Participation Assignment
CHEM 1090-General Chemistry I

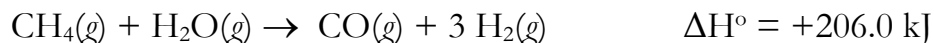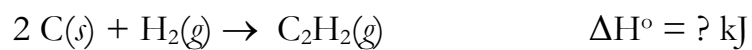**Name:** **#13**

Section: 32, TR **Due Date: Thursday 3/5/2020**

1. The first reaction in the steam reforming process for the production of hydrogen gas using methane is as follows:

$$CH_4(g) + H_2O(g) \rightarrow CO(g) + 3\ H_2(g) \qquad \Delta H^o = +206.0\ kJ$$

Write the chemical equation and the standard enthalpy value for the reaction of 2 moles of methane, CH_4.

2. The reverse of the reaction in #1 is sometimes called a methanation reaction. Write the chemical equation for the reverse reaction and also the standard enthalpy value for the production of 1 mole of methane.

3. Calculate the standard enthalpy of reaction for the following reaction:

$$2\ C(s) + H_2(g) \rightarrow C_2H_2(g) \qquad\qquad \Delta H° = ?\ kJ$$

Using only the following information:

$$2\ C_2H_2(g) + 5\ O_2(g) \rightarrow 4\ CO_2(g) + 2\ H_2O(l) \quad \Delta H° = -2598.8\ kJ$$

$$C(s) + O_2(g) \rightarrow CO_2(g) \qquad\qquad \Delta H° = -393.5\ kJ$$

$$2\ H_2(g) + O_2(g) \rightarrow 2\ H_2O(l) \qquad\qquad \Delta H° = -571.6\ kJ$$