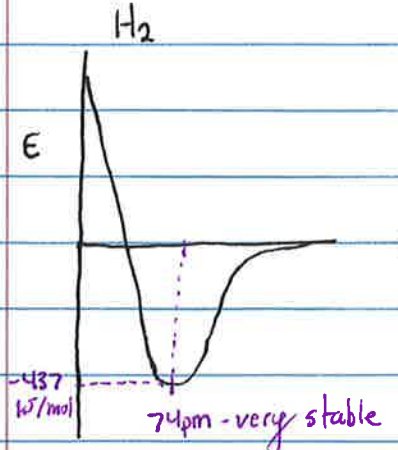
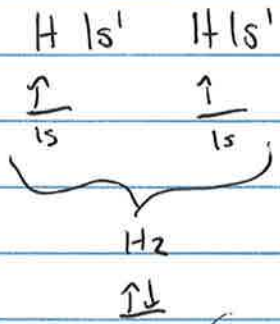


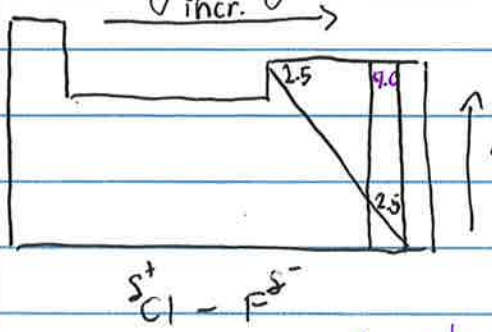


$H_2 \rightarrow 2H$ $\Delta E = +436$ kJ/mol (bond dissociation)

$2H \rightarrow H_2$ $\Delta E = -436$ kJ/mol (bond energy)

	bond distance	bond dissociation energy
F_2	141pm	159 kJ/mol
Cl_2	199pm	243 kJ/mol
Br_2	228pm	193 kJ/mol
I_2	267pm	151 kJ/mol

electronegativity - how much an atom "wants" another electron relatively



- F is the highest at 4.0
- H is 2.1

E.N 3.0 4.0 ← F wants it a little more, so the electrons are pulled more towards F making it a little negative (S^-)

C_sF $\Delta EN = 3.3$ (very ionic)

a7 4.0

if $\Delta EN < 0.5$, the bond is effectively entirely covalent (barely polar covalent)

C-F $\Delta EN = 1.5$ (polar covalent) since the electrons are pulled more towards F
2.5 4.0

F-F $\Delta EN = 0$ (non-polar)
4.0 4.0

	Ionic	polar-covalent	cov-Molec
	NaCl	HCl (g)	Cl_2
state of matter at RT	solid	gas	gas
melting pt	801°C	-115°C	-102°C
boiling pt	1465°C	-84°C	-34°C

lewis dots to understand covalent bonding (valence electrons)
s + p only => 8 possible electrons

:Ne: :Ar: :F:
octet octet

:F: F: both have octet so ∴
↖ electron shared pair (covalent bond)

H: H both have duplet so ∴
H: F: H has duplet, F has octet so ∴

:O· or :O: :O: H :O::O:
"need 2 more" H double bond

·N· ·C·

· Steps for drawing good lewis structures

1. Sketch the atoms being used
2. Adjust the central atom for charge
   - cation? erase one electron
   - anion? add one electron
3. Add bonding atoms one at a time while trying to make both atoms have an octet. (add O first)

CO_2 ·C· :Ö· or :Ö:

:Ö::C::Ö:

NO_2^+ :N· :Ö· or :Ö:

$[:Ö::N::Ö:]^+$

NO_2^- ·N· :Ö· or :Ö:

$[:Ö:N::Ö:]^-$

Oxygen "snap on"

NO_3^-