

Exp. Number 2	Experiment Title/ Subject Heat of Reaction	06	
Name Kevin Zhang	Lab Partner	Course 1214	Section

Temperature of HCl: 15.3°C

Temperature of NaOH: 15.2°C

Final temperature: 28.8°C

Temperature change: 13.5°C

$$\Delta H = mc\Delta T = (150\text{g})(4.184\text{J/g}\cdot^{\circ}\text{C})(13.5^{\circ}\text{C}) = 8.50 \times 10^3 \text{ J}$$

exothermic
 8.50 kJ

$$\text{Moles of water} = \frac{2.0 \text{ mol}}{1 \text{ L}} \cdot \frac{1 \text{ L}}{1000 \text{ mL}} \cdot 75 \text{ mL} = 0.25 \text{ mol}$$

$$\Delta H \text{ per mole of water} = \frac{8.50 \text{ kJ}}{0.25 \text{ mol}} = 34.0 \text{ kJ/mol}$$

mass of Mg: 0.292 g

$$\text{moles of Mg} = (0.292\text{g}) \left(\frac{1 \text{ mol}}{24.305\text{g}} \right) = 0.0120 \text{ mol}$$

initial temperature: ~~15.8°C~~ 15.9°C

final temperature: 23.0°C

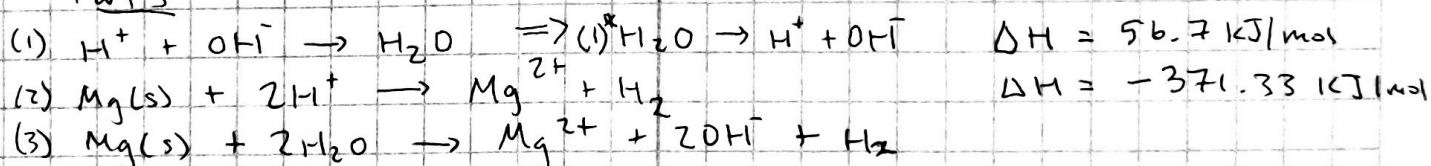
temperature change: 7.1°C

$$\Delta H = mc\Delta T = (150\text{g})(4.184\text{J/g}\cdot^{\circ}\text{C})(7.1^{\circ}\text{C}) = 4.456 \times 10^3 \text{ J}$$

exothermic
 4.456 kJ

$$\Delta H \text{ per mole of Mg} = \left(\frac{4.456 \text{ kJ}}{0.0120 \text{ mol}} \right) = 371.33 \text{ kJ/mol}$$

Part 3



$$\Delta H_{(3)} = \Delta H_{(2)} + 2\Delta H_{(1)} = -371.33 \text{ kJ/mol} + 2(56.7 \text{ kJ/mol})$$

$$= -257.93 \text{ kJ/mol}$$

Student's Signature	Date	Instructor/TA Signature	Date
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