

Name_____

Section

Due Friday Dec 2, 2011

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1. For the reaction: $2\text{NO}_2(\text{g}) \rightarrow \text{N}_2\text{O}_4(\text{g})$

$$\Delta S^\circ = -175.8 \text{ J/K.mol N}_2\text{O}_4$$

$$\Delta H^\circ = -57.2 \text{ kJ/mol N}_2\text{O}_4$$

- Explain why ΔS° is negative.
- Since ΔH° is also negative, what does this mean about the relative stabilities of the reactants and products (which do you think is more stable?). Draw a graph where H is on the y axis and reaction progress is on the x axis, to show the relative positions of the reactants and products
- Calculate ΔG° (remember $T = 298\text{ K}$ at the standard state) – what are the units?
- Is this reaction spontaneous? (what is the sign of ΔG°)
- At what temperature is the reaction at equilibrium?