

Chemical Methods for counting amounts

by balanced reaction

$$2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + 1 \text{O}_2$$

2 molecule 2 molecules 1 molecule

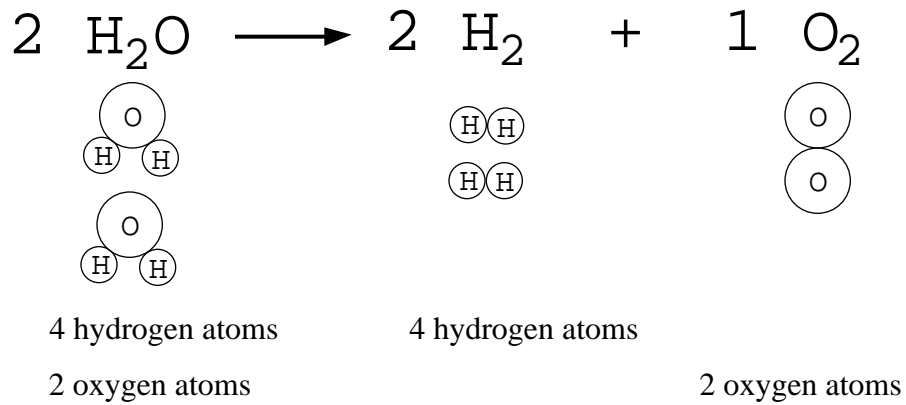
reactants → products

What did John Dalton in 1808 have to say about chemical reactions?
Is chemical conservation of atoms a law of nature?
 In other words, atoms are not created nor destroyed in chemical reaction.

$$2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + 1 \text{O}_2$$

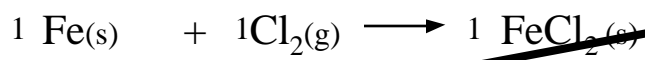
This is a chemical recipe for the decomposition of water by electrolysis.

1. Chemical reactions involve just the simple rearrangement of atoms.
 2. Atoms are conserved in a chemical reaction.
- In other words, atoms are not created or destroyed in a chemical reaction.
- This is true for the above decomposition of water by electrolysis.



Combination - Synthesis (the REDOX process defined)

iron metal plus chlorine gas forms iron (II) chloride



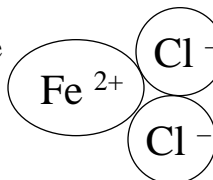
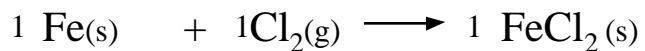
Analyzing the half reactions



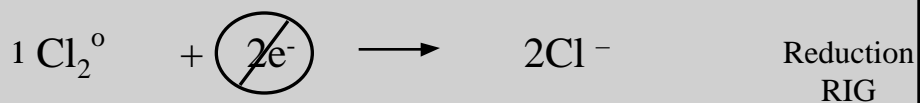
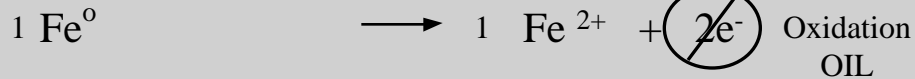
Reduction
RIG

Combination - Synthesis (the REDOX process defined)

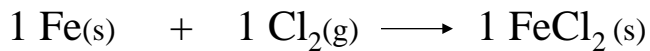
iron metal + chlorine gas forms iron (II) chloride



Analyzing the half reactions

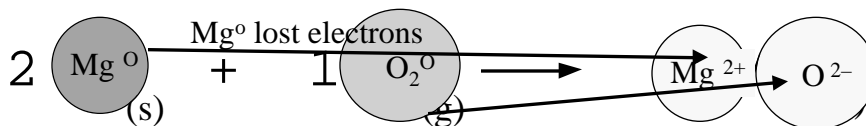


the electrons on the reactant side cancel the electrons on the product side



What reactant was oxidized?

What reactant was reduced?

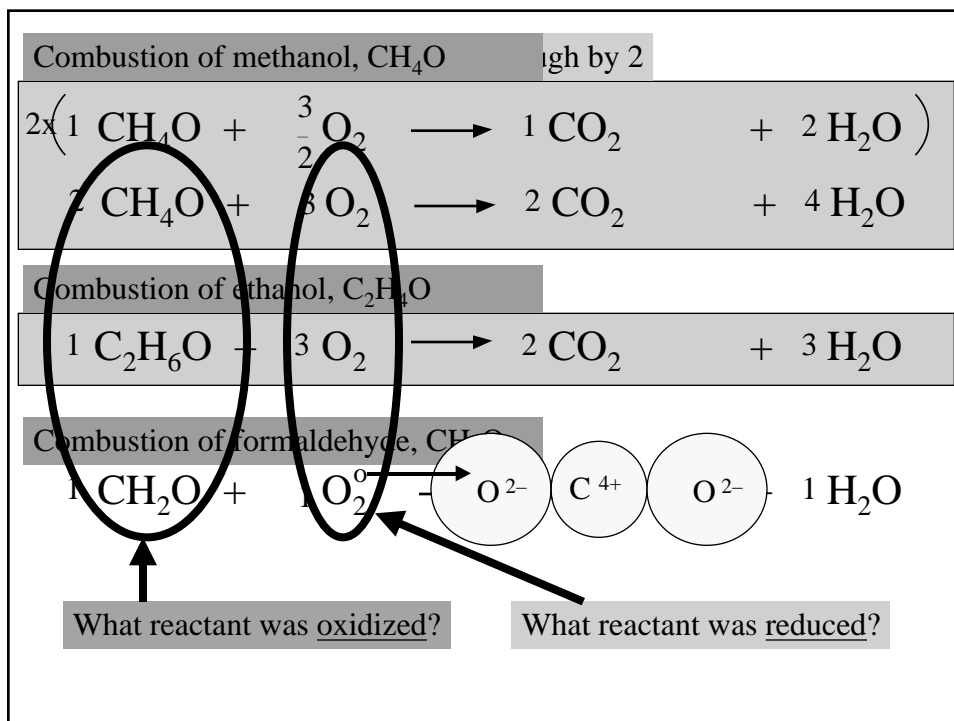
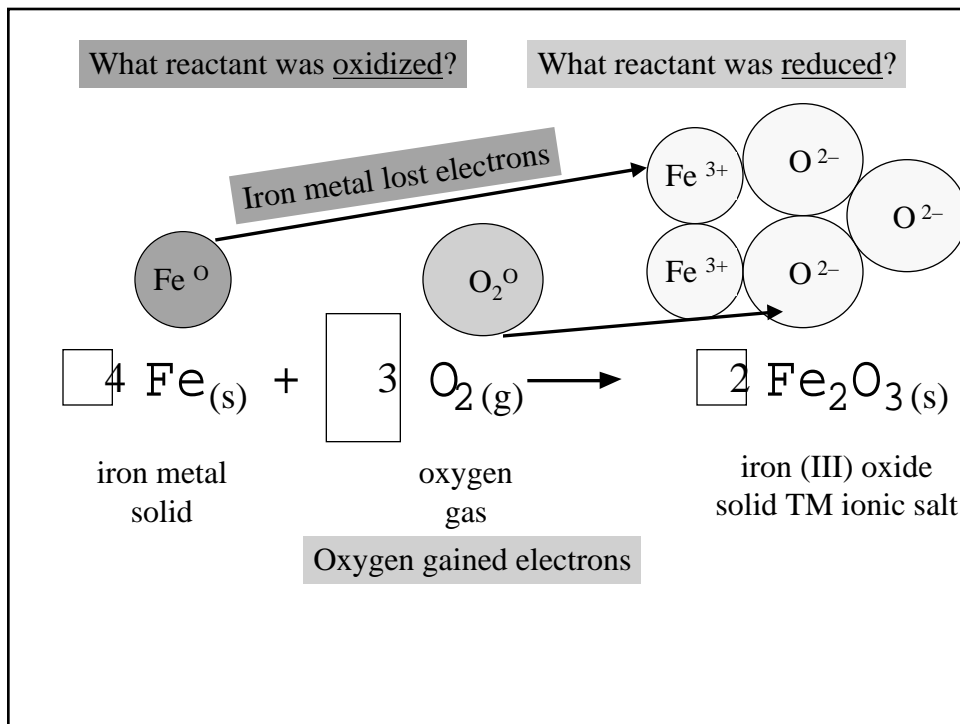


magnesium metal
solid

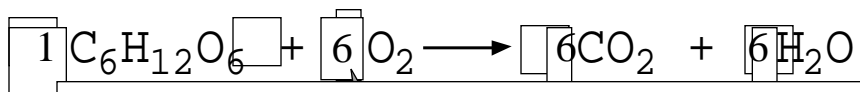
oxygen
gas

magnesium oxide
solid ionic salt

Oxygen gained electrons



Now balance the combustion of glucose (blood sugar)



Combination - Synthesis - PHOTOSYNTHESIS

