

Spring 2006 CH302 Worksheet 1a: The thermodynamics of chemical and physical processes

Chemical Reaction		ΔH (kJ)	BE (kJ)	Δn_{ga}	w (kJ)	Δn_{system}	TΔS (kJ)	ΔG (kJ)
$CH_{4g} + 2O_{2g} \rightarrow CO_{2g} + 2H_2O_g$	sign							
Explain: Combustion reaction, would predict large heat and spontaneous reaction. $\Delta n = 0$ means no work, small entropy change.	calc.							
$2H_{2g} + O_{2g} \rightarrow 2H_2O_g$	sign							
Explain:	calc.							
$2H_2O_g \rightarrow 2H_{2g} + O_{2g}$	sign							
Explain:	calc.							
$C_2H_5OH_l + 3O_{2g} \rightarrow 2CO_{2g} + 3H_2O_g$	sign							
Explain:	calc.							
$C_2H_5OH_l + 3O_{2g} \rightarrow 2CO_{2g} + 3H_2O_l$	sign							
Explain:	calc.							
$C_3H_{8g} + 5O_{2g} \rightarrow 3CO_{2g} + 4H_2O_g$	sign							
Explain:	calc.							
$2H_2O_{2l} \rightarrow 2H_2O_l + O_{2g}$	sign							
Explain:	calc.							
$CCl_{4l} \rightarrow C_s + 2Cl_{2g}$	sign							
Explain:	calc.							
$Ba(OH)_2(H_2O)_{8s} + 2NH_4NO_3 \rightarrow Ba(NO_3)_2s + 2NH_{3g} + 10H_2O_l$	sign							
Explain:	calc.							

$2\text{O}_{3g} \rightarrow 3\text{O}_{2g}$	sign							
Explain:	calc.							

Chemical Reaction		ΔH (kJ)	BE (kJ)	Δn_{ga}	w (kJ)	Δn_{system}	T ΔS (kJ)	ΔG (kJ)
$\text{CO}_{2g} \rightarrow \text{CO}_{2s}$	sign							
Explain:	calc.							
$\text{NH}_{3g} + \text{HCl}_g \rightarrow \text{NH}_4\text{Cl}_s$	sign							
Explain:	calc.							
$\text{H}_2\text{O}_s \rightarrow \text{H}_2\text{O}_l$	sign							
Explain:	calc.							
Reaction:	sign							
Explain:	calc.							
	sign							
Explain:	calc.							
Reaction:	sign							
Explain:	calc.							
Reaction:	sign							
Explain:	calc.							
Reaction:	sign							
Explain:	calc.							

Reaction:	sign							
Explain:	calc.							
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Explain:	calc.							