$N_A = 6.022 \times 10^{23}$ $K = °C + 273$

$R = 0.08206$ Latm/molK $= 8.314$ J/Kmol

$E=hc/\lambda$ $E = -2.178 \times 10^{-18}$ J $(Z^2/n^2) = -1312$ kJ/mol (Z^2/n^2)

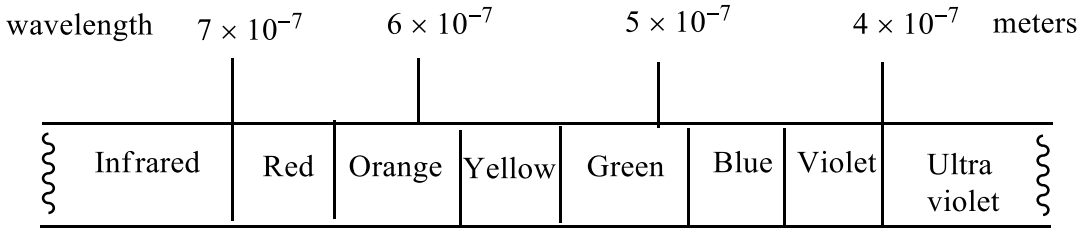
Root mean square velocity $= \sqrt{\frac{3RT}{M}}$ $\lambda = \frac{h}{mv}$

$c = 2.998 \times 10^8$ m/s $h = 6.62608 \times 10^{-34}$ Js

$\Delta x \Delta p = h$ $m_e = 9.10939 \times 10^{-31}$ kg

$E_n = \frac{n^2h^2}{8mL^2}$ $E = \frac{h^2}{8m}\left[\frac{n_x^2}{L_x^2} + \frac{n_y^2}{L_y^2} + \frac{n_z^2}{L_z^2}\right]$

1 pm $= 10^{-12}$ m 1 nm $= 10^{-9}$ m



$$CN^- > NO_2^- > en > NH_3 > H_2O > OH^- > F^- > Cl^- > Br^- > I^-$$

Strong-field ligands (large Δ)

Weak-field ligands (small Δ)

Table 19.16

Approximate Relationship of Wavelength of Visible Light Absorbed to Color Observed

Absorbed Wavelength in nm (color)	Observed Color
400 (violet)	Greenish yellow
450 (blue)	Yellow
490 (blue-green)	Red
570 (yellow-green)	Violet
580 (yellow)	Dark blue
600 (orange)	Blue
650 (red)	Green