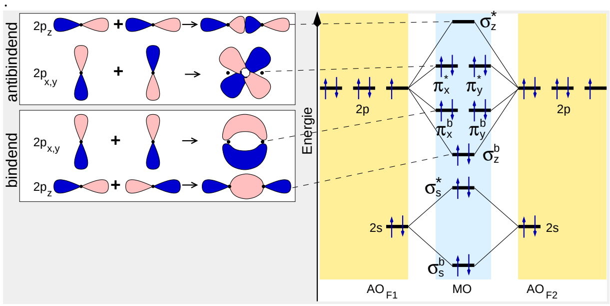
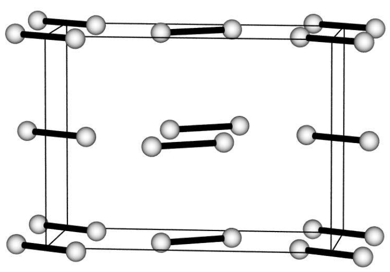
4. Halogene: F, Cl, Br, I, At

4.1. Elemente

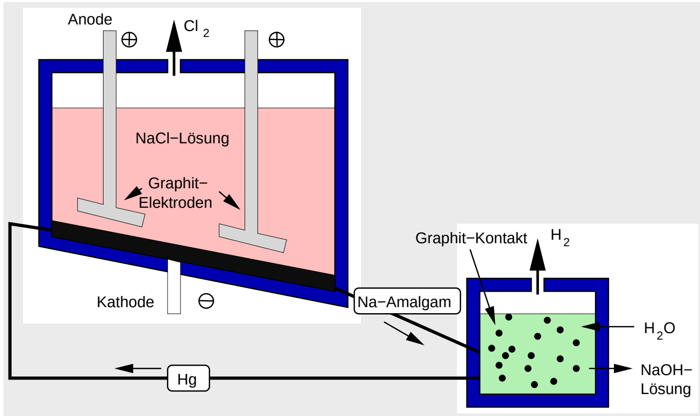
	Fluor	Chlor	Brom	Iod
E_A [eV]	-3.4	-3.6	-3.4	-3.1
EN	4.1	2.8	2.7	2.2
I_E [eV]	17.5	13.0	11.8	10.4
E_0 [V]	+2.87	+1.36	+1.07	+0.54
$E_{X_2 \rightarrow 2X}$ [$\frac{kJ}{mol}$]	158	244	193	151
Kp_{X_2} [°C]	-220	-101	-7	114
d_{X-X} [pm]	142	199	228	267
r_{X^-} [pm]	136	181	195	216
sonstige	$\xrightarrow{\text{Affinitätzuelektroneg.Elem.}}$ MetallischerCharakter			
Tendenzen	$\xleftarrow{\text{Affinitätzuelektropos.Elem.}}$ Reaktionsfähigk.,Oxidationskraft			



MO-Schema für F_2



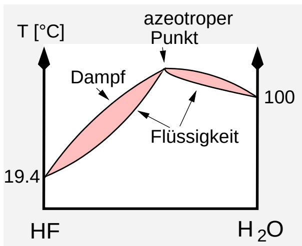
Kristallstruktur von I_2



Amalgam-Verfahren (NaOH/Cl_2-Gewinnung)

4.2 Wasserstoffverbindungen

	HF	HCl	HBr	HI
Siedepunkt	+19.5	-85.1	-66.7	- 35.4
Schmelzpunkt	-83.1	-114.2	-86.8	-50.8
Bildungsenthalpie [$\frac{kJ}{mol}$]	-271	-92	-36	27
		$\xrightarrow{\text{Säurestärke}}$		
Azeotrope (Gew.% HX)	35	20.2	47	57
Azeotrope (Kp. in [°C])	112	110	126	127
d_{X-H} [pm]	92	127	142	162



Positiv-Azeotrop HF-H_2O

4.3 Interhalogenverbindungen