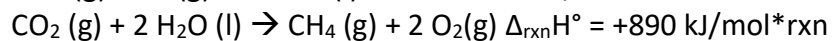
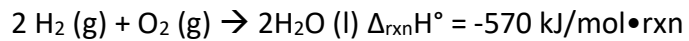
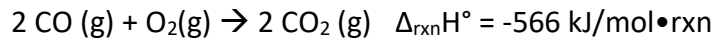


06/14/22

Using the following information, determine the  $\Delta_{\text{rxn}}H^\circ$  for  $\text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{CO}(\text{g}) + 3 \text{H}_2(\text{g})$



How much energy is required to make 10 kg of  $\text{H}_2(\text{g})$

Assume that coal is pure carbon. Write the balanced chemical equation for the burning of coal.

How many joules of heat can be generated when 100 pounds of coal is burned? The  $\Delta_f H^\circ$  of  $H_2O(l)$  = -285 kJ/mol and the  $\Delta_f H^\circ$  of  $CO_2(g)$  = -393 kJ/mol

How many kilograms of  $CO_2$  will be produced in this process?

Write the balanced equation for the combustion of natural gas - CH<sub>4</sub> (g)

How many joules of heat can be generated when 100 pounds of natural gas is burned? The  $\Delta_f H^\circ$  of H<sub>2</sub>O (l) = -285 kJ/mol, the  $\Delta_f H^\circ$  of CO<sub>2</sub> (g) = -393 kJ/mol and the  $\Delta_f H^\circ$  of CH<sub>4</sub> (g) = -74 kJ/mol.

How many kilograms of CO<sub>2</sub> will be produced in this process?

Compare coal to natural gas

Consider the combustion of gasoline  $\text{C}_8\text{H}_{18}$ .

Write the balanced chemical equation for this process

You combust 2.8 grams of gasoline in a calorimeter that contains 2.00 L of water and the temperature of the water increases by  $15.97^\circ\text{C}$ . The  $\Delta_f H^\circ$  of  $\text{H}_2\text{O} (\text{l}) = -285 \text{ kJ/mol}$  and the  $\Delta_f H^\circ$  of  $\text{CO}_2 (\text{g}) = -393 \text{ kJ/mol}$ . What is the  $\Delta_f H^\circ$  of  $\text{C}_8\text{H}_{18}$ ?