Homework

1. molar heat

$\Delta H_r = \Sigma n H_{fP} - \Sigma n H_{fr}$ ← heat of rxn

$H_r = \frac{\Delta H_r}{n} =$ kJ/mol

Reference Energy State

Reference energy state - elements are defined as the reference point at which the potential energy is shown to be zero.
Therefore: E_p of $H_{2(g)} = 0$ kJ

Ex. $H_{2(g)} + 1/2O_{2(g)} \longrightarrow H_2O_{(g)}$ $\Delta H_f = -285.8$ kJ

*allows us to describe the enthalpy change for a formation reaction from zero to a final value

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.

Ex. $H^o_{(sd)}$ = + 280.7 kJ/mol
SnO

$H^o_{(sd)}$ = + 577.6 kJ/mol
SnO_2

Therefore SnO_2 is more stable.

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

Which is more stable, ammonia or butane?

$NH_{3(g)}$

H_f = -45.9 kJ/mol

H_{sd} = 45.9 kJ/mol

$C_4H_{10(g)}$

H_f = -125.6 kJ/mol

H_{sd} = 125.6 kJ/mol

$\Delta H_{SD} = ?$

$$H_2O_{(\ell)} \rightarrow H_{2(g)} + \tfrac{1}{2}O_{2(g)}$$

$$H_{2(g)} + \tfrac{1}{2}O_{2(g)} \rightarrow H_2O_{(\ell)} \quad \Delta H_f = ?$$

Worksheet