

Chem 531: Problem Set #8

Due in class: Thursday, November 30th

- (1) Calculate the value of the mean ionic molality m_{\pm} in 5.0×10^{-4} molal solutions of (a) KCl, (b) $\text{Ca}(\text{NO}_3)_2$, and (c) ZnSO_4 . Assume complete dissociation.
- (2) Express the mean ionic activity a_{\pm} in terms of m_{+} and m_{-} for (a) NaCl, (b) MgBr_2 , (c) Li_3PO_4 , and (d) $\text{Ca}(\text{NO}_3)_2$. Assume complete dissociation.
- (3) Calculate the mean ionic molality and mean ionic activity of a 0.150 *m* $\text{Ca}(\text{NO}_3)_2$ solution for which the mean ionic activity coefficient is 0.165.
- (4) Calculate the ionic strength I , the mean ionic activity coefficient γ_{\pm} , and the mean ionic activity a_{\pm} for a 0.0325 *m* solution of $\text{K}_4\text{Fe}(\text{CN})_6$ at 298 K. For the latter two quantities, utilize the Debye-Hückel limiting law.