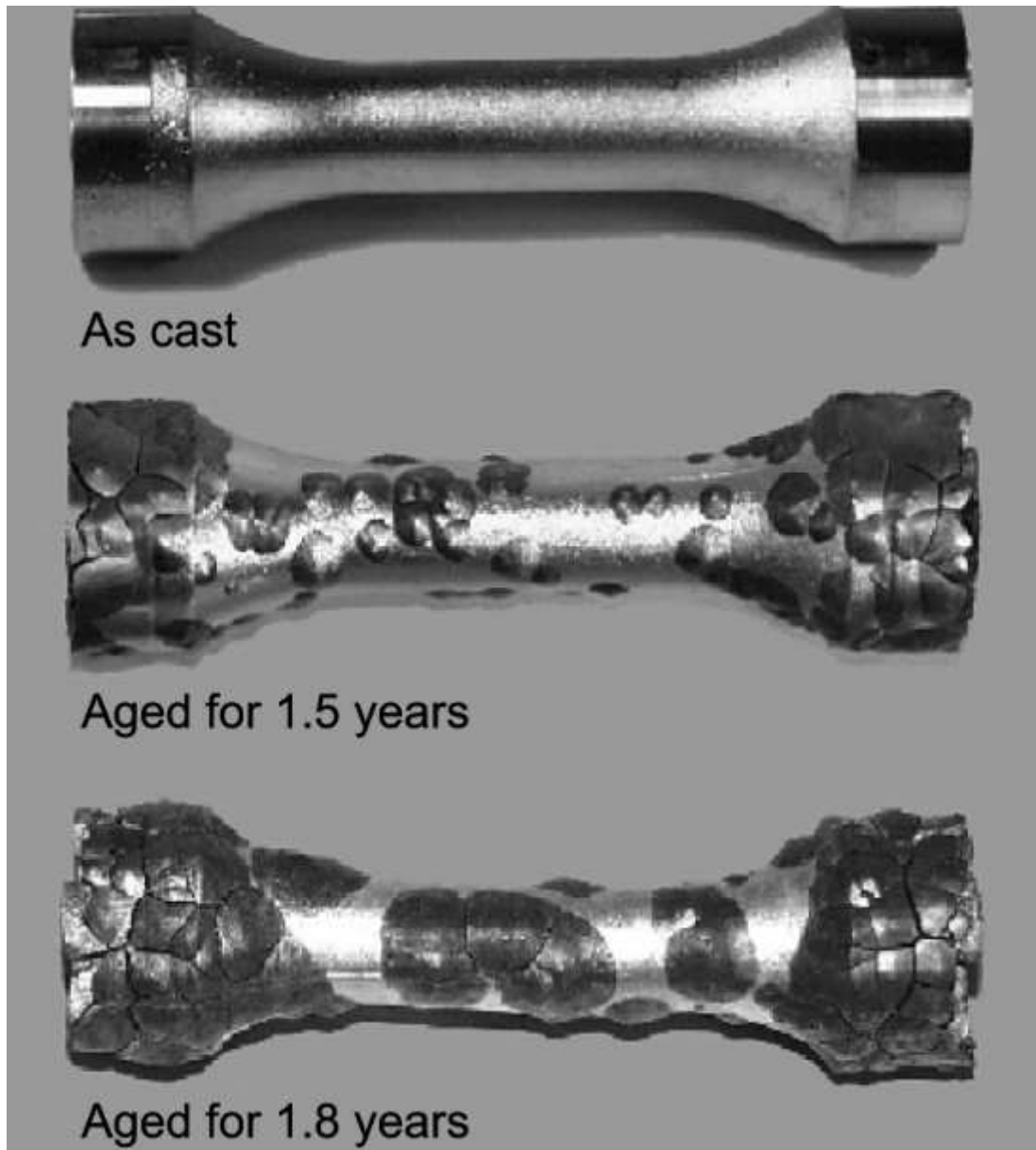


O que é a “peste do estanho”?



Peça de estanho atacada pela “peste do estanho”

6/9/2009

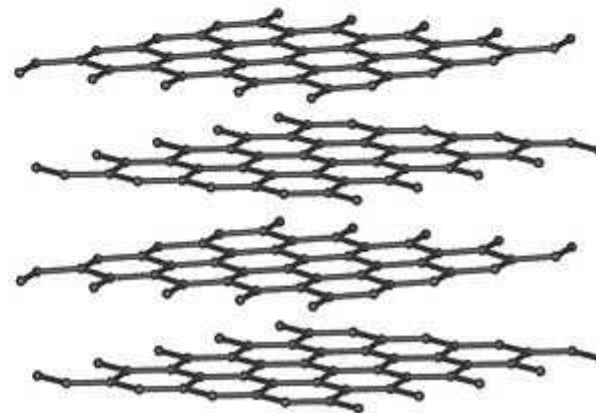
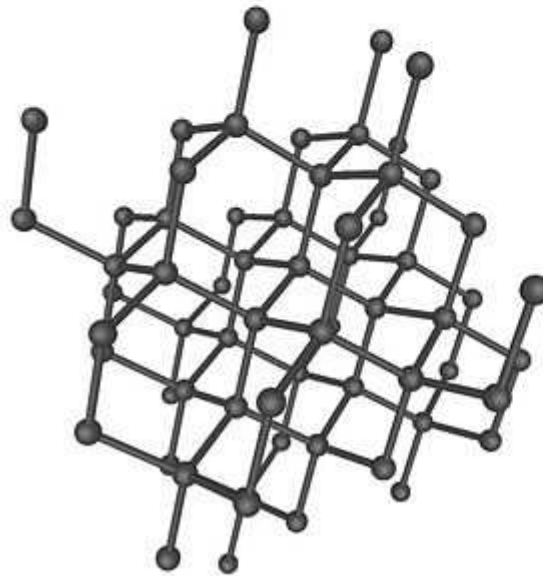


- Confiabilidade de soldas sem chumbo.

- Danos causados pela “peste do estanho”

- <http://www.emeraldinsight.com/Insight/ViewContentServlet?contentType=Article&Filename=Published/EmeraldFullTextArticle/Articles/2190160201.html>

# Alotropia: carbonio e diamante

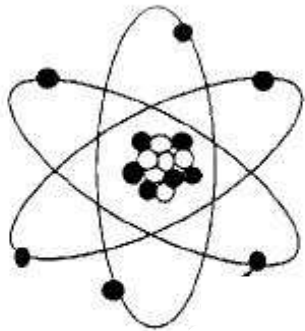


6/9/2009

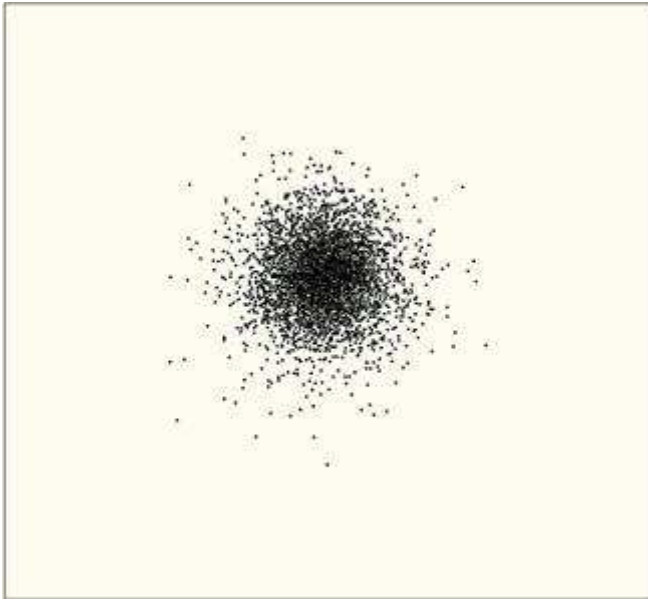
[http://www.newworldencyclopedia.org/entry/Image:Diamond\\_and\\_graphite.jpg](http://www.newworldencyclopedia.org/entry/Image:Diamond_and_graphite.jpg)

# Propriedades periódicas e distribuição de elétrons

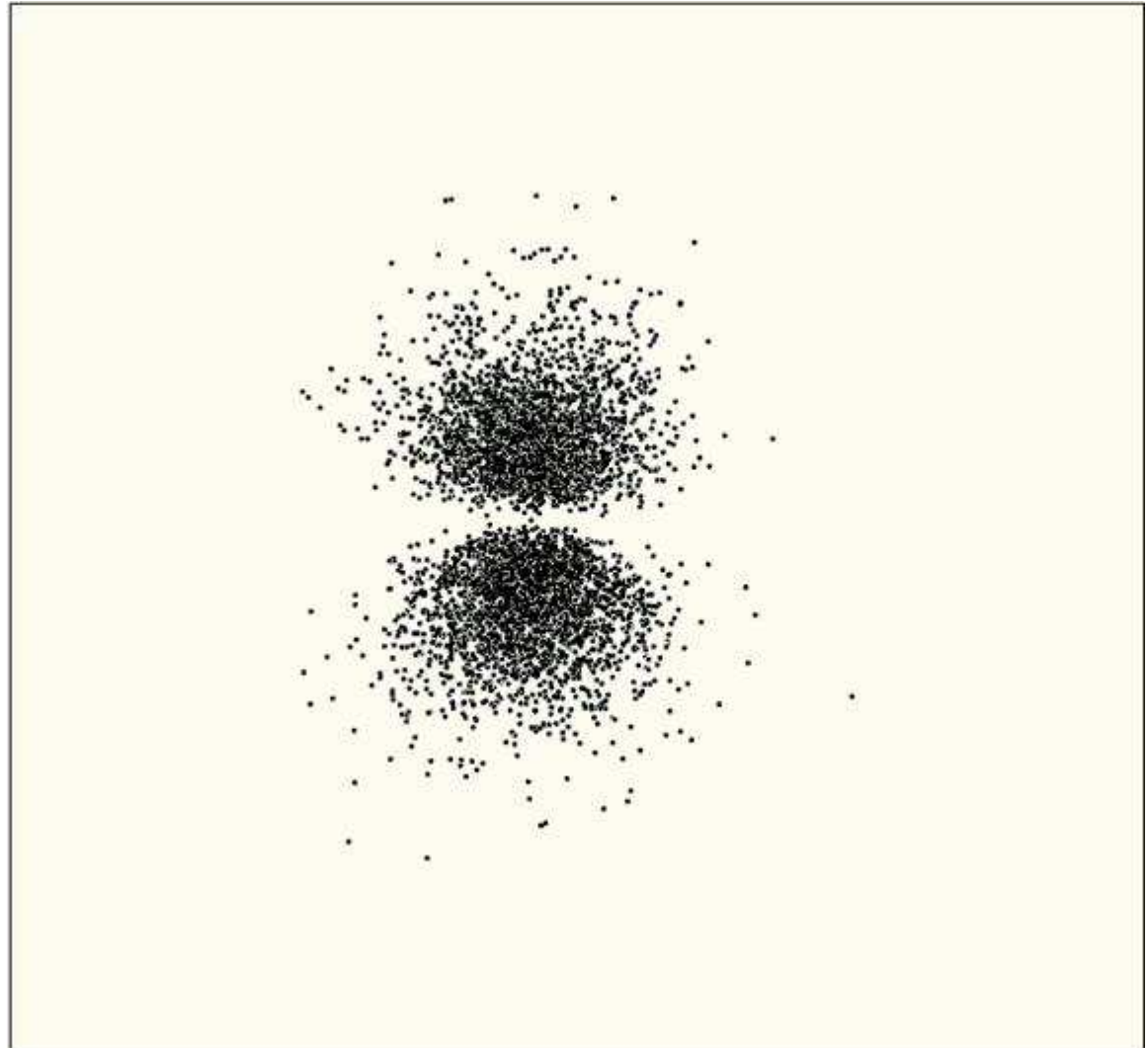
# Órbitas e orbitais

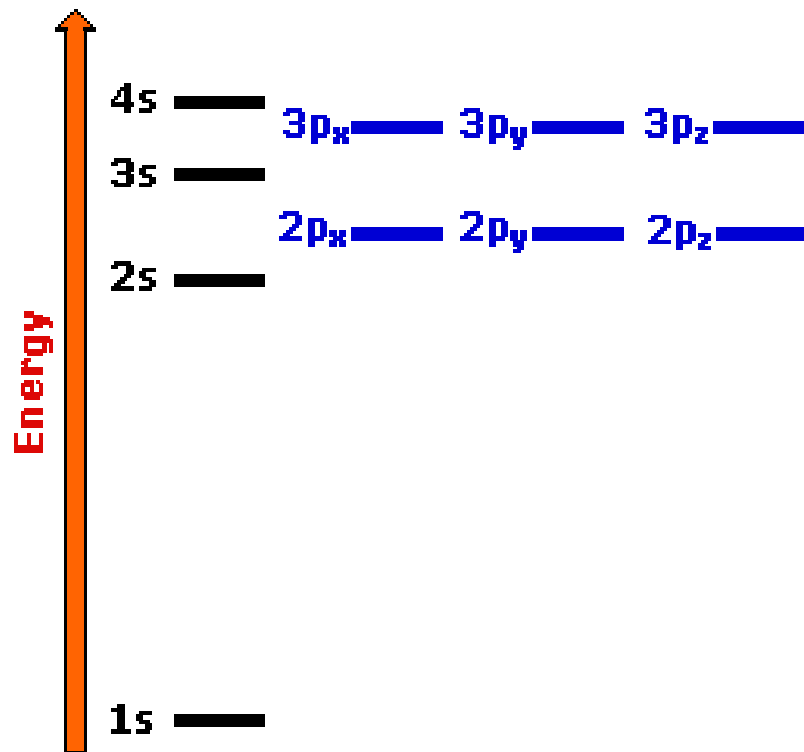


$$\Psi_k = \frac{1}{\sqrt{\pi}} \left( \frac{Z}{a_0} \right)^{3/2} e^{-\rho}$$



$$\Psi_{1s} = \frac{1}{\sqrt{\pi}} \left( \frac{Z}{a_0} \right)^{3/2} e^{-\rho}$$





**Relative Energy of s and p Orbitals**  
(d orbitals are not shown)

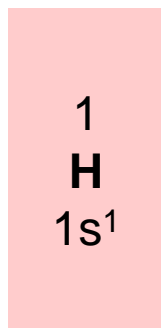
Para geógrafos: orbitais são os lugares dos elétrons.

Primeiro são preenchidos os orbitais com energia mais baixa, depois os que têm maior energia.

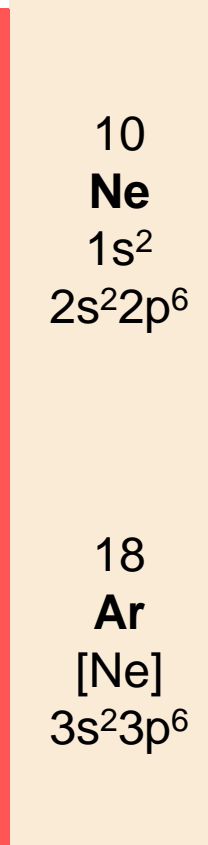
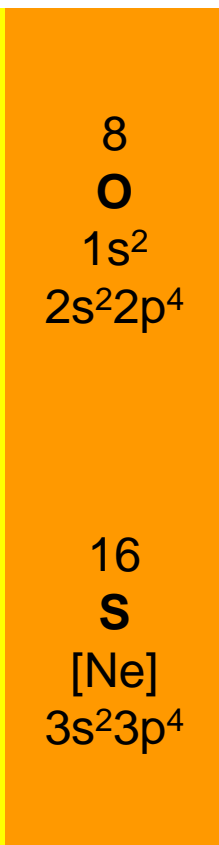
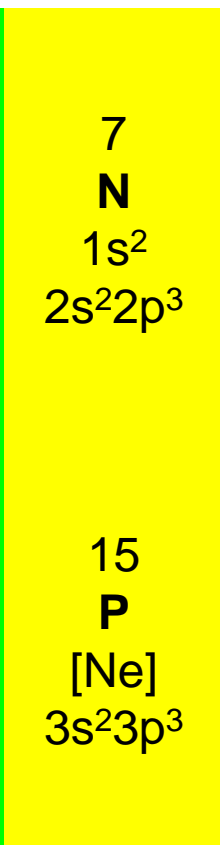
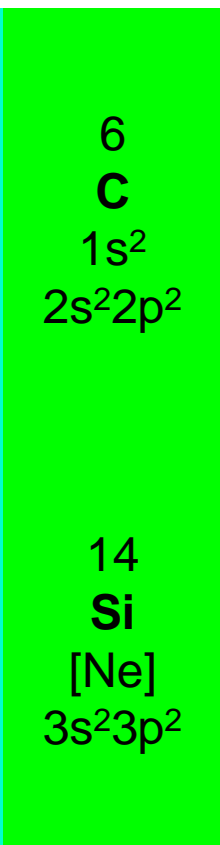
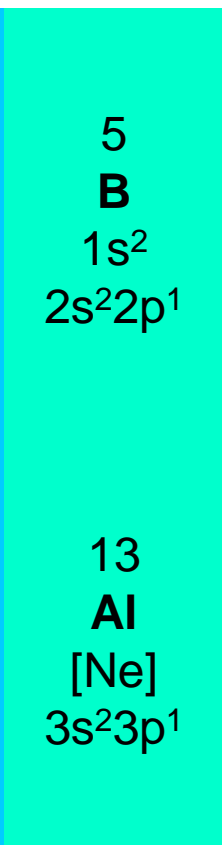
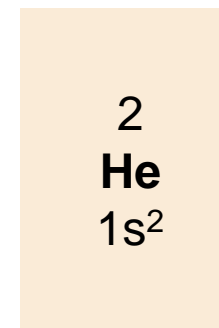
<http://www.cem.msu.edu/~reusch/VirtTxtJml/models2.htm#nacl>

6/9/2009

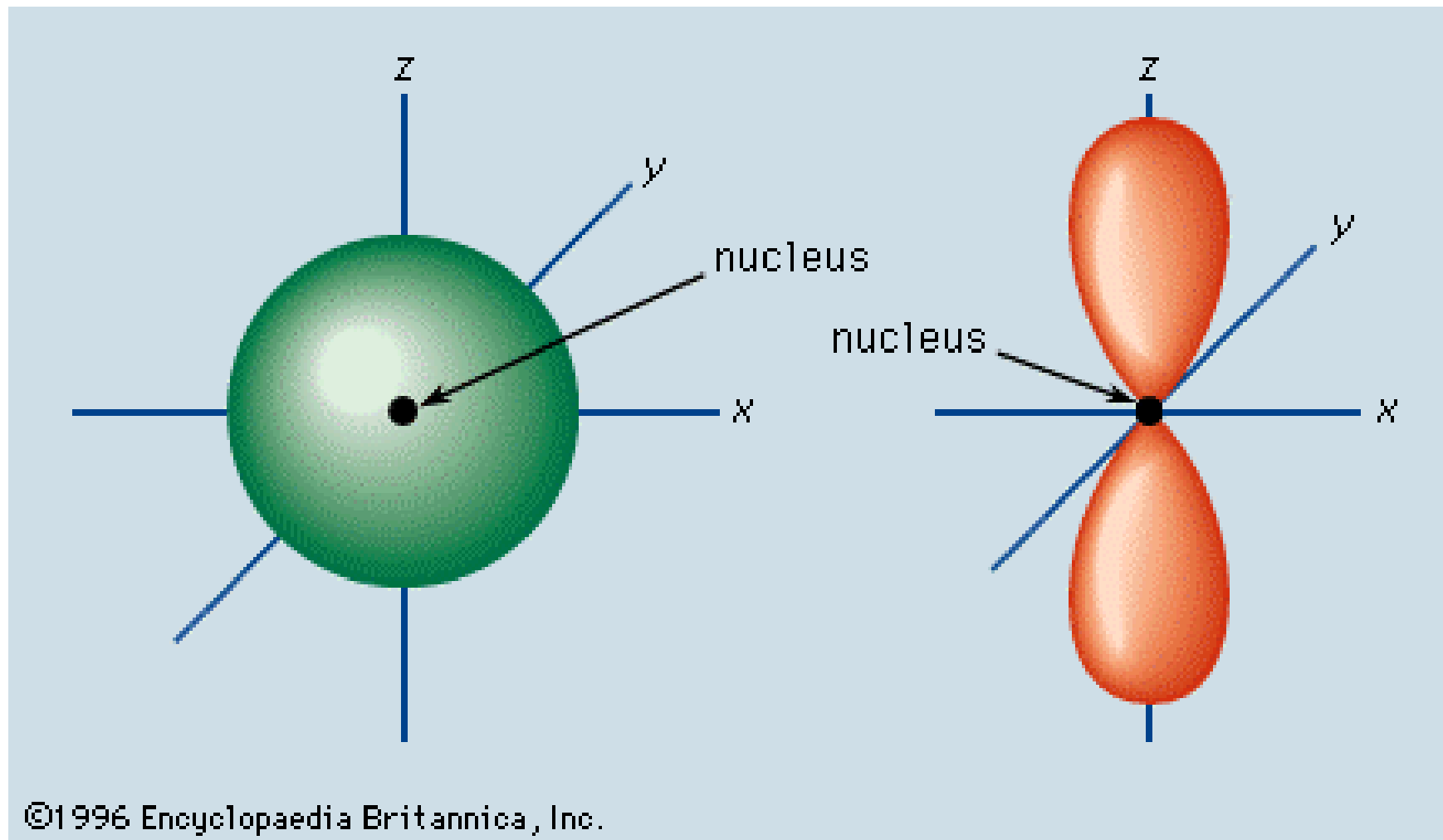
1A      2A      3A      4A      5A      6A      7A      8A

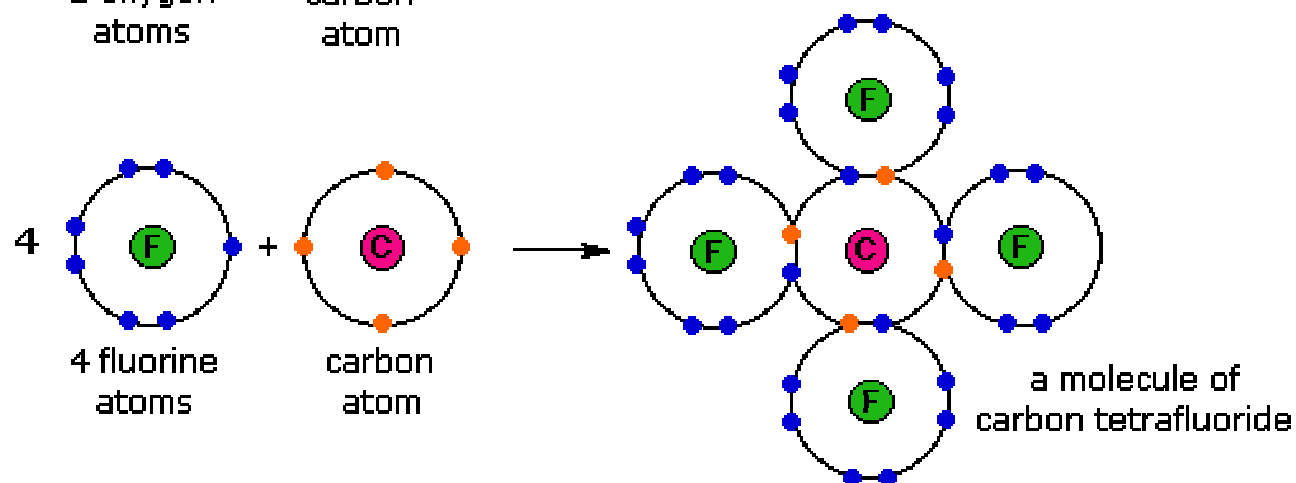
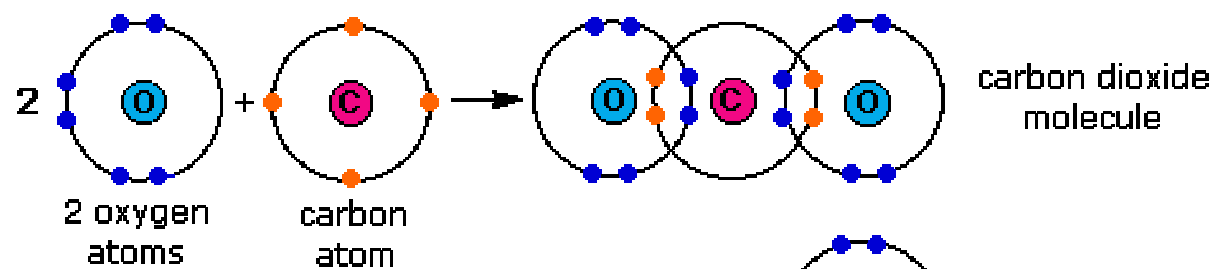
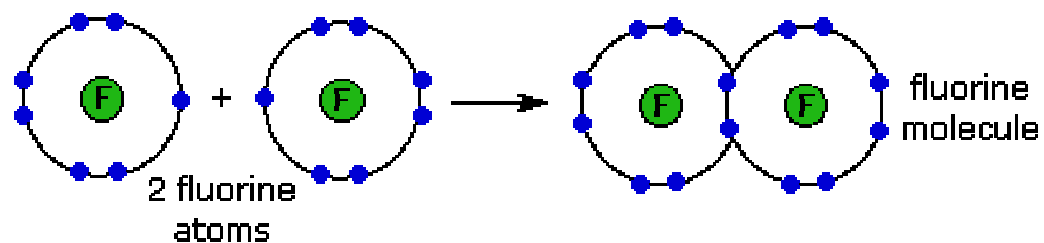
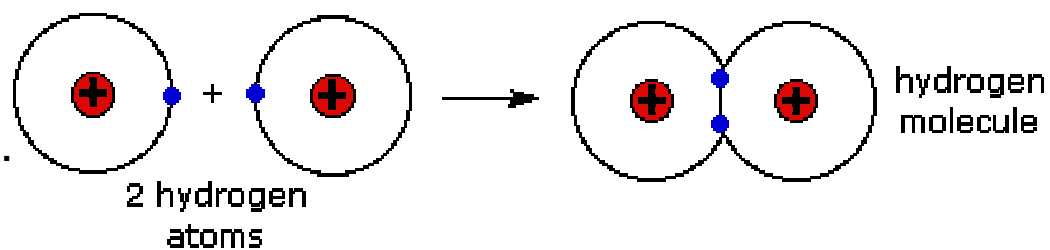


Tipo de orbital	Máximo de électrons
s	2
p	6
d	10
f	14



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	<u>H</u>																	<u>He</u>
	1																	2
2	<u>Li</u>	<u>Be</u>	A distribuição dos elétrons é a origem da periodicidade das propriedades químicas e físicas dos elementos.										<u>B</u>	<u>C</u>	<u>N</u>	<u>O</u>	<u>F</u>	<u>Ne</u>
	2,1	2,2											2,3	2,4	2,5	2,6	2,7	2,8
3	<u>Na</u>	<u>Mg</u>											<u>Al</u>	<u>Si</u>	<u>P</u>	<u>S</u>	<u>Cl</u>	<u>Ar</u>
	2,8,1	2,8,2											2,8,3	2,8,4	2,8,5	2,8,6	2,8,7	2,8,8
4	<u>K</u>	<u>Ca</u>	<u>Sc</u>	<u>Ti</u>	<u>V</u>	<u>Cr</u>	<u>Mn</u>	<u>Fe</u>	<u>Co</u>	<u>Ni</u>	<u>Cu</u>	<u>Zn</u>	<u>Ga</u>	<u>Ge</u>	<u>As</u>	<u>Se</u>	<u>Br</u>	<u>Kr</u>
	2,8,8,1	2,8,8,2	2,8,9,2	2,8,10,2	2,8,11,2	2,8,13,1	2,8,13,2	2,8,14,2	2,8,15,2	2,8,16,2	2,8,18,1	2,8,18,2	2,8,18,3	2,8,18,4	2,8,18,5	2,8,18,6	2,8,18,7	2,8,18,8
5	<u>Rb</u>	<u>Sr</u>	<u>Y</u>	<u>Zr</u>	<u>Nb</u>	<u>Mo</u>	<u>Tc</u>	<u>Ru</u>	<u>Rh</u>	<u>Pd</u>	<u>Ag</u>	<u>Cd</u>	<u>In</u>	<u>Sn</u>	<u>Sb</u>	<u>Te</u>	<u>I</u>	<u>Xe</u>
	2,8,18 8,1	2,8,18 8,2	2,8,18 9,2	2,8,18 10,2	2,8,18 12,1	2,8,18 13,1	2,8,18 14,1	2,8,18 15,1	2,8,18 16,1	2,8,18 18,0	2,8,18 18,1	2,8,18 18,2	2,8,18 18,3	2,8,18 18,4	2,8,18 18,5	2,8,18 18,6	2,8,18 18,7	2,8,18 18,8
6	<u>Cs</u>	<u>Ba</u>	*	<u>Hf</u>	<u>Ta</u>	<u>W</u>	<u>Re</u>	<u>Os</u>	<u>Ir</u>	<u>Pt</u>	<u>Au</u>	<u>Hg</u>	<u>Tl</u>	<u>Pb</u>	<u>Bi</u>	<u>Po</u>	<u>At</u>	<u>Rn</u>
	2,8,18 18,8,1	2,8,18 18,8,2		2,8,18 32,10,2	2,8,18 32,11,2	2,8,18 32,12,2	2,8,18 32,13,2	2,8,18 32,14,2	2,8,18 32,15,2	2,8,18 32,17,1	2,8,18 32,18,1	2,8,18 32,18,2	2,8,18 32,18,3	2,8,18 32,18,4	2,8,18 32,18,5	2,8,18 32,18,6	2,8,18 32,18,7	2,8,18 32,18,8
7	<u>Fr</u>	<u>Ra</u>	**	<u>Rf</u>	<u>Db</u>	<u>Sg</u>	<u>Bh</u>	<u>Hs</u>	<u>Mt</u>	<u>Uu n</u>	<u>Uu u</u>	<u>Uu b</u>	Tipo de orbital		Máximo de elétrons			
	2,8,18,3 2 18,8,1	2,8,18,3 2 18,8,2		2,8,18,3 2 32,10,2	2,8,18,3 2 32,11,2	2,8,18,3 2 32,12,2	2,8,18,3 2 32,13,2	2,8,18,3 2 32,14,2	2,8,18,3 2 32,15,2	2,8,18,3 2 32,17,1	2,8,18,3 2 32,18,1	2,8,18,3 2 32,18,2						
http://www.chemicalelements.com/    6/9/2009													s		2			
													p		6			
													d		10			
													f		14			
			*	<u>La</u>	<u>Ce</u>	<u>Pr</u>	<u>Nd</u>	<u>Pm</u>	<u>Sm</u>	<u>Eu</u>	<u>Gd</u>	<u>Tb</u>	<u>Dy</u>	<u>Ho</u>	<u>Er</u>	<u>Tm</u>	<u>Yb</u>	<u>Lu</u>
				2,8,18 18,9,2	2,8,18 20,8,2	2,8,18 21,8,2	2,8,18 22,8,2	2,8,18 23,8,2	2,8,18 24,8,2	2,8,18 25,8,2	2,8,18 25,9,2	2,8,18 27,8,2	2,8,18 28,8,2	2,8,18 29,8,2	2,8,18 30,8,2	2,8,18 31,8,2	2,8,18 32,8,2	2,8,18 32,9,2
			**	<u>Ac</u>	<u>Th</u>	<u>Pa</u>	<u>U</u>	<u>Np</u>	<u>Pu</u>	<u>Am</u>	<u>Cm</u>	<u>Bk</u>	<u>Cf</u>	<u>Es</u>	<u>Fm</u>	<u>Md</u>	<u>No</u>	<u>Lr</u>
				2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2	2,8,18,3 2





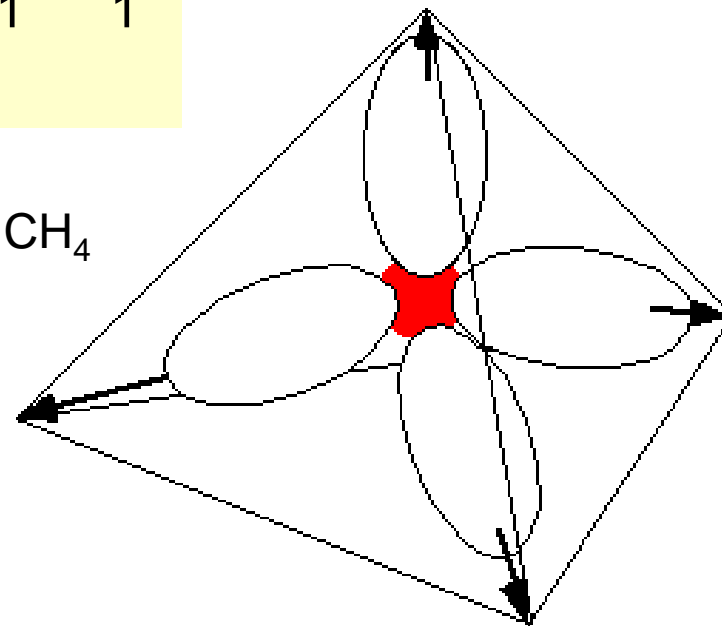
# Quantas ligações químicas pode formar um elemento?

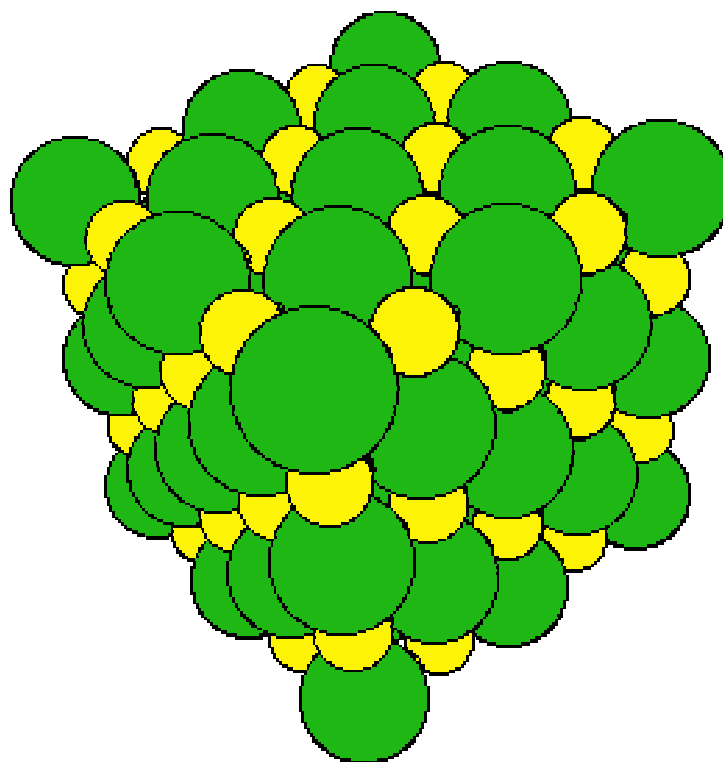
## Valência

Átomo	H	C	N	O	F	Cl	Br	I
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Valência	1	4	3	2	1	1	1	1
----------	---	---	---	---	---	---	---	---

Metano, CH<sub>4</sub>





Cloreto de sódio, NaCl

Sodium  
Cation  $\text{Na}^+$

Chloride  
Anion  $\text{Cl}^-$