CHEM1612 (Pharmacy) - November 2014

These answers have not been checked.

2014-N-2

- A species that can form a bond by donating a lone pair of electrons, *e.g.* H_2O.

  Used to predict the effect of a change in the conditions on a reaction at equilibrium, this principle predicts that a reaction shifts to counteract the change.

  Catalysis that occurs with the reactants and catalyst are in different phases, such as a solid catalysing the reaction of gases.

- 28.83 °C

2014-N-3

- -33.02 kJ

  +3.258 K

- 4.28

2014-N-4

- 0.578 mol kg^{-1}
- -100. kJ mol^{-1}

2014-N-5

- $K_c = \frac{[N_2O_4(g)]}{[NO_2(g)]^2}$

  $\Delta H° = -57$ kJ mol^{-1}; $\Delta S° = -176$ J K^{-1} mol^{-1}

  -5 kJ mol^{-1}

2014-N-6

- 0.16 kJ mol^{-1}

2014-N-7

- 2.09

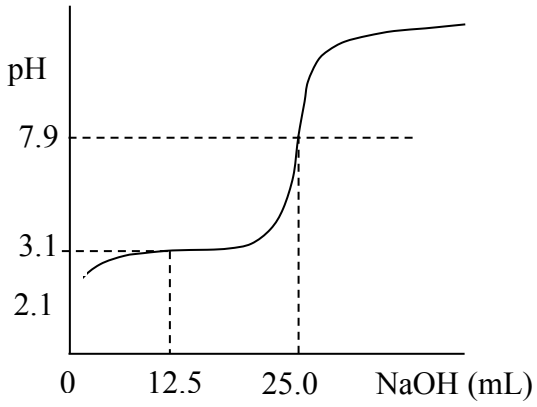
  3.17

  7.93

  12.30

2014-N-8

- See below.



2014-N-9

- 0.0139 M

  2.23×10^{-5}

-

2014-N-10

- $^{37}_{18}\text{Ar} + {}^{0}_{-1}\text{e} \rightarrow {}^{37}_{17}\text{Cl} + {}^{0}_{0}\gamma$

  $^{93}_{44}\text{Ru} \rightarrow {}^{93}_{43}\text{Tc} + {}^{0}_{+1}\text{e}$

  $^{42}_{19}\text{K} \rightarrow {}^{42}_{20}\text{Ca} + {}^{0}_{-1}\text{e}$

  $^{251}_{98}\text{Cf} \rightarrow {}^{247}_{96}\text{Cm} + {}^{4}_{2}\alpha$

- +III or +3

  -III or -3

  -III or -3

  ßß+III or +3

- $[Co(OH_2)_6]CO_3$

  $[Cu(NH_3)_4]SO_4$

  $(NH_4)_2[FeF_6]$

  $K_4[Mn(CN)_6]$

2014-N-11

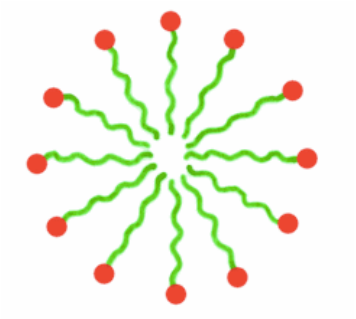
- 24

  0.91 M

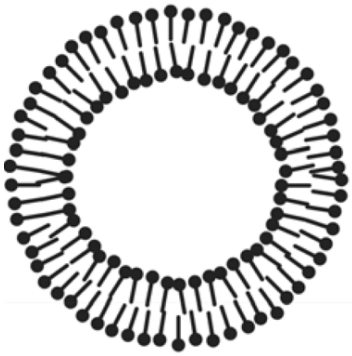
  $S_2O_3^{2-}$ is a stronger ligand than NH_3, presumably because of its negative charge.

2014-N-12

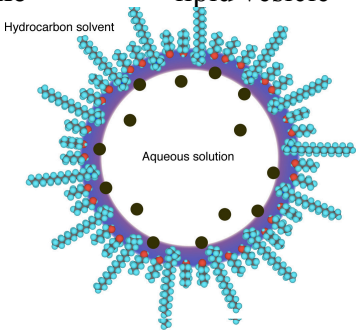
- See below.



detergent micelle



lipid vesicle



water-in-oil microemulsion

- 1.2 g
- Ni(s) will be produced at the cathode and $I_2(g)$ will be produced at the anode.

2014-N-13

- +0.02 V

  +0.02 V

  0.125 M

  $[Cd^{2+}] = 0.042$ M and $[Fe^{2+}] = 0.958$ M

2014-N-13

- rate = $k[ICl][H_2]$

  $k = 0.15$ L mol^{-1} s^{-1}