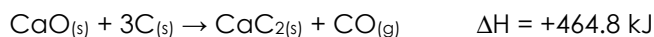Practice Quiz
Thermodynamics

1. Calcium carbide can be made by heating calcium oxide (lime) with carbon (charcoal) according to the following reaction:

$$CaO_{(s)} + 3C_{(s)} \rightarrow CaC_{2(s)} + CO_{(g)} \qquad \Delta H = +464.8 \text{ kJ}$$

How many kilojoules of heat are absorbed in a reaction in which 50.0 grams C(s) is consumed?

2. Large beds of granite rock are used in some solar-heated homes to store heat. Calculate the quantity of heat absorbed by 200.0 kg of rocks if their temperature increased by 16°C. The specific heat capacity of the granite rocks is 0.79 J/g°.

3. In a coffee-cup calorimeter, 0.0200 moles of CsOH and 0.0200 moles of HCl are mixed together with water to make a solution with a total volume of 150.0mL. The temperature of the solution before mixing was 22.50°C. After mixing the temperature of the solution is 24.28°C. What is the enthalpy of the reaction (ΔH) per mole of cesium hydroxide? Assume that the density of the solution is 1.01g/mL and that the specific heat of the solution is 4.2J/g°C.

4. Using the data provided, calculate the standard reaction enthalpy for the following reaction:

$$2Ag_2S_{(s)} + 2H_2O_{(l)} \rightarrow 4Ag_{(s)} + 2H_2S_{(g)} + O_{2(g)}$$
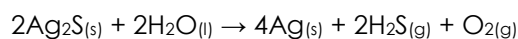
Compound	$\Delta H°f$ (kJ/mol)
$Ag_2S_{(s)}$	-32.6
$H_2O_{(l)}$	-285.5
$H_2S_{(g)}$	-20.5
$NO_{2(g)}$	33.84
$HNO_{3(aq)}$	-206.6
$NO_{(g)}$	90.37