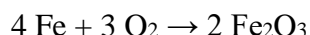


## Introducing REDOX!

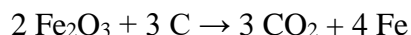
### ☺ *Introduction*

The rusting of metals, the process involved in photography, the way living systems produce and utilize energy, and the operation of a car battery, are few examples of a very common and important type of chemical reactions. These chemical changes are all classified as "electron-transfer" or oxidation-reduction reactions.

Previously, the term oxidation was derived from the observation that almost all elements reacted with oxygen to form compounds called oxides. A typical example is the corrosion or rusting of iron as described by the chemical equation:



On the other hand, reduction was the term originally used to describe the removal of oxygen from metal ores, which "reduced" the metal ore to pure metal as shown below:



Based on the two examples above, oxidation can be defined very simply as, the "addition" of oxygen; and reduction as the "removal" of oxygen.

***But there is a lot more about "oxidation-reduction"...***

### ☺ *Objectives*

- Define an oxidation-reduction reaction
- Describe the processes of oxidation and reduction

### ☺ *Materials*

- Test Tubes & Beakers
- Silver Nitrate ( $\text{AgNO}_3$ ) solution
- Copper (II) Sulfate ( $\text{CuSO}_4$ ) solution
- Copper Wire
- Iron nail



I know how to change copper to silver.....

I am RICH!!!!  
HOOOOWWAAHHAAAAA

### ☺ *Valuable Information*

- The silver nitrate solution is made up of silver ions  $\text{Ag}^+$  and nitrate ions ( $\text{NO}_3^-$ ). Both ions are colorless.
- The copper (II) sulfate solution is made up of copper (II) ions ( $\text{Cu}^{2+}$ ) and sulfate ions ( $\text{SO}_4^{2-}$ ). The copper (II) ion is blue; whereas, the sulfate ion is colorless.
- Copper solid ( $\text{Cu}$ ) has a reddish brown color.
- In solution, the iron II ion ( $\text{Fe}^{2+}$ ) has a green color.

Activity #	Activity One	Activity Two
Title	Creation of Silver!	The Iron or Cupper Nail?
Procedure	<ul style="list-style-type: none"> <li>➤ Fill a beaker with the silver nitrate solution.</li> <li>➤ Immerse a cupper wire in the solution.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Tie the iron nail to a thread.</li> <li>➤ Fill a test tube with the cupper sulfate solution.</li> <li>➤ Immerse the iron nail in the solution.</li> </ul>
Observations		

☺ **Conclusion:**

**Oxidation:** \_\_\_\_\_

\_\_\_\_\_

**Reduction:** \_\_\_\_\_

\_\_\_\_\_

**Oxidation-Reduction Reaction:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**What do an “oil” gallon and a “rig” truck have to do with oxidation-reduction?**