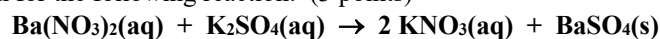


Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

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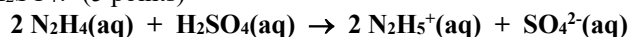
1. Complete the following problems.

a. Write the net ionic equation for the following reaction: (3 points)



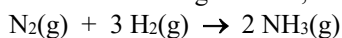
b. Write the spectator ion(s) in the reaction in #1a. (2 points)

2. Hydrazine,  $\text{N}_2\text{H}_4$ , a base like ammonia, can react with an acid such as sulfuric acid as shown below. What mass of hydrazine reacts with 155 mL of 0.310 M  $\text{H}_2\text{SO}_4$ ? (5 points)

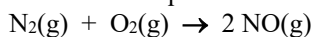


3. If 25 J are required to change the temperature of 5.0 g of substance A by 2.0 K, what is the specific heat of substance A? (4 points)

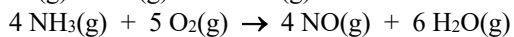
4. Determine  $\Delta H$  for the following reaction,



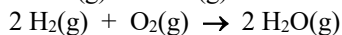
given the thermochemical equations below. (6 points)



$$\Delta H = +180.8 \text{ kJ}$$



$$\Delta H = -906.2 \text{ kJ}$$



$$\Delta H = -483.6 \text{ kJ}$$