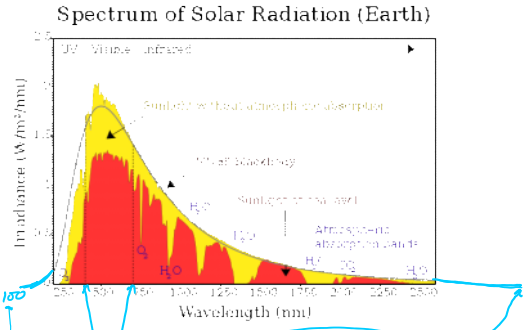


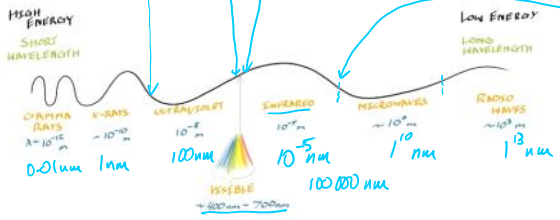
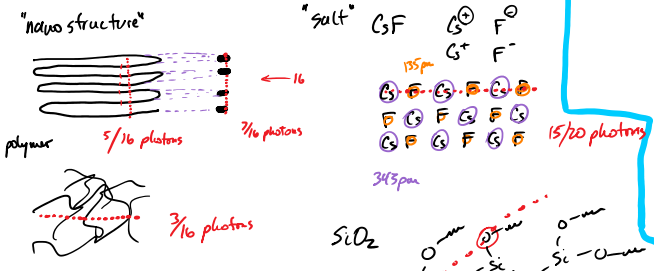


Figure 1. The electromagnetic spectrum. Visible light is only a tiny little bit of the spectrum.



$E = \frac{hc}{\lambda}$ — E = energy

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

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

λ = wavelength = 650 nm

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

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

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

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

J - electron charge

next step J → eV 1eV - 1 volt

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

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

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