

**Chapter 5 Example Problem—Vapor Pressure Lowering**

The vapor pressure of (pure) water at 20.0°C is 17.535 Torr. Consider a solution in which 30.00 g of lithium sulfate ( $M = 109.95 \text{ g mol}^{-1}$ ) is completely dissolved in 500. g of water ( $M = 18.02 \text{ g mol}^{-1}$ ). Assume that Raoult's Law applies to the solution.

- (a) Predict the vapor pressure of the aqueous lithium sulfate solution at 20.0°C.
- (b) Careful measurements with an isoteniscope reveal that the actual vapor pressure of the aqueous lithium sulfate solution at 20.0°C is 17.074 Torr. What is wrong with our calculation in part (a)?
- (c) What is wrong (or at least overly simplistic) with our refinement in part (b)?