



Pour les applications chimiques,

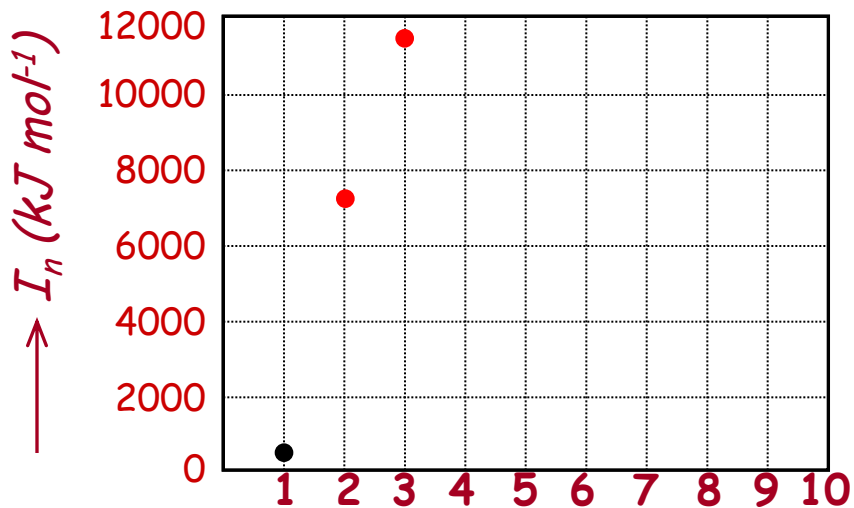
*on préfère utiliser des unités d'énergie faisant intervenir des quantités de matière de l'ordre de la mole*

éléments de la période 3 :

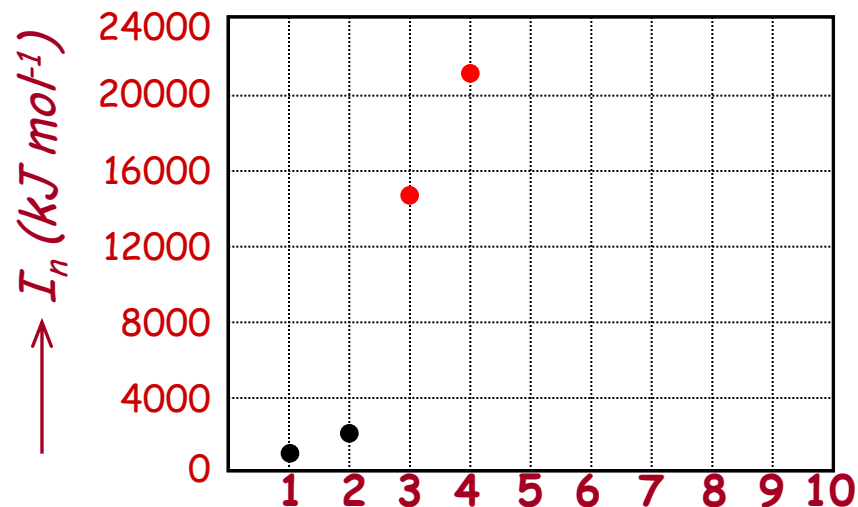
$\text{kJ mol}^{-1}$	Na	Mg	Al	Si	P	S	Cl	Ar
$I_1$	496	738	578	787	1012	1000	1251	1520
$I_2$	4562	1451	1817	1577	1903	2251	2297	2665
$I_3$	6912	7733	2745	3231	2912	3361	3822	3931
$I_4$	9543	10540	11575	4356	4956	4564	5158	5770
$I_5$	13353	13630	14830	16091	6273	7013	6540	7238
$I_6$	16610	17995	18376	19784	22233	8495	9458	8781
$I_7$	20114	21703	23293	23783	25397	27106	11020	11995

*Pour n'importe quel atome :  $I_1 < I_2 < I_3 < I_4 < \dots$*

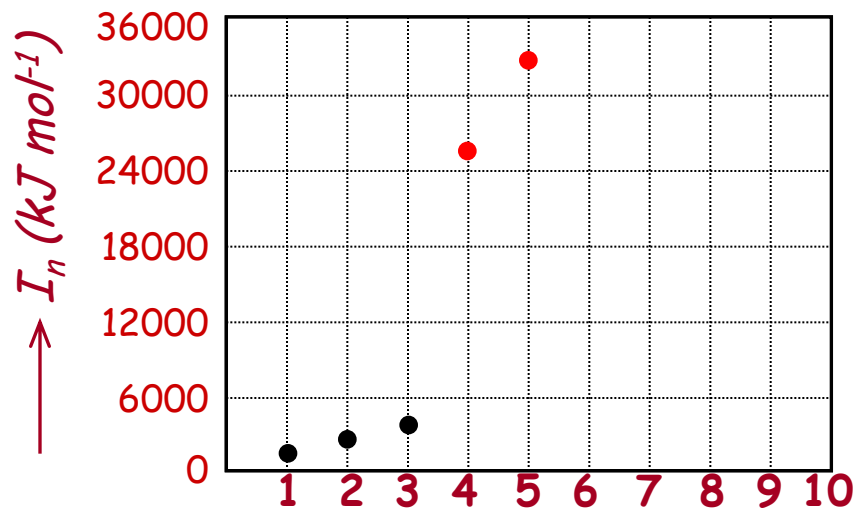
Li



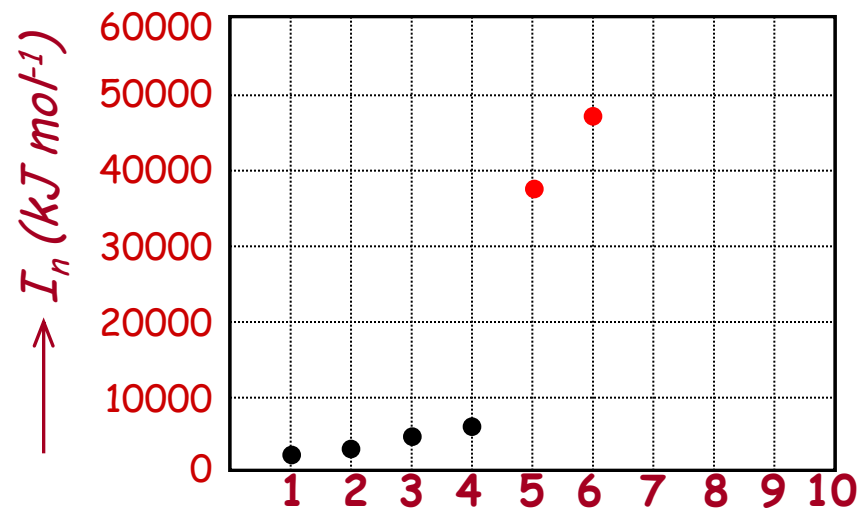
Be

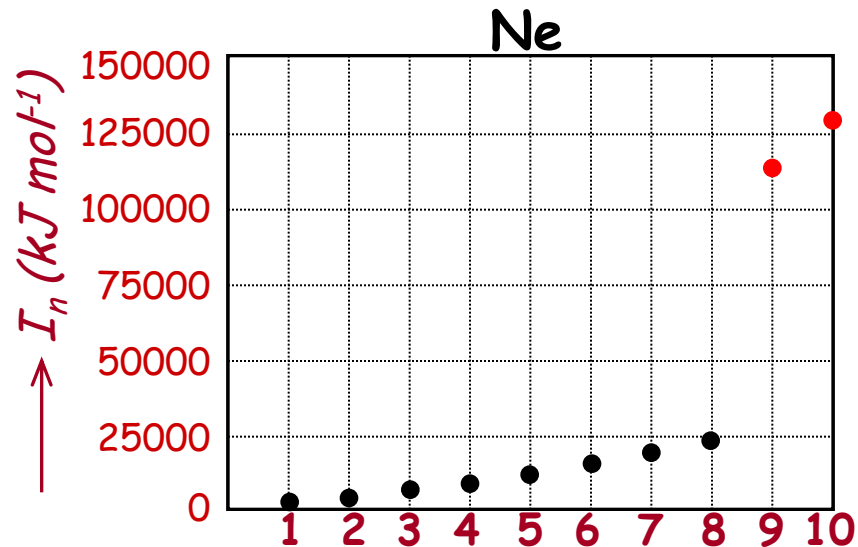
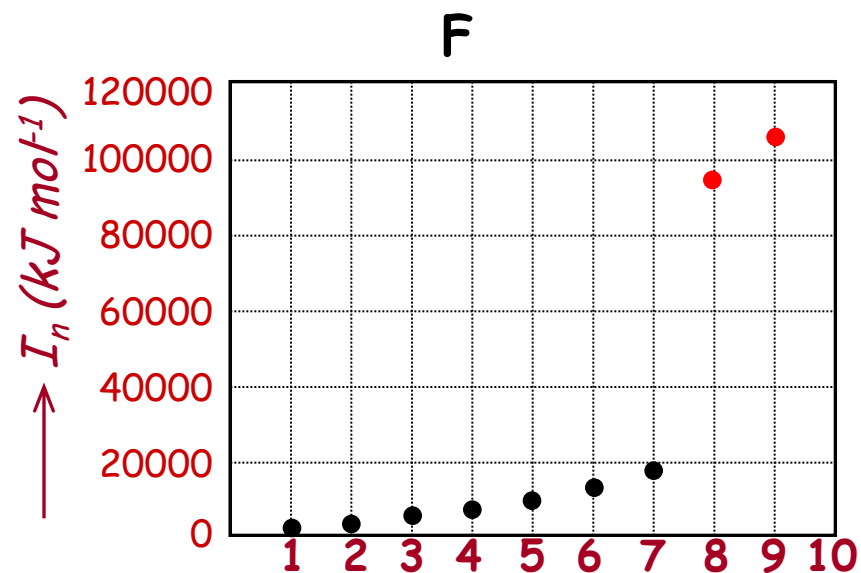
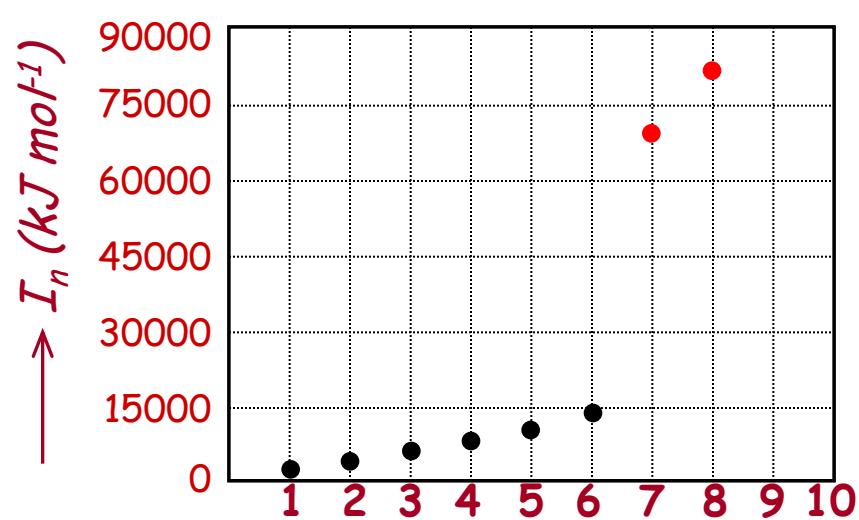
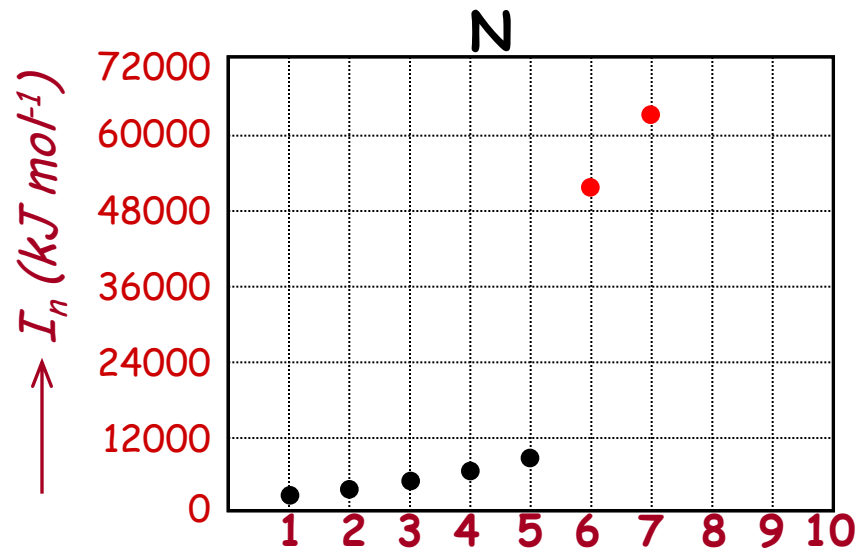


B

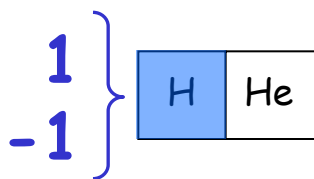
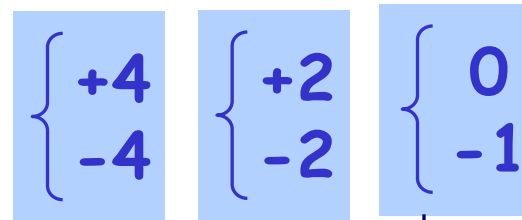


C





# Degrés d'oxydation extrêmes :

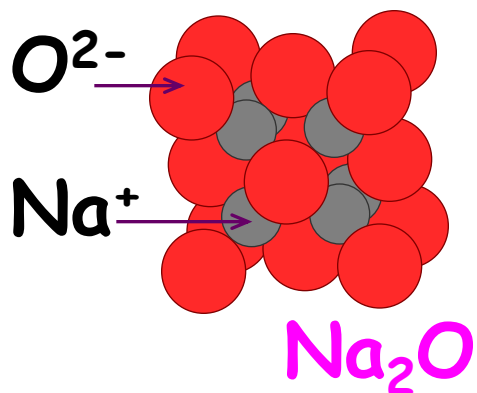
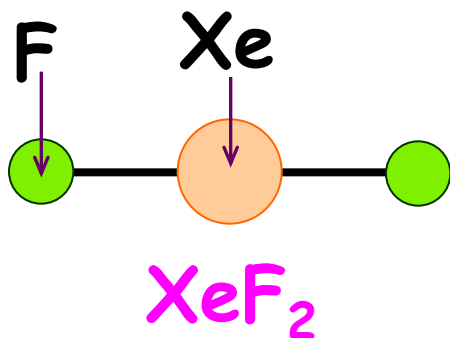
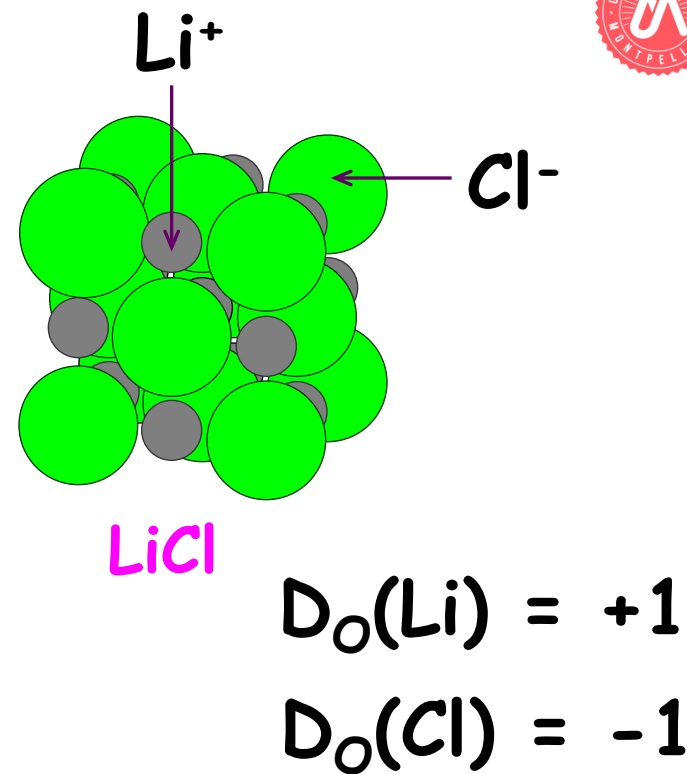
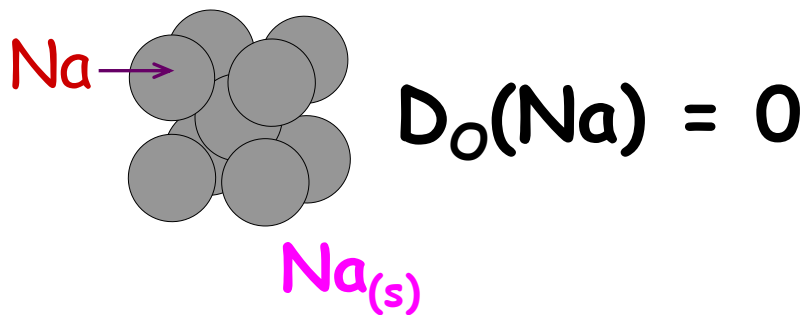


1	2											13	14	15	16	17	18
Li	Be											B	C	N	O	F	Ne
Na	Mg	3	4	5	6	7	8	9	10	11	12	Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt	-	-	-	-	-	-	-	-	-

# IONS LES PLUS STABLES DES ELEMENTS s et p

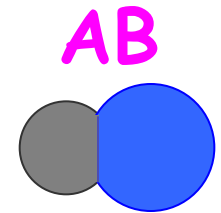
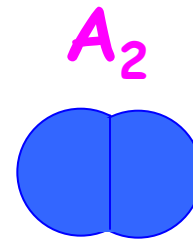
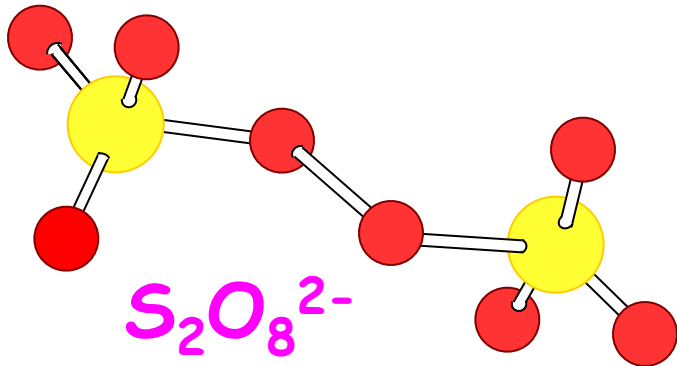
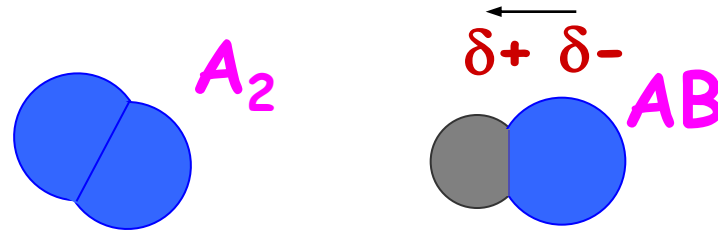
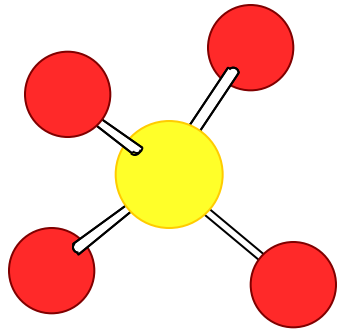
1	2	13	14	15	16	17	18
s <sup>1</sup>	s <sup>2</sup>	p <sup>1</sup>	p <sup>2</sup>	p <sup>3</sup>	p <sup>4</sup>	p <sup>5</sup>	p <sup>6</sup>
H							He
Li	Be	B	C	N	O	F	Ne
Na	Mg	Al	Si	P	S	Cl	Ar
K	Ca	Ga	Ge	As	Se	Br	Kr
Rb	Sr	In	Sn	Sb	Te	I	Xe
Cs	Ba	Tl	Pb	Bi	Po	At	Rn
Fr	Ra						
↓	↓	↓	↓	↓	↓	↓	
<b>X<sup>+</sup></b>	<b>X<sup>2+</sup></b>	<b>X<sup>3+</sup></b>	<b>X<sup>4+</sup></b> <b>X<sup>4-</sup></b>	<b>X<sup>3-</sup></b>	<b>X<sup>2-</sup></b>	<b>X<sup>-</sup></b>	



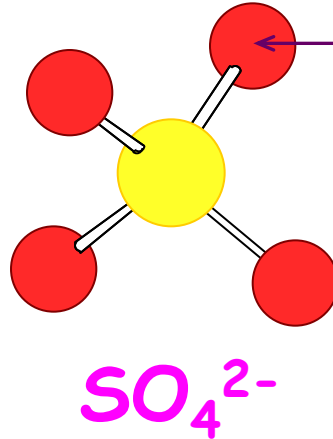
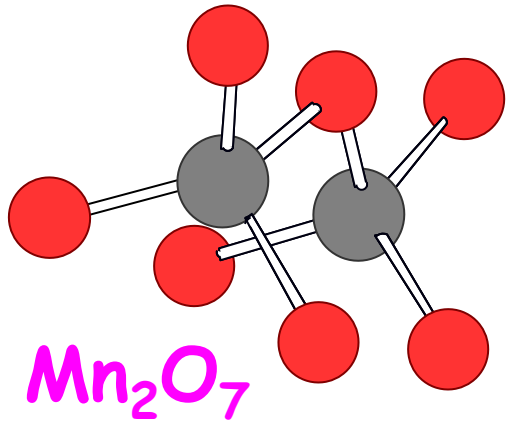




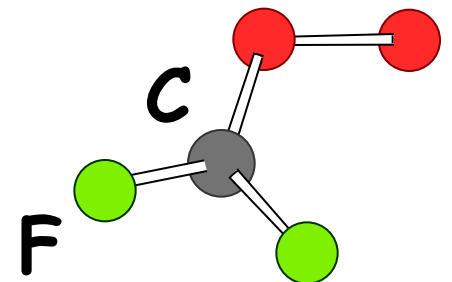
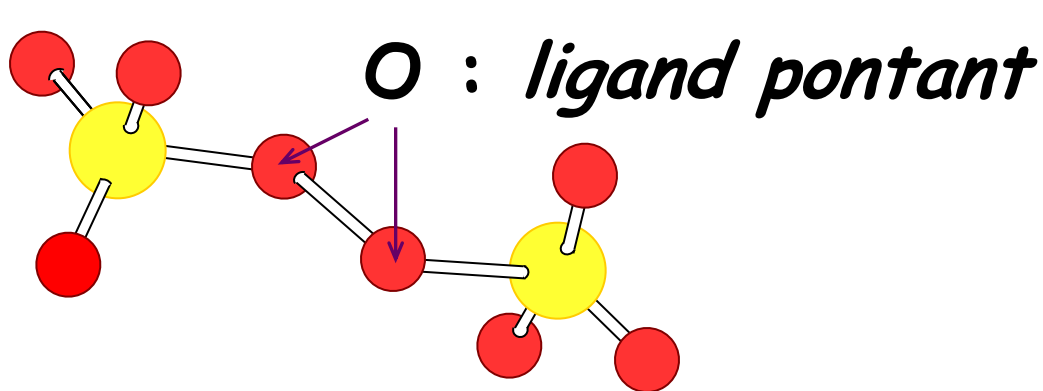
(dipôle électrique)

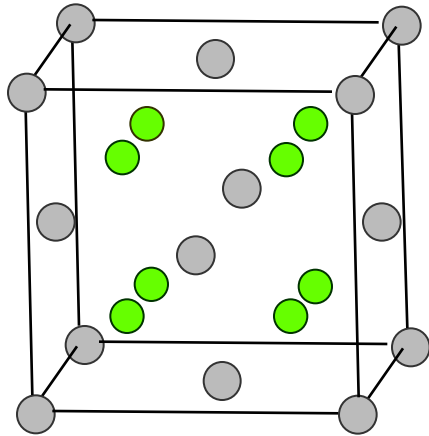
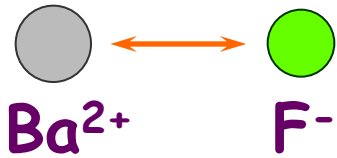


# Ligands atomiques et moléculaires :



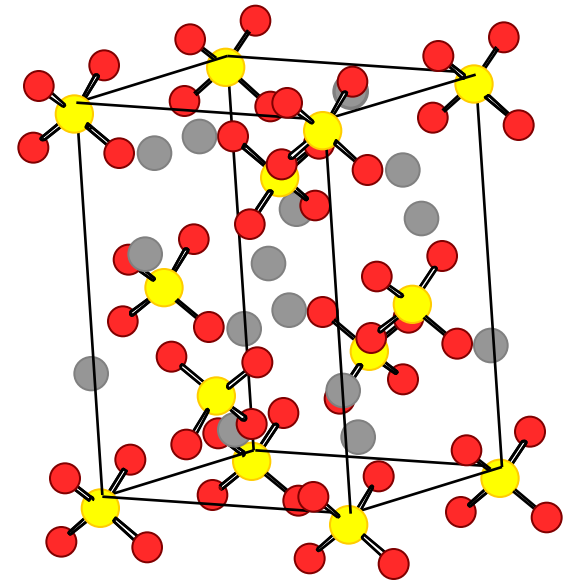
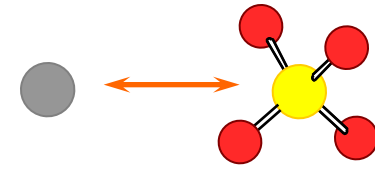
O : *ligand terminal atomique*



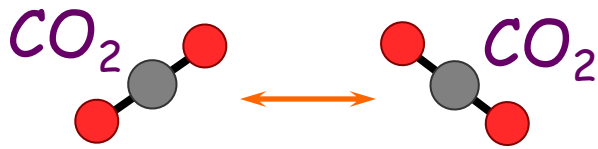


*crystal de  $BaF_2$*

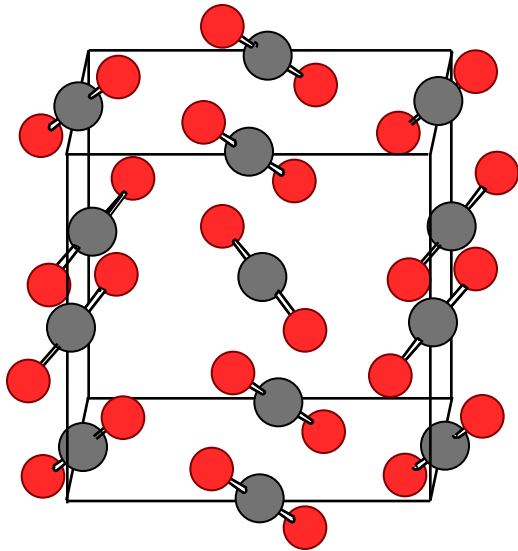
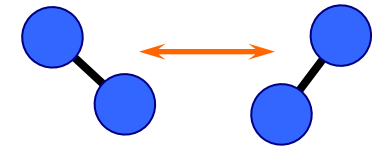
$$E_c \sim q_1 \cdot q_2$$



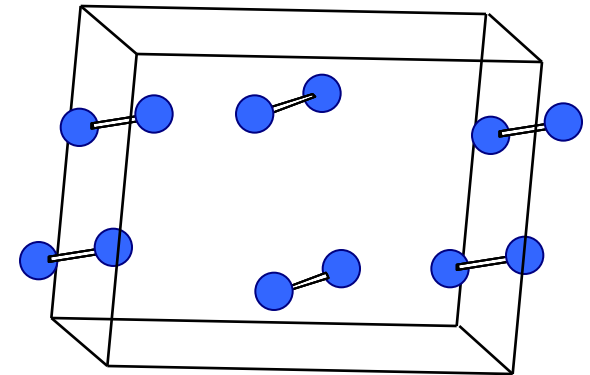
*crystal de  $Na_2SO_4$*



*Attraction  
van der Waals*



*crystal de  $\text{CO}_2$*



*crystal de  $\text{N}_2$*