

SUPPLEMENTAL INFORMATIONFundamental Constants/Conversion Factors/Relationships

Avogadro's Number	N_A	$= 6.022 \times 10^{23} / \text{mol}$
Gas Constant	R	$= 8.314 \text{ J/mol-K}$ $= 0.0821 \text{ L-atm/mol-K}$
Kelvin	K	$= ^\circ\text{C} + 273.15$
Fahrenheit to Celsius	$^\circ\text{C}$	$= \frac{5}{9} (^\circ\text{F} - 32)$
Pressure	1 atm	$= 760 \text{ mm Hg} = 760 \text{ torr} = 1.01325 \times 10^5 \text{ Pa}$ $K_f(\text{H}_2\text{O}) = 1.86^\circ\text{C}/m$ $K_b(\text{H}_2\text{O}) = 0.51^\circ\text{C}/m$

Equations

$$P_{\text{solution}} = X_{\text{solvent}} P_{\text{solvent}}^\circ$$

$$\Delta T_f = -iK_f m$$

$$\Delta T_b = iK_b m$$

$$\pi = iMRT$$

$$[A] = [A]_0 - kt$$

$$\ln[A] = \ln[A]_0 - kt$$

$$\frac{1}{[A]} = kt + \frac{1}{[A]_0}$$

$$t_{\frac{1}{2}} = \frac{[A]_0}{2k}$$

$$t_{\frac{1}{2}} = \frac{0.693}{k}$$

$$t_{\frac{1}{2}} = \frac{1}{k[A]_0}$$

$$k = Ae^{-E_a/RT}$$

$$\ln k = -\frac{E_a}{RT} + \ln A$$

$$\ln\left(\frac{k_1}{k_2}\right) = \frac{E_a}{R}\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$$