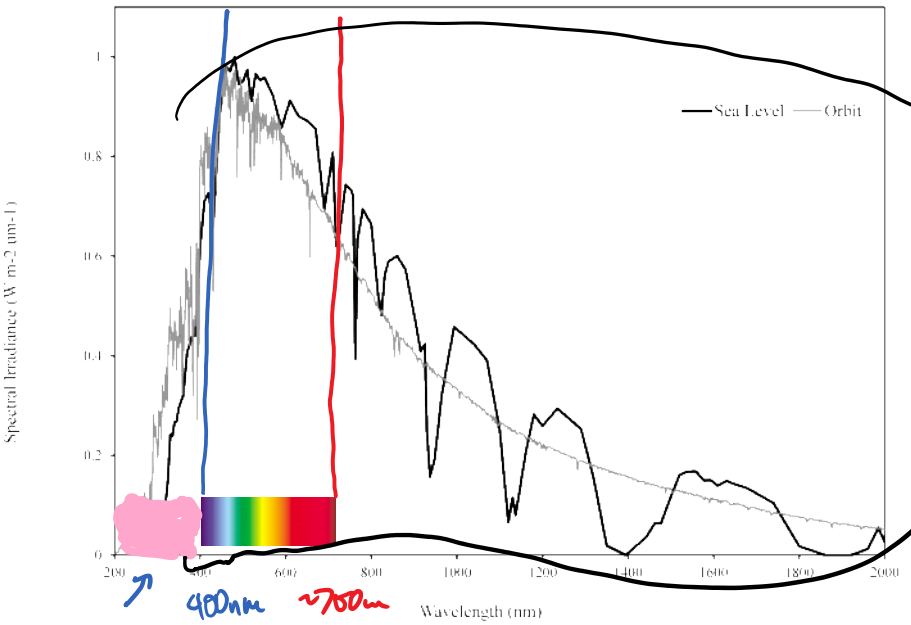


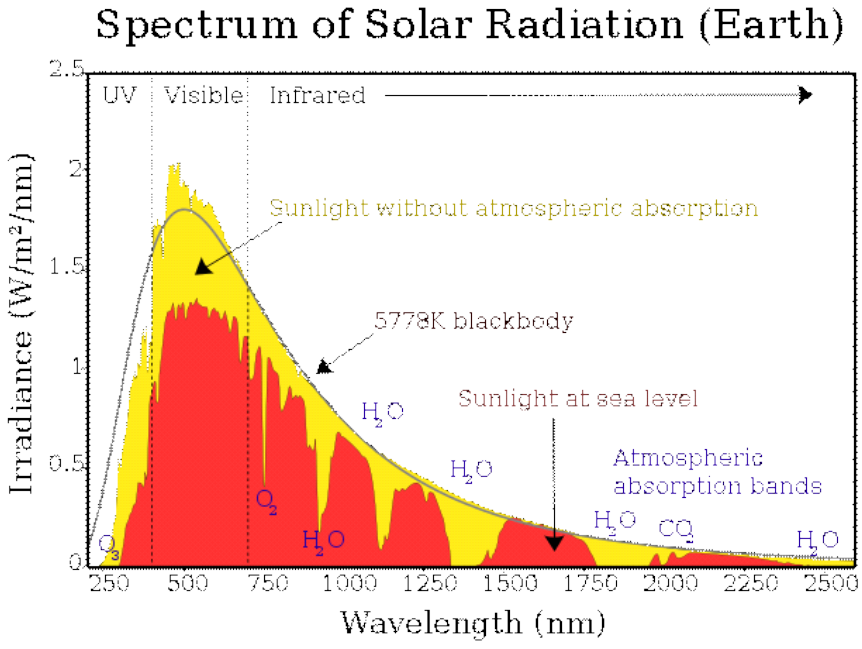
excitation

bond "broken"

#1 + #6

UV absorption

UV



end point of polymers

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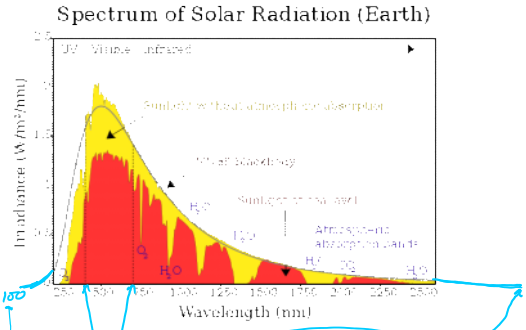


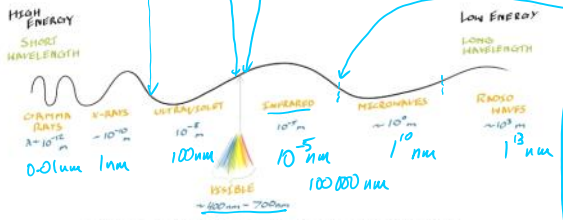


Figure 1. The electromagnetic spectrum. Visible light is only a tiny little bit of the spectrum.

$E = \frac{hc}{\lambda}$ E = energy

$h = 6.626 \times 10^{-34}$ J·s Planck constant

$c = 3 \times 10^{8}$ m/s speed of "light"

λ = wavelength = 650 nm

$= 650 \times 10^{-9}$ m

$= 6.50 \times 10^{-7}$ m

$= \frac{(6.626 \times 10^{-34}\ J \cdot s)(3 \times 10^{8}\ m/s)}{650 \times 10^{-9}\ m}$

$E = 3.06 \times 10^{-19}$ J "electron charge energy"

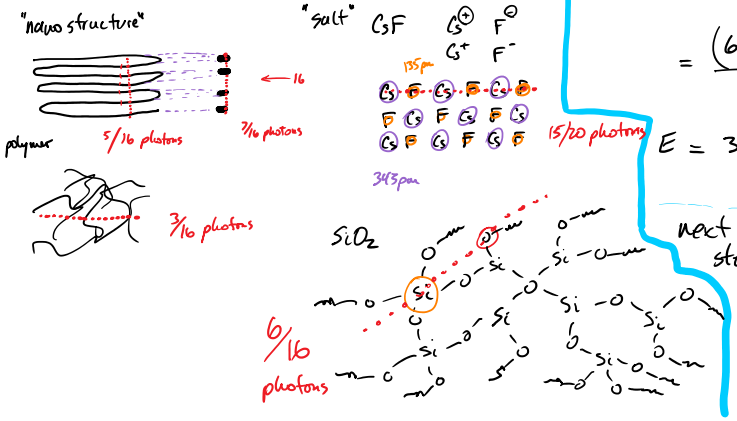
J - electron charge

next step J → eV 1eV - 1 volt

$1eV = E(1e^{-}\text{ through }1V) = 1.602 \times 10^{-19}\ C \cdot 1\ \frac{J}{C}$

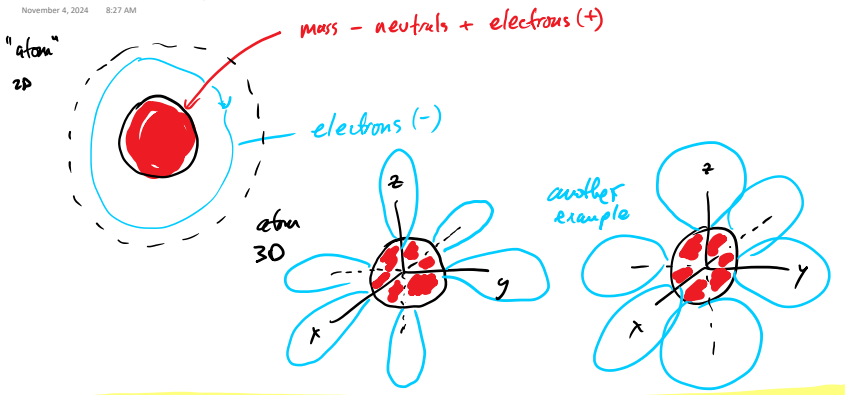
$= 1.602 \times 10^{-19}\ \frac{J}{eV}$

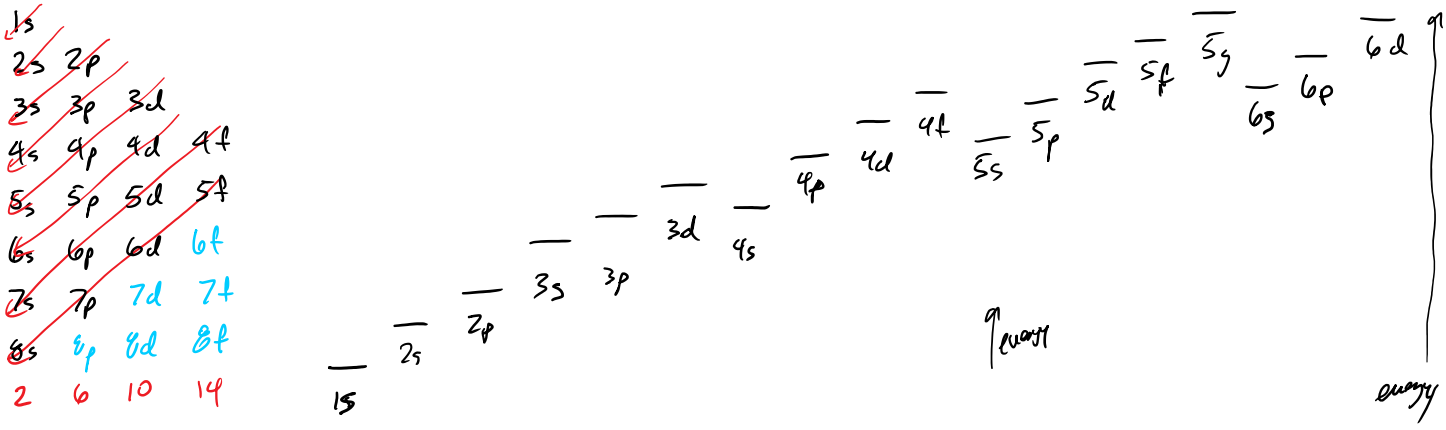
$E = \frac{3.06 \times 10^{-19}\ J}{1.602 \times 10^{-19}\ \frac{J}{eV}} = 1.91\ eV$



Electron/Electronic Configuration

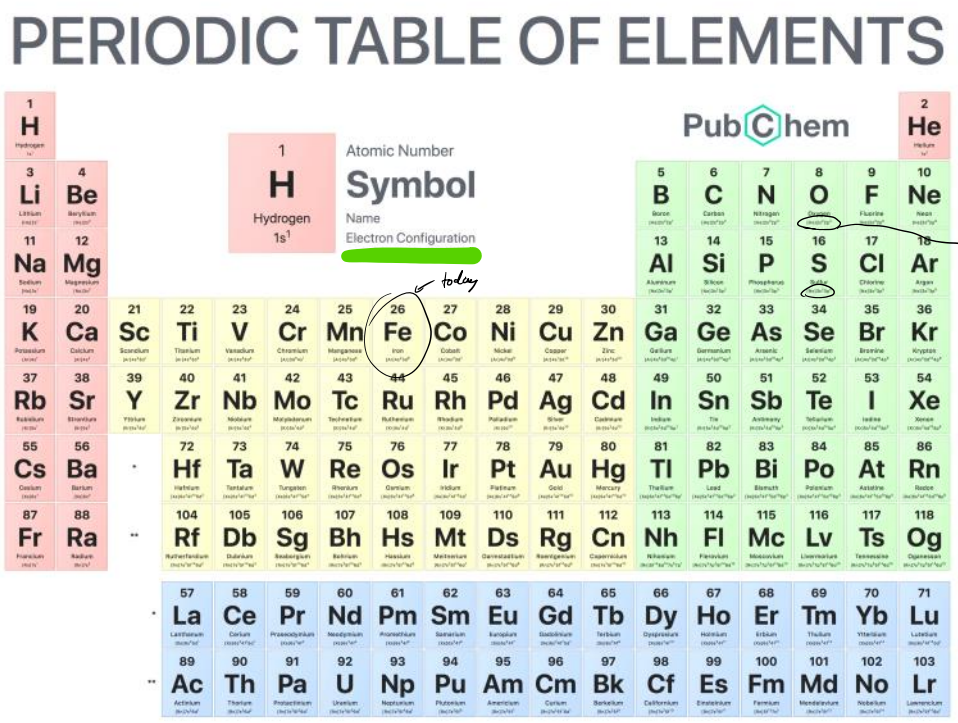
November 4, 2024 8:27 AM





Periodic Table - Electron Configuration

November 1, 2024 9:12 AM



$1s^2$

Neon - Ne

$[He]\,2s^2 2p^6 = 1s^2 2s^2 2p^6$

Oxygen $[He]\,2s^2 2p^4$

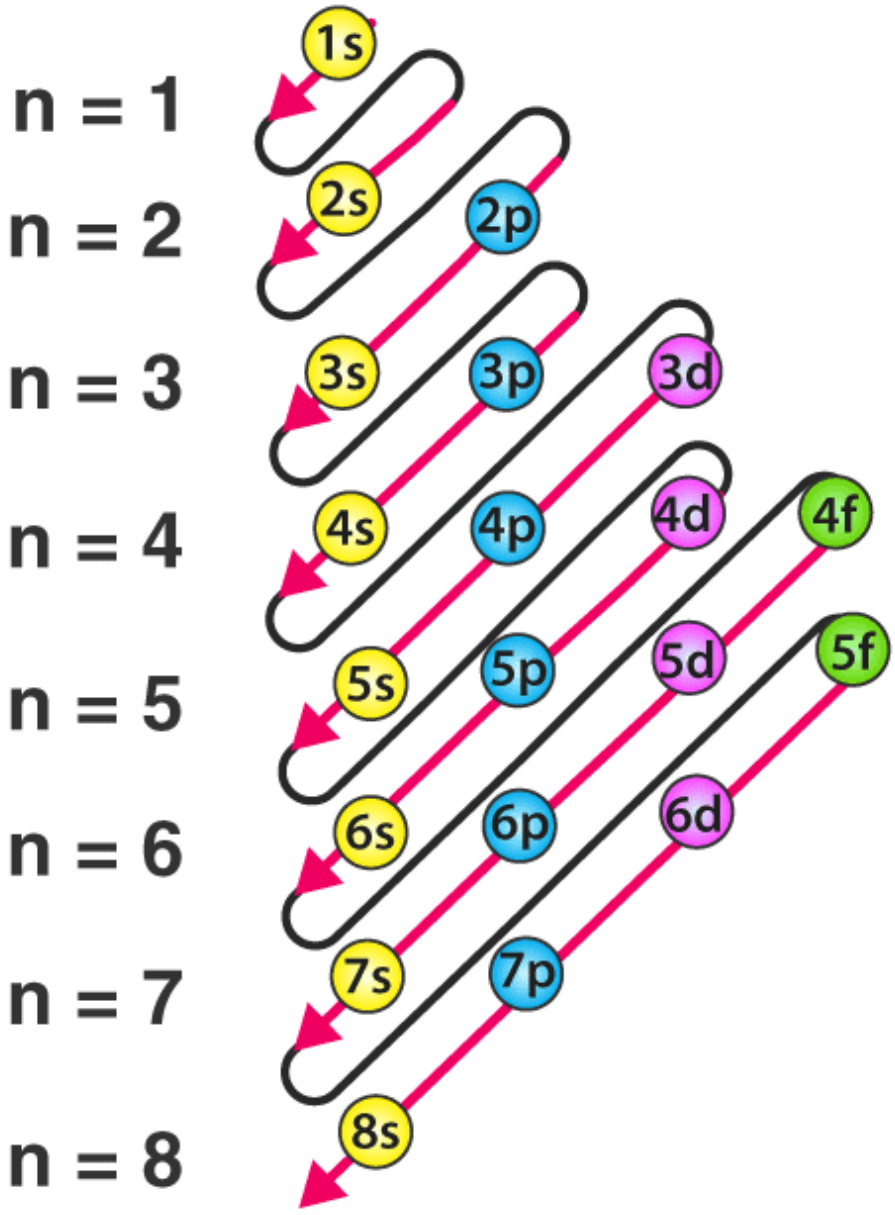
Argon - Ar $[Ne]\,3s^2 3p^6 = 1s^2 2s^2 2p^6 3s^2 3p^6$

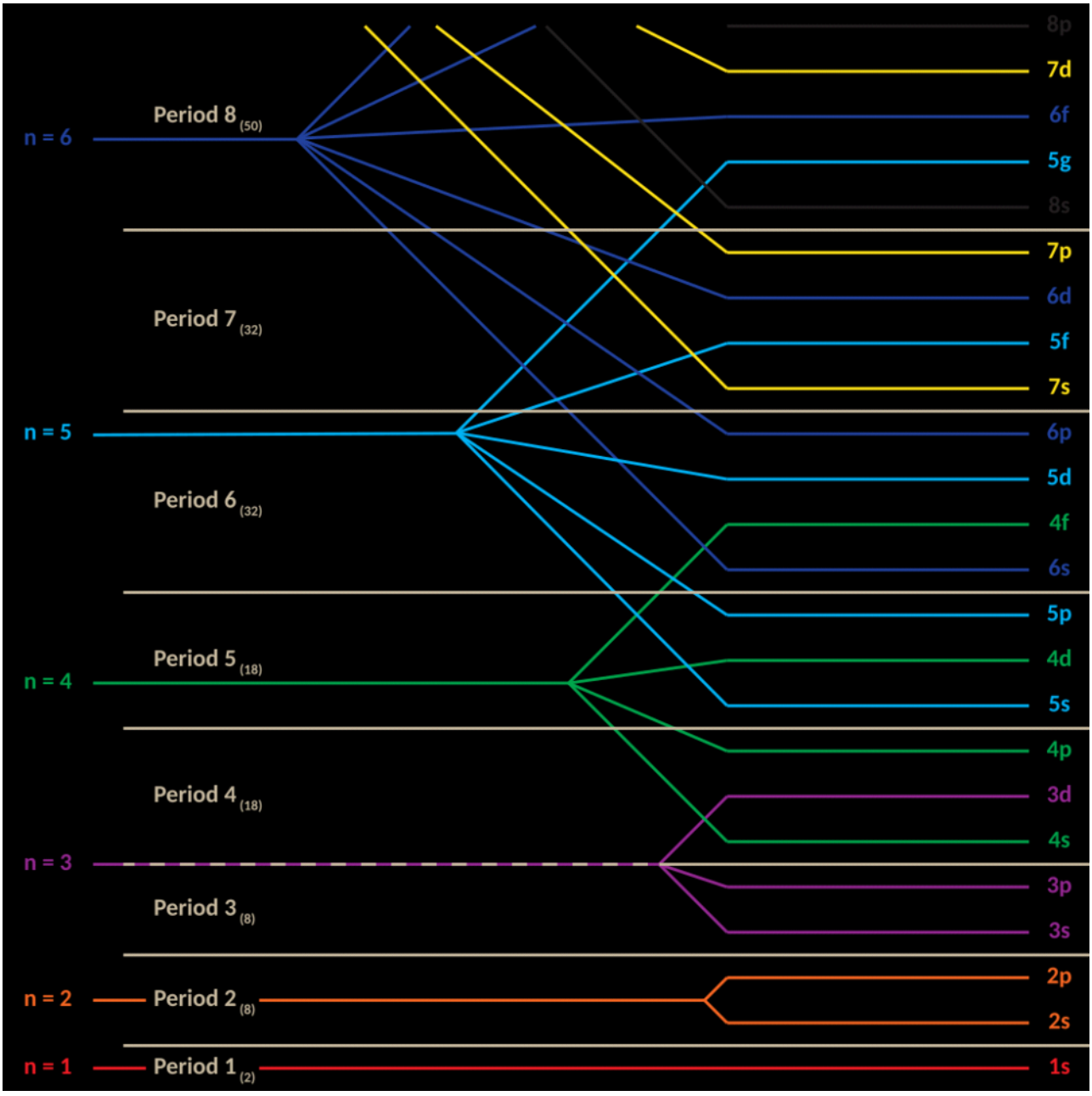
Krypton - Kr $[Ar]\,4s^2 3d^{10} 4p^6 = 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

Xenon - Xe $[Kr]\,5s^2 4d^{10} 5p^6$

Radon - Rn $[Xe]\,6s^2 4f^{14} 6d^{10} 6p^6$

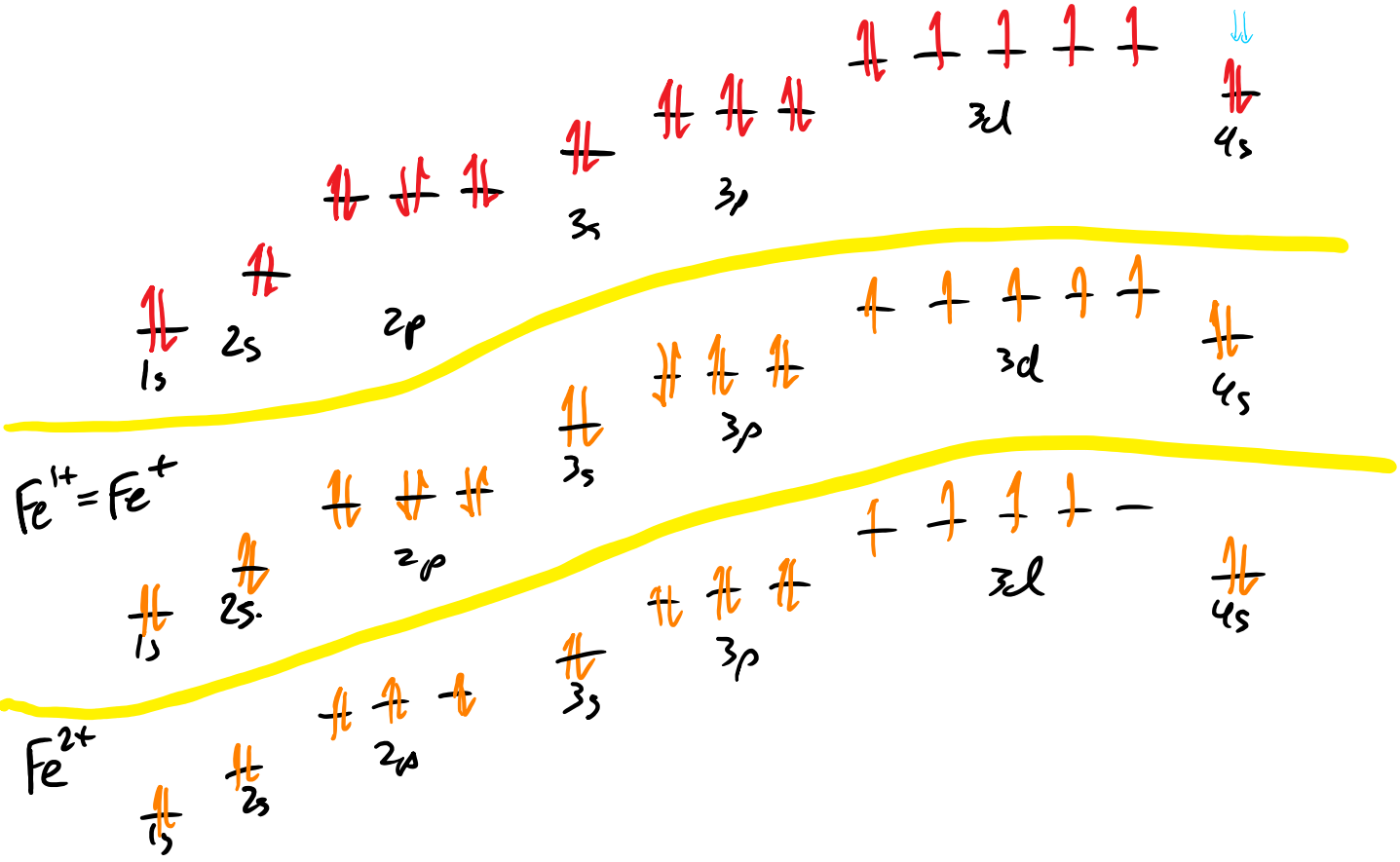
Oganesson - Og $[Rn]\,7s^2 7p^6 5f^{14} 6d^{10}$


n = 1
n = 2
n = 3
n = 4
n = 5
n = 6
n = 7
n = 8
1s
2s
2p
3s
3p
3d
4s
4p
4d
4f
5s
5p
5d
5f
6s
6p
6d
7s
7p
8s

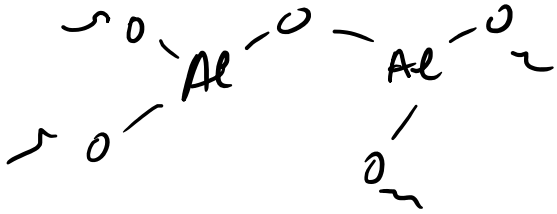

n = 6
n = 5
n = 4
n = 3
n = 2
n = 1
Period 8 (50)
Period 7 (32)
Period 6 (32)
Period 5 (18)
Period 4 (18)
Period 3 (8)
Period 2 (8)
Period 1 (2)
8p
7d
6f
5g
8s
7p
6d
5f
7s
6p
5d
4f
6s
5p
4d
5s
4p
3d
4s
3p
3s
2p
2s
1s
energy

Iron (Fe) - example

$Fe = [Ar]\ 4s^2 3d^6 = 1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^6$



Al_2O_3



CsF

Cs^+ F^-

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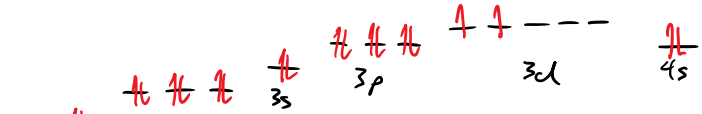
Electron/Electronic Configuration

Titanium (Ti) $[Ar]\,4s^2\,3d^2 = Ti^0$



$Cl^0\ [Ne]\,3s^2\,3p^5$

$Cl^-\ [Ne]\,3s^2\,3p^6$

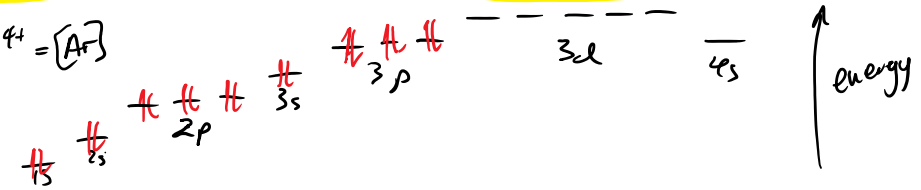
$Ti^{2+} + O^{2-} \rightarrow TiO$

$Ti^{4+} + 2O^{2-} \rightarrow TiO_2$

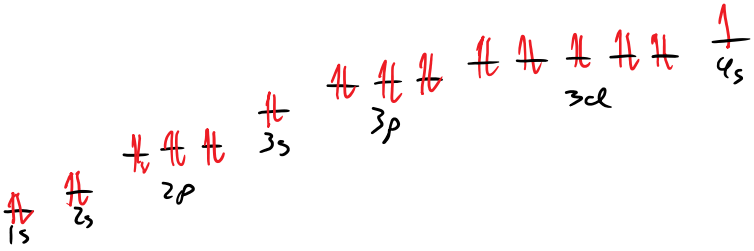
$Ti^{4+} + 4Cl^- \rightarrow TiCl_4$

$TiO_2 + 4HCl\ (gas) \rightleftharpoons TiCl_4 + 2H_2O$

$Ti^{4+} = [Ar]$

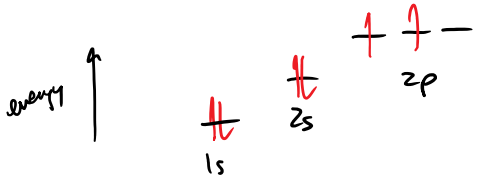


Copper (Cu) $[Ar]\,4s^1\,3d^{10}$

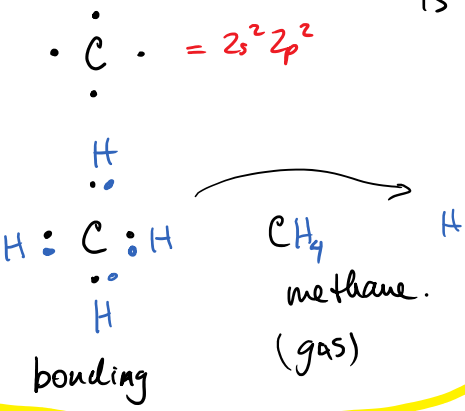


thermodynamic difference.

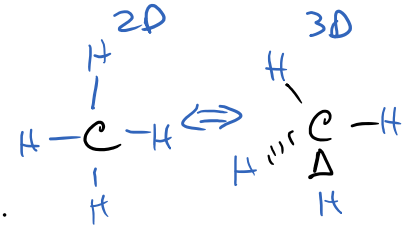
Carbon (C) $[He]2s^2\,2p^2 = 1s^2\,2s^2\,2p^2$



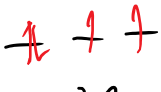
+ Hydrogen $1s^1$ $H\cdot$



CH_4 methane. (gas)



Carbon dioxide CO_2



Oxygen $[He]\,2s^2\,2p^4$

equilibrium

Periodic Table - Electron Configuration

November 8, 2024 2:00 PM