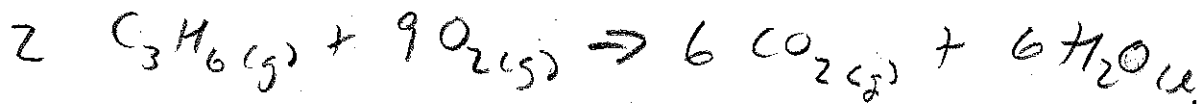


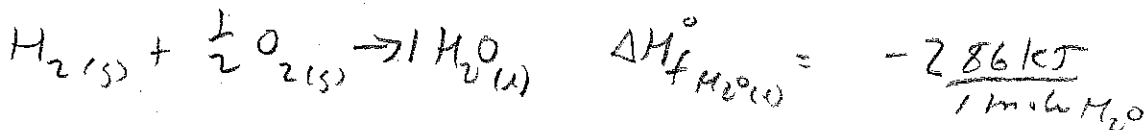
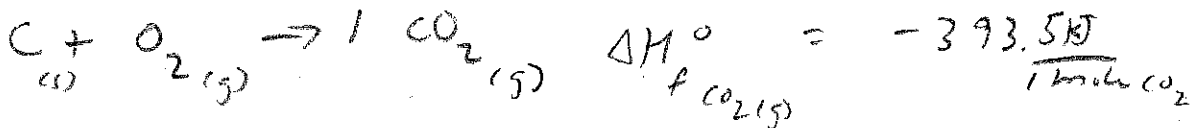
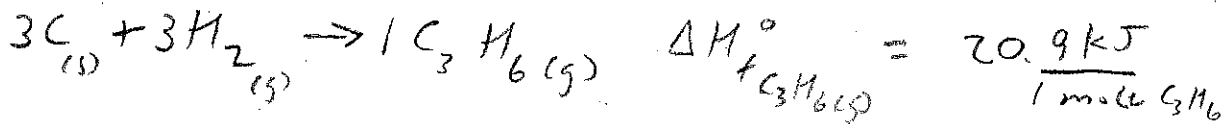
# Standard Enthalpies of Formation

Calculate  $\Delta H_{\text{rxn}}^{\circ}$  for following:



$$\Delta H_{\text{rxn}}^{\circ} = \sum n_p \cdot \Delta H_f^{\circ}(\text{product}) - \sum n_r \cdot \Delta H_f^{\circ}(\text{reactant})$$

Info from book (Standard Enthalpy of Formation)



$$\Delta H_{\text{rxn}}^{\circ} = (6 \text{ mole CO}_2)(\Delta H_{f, \text{CO}_2}^{\circ}) + (6 \text{ mole H}_2\text{O})(\Delta H_{f, \text{H}_2\text{O}}^{\circ}) - (2 \text{ mole C}_3\text{H}_6)(\Delta H_{f, \text{C}_3\text{H}_6}^{\circ}) - (9 \text{ mole O}_2)(\Delta H_{f, \text{O}_2}^{\circ})$$

$$\Delta H_{\text{rxn}}^{\circ} = (6 \text{ mole CO}_2)\left(\frac{-393.5 \text{ kJ}}{1 \text{ mole CO}_2}\right) + (6 \text{ mole H}_2\text{O})\left(\frac{-286 \text{ kJ}}{1 \text{ mole H}_2\text{O}}\right) - (2 \text{ mole C}_3\text{H}_6)\left(\frac{20.9 \text{ kJ}}{1 \text{ mole}}\right) - (9 \text{ mole O}_2)\left(\frac{0 \text{ kJ}}{1 \text{ mole O}_2}\right)$$

$$\Delta H_{\text{rxn}}^{\circ} = -2361 \text{ kJ} + (-1716 \text{ kJ}) - 41.80 \text{ kJ} - 0 \text{ kJ}$$

$$\Delta H_{\text{rxn}}^{\circ} = -4.118 \times 10^3 \text{ kJ}$$

$$\Delta H_{\text{rxn}}^{\circ} = -4.12 \times 10^3 \text{ kJ}$$

which means

$$\frac{-4.12 \times 10^3 \text{ kJ}}{2 \text{ mole C}_3\text{H}_6 \text{ react}} = \frac{-4.12 \times 10^3 \text{ kJ}}{9 \text{ mole O}_2 \text{ react}} = \frac{-4.12 \times 10^3 \text{ kJ}}{6 \text{ mole CO}_2 \text{ product}} = \frac{-4.12 \times 10^3 \text{ kJ}}{6 \text{ mole H}_2\text{O}}$$