

## Formulae and Stuff - Chem 221

$$1 \text{ eV} = 8067.5 \text{ cm}^{-1} = 1.6022 \times 10^{-19} \text{ J} = 1.6022 \times 10^{-12} \text{ ergs}$$

$$c = 2.9979 \times 10^8 \text{ m/sec} \quad h = 6.6256 \times 10^{-34} \text{ Joule-sec} = 6.6256 \times 10^{-27} \text{ erg-sec}$$

$$N = 6.022137 \times 10^{23} \text{ mol}^{-1} \quad \beta = 5.051 \times 10^{-24} \text{ erg/gauss} \quad f = 96,485.31 \text{ C/mol e}^{-}$$

$$\mu (^1\text{H}) = 2.7927 \text{ nuclear magnetons} \quad k = 1.38054 \times 10^{-23} \text{ J/K} = 1.38054 \times 10^{-16} \text{ erg/K}$$

$$N = 16(t_R/W)^2 \quad k' = t_R'/t_M \quad k' = K(V_S/V_M)$$

$$R_S = \frac{2(\Delta Z)}{W_A + W_B} \quad R_S = (N^{1/2}/4) [(\alpha - 1)/\alpha] [k_B'/(1 + k_B')]$$

$$N = 16R_S^2[\alpha/(\alpha - 1)]^2[(1 + k_B')/k_B']^2 \quad t_R = 16(R_S)^2[\alpha/(\alpha - 1)]^2[(k_B' + 1)^3/(k_B')^2](H/u)$$

$$\alpha = k_B'/k_A' \quad \alpha = (t_R')_B/(t_R')_A$$

$$E = h\nu \quad \lambda = c/\nu \quad \bar{\nu} = 1/\lambda$$

$$n_i = c/v_i \quad \frac{\sin\theta_1}{\sin\theta_2} = \frac{n_2}{n_1} = \frac{v_1}{v_2} \quad \frac{I_r}{I_o} = \frac{(n_2 - n_1)^2}{(n_2 + n_1)^2}$$

$$\lambda_{\text{max}} = 2898/T \quad D = F \times D_a \quad D^{-1} = 1/D$$

$$\Delta\lambda_{\text{eff}} = D^{-1} \times w \quad n\lambda = d(\sin i + \sin r) \quad dr/d\lambda = n/(d\cos r)$$

$$R = \lambda_{\text{avg}}/\Delta\lambda \quad R = nN \quad f = 2V_M/\lambda = (2V_M/c)\nu$$

$$\bar{\Delta\nu} = 1/\delta \quad \delta = 2x \quad A = \epsilon bc$$

$$A = -\text{Log}T \quad s_c/c = (0.434 s_T)/(T \text{ Log}T)$$

$$\nu = (1/2\pi)(k/\mu)^{1/2} \quad \bar{\nu} = (5.3 \times 10^{-12})(k/\mu)^{1/2} \quad \mu = (m_1 m_2)/(m_1 + m_2)$$

$$E = (\nu + 1/2)h\nu \quad b = N/[2(\bar{\nu}_1 - \bar{\nu}_2)] \quad \Delta\nu = 1/4\tau$$

$$N_2/N_1 = e^{-\Delta E/kT} \quad \nu_o = \gamma B_o/2\pi \quad h\nu = 2\mu\beta B_o$$

$$m/z = \frac{B^2 r^2}{2V} \quad v = (2eV/m)^{1/2}$$

$$i = nFAD_{\text{Ox}}(dC_{\text{Ox}}/dx) \quad i = \frac{nFA(D_{\text{Ox}})^{1/2}C_{\text{Ox}}}{(\pi t)^{1/2}} \quad E = E^o - (0.0592/n)\text{Log}(a_{\text{red}}/a_{\text{ox}})$$

$$(i_d)_{\text{max}} = 706 n (D_{\text{Ox}})^{1/2} m^{2/3} t^{1/6} C_{\text{Ox}}$$