

MEDIUM PACKET 1

KEY

Thermodynamics

$$\lambda = \underline{498} \text{ nm}$$

Equilibrium

- a) Pure Water = 0.013 mol/L
b) 0.2M KBr = 2.2×10^{-4} mol/L
c) 0.2M $\text{Pb}(\text{NO}_3)_2$ = 0.0102 mol/L
 $\text{KBr} < \text{Pb}(\text{NO}_3)_2 < \text{water}$

Chemical Reactions

$$\Delta T = \underline{0.072} \text{ K}$$

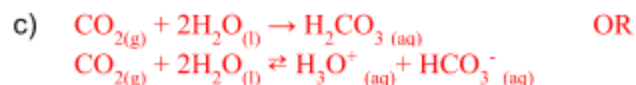
KEY

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Kinetics

$$\text{Rate} = \underline{0.0185}[\text{W}]^2[\text{C}]$$

Chemical Reactions



Thermodynamics

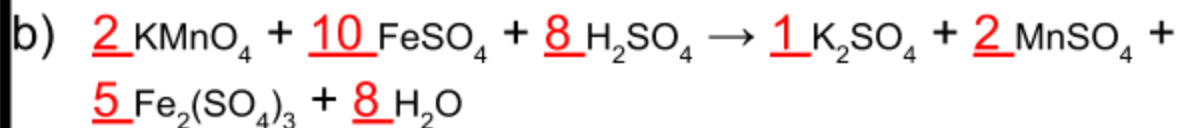
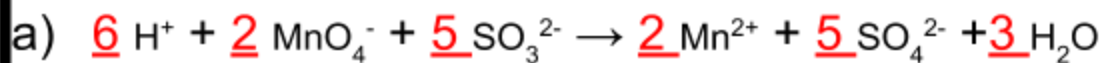
1) $\Delta H = \underline{-138}$ kJ/mol



MEDIUM PACKET 3

KEY

Chemical Reactions



Equilibrium

$$[\text{F}^-] = \underline{1.4 \times 10^{-3}} \text{ M}$$

Acid/Base

$$\text{pH} = \underline{0.325}$$

KEY

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MEDIUM PACKET 4

KEY

Physical Properties

50 g/mol

Chemical Reactions

1815.63 atm

Kinetics

0.043 M/s

KEY

KEY

Physical Properties

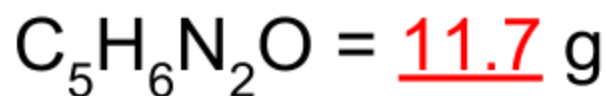
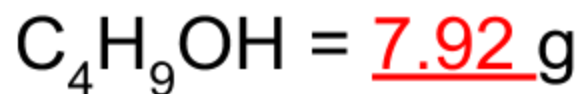
Atom 1 = Oxygen-16 (oxygen is also fine)

Atom 2 = Deuterium

Atom 3 = Tritium

(order does not matter)

Chemical Reactions



Thermodynamics

280 g/s

Equilibrium

Greatest amount of $\text{Mg}(\text{OH})_2$ dissolved:
(Solution A) / ~~(Solution B)~~

By how much? 4.48×10^{-4} grams

Electrochemistry

Cell Potential = 0.03 volts

Acid/Base

1) ~~(1) / (2) / (3) / (4)~~ / **(5)**
1) ~~(more tightly)~~ / **(less tightly)** / ~~(no effect)~~

MEDIUM PACKET 7

KEY

Chemical Reactions

Oxidizing Agent = Ce (or cerium)
Oxidation State = +4

Electrochemistry

17.78 g

Kinetics

$E_a =$ 111 kJ/mol
Acceptable range: 110.5kJ/mol - 111.5kJ/mol

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MEDIUM PACKET 8

KEY

Thermodynamics

1963.4 kJ

Equilibrium

3.26×10^{-3} M

Acid/Base

pH = 5.4

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KEY

Physical Properties

7 %

Electrochemistry

$$E_{\text{cell}} = \underline{0.063} \text{ volts}$$

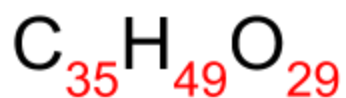
Acid/Base

- a) strongly acidic
- b) weakly basic
- c) strongly basic
- d) weakly acidic
- e) strongly acidic
- f) neutral

MEDIUM PACKET 10

KEY

Physical Properties



Thermodynamics

$$\Delta G_f^\circ = \underline{-762.11} \text{ kJ/mol}$$

Acid/Base

$$\underline{44.96} \text{ g}$$

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MEDIUM PACKET 11

KEY

Physical Properties

6.78x10¹⁸ sec

Acid/Base

1.14 moles

Kinetics

155.285 times faster

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MEDIUM PACKET 12

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Physical Properties

Emission = Flareon

Wavelength = 656nm

Electrochemistry

0.64 g

Acid/Base

pH difference = 0

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MEDIUM PACKET 13

KEY

Physical Properties

75% Carbon

Electrochemistry

1.208 g

Acid/Base

pH = 12.34

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Physical Properties

$$P = \underline{0.0313} \text{ atm}$$

Thermodynamics

$$\underline{413} \text{ kJ/mol}$$

Electrochemistry

$$E_{\text{cell}} = \underline{1.548} \text{ volts}$$

Physical Properties



Li is a ~~(oxidizing)~~ / **(reducing)** agent

Chemical Reactions

\$ range: \$1.80-\$1.90

That's one poor factory

Electrochemistry

