Chemistry 122 Midterm Review

Sect 17.

- Endo & Exothermic reactions
- Units for Heat flow
- Heat Capacity & Specific Heat
- Measuring Changes in Enthalpy

$\Delta H = C_m \Delta T$

heat lost = heat gain

- Thermochemical Equations
- Heat and Changes of State $\Delta H_{fus}, \Delta H_{vap}$
- Heat of Reaction → Hess' Law
- Standard Heat of Formation

Questions p 535 - #43, 46, 47, 54-56, 58, 59, 67, 71

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6 moles

If 2.9 g of CH_4 → burned

how much heat is release

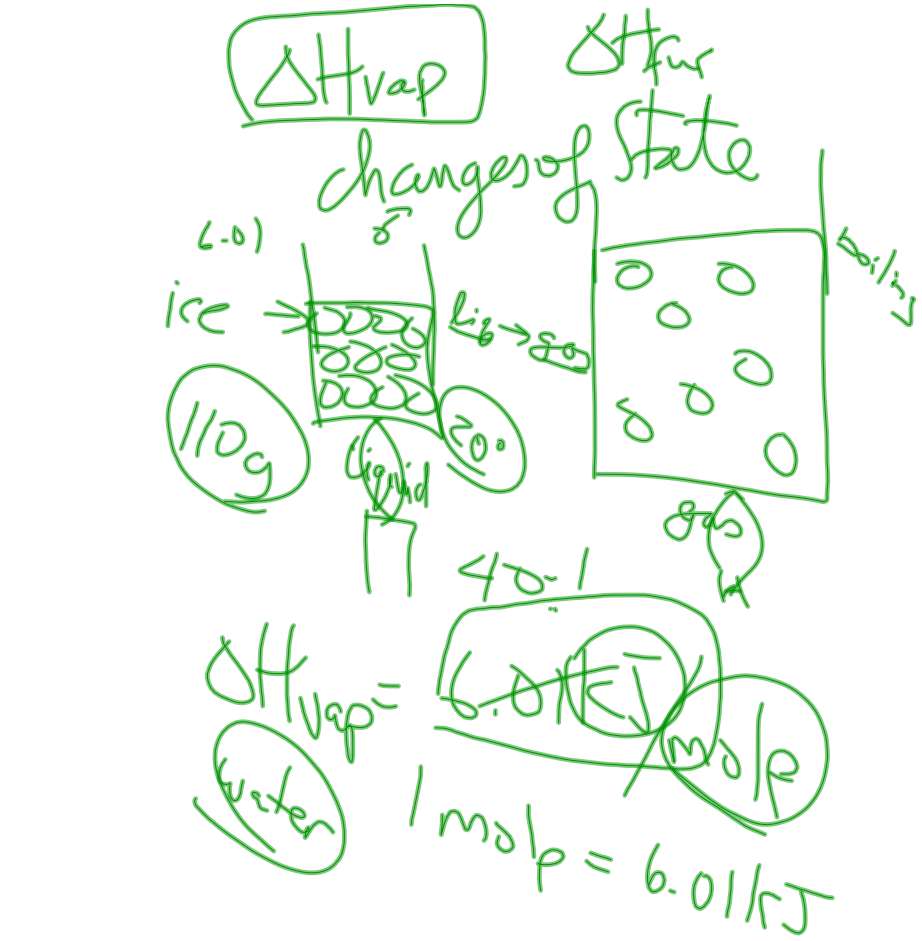
1.3 CH_4 → 1.3 → 2.9 → x J

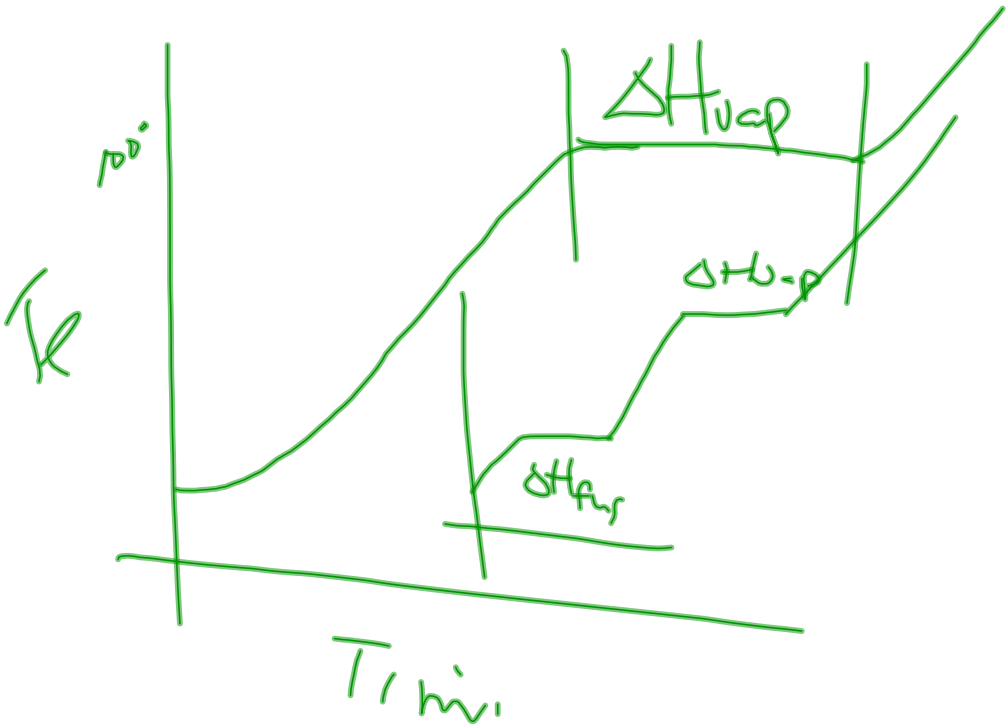
$2CH_4 + 5O_2 \rightarrow 2CO_2 + 6H_2O + 2700\,J$

1.3 moles → x J

2 mole → 2700 J

12
4
16


ΔHvap
ΔHfus
changes of State
(-0)
ice
liquid
gas
110g
20°
40.1
ΔHvap =
6.01 kJ
mole
water
1 mole = 6.01 kJ


ΔHvap
ΔHfus
P
T
Trivi

$C_{(s)} \rightarrow C_{(s)}$ diamond → graphite $\quad \Delta H^\circ = \Delta H_{(prod)} - \Delta H_{(reactant)}$

diam
$C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} \quad \Delta H = -393.5\ kJ$

$C_{(s)}$ graphite $+ O_{2(g)} \rightarrow CO_{2(g)} \quad \Delta H = -395.4\ kJ$

$C_{(d)} + \cancel{O_{2(g)}} \rightarrow \cancel{CO_{2(g)}} \quad \Delta H = -393\ kJ$

$\cancel{CO_2} \rightarrow C_{(g)} + \cancel{O_{2(g)}} \quad \Delta H = 395.4\ kJ$

$C_{(d)} \rightarrow C_{(g)} \quad \boxed{\Delta H = +1.9\ kJ}$

find $\boxed{\Delta H_f^\circ}$ for $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$

$$\Delta H^\circ = \Delta H_{f(prod)}^\circ - \Delta H_{f(react)}^\circ$$

$$\Delta H^\circ = [2(-393.5)] - [2(-110.5) + 0]$$

$$= -787\ kJ - (-221)$$

$$-787 + 221 = \boxed{-566\ kJ}$$

ΔH

Chap 18

- Rate of Reaction
- Factors Affecting Rate of Rxn
- Reversible Reactions/Equilibrium
- Le Chateliers Principle
- Keq: C
- Ksp

Chap 18 Questions

P 581

#45, 49, 51, 53, 55

P 555 - #6
557 - #7, 8
559 - #9, 10
563 - #17, 18