Announcements

- Turn on the Clicker (the red LED comes on).
- Push “Join” button followed by “20” followed by the “Send” button (switches to flashing green LED if successful).

- Do not forget to download handouts for next week's lab.

- Quiz tomorrow covers electrochemistry material from last week plus today's material through using half-cell potentials to calculate voltaic cell potential and figuring out which way the reaction proceeds.

Review

- Voltaic Cells
- Assigning Oxidation #'s (oxidation states)
- Redox Reactions and Balancing them.
- Energetics of Redox Reactions $\Delta G = -nFE$
  - F= 96485 C/mol electrons
  - E = cell potential
  - n= # moles electrons transferred during reaction

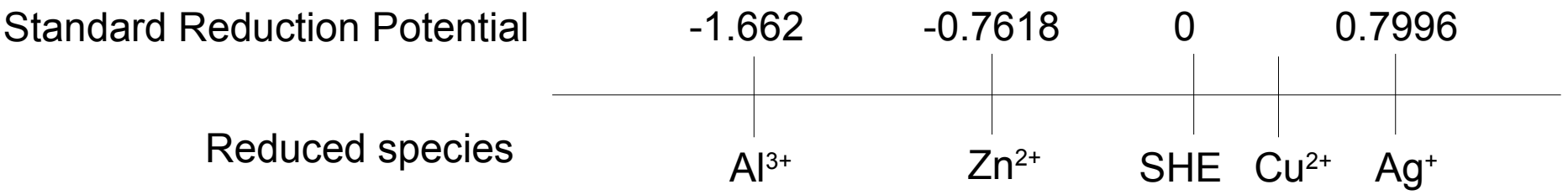
Rules for assigning Oxidation #s

- All pure elements have an oxidation number = 0.
- O atoms in compounds usually have an oxidation number of -2, except in the case of peroxides.
- Alkali metals: +1, Alkali earths: +2, Halogens: -1 (but in oxides +1, +2...., in ClO^-, Cl is +1)
- H atoms in compounds have oxid# = +1, except in metal hydrides.
- The total of all the charges (oxid #s) on all the atoms in a molecule or ion must add up to the total charge on the species.
- Do not confuse oxid# with formal charge which is used to find the best Lewis structure.

Standard Reduction Potentials

Chang Figure 19.4

Standard Reduction Potentials



	E^o (V)		E^o (V)
$PbO_2(s) + SO_4^{2-} + 4H^+ + 2e^- \longrightarrow PbSO_4 + 2H_2O$	1.685	$2H^+ + 2e^- \longrightarrow H_2$	0.000
$Ag^+ + e^- \longrightarrow Ag$	0.7996	$PbSO_4(s) + 2e^- \longrightarrow Pb + SO_4^{2-}(aq)$	-0.356
$I_2(s) + 2e^- \longrightarrow 2I^-(aq)$	0.5355	$Zn^{2+} + 2e^- \longrightarrow Zn$	-0.7618
$Cu^{2+} + 2e^- \longrightarrow Cu$	0.3419	$Al^{3+} + 3e^- \longrightarrow Al(s)$	-1.662