Molar Enthalpy Problems 1

1) Calculate the molar heat of dissolution of sodium hydroxide given that 4.00 g of NaOH dissolved in 20.0 mL of water changes the temperature from 22.0 °C to 72.0 °C.

Dissolution Equation with ΔH: _____

2) If 24.42 g of potassium chlorate are dissolved in 1.0 kg of water, the temperature of the water drops from 24.0 °C to 22.0 °C.

Calculate the change in enthalpy for the dissolution of $KClO_3$.

Sketch the enthalpy graph:

3) A laboratory technician prepares 2.0 L of sodium nitrate solution with a concentration of 0.10 mol/L. The molar enthalpy for the dissolution of sodium nitrate is 36.0 kJ/mol.

The initial temperature of the water used is 24.0 °C.

What is the final temperature of the solution?

Equation including the heat energy: _____

4) How many grams of potassium hydroxide must dissolved in 100. mL of water at 25.0 °C to the change the water temperature after dissolution to 80.0 °C if the heat of reaction for the dissolution is – 55.0 kJ/mol?

Equation including the heat energy: _____