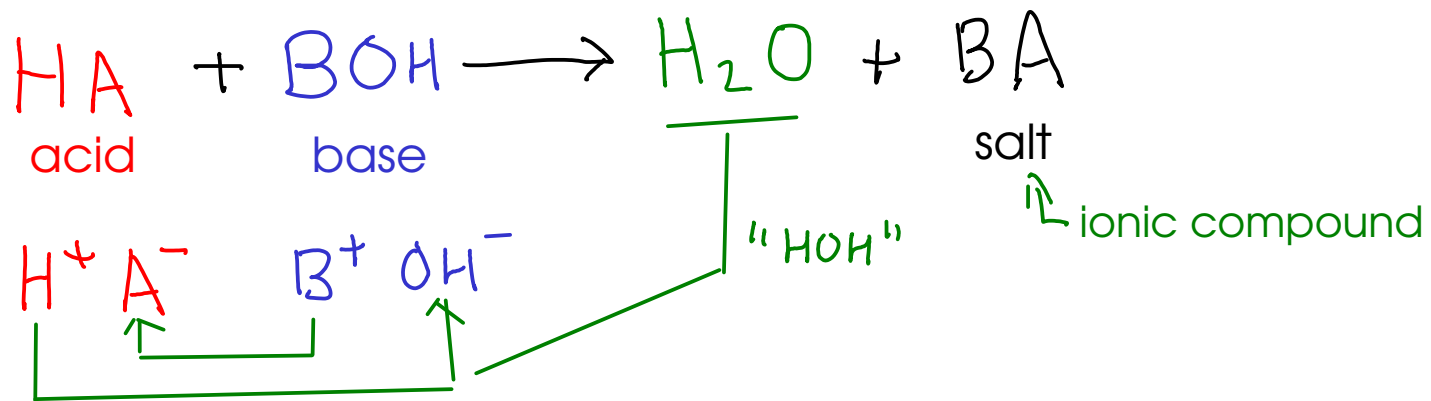
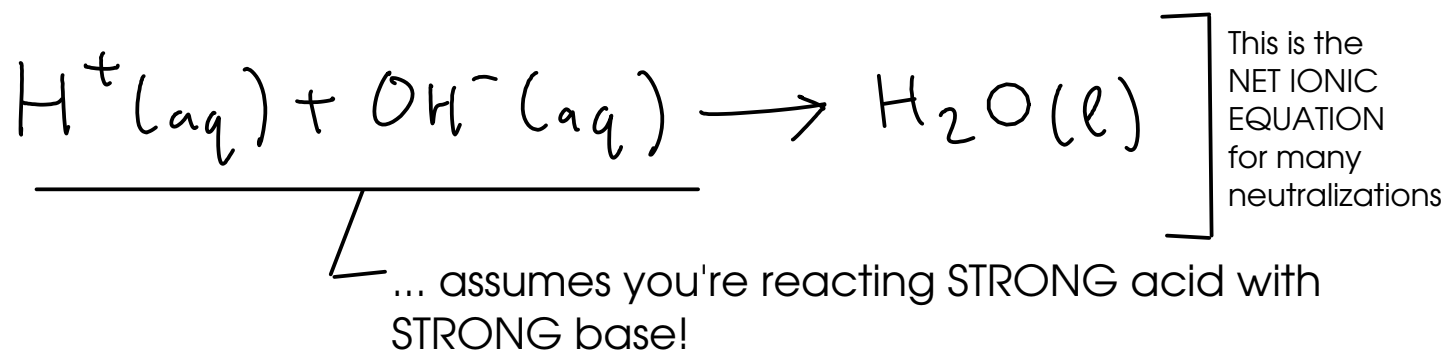


ACID/BASE REACTIONS (also called NEUTRALIZATION REACTIONS)

- There are several stable molecules that may be formed in double replacement reactions, but the most common is WATER!
- Double replacement reactions that form water are also called "neutralizations"



* To make water (H_2O), you need a source of hydrogen ion (H^+) and hydroxide ion (OH^-)



ACIDS

- compounds that release hydrogen ion (H^+), when dissolved in water.

Properties of acids:

- Corrosive: React with most metals to give off hydrogen gas
- Cause chemical burns on contact
- Taste sour (like citrus - citric acid!)
- Changes litmus indicator to RED

BASES

- Substances that release hydroxide ion (OH^-) when dissolved in water

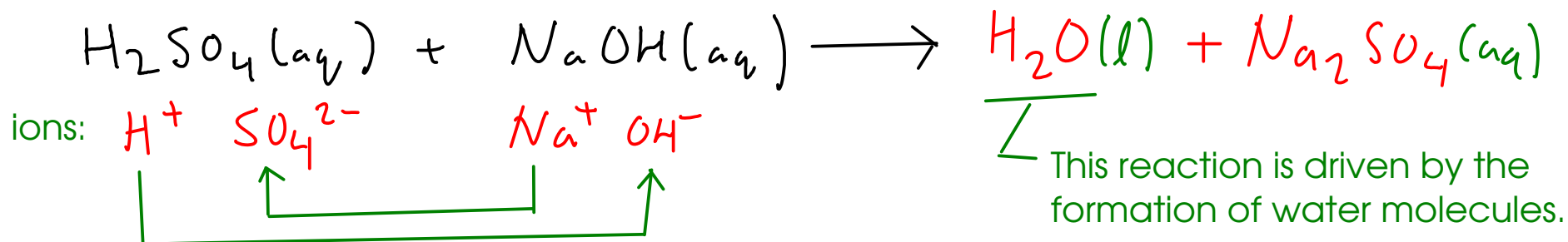
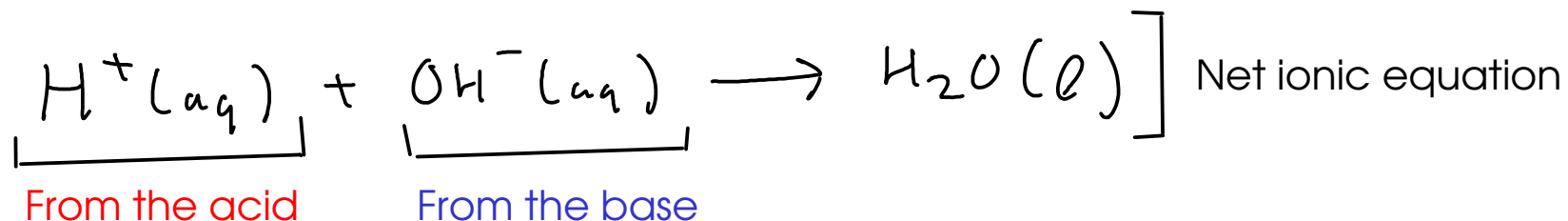
Properties of bases:

- Caustic: Attack and dissolve organic matter (think lye, which is NaOH)
- Cause skin/eye damage on contact
- Taste bitter
- changes litmus indicator to BLUE

Due to the dissolving action of base on your skin, bases will feel "slippery". The base ITSELF is not particularly slippery, but what's left of your skin IS!

ACID/BASE or NEUTRALIZATION reactions continued

- the driving force of these reactions is the formation of water molecules.



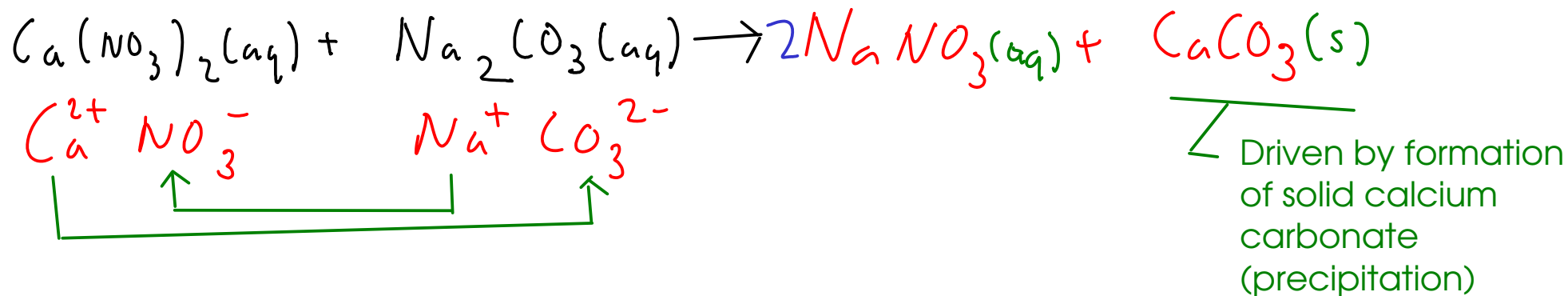
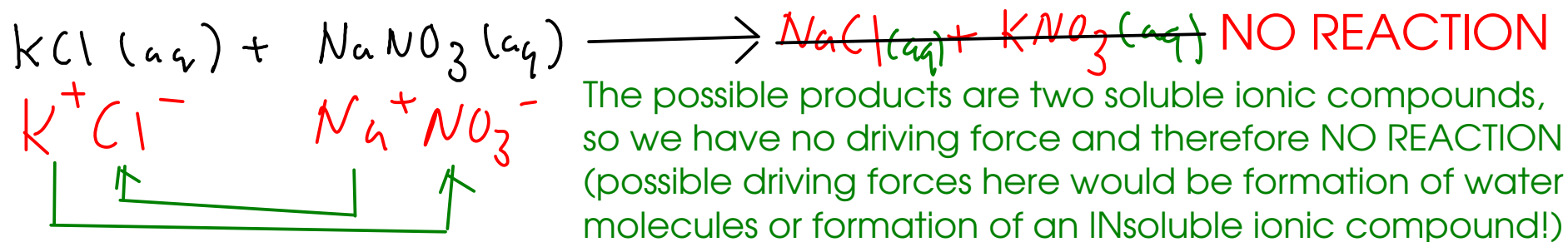
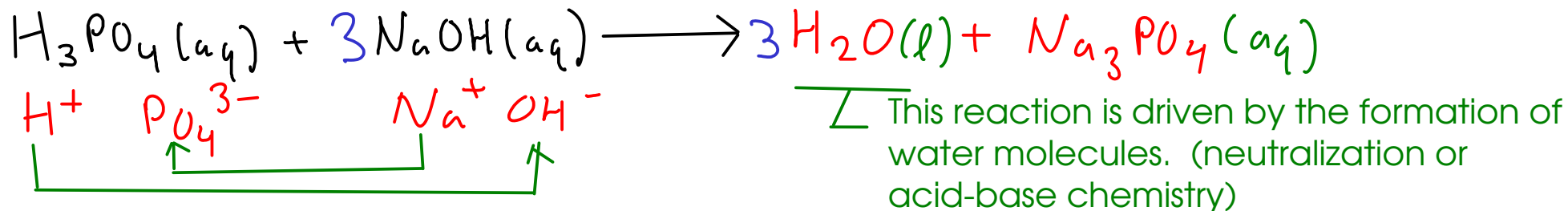
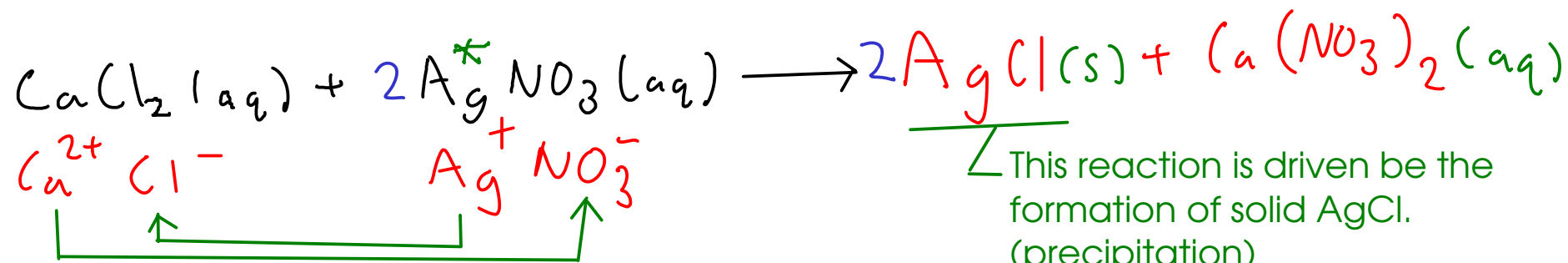
- How can this reaction be detected?

- pH detector (indicator paper, etc.)
- do the products have similar chemical properties to the reactants?
- release of heat!

... formation of water is usually accompanied by a release of heat

A few examples of precipitation and acid/base:

* Transition metals DO NOT change their charge in exchange reactions!

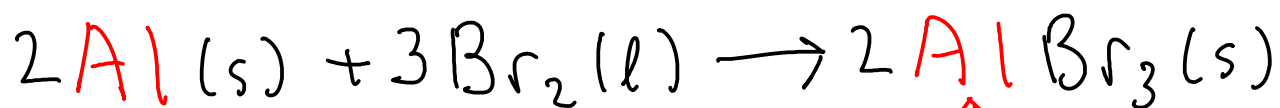


OXIDATION / REDUCTION CHEMISTRY

- Precipitation reactions involve ions pairing up, but the ions themselves are not formed in precipitation reactions. Precipitation reactions (and quite a few others) start with pre-existing ions.

... but ions have to be produced somehow - through a chemistry that involves the transfer of electrons.

- OXIDATION/REDUCTION chemistry ("REDOX" chemistry) involves transfer of electrons and can make ions.



↑
Elemental,
metallic
aluminum.
Uncharged!

↑
Aluminum
cation



These are called
"half-reactions"



electron

oxidation: loss
of electrons

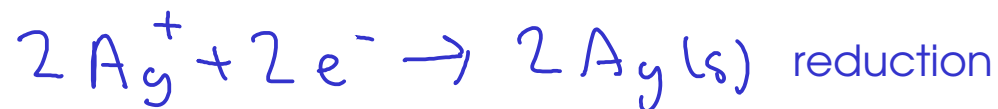
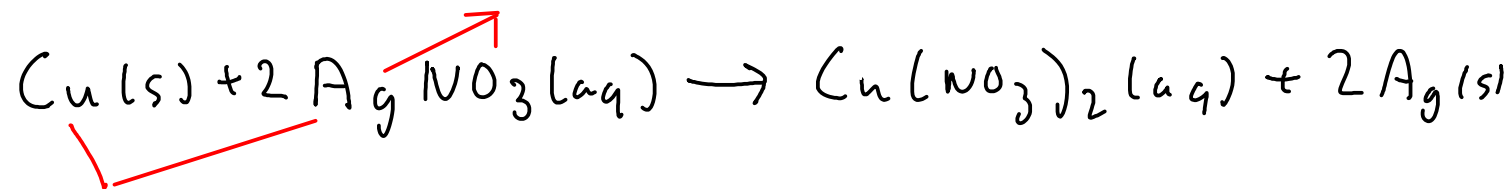


reduction: gain of
electrons

- oxidation and reduction always occur together. In other words, we can't just make free electrons using oxidation without giving them somewhere to go.

- Many of the types of reactions that you might have heard of before are actually redox reactions!

- SINGLE REPLACEMENT reactions



- COMBUSTION reactions (burning)

