

Homework



$$\textcircled{1} \quad \Delta H_r = n H_r$$

$$\Delta H_r = \sum n H_{f,p} - \sum n H_{f,r}$$

$$\Delta H_r = \left[(1 \text{ mol}) \left(-393.5 \frac{\text{kJ}}{\text{mol}} \right) + (2 \text{ mol}) \left(-241.8 \frac{\text{kJ}}{\text{mol}} \right) \right] - \left[(1 \text{ mol}) \left(-239.1 \frac{\text{kJ}}{\text{mol}} \right) + \left(\frac{3}{2} \text{ mol} \right) \left(0 \frac{\text{kJ}}{\text{mol}} \right) \right]$$

$$\Delta H_r = -638 \text{ kJ}$$

$$\Delta H_r = n H_r$$

$$H_r = \frac{\Delta H_r}{n} = \frac{-638 \text{ kJ}}{1 \text{ mol}} = \boxed{-638 \text{ kJ/mol}}$$

Thermal Stability

Thermal Stability - the tendency of a compound to resist decomposition when heated.

- the more endothermic the simple decomposition (sd), the more stable the compound.

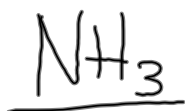
$$\text{Ex. } H_{(\text{sd})}^{\circ} = + 280.7 \text{ kJ/mol} \\ \text{SnO}$$

$$H_{(\text{sd})}^{\circ} = + 577.6 \text{ kJ/mol} \\ \text{SnO}_2$$

Therefore SnO₂ is more stable.

*Normally not given the H_{sd} , but given the H_{f}

Which is more stable, ammonia or **butane**?



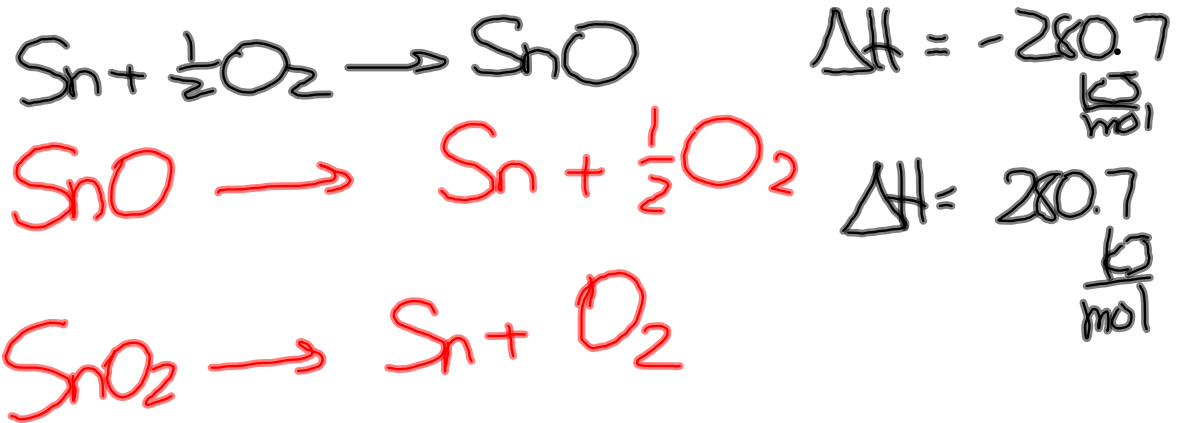
$$H_{\text{f}} = -45.9 \text{ kJ/mol}$$

$$H_{\text{sd}} = 45.9 \text{ kJ/mol}$$



$$H_{\text{f}} = -125.6 \text{ kJ/mol}$$

$$H_{\text{sd}} = 125.6 \text{ kJ/mol}$$



Worksheet

