Answer on the Question #67787, Chemistry / General chemistry

What is the enthalpy change for: CH4 -> C+ 2H2 in kJ ?

Solution:

For this reaction:

Enthalpy of reaction is the difference between the sum of standard heat of formation of products and the sum of standard heat of formation of reactants:

$$\Delta H_{reaction} = \sum \Delta_f H_{products} - \sum \Delta_f H_{reactants}$$

Enthalpy of the reaction studied:

$$\Delta H_{reaction} = \sum 2 \cdot \Delta_f H_{H_2} + \Delta_f H_C - \sum \Delta_f H_{CH_4}$$

Values of the standard enthalpies of formation taken from the CRC Handbook:

$$\Delta H_{reaction} = \sum 2 \cdot 0 + 0 - \sum -74.81 = 74.81\ kJ$$

Answer: Enthalpy of the reaction is 74.81 kJ