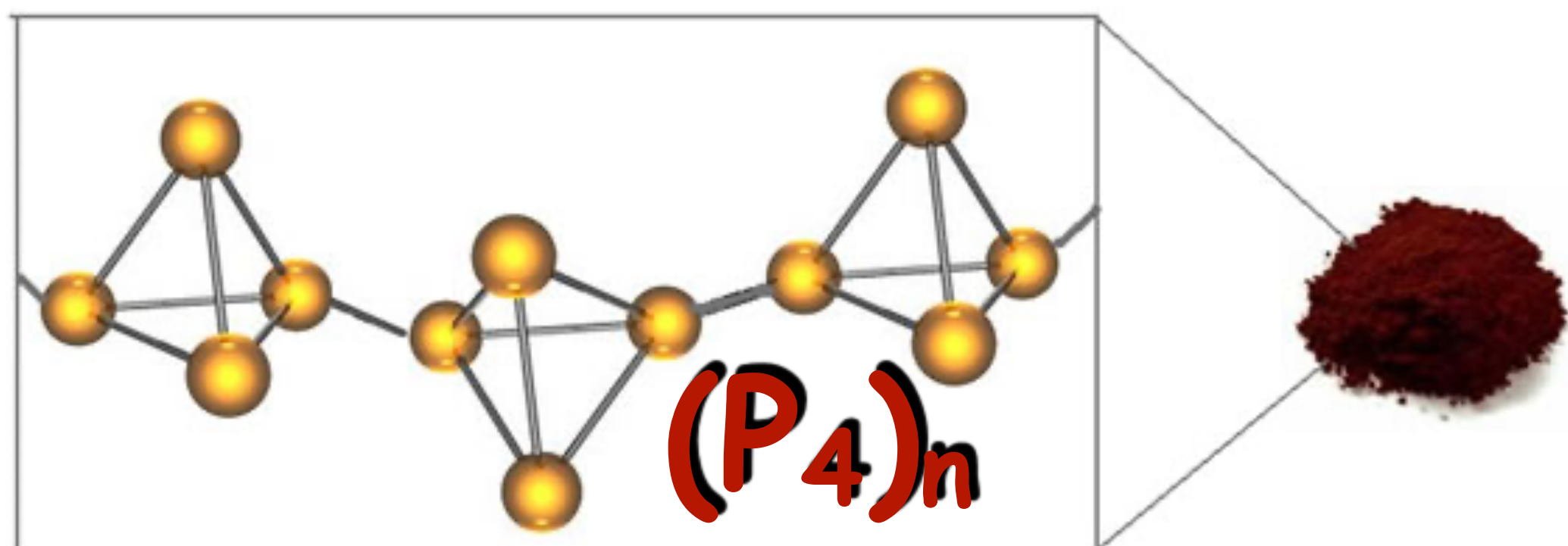
Comparação de Entalpia: Oxigênio vs Ozônio





Fósforo

O fósforo possui várias formas alotrópicas, mas as mais comuns são o fósforo **branco** e o fósforo **vermelho**.



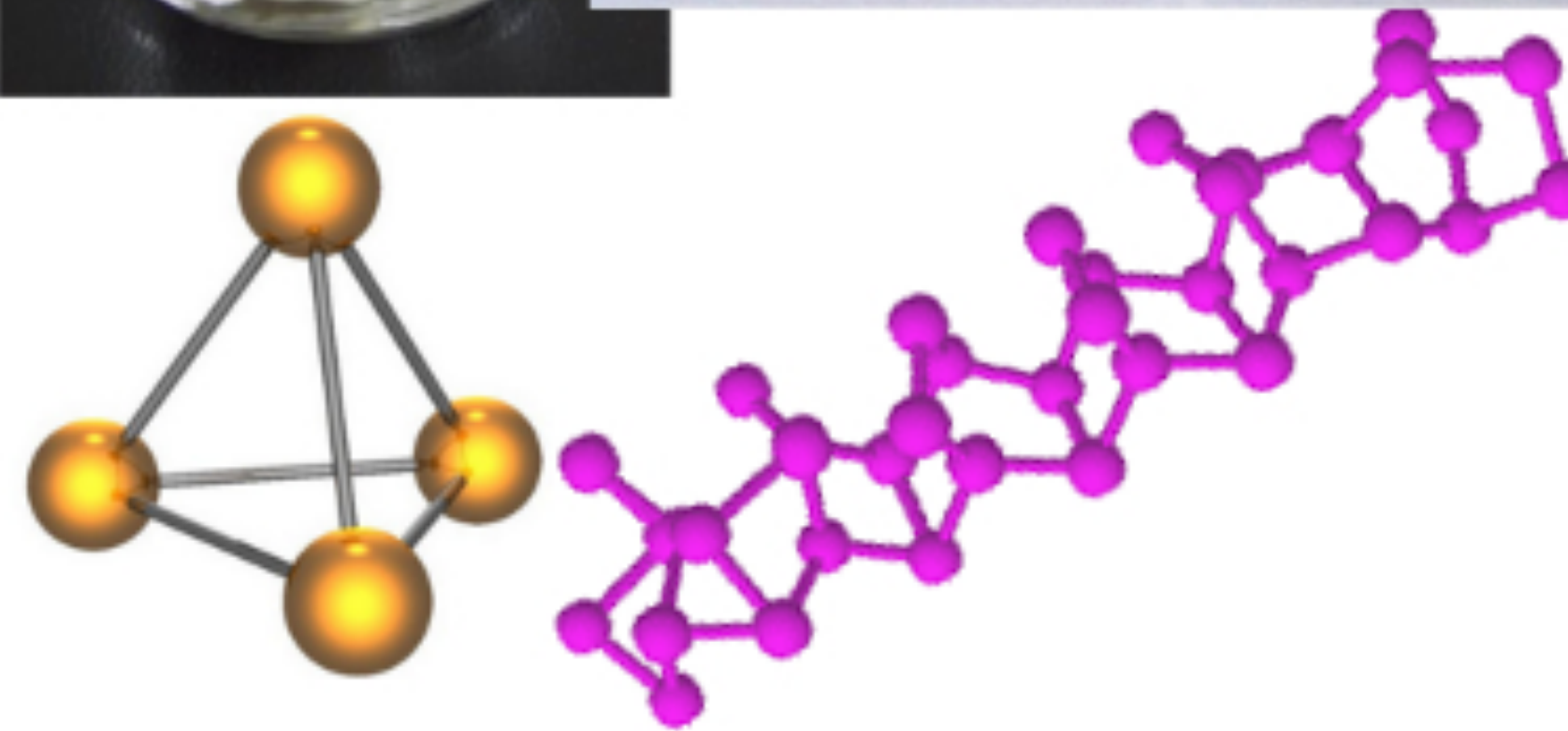
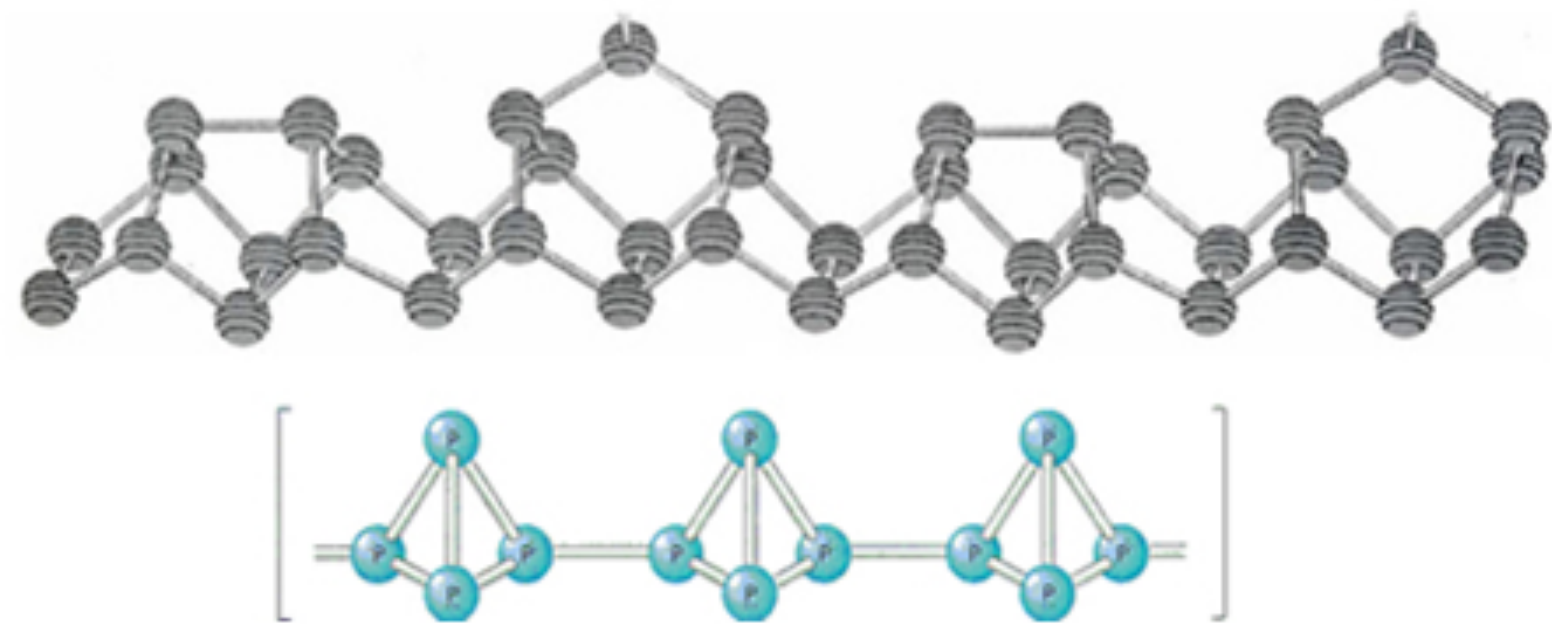
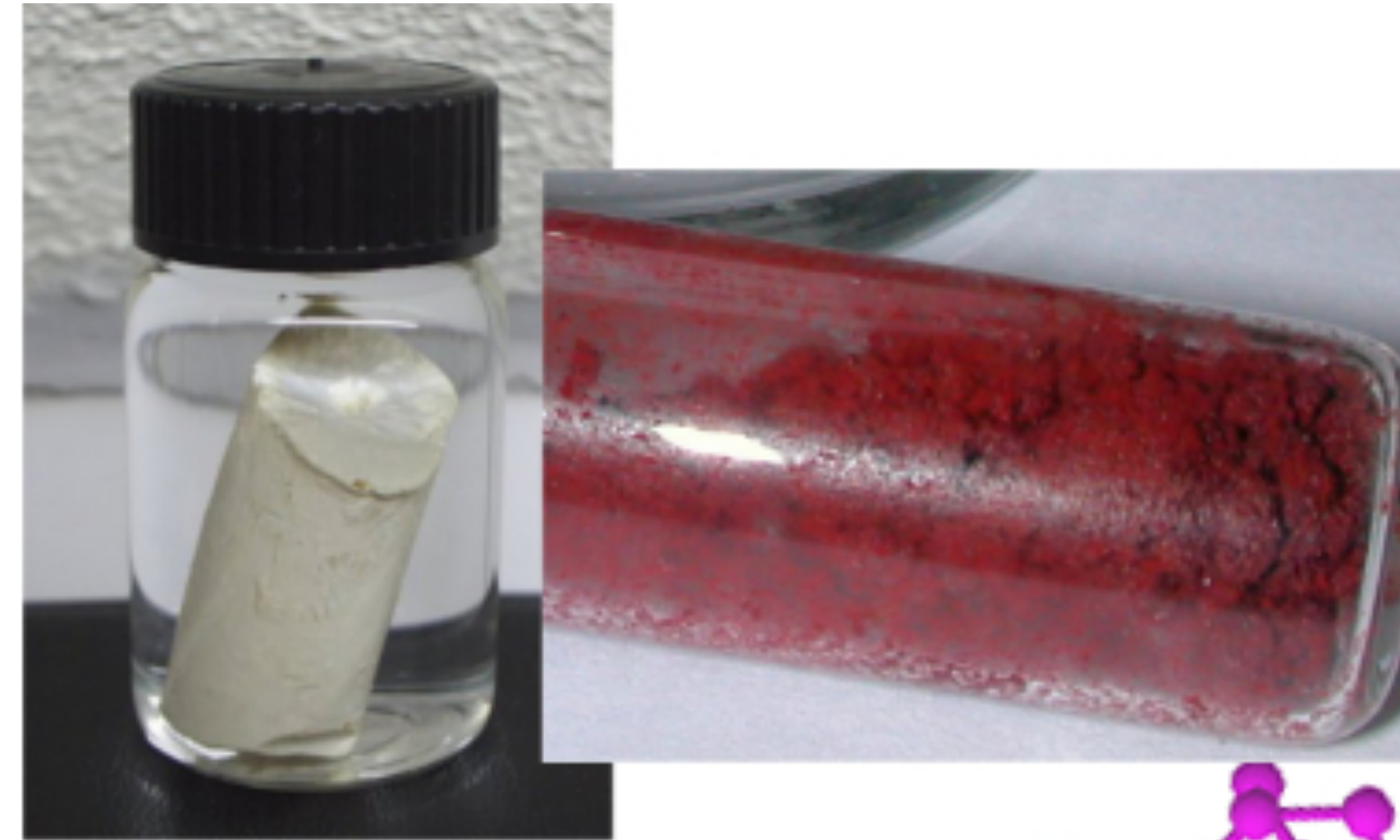


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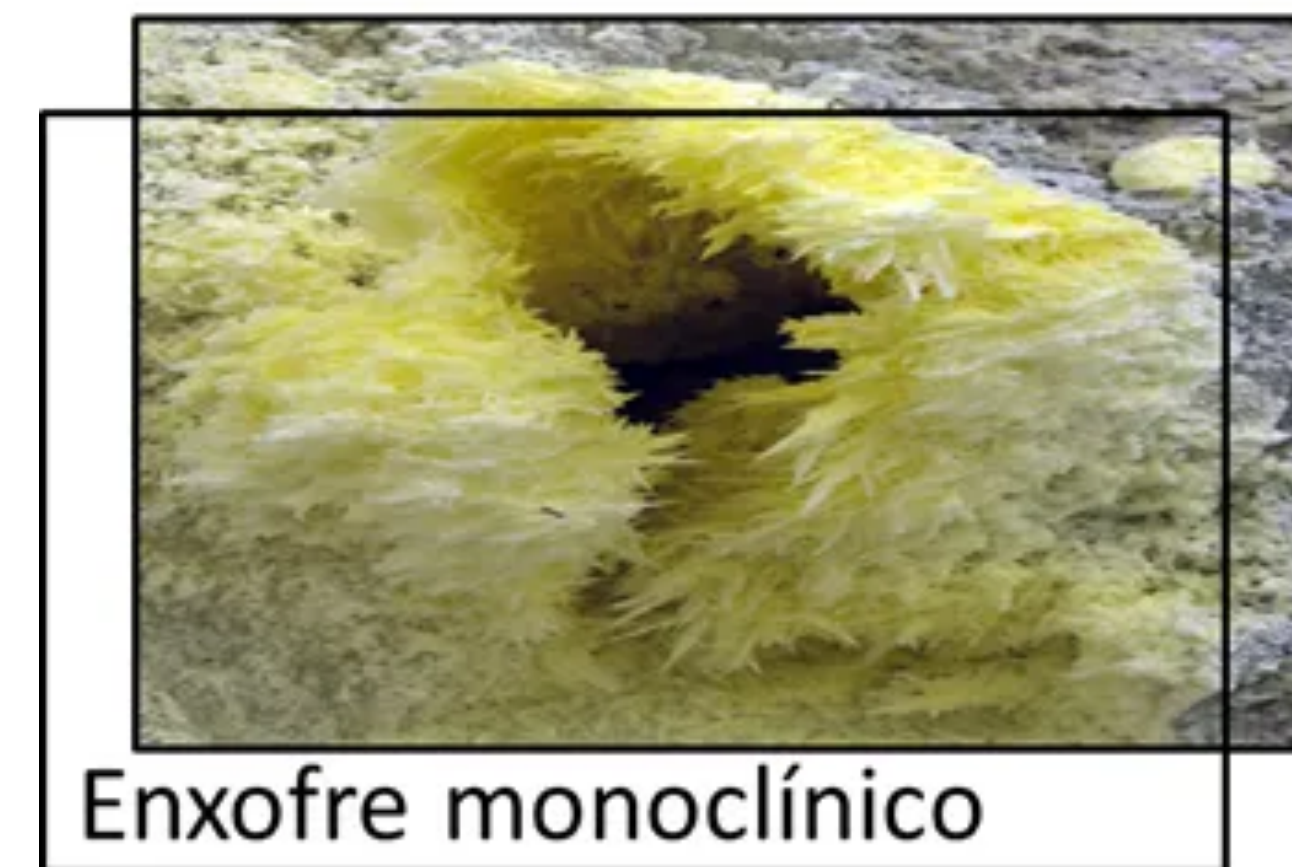
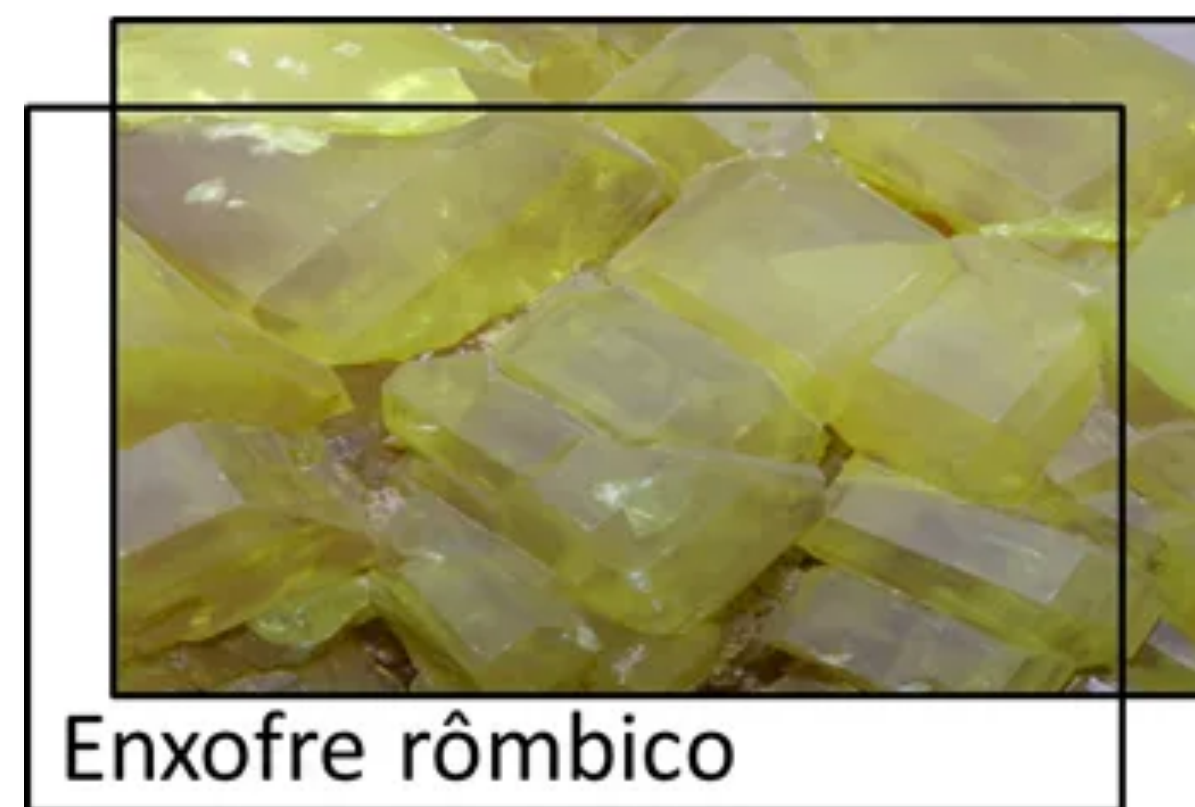
Fósforo



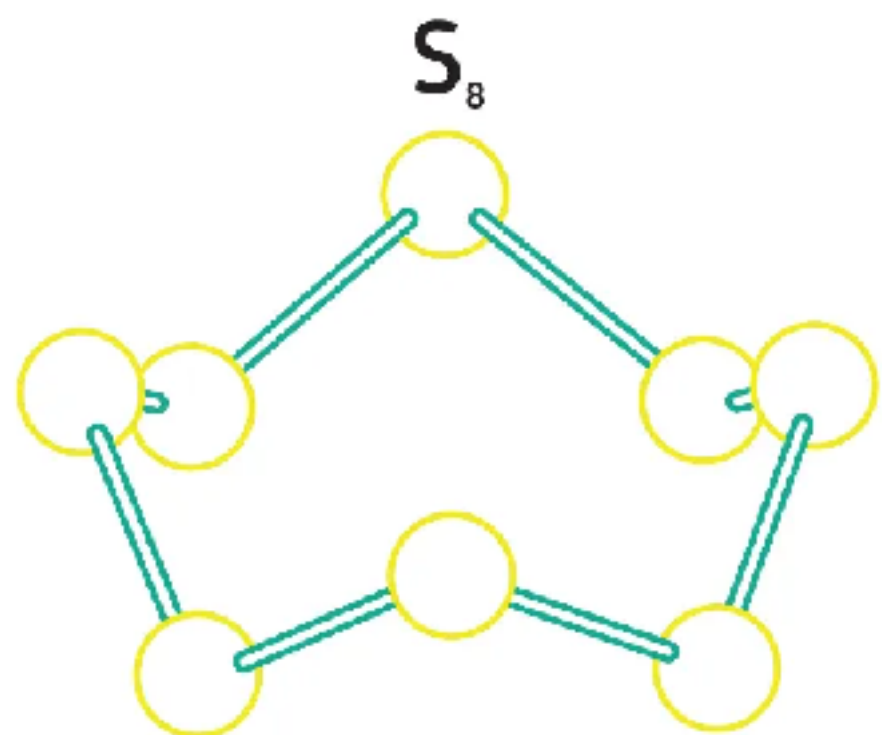
Enxofre

O enxofre (S) é um elemento que possui a maior variedade de formas alotrópicas, incluindo as moléculas de S_2 , S_4 , S_6 e S_8 , que se diferenciam pela quantidade de átomos em cada molécula.

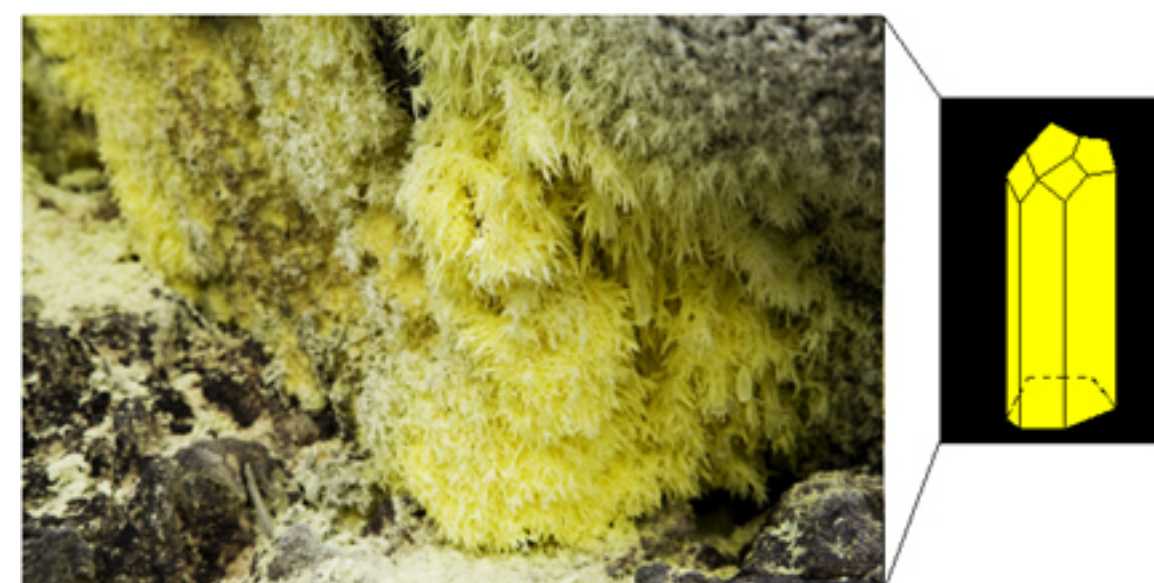
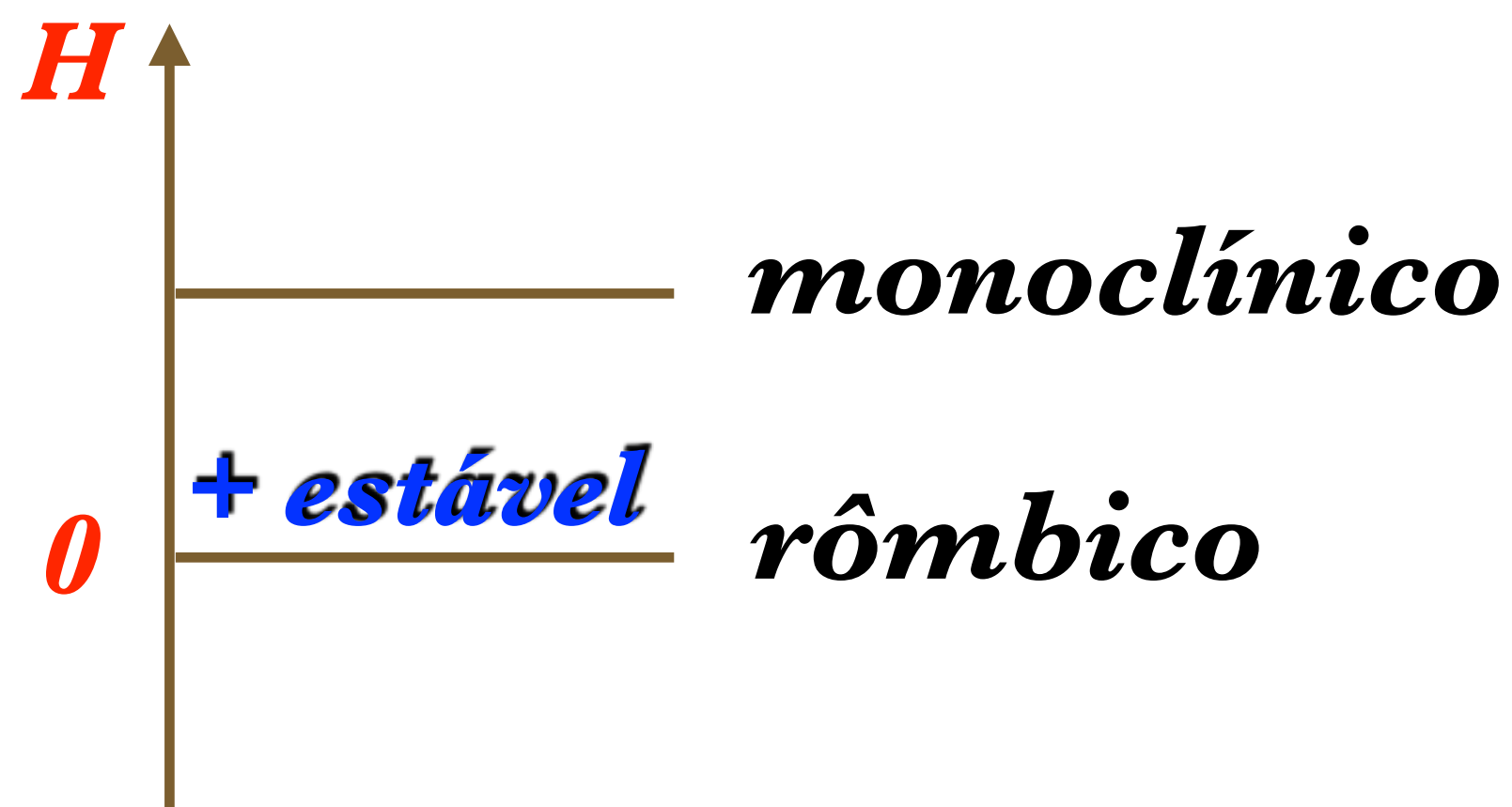
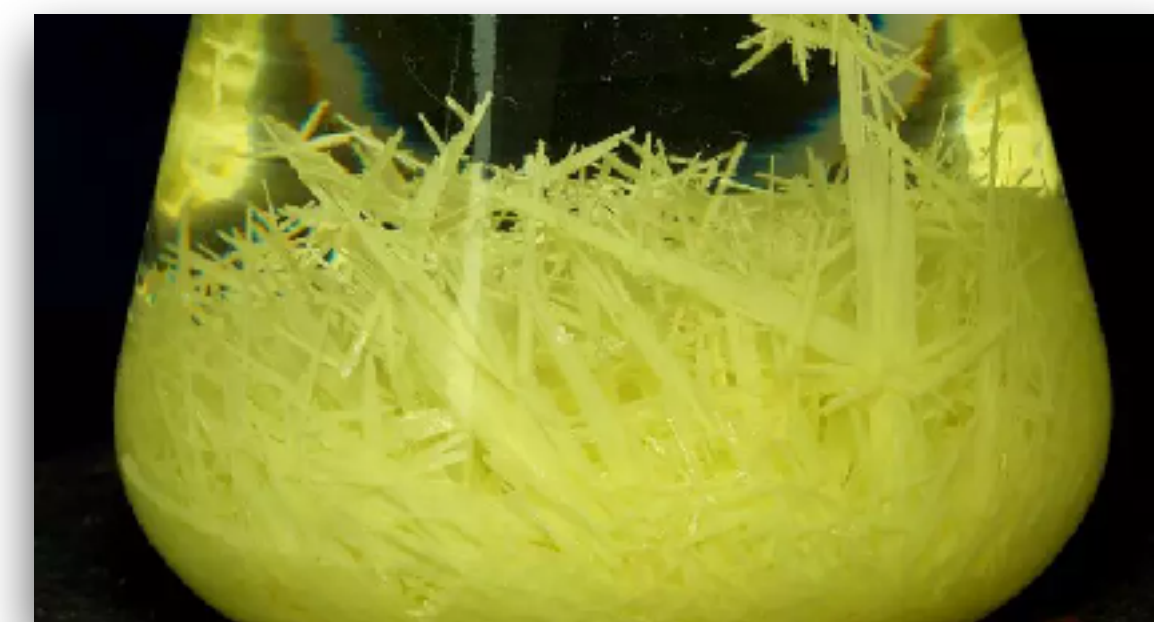
No entanto, os alótropos mais importantes do enxofre são dois: o **enxofre rômboico** e o **enxofre monoclinico**.



Estabilidade



Enxofre





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