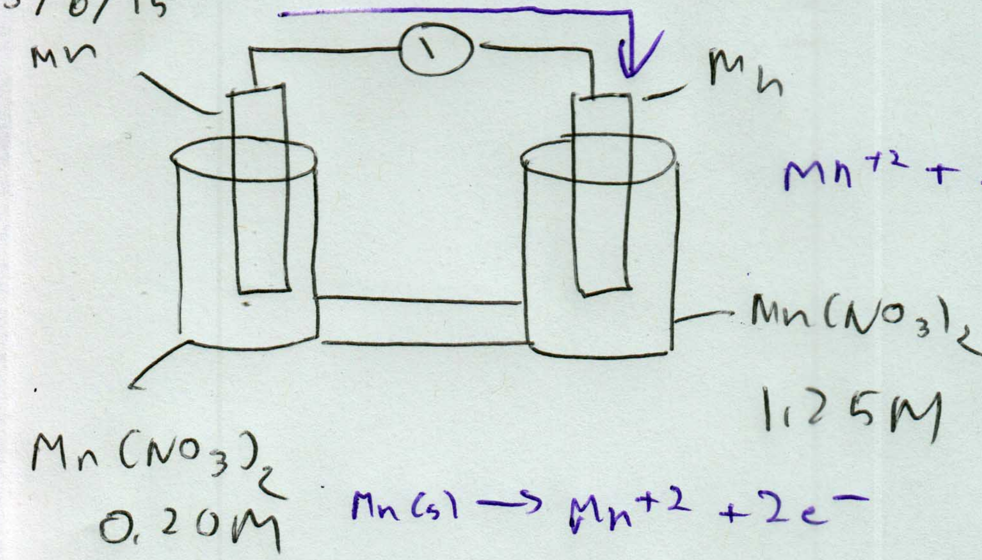
3/6/15



$Mn^{+2} + 2e^- \rightarrow Mn(s)$

$\mathcal{E}^\circ = -1.18\,V$

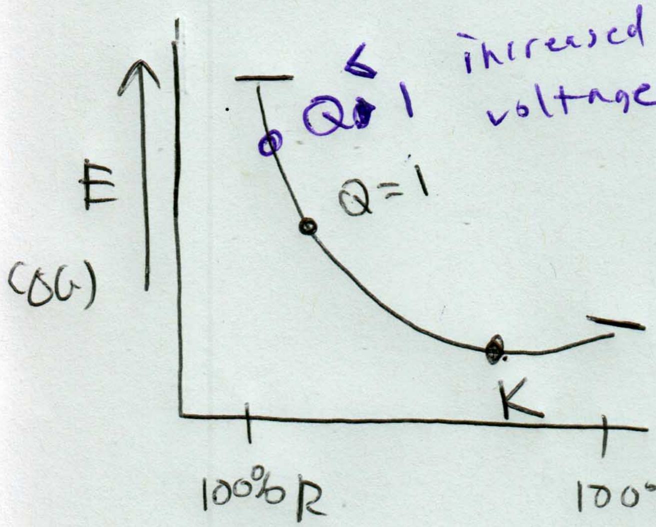
$\mathcal{E}^\circ = 0$

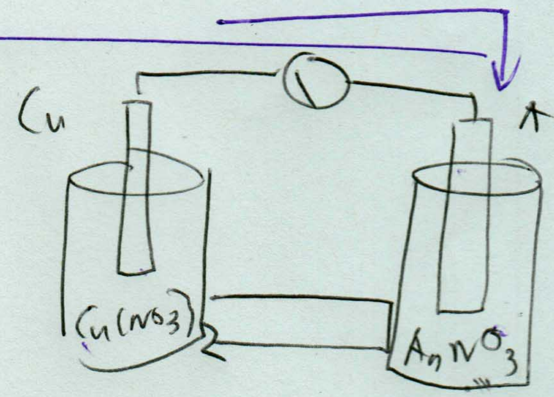
$Mn(s) \rightarrow Mn^{+2} + 2e^-$

$Q = \frac{[0.20]}{[1.25]}$

$\mathcal{E} = 0 - \frac{RT}{nF} \ln Q$

$n = 2$





$Ag^+ + e^- \rightarrow Ag^0$

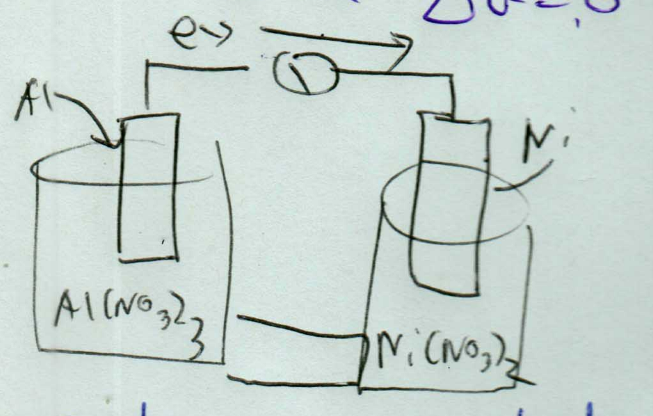
reactant

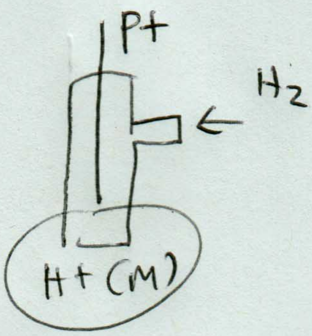
$\Delta G = -nF\mathcal{E}^\circ$ $\Delta G = \Delta G^\circ + RT \ln Q$

$Q = K$ $\Delta G = 0 \rightarrow \mathcal{E} = 0$

$Al \rightarrow Al^{+3} + 3e^-$

Ni^{+2} ~~(aq)~~ $+ 2e^- \rightarrow Ni$





Cd^{+2} −0.40 V Ni^{+2} −0.25 V

"which is the better oxidizing agent" ⇔
"which is better at getting reduced"

Even though neither of these ions has a positive reduction potential, the potential for Nickel is higher, so it is the better oxidizing agent.

$Au(NO_3)_3(aq) + Cu(s) \rightarrow CuNO_3 + Au(s)$

$Au^{+3} + 3e^- \rightarrow Au$ +1.50 V $Cu^+ + e^- \rightarrow Cu$ +0.52 V

$3 | 2 (Cu \rightarrow Cu^+ + e^-$ −.52 V

0.98 V

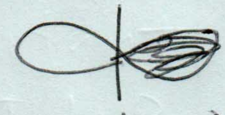
Zn(s)

$\psi(n, l, m_l, m_s)$
↑
wavefunction

l = # of energy packets oriented spherically (orbital angular momentum)

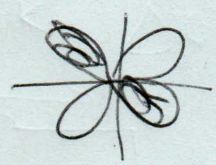
$l = 0$ (0 nodes) $l = 1$ (1 node)

s



p

$l = 2$ (2 nodes)

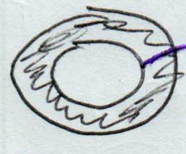


d

n = total # of packets of energy available to an electron

n−1 total ~~packets~~ packets usable by electron

2s



shielding + penetration — effects that occur in polyelectronic systems that cause energy levels of orbitals to occur "out of order"

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$