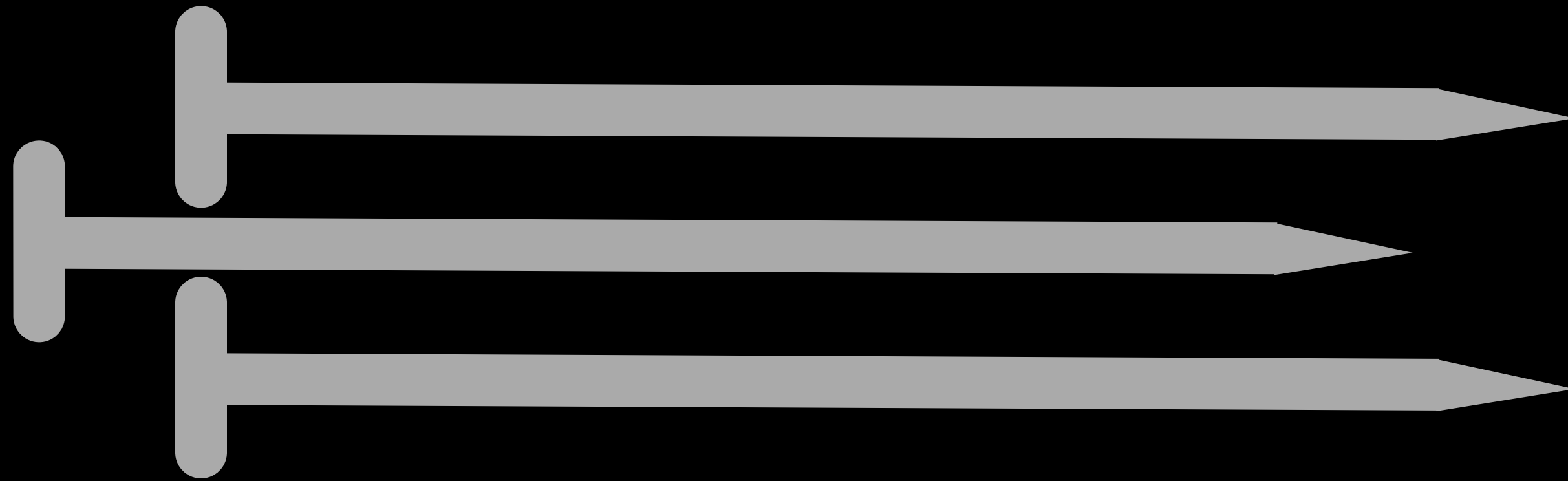
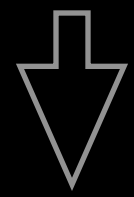


Conservation of Atoms



Chemistry Essentials - 012

Conservation of Atoms



Chemical Processes

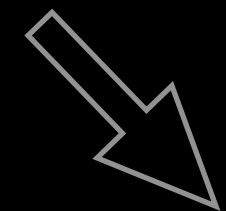
determine



Masses



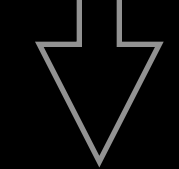
Analyte



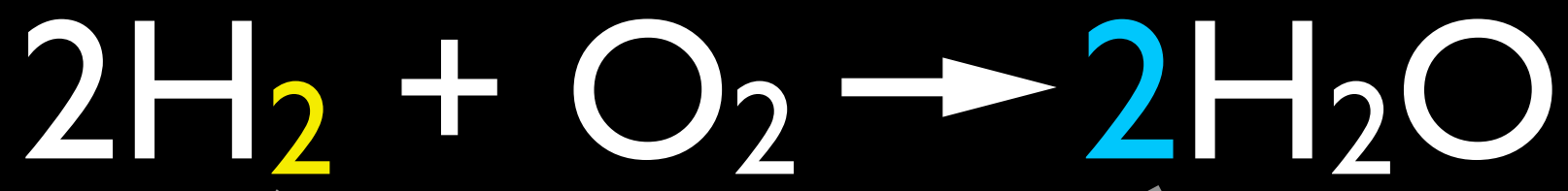
Titration



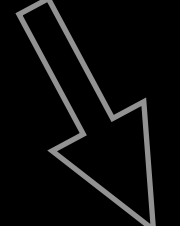
Equivalence Point



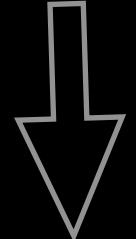
Color



Atoms



Molecules



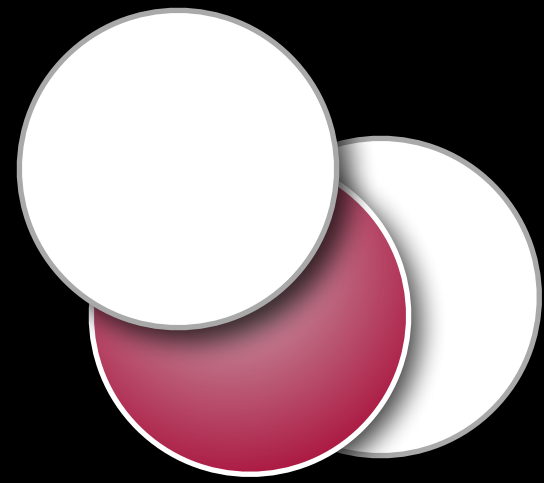
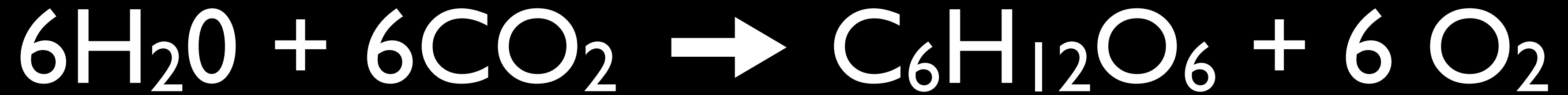
Moles

Gravimetric Analysis

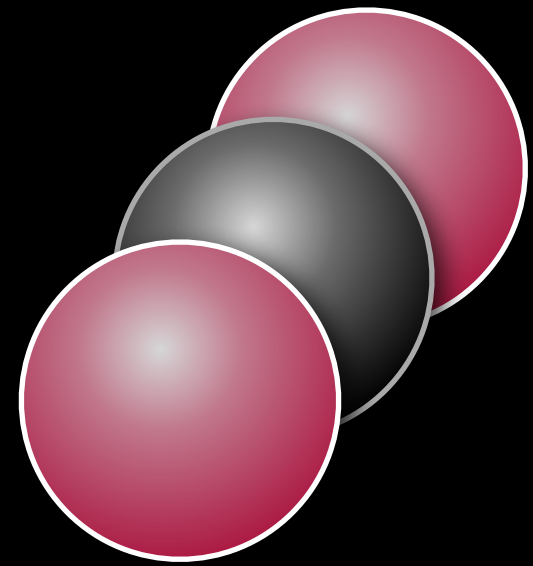


Mass of Solid Product

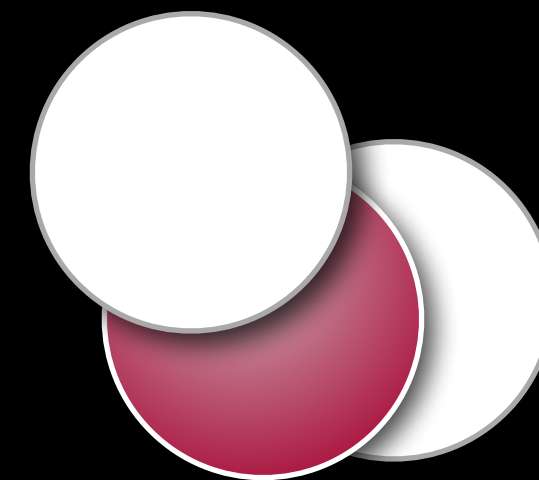
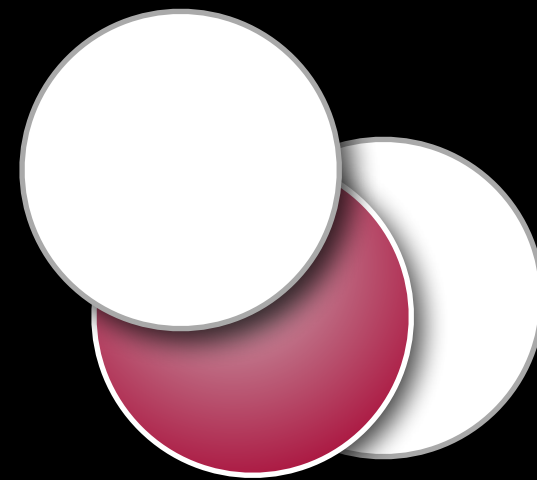
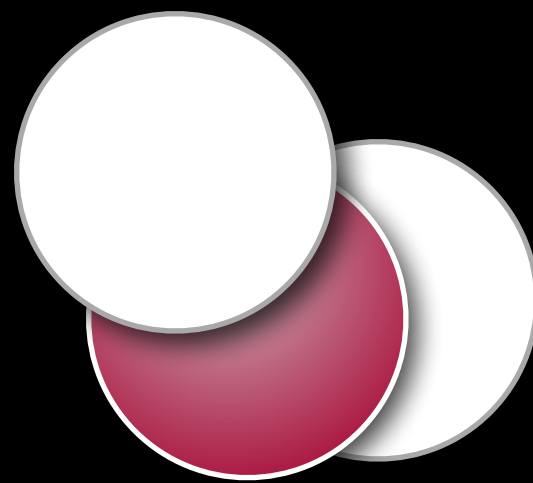
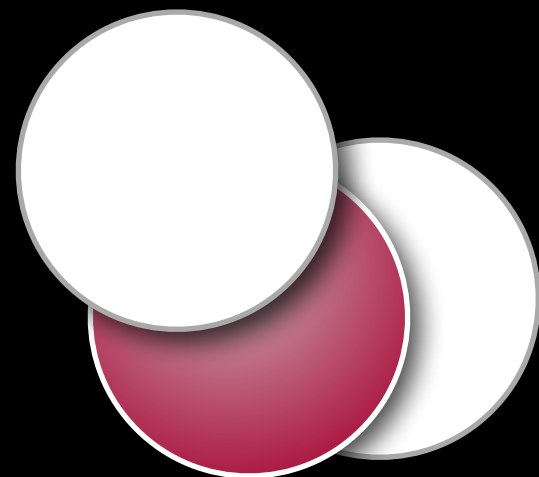
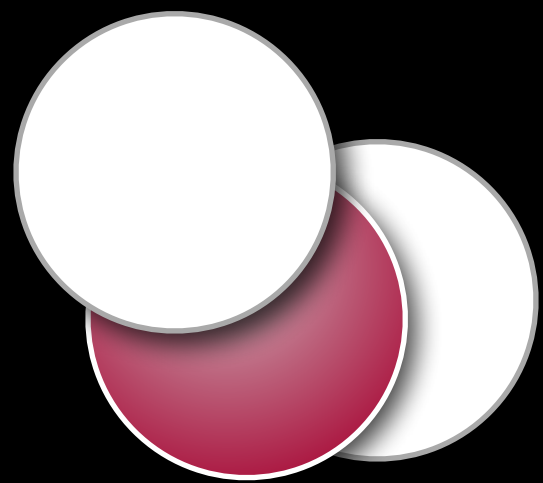
Chemical Reaction

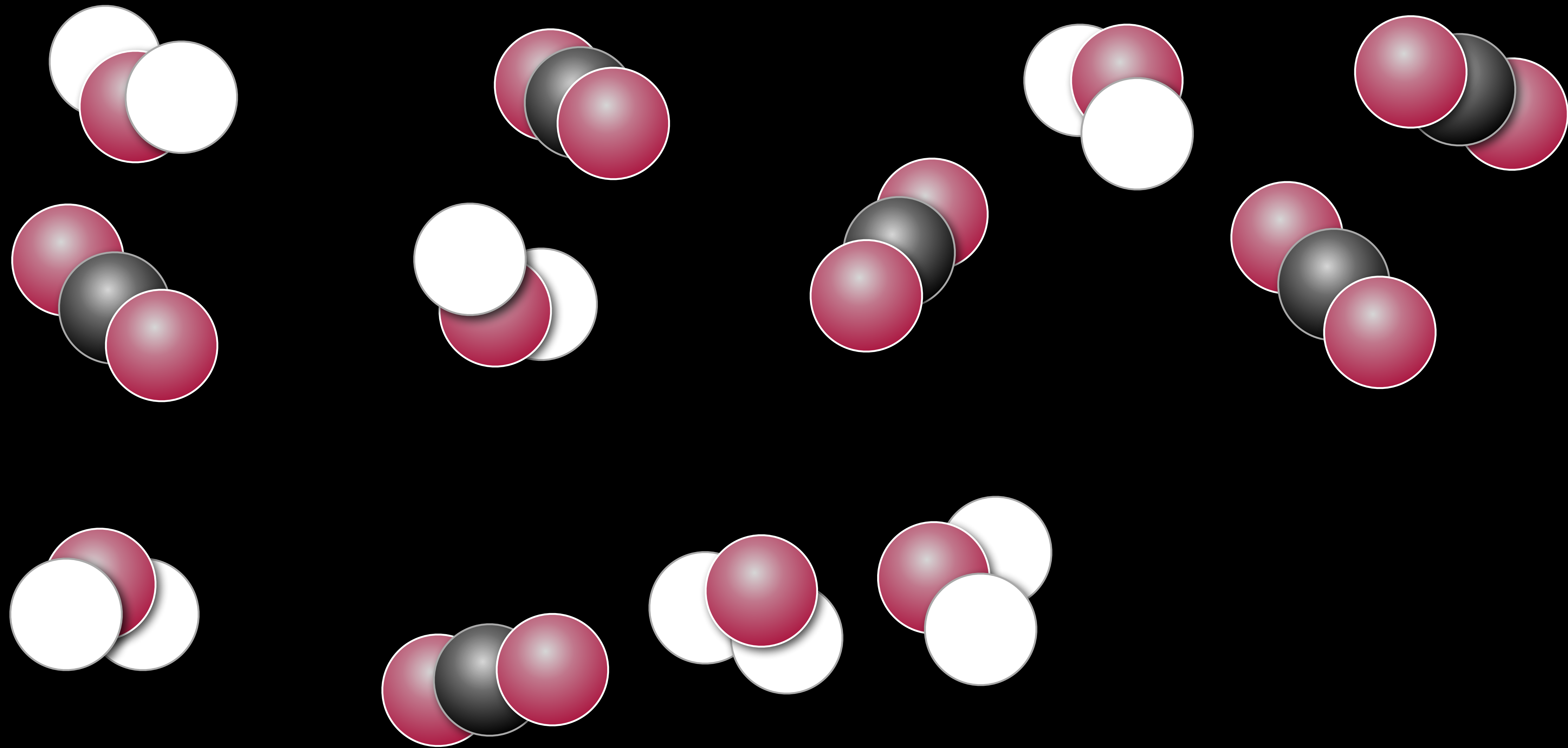
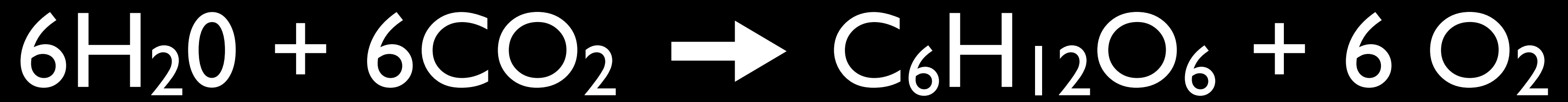


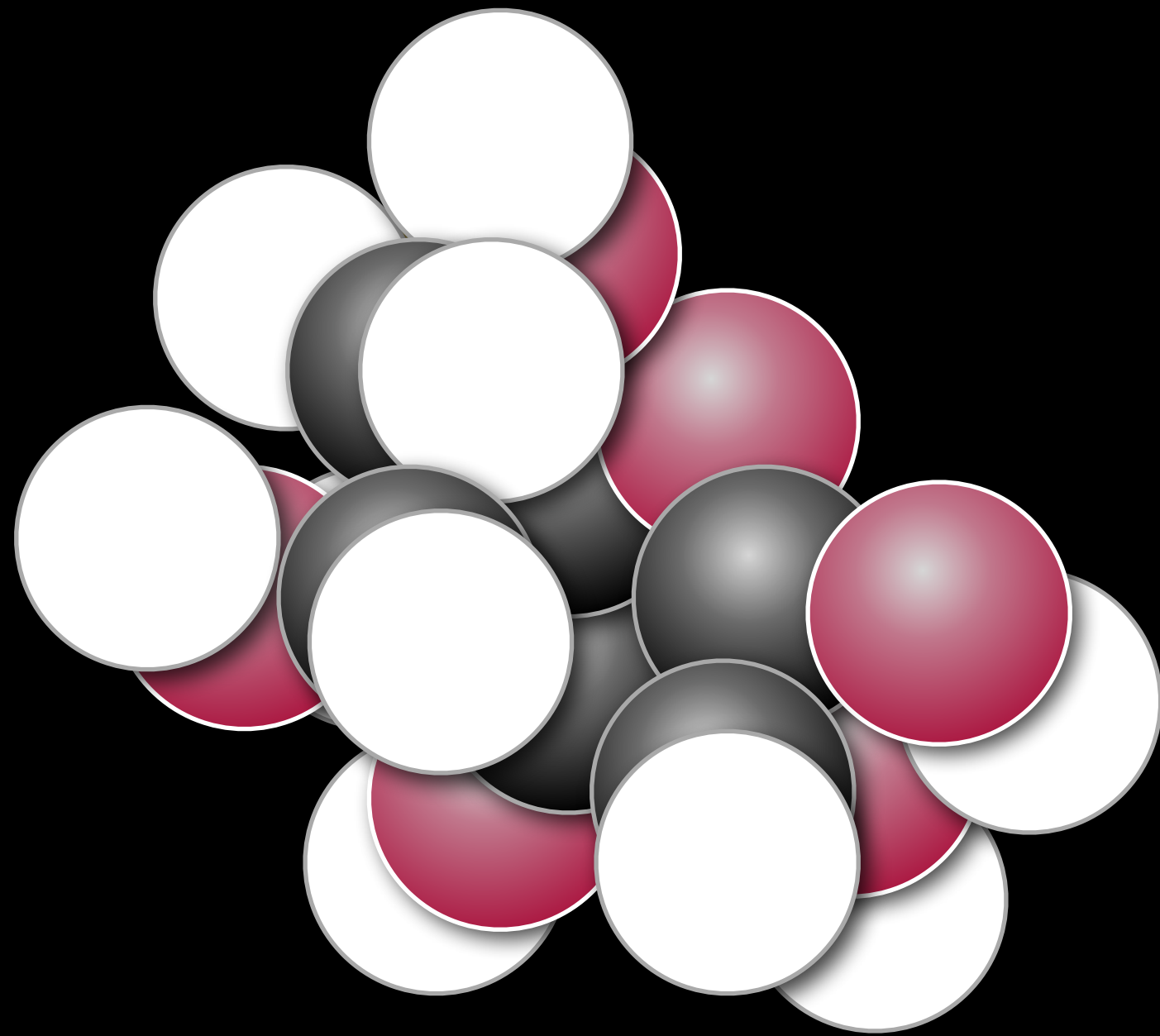
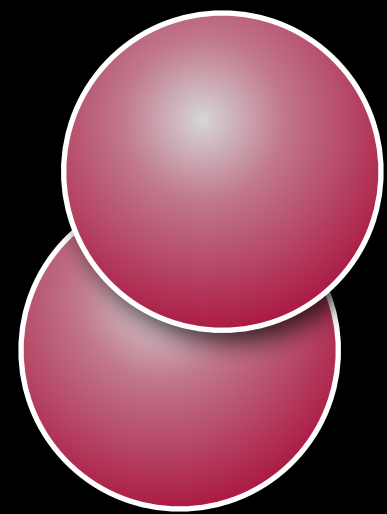
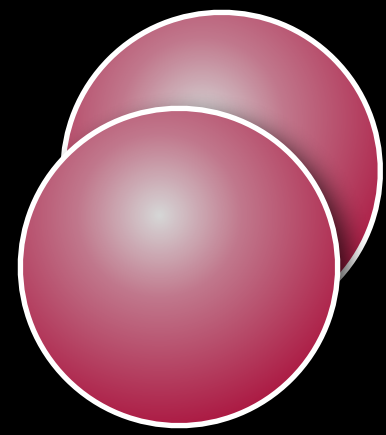
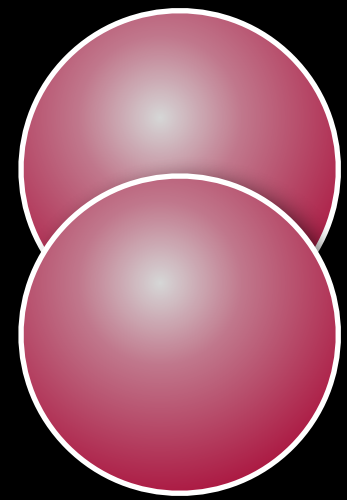
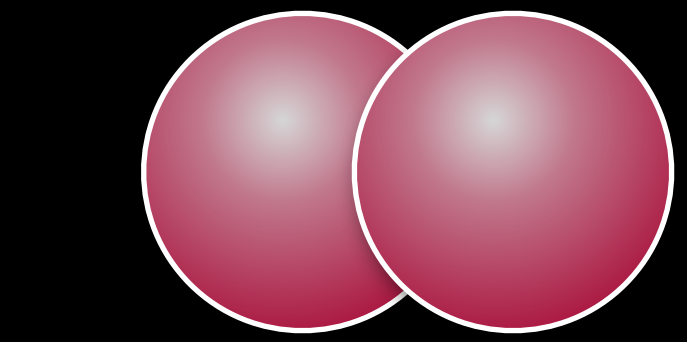
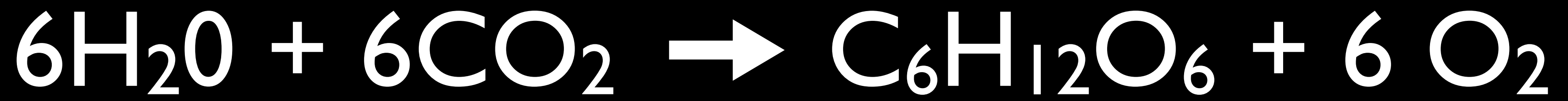
Water



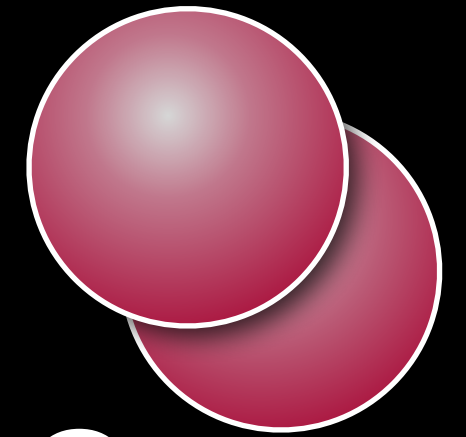
Carbon Dioxide



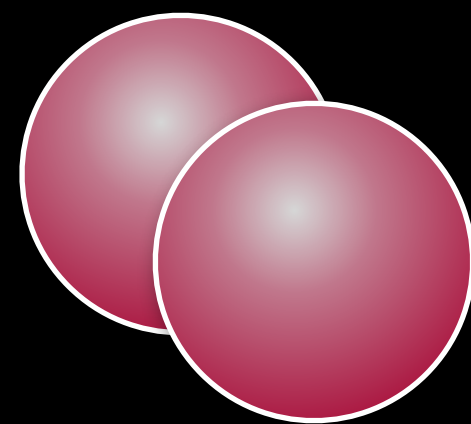




Glucose



Oxygen



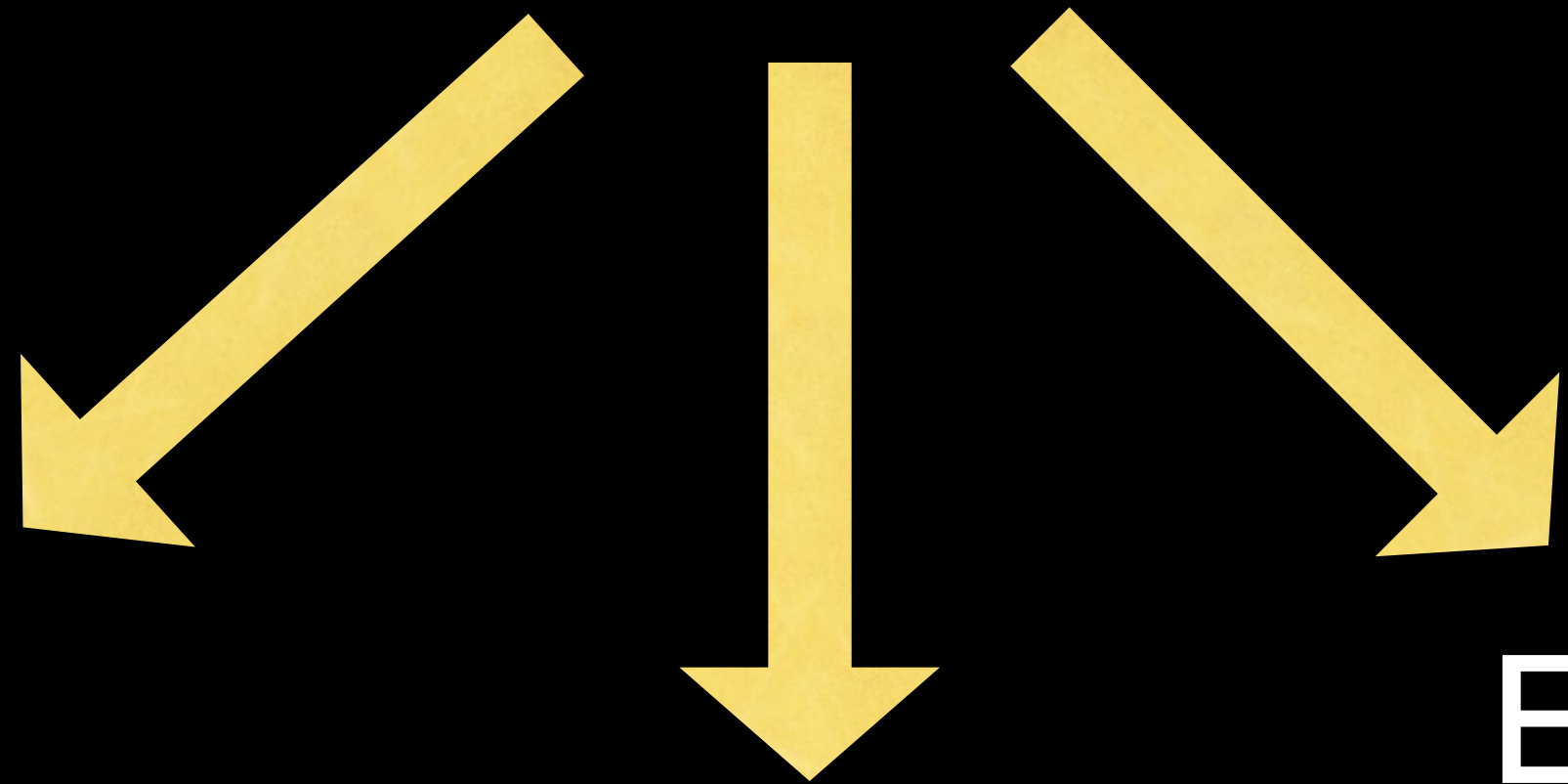
MOLE

6.02×10^{23}

Key

- Atomic number
- Element symbol
- Element name
- Average atomic mass*

Mass



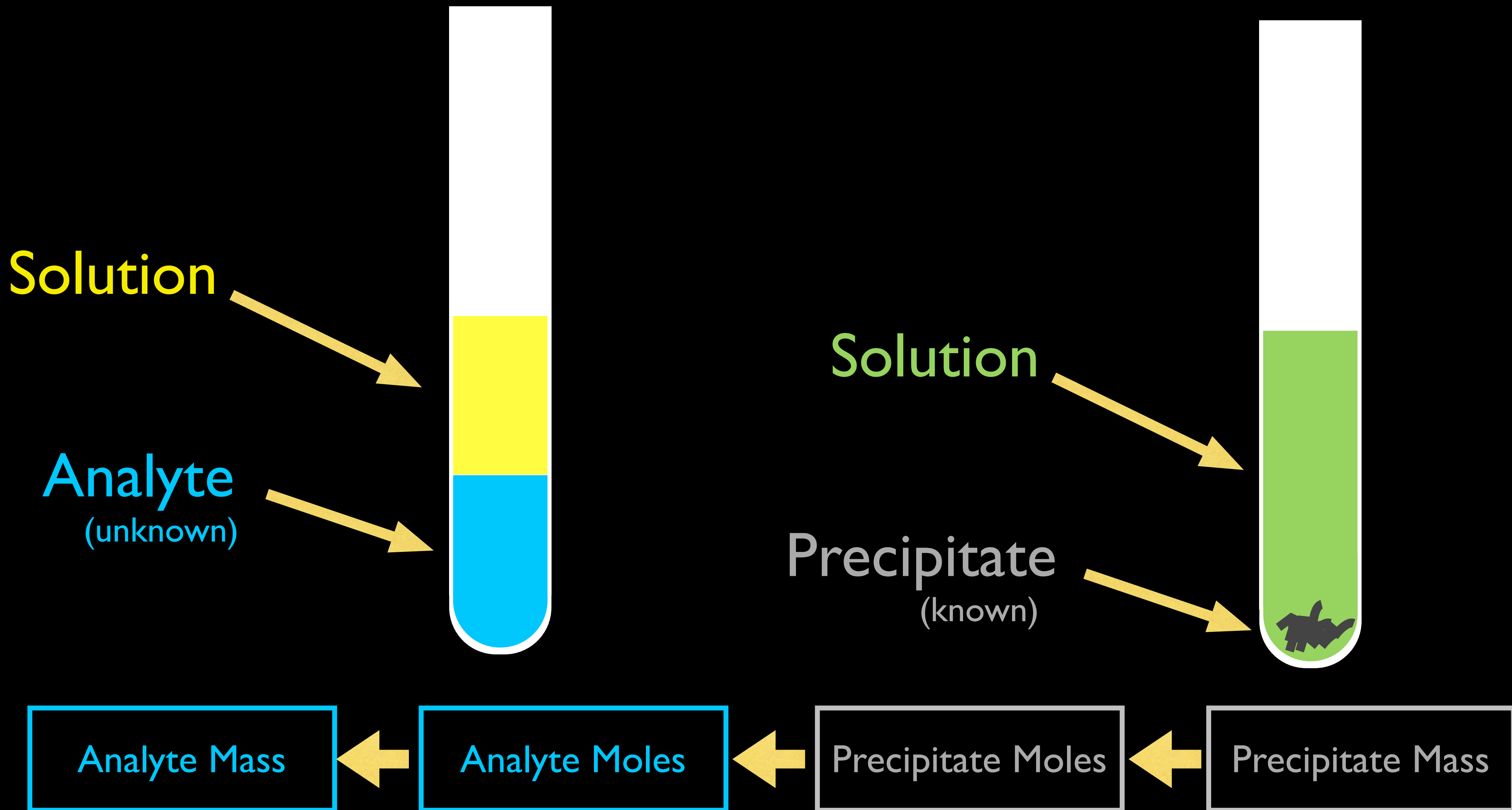
Gravimetric Analysis

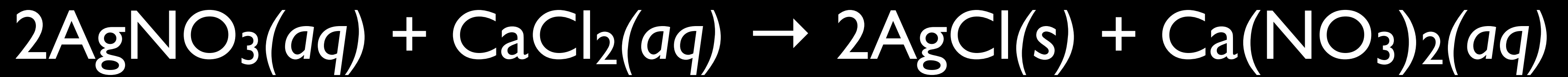
Solution

Analyte
(unknown)



Gravimetric Analysis





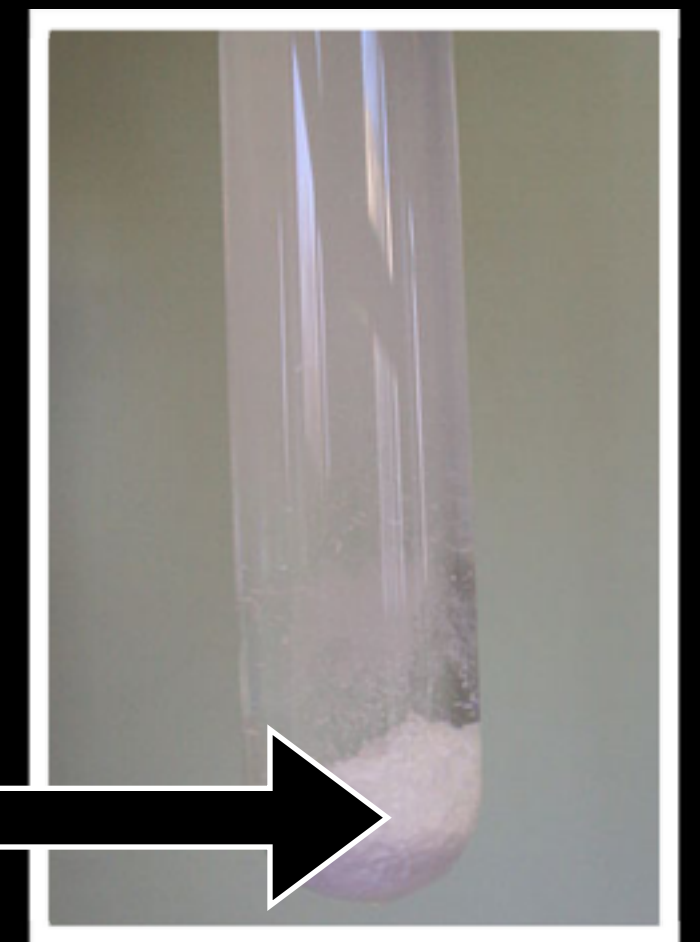
Analyte

$$\frac{5.71 \text{ g AgCl}}{1} \times \frac{1 \text{ mol AgCl}}{143.32 \text{ g AgCl}} \times \frac{1 \text{ mol CaCl}_2}{2 \text{ mol AgCl}} \times \frac{110.98 \text{ g CaCl}_2}{1 \text{ mol CaCl}_2}$$

2.21 g CaCl₂

17 Cl Chlorine 35.45	20 Ca Calcium 40.08	47 Ag Silver 107.87
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5.71 g AgCl



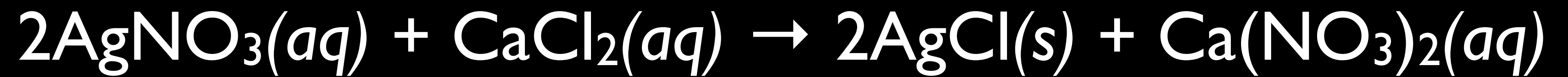
Analyte Mass

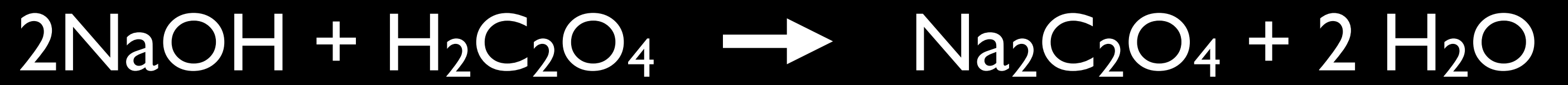
Analyte Moles

Precipitate Moles

Precipitate Mass

You Try



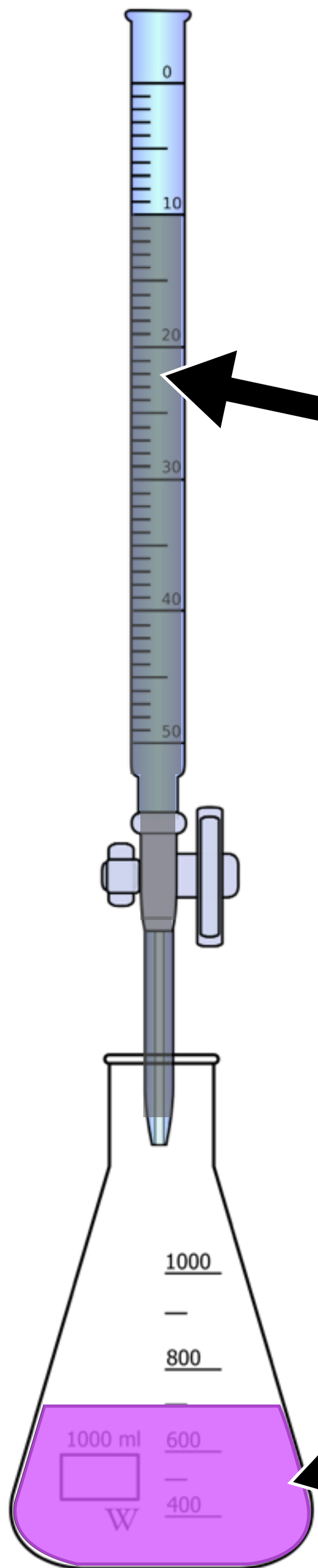


1.00 Molar NaOH

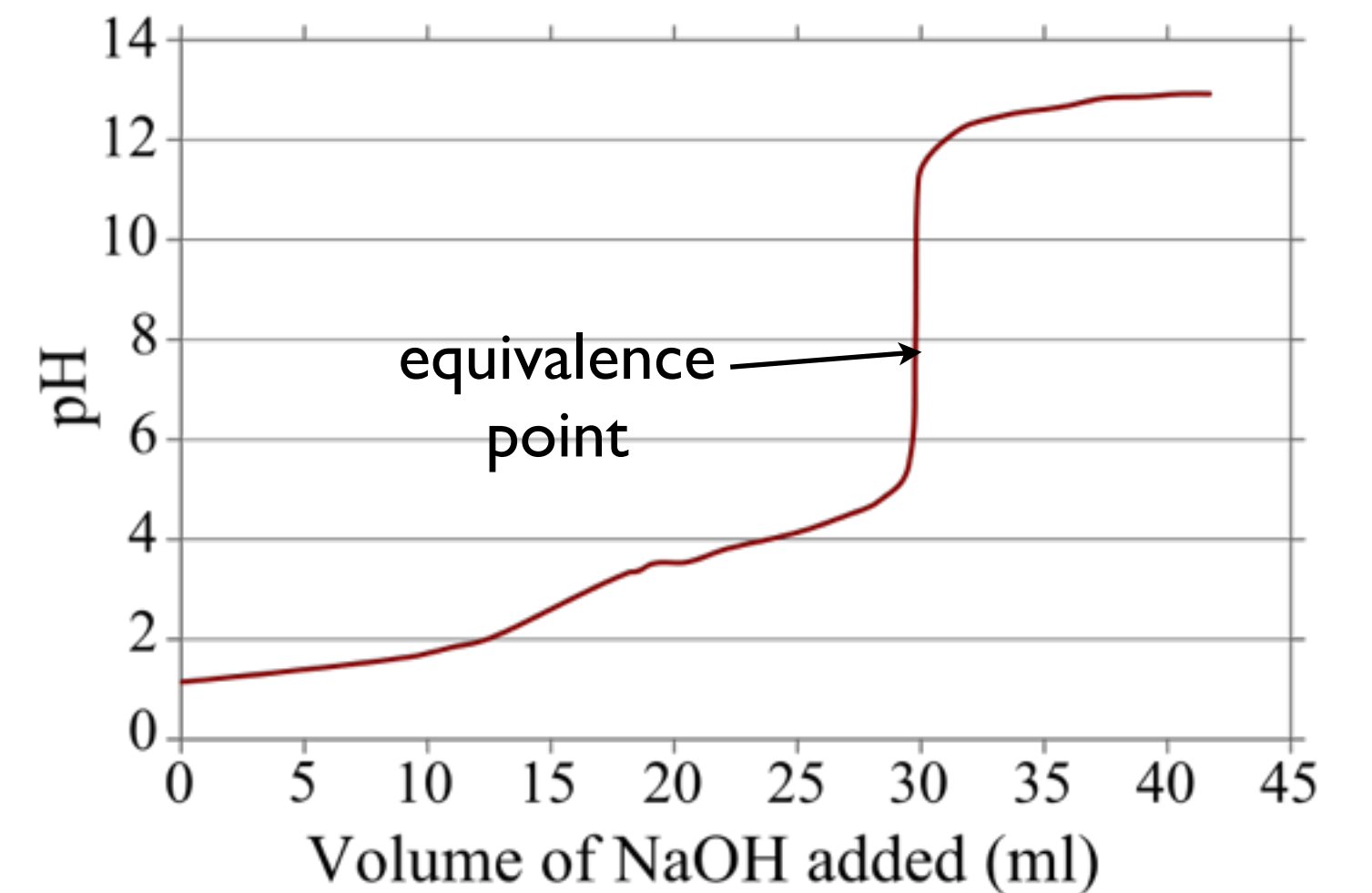
Phenolphthalein

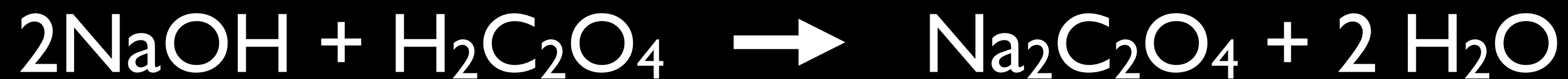


$\text{H}_2\text{C}_2\text{O}_4$
(anilate)



Titration Curve (oxalic acid/NaOH)

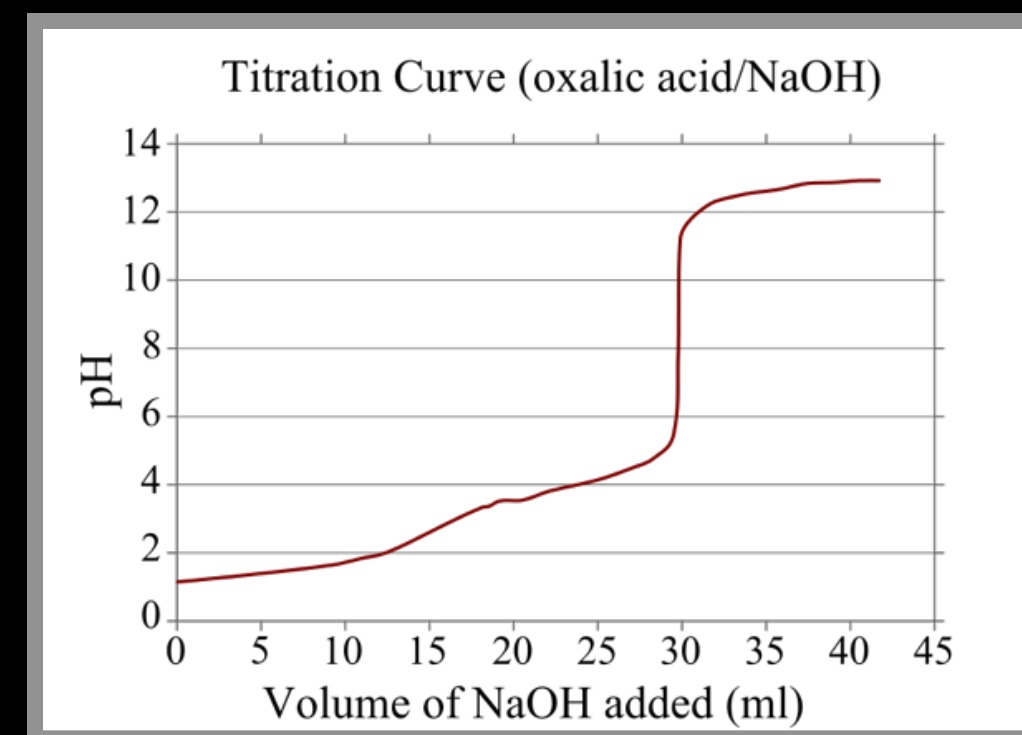




$$\frac{30.0 \text{ ml soln}}{1} \times \frac{1 \text{ Liter soln}}{1000 \text{ ml soln}} \times \frac{1 \text{ mol NaOH}}{1 \text{ Liter soln}} \times \frac{1 \text{ mol H}_2\text{C}_2\text{O}_4}{2 \text{ mol NaOH}}$$

$$\times \frac{90.0 \text{ g H}_2\text{C}_2\text{O}_4}{1 \text{ mol H}_2\text{C}_2\text{O}_4} = 1.35 \text{ g H}_2\text{C}_2\text{O}_4$$

1 H Hydrogen 1.01	6 C Carbon 12.01	8 O Oxygen 16.00
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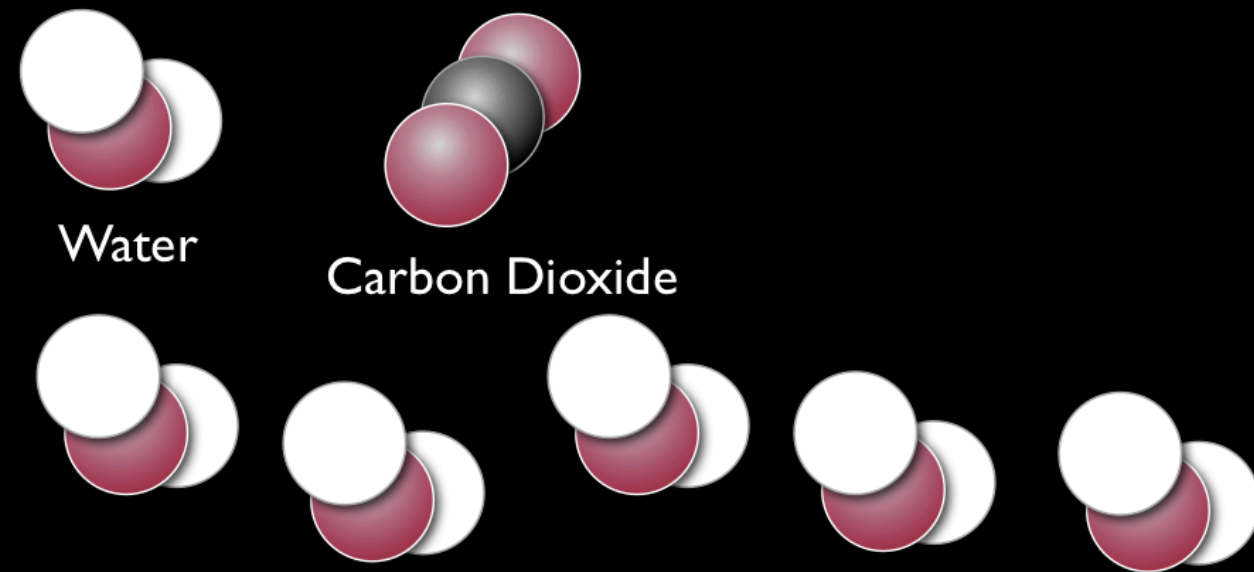
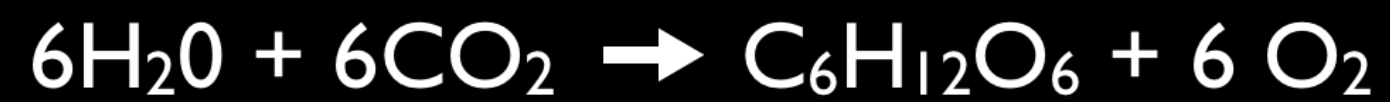


You Try

How much of the analyte ($\text{H}_2\text{C}_2\text{O}_4$) is present if 25.0 mL of .50 M NaOH is required to reach the equivalence point.

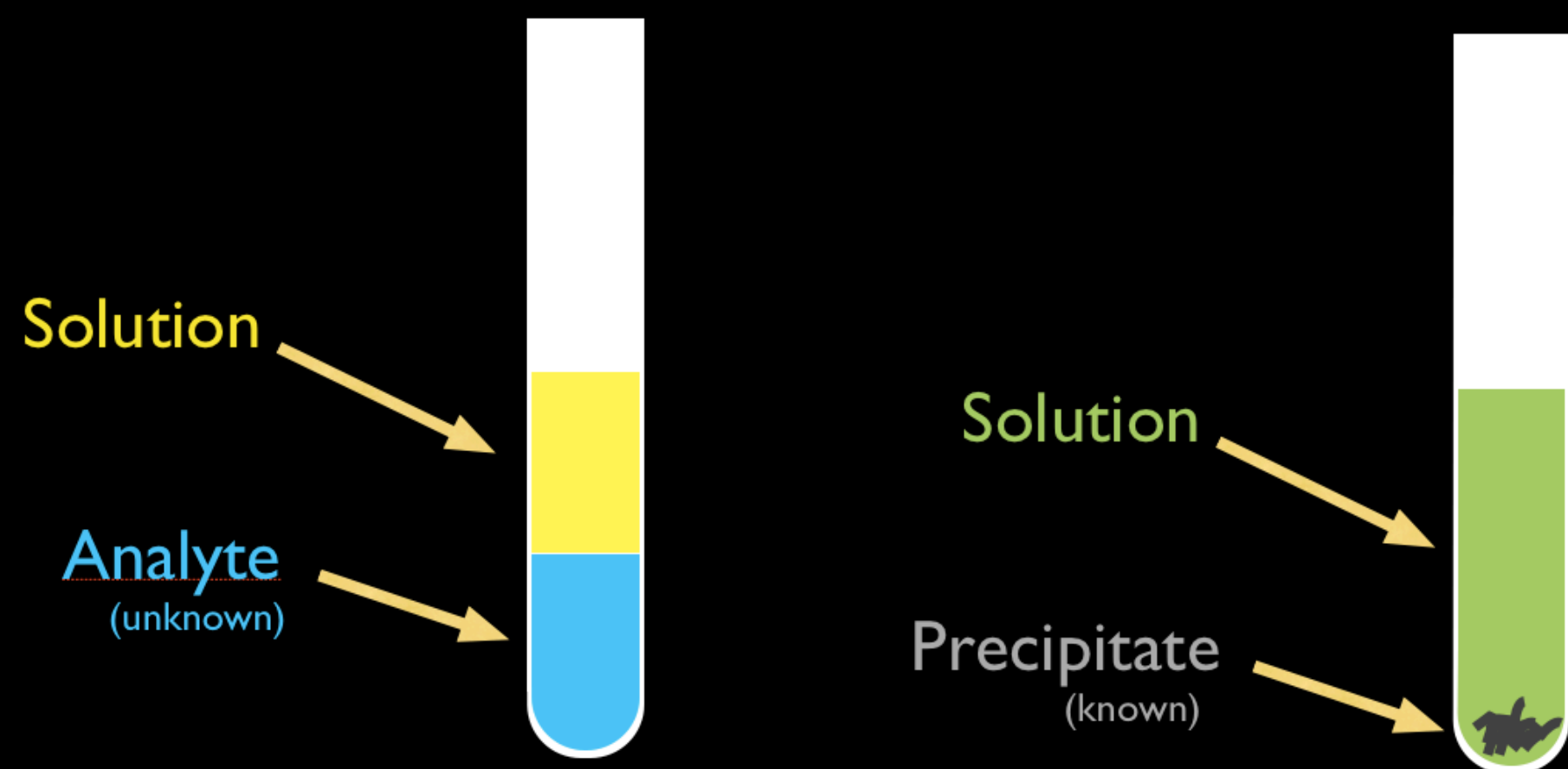
Did you learn?

Chemical Reaction



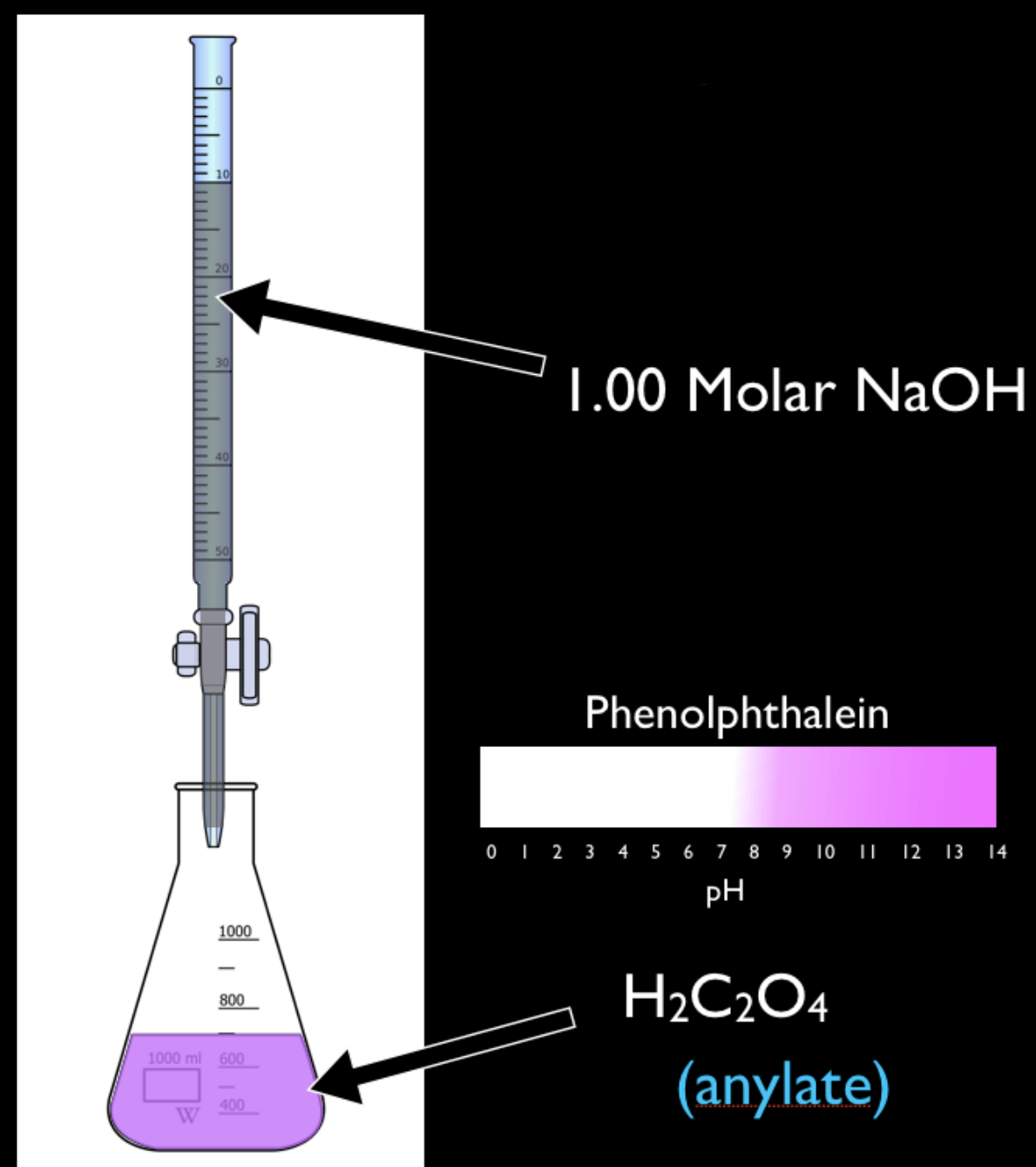
To apply the conservation of atoms in various processes.

Did you learn?



To use gravimetric analysis to determine the concentration of an analyte in a solution.

Did you learn?



To use a titration to determine the concentration of an analyte in a solution.

Acknowledgements

File:AgCl-Neerslag.jpg, n.d. <http://commons.wikimedia.org/wiki/File:AgCl-neerslag.jpg>.

Sponk, Erlenmeyer_flasks_DE.svg; *Deutsch: Verschiedene Erlenmeyerkolben*, September 8, 2010. [Erlenmeyer_flasks_DE.svg. http://commons.wikimedia.org/wiki/File:Erlenmeyer_flasks_FR.svg](http://commons.wikimedia.org/wiki/File:Erlenmeyer_flasks_FR.svg).



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