

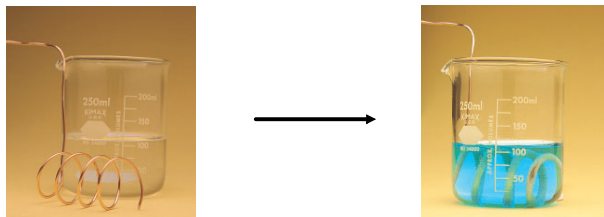
Topic 1 - Reduction and Oxidation Half Reactions

Single replacement reactions are a good illustration of electron transfer

All of these reactions share a common feature:

Ions are converted to atoms and atoms are converted to ions

Example: the reduction of aqueous silver nitrate to silver metal in the presence of solid copper



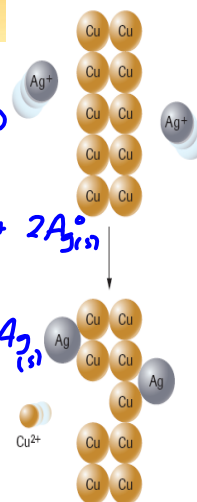
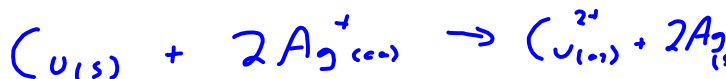
Non-ionic reaction:



Total ionic reaction:



Net ionic reaction:



<http://www.chem.iastate.edu/group/Greenbowe/sections/projectfolder/animationsindex.htm>

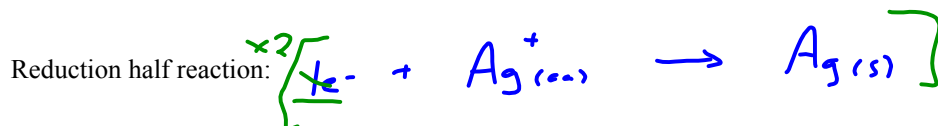
Half Reactions

A half reaction shows only half of our net reaction

There are two types of half reactions: **reduction** and **oxidation**

- reduction refers to the gain of electrons
- oxidation refers to the loss of electrons

OIL RIG
LEO says GER



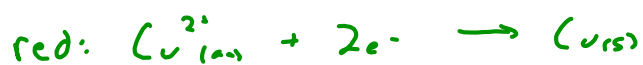
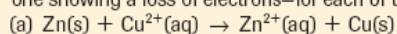
Creating half reactions from a simple redox reaction

A **redox** reaction is a chemical reaction where electrons are transferred between entities.

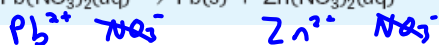
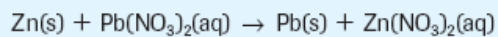
In a redox reaction the *total number of electrons gained in a reaction must equal the total number of electrons lost*

Oxidation and reduction occur simultaneously rather than sequentially

8. Write a pair of balanced half-reaction equations—one showing a gain of electrons and one showing a loss of electrons—for each of the following reactions:



Write and label two balanced half-reaction equations to describe the reaction of zinc metal with aqueous lead(II) nitrate, as given by the following chemical equation:



Practice Sheet 1

For each of the following, write and label the oxidation and reduction half reaction equations. Ignore spectator ions.

