CHEM1612 (Pharmacy) - November 2009

2009-N-2

- $-1420\ kJ\ mol^{-1}$ (to 3 sig fig)

  $-370.\ kJ\ mol^{-1}$

2009-N-3

- 16 g
- $1370\ m\ s^{-1}$

2009-N-4

- 10.4
- 6.81

2009-N-5

- $5.97 \times 10^{3}\ J\ mol^{-1}$

  $-14.3\ kJ\ mol^{-1}$

2009-N-6

- A Lewis acid is a species that can accept an electron pair.

  The entropy of a perfect crystal is 0 at 0 K.

  The random motion of particles in a liquid that increase with increasing temperature.
- $+96.3\ J\ K^{-1}\ mol^{-1}$

2009-N-7

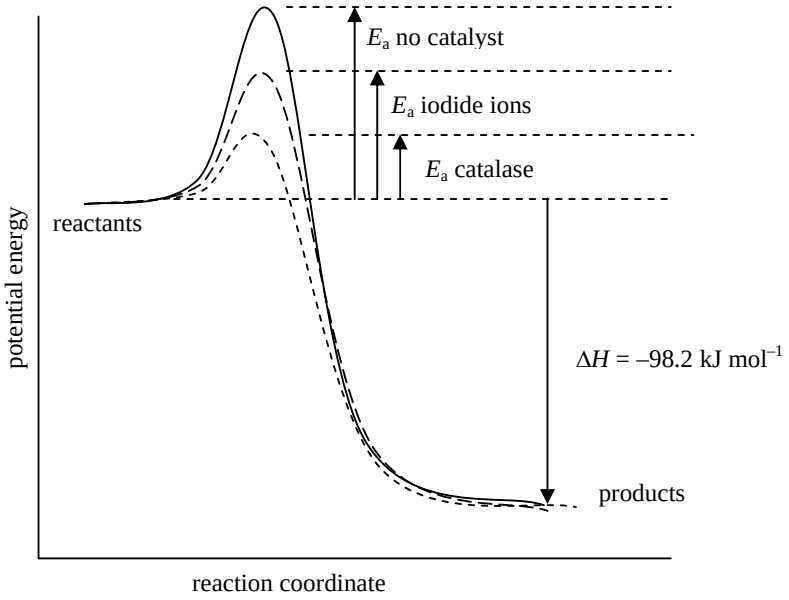
- 6

2009-N-8

- no precipitate forms
- $-33.02\ kJ\ mol^{-1}$

  increase of 3.258 K

2009-N-9

- 

  1.6×10^3 (iodide ion)

  5.8×10^8 (catalase)

2009-N-10

- 40.4 mg
- $^{40}_{19}\text{K} \rightarrow {}^{40}_{18}\text{Ar} + {}^{0}_{+1}\text{e}$

  $^{67}_{31}\text{Ga} + {}^{0}_{-1}\text{e} \rightarrow {}^{67}_{30}\text{Zn}$

  $^{151}_{66}\text{Dy} \rightarrow {}^{147}_{64}\text{Gd} + {}^{4}_{2}\text{He}$
- Radon is a gas, so can be inhaled. The alpha particles are therefore generated in the lungs and can cause direct damage without needing to penetrate the skin.

2009-N-11

- Heating and stirring: increase the frequency and velocity of collisions that are necessary for coagulation to occur.

  Addition of an electrolyte: neutralises the surface charges, thus removing the electrostatic repulsion between colloidal particles.

  Changing the pH: can flatten / desorb electrosteric stabilisers
- 0.0233

  It is negative. (Increase in temperature favours the backward reaction, so the dissolution process must be exothermic.)

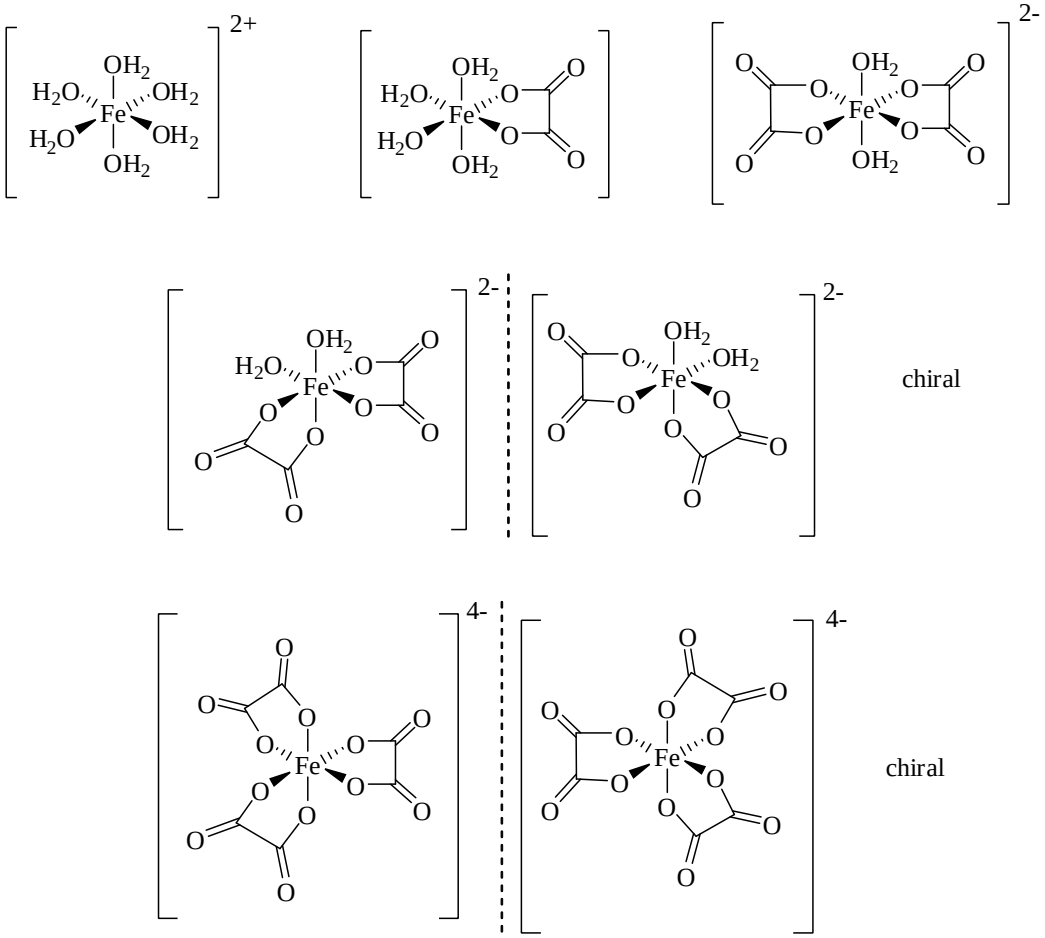
2009-N-12

- $[Ag^+(aq)] = 3.2 \times 10^{-9}$ M $[Cl^-(aq)] = 0.056$ M $[Na^+(aq)] = 0.086$ M

2009-N-13

- No. Ligands require at least one lone pair of electrons that can be donated to a metal ion to form a covalent bond. Methane, CH_4, has no lone pairs.

7



2009-N-14

- A lipid bilayer will self assemble to form vesicles, which contain solvent that is physically separated from the outer solvent. If the drug is present in the trapped solvent it must stay contained there until the vesicle is broken up where the drug is required.
- From Step 1: $K = [N_2O_2(g)]/[NO(g)]^2$

  $\Rightarrow$ $[N_2O_2(g)] = K\,[NO(g)]^2$

  From Step 2: Rate $= k\,[N_2O_2(g)][Br_2(g)]$

  $= k\,K\,[NO(g)]^2[Br_2(g)]$

2009-N-15

- –0.54
- $3S(s) + 4H^{+}(aq) + 4NO_3^{-}(aq) \rightarrow 3SO_2(g) + 4NO(g) + 2H_2O(l)$

2009-N-16

- 1.4×10^{10}
- pentaamminechloridochromium(III) chloride

  $[PtBr_2(CO)_4](NO_2)_2$

  potassium hexafluoridochromate(III)

  ammonium aquapentafluoridocuprate(II)
- solubility and transport