

Gases

① $\frac{P}{T}$

↓ P allows gas to expand

② ↓ U to maintain P.

$\Delta = (\text{final} - \text{initial})$

State function G, H, S

Mar 20-8:07 AM

Spontaneous - Ball rolls down hill

G, H, S

T in KELVIN

✓ Entropy ΔS (J) Spont $\oplus \Delta S$ more disorder

✓ Enthalpy ΔH (kJ) Lose heat Spont EXOTHERMIC $\ominus \Delta H$

Mar 20-8:22 AM

$$\Delta G = \overset{\text{SPONT}}{\Delta H} - (T \overset{\text{SPONT}}{\Delta S})$$

$$\Delta G = \ominus - (\oplus \oplus)$$

$$= \ominus - (\oplus)$$

$$= \ominus + (\ominus)$$

Spont → $\Delta G = \ominus$

← Math Good!

Mar 20-8:27 AM

$$\Delta G = \overset{\text{SPONT}}{\Delta H} - T \overset{\text{NON SPONT}}{\Delta S}$$

WANT $\Delta G \ominus$ SPONT

$$= \ominus - (T \ominus)$$

$$\ominus = \overset{-100}{\ominus} + (T \overset{20}{\oplus})$$

Spont at Low T $T < 5$

(MIX ~ MATCH)
 T decides

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Spont → $\Delta G = \Delta H - T \Delta S$
NON SPONT SPONT

Want $\Delta G \ominus$ Spont = $(\oplus) - (T \oplus)$

High T

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$\Delta G = \Delta H - T \Delta S$

Spont ↔ Nonspont

← \ominus \oplus →

Δ occurs.

$0 = \Delta H - T \Delta S$
 $\Delta H = T \Delta S$
 $T = \frac{\Delta H}{\Delta S}$

Mar 20-8:36 AM

Appendix C

P 1112 - 1114

ΔG° ΔH° ΔS°

Non Std $\Delta G, \Delta H, \Delta S$

At Std Condition
 1 atm
 25°C
 298K

Mar 20-8:39 AM

19 / 41, 58 atb, 65

Mar 20-8:44 AM