



## The Nature of Chemical Reactions

In chemical reactions atoms are rearranged as chemical bonds are formed or broken!

REACTANTS ----> PRODUCTS

In a chemical change, the properties of the reactants are different than the products!

Example: Na + Cl ----> NaCl



+

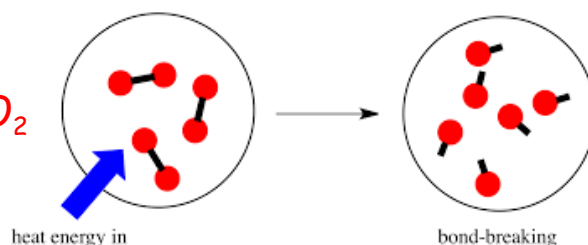
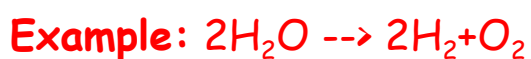


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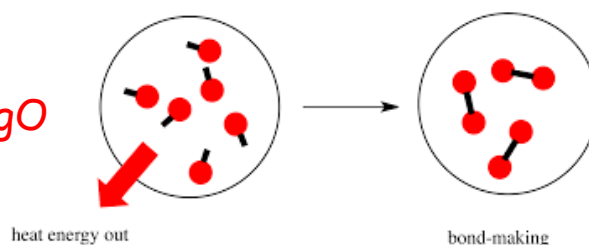




In <sup>into</sup> <sup>heat</sup> endothermic chemical reactions energy is **added** as bonds are broken!

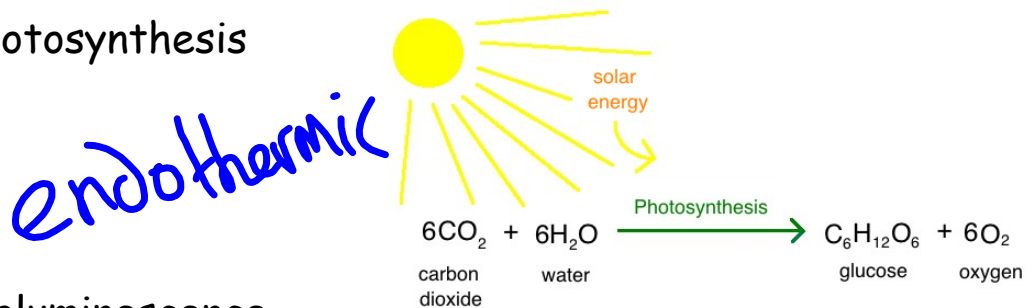


In <sup>out of</sup> <sup>heat</sup> exothermic chemical reactions energy is **released** as bonds are formed!



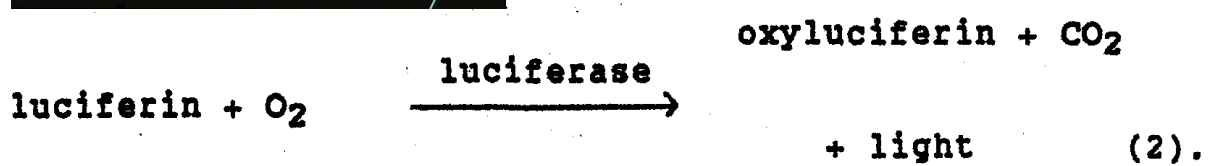
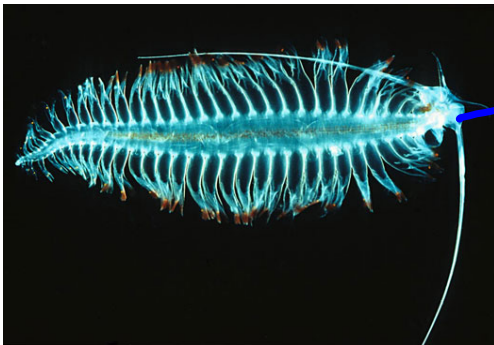
Make a hypothesis - endothermic or exothermic

1) photosynthesis



2) Bioluminescence

*exothermic*





Review: How do you know a chemical reaction (chemical change) has taken place?

Color change

bubbles (formation of a gas)


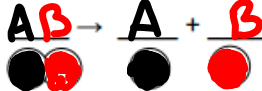

Sound.

Smell

precipitate (solid formed from liquid)

precipitate

## Reaction Types

Type of Reaction	Definition	★ Equation
Synthesis	two things → 1 thing (more complex)	$\text{A} + \text{B} \rightarrow \text{AB}$ 
Decomposition	1 thing → 2 things (complex)	$\text{AB} \rightarrow \text{A} + \text{B}$ 
Single Replacement	1 thing switches places	$\text{AB} + \text{C} \rightarrow \text{AC} + \text{B}$ 
Double Replacement	2 things switch places	$\text{AB} + \text{CD} \rightarrow \text{AC} + \text{BD}$ 