

3. Camphor ($C_{10}H_{16}O$, MW = 152 g/mol) and naphthalene ($C_{10}H_8$, MW = 128 g/mol) are both molecular solids that can be used to make mothballs. A 5.2 gram sample of mothballs was dissolved in 100.0 g ethanol, and the resulting solution had a boiling point of 78.90 °C. Were the mothballs camphor or naphthalene? Ethanol has a boiling point of 78.41 °C and its $K_b = 1.22$ °C/m. Hint: $\Delta T_b = i K_b m$ where i is the van't Hoff factor. You must show your work.

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4. Aqueous ammonia is commercially available in a solution that is 28.0% NH_3 by mass. What is the molarity of NH_3 in this solution ($d = 1.165$ g/mL)?

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5. The vapor pressure of pure water at 25 °C is 23.8 torr. Calculate the vapor pressure (in torr) of a solution prepared by dissolving 35.0 g of urea [$(NH_2)_2CO$] in 75.0 g of water at 25 °C .

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