

**Reversible Reaction: Blue flask**

**Video for Reference if desired:** https://www.youtube.com/watch?v=9nlTaGcf7OE&feature=related

**Chemicals available in kit:**

10 g of dextrose

Methylene blue indicator

8 g KOH

**Materials for demonstration provided in kit:** 500 mL flask.

**Materials used for multiple demos to add in**: none

**Materials you must grab immediately before:** 300 mL of water

Optional: Extra beaker for dramatic pouring effect.

**Procedure for in class demo**:

Place water in flask and slowly dissolve KOH (suggestion, do this before class).

Add 10 g of dextrose

Add 5-10 drops of methylene blue

The solution will be blue (Methylene blue is oxidized)

The solution will slowly turn colorless (glucose is reducing the methylene blue)

*This may be best to quickly mix up before class and let sit for the first part of lecture so that it is completely clear once the demo begins.*

Shake the solution vigorously to introduce oxygen. The solution will turn blue (dissolved O2 oxidizes the methylene blue). **Option:** Pouring from a high height into a second beaker will also reintroduce the color. This is nice and dramatic but also requires neat pouring skills and introduces the possibility of spillage. Please ask stockroom for a beaker if you’d like to do this.

**Discussion**: Use to show a visible reversible redox reaction occurring. Reactions occurring are discussed in powerpoint file.

In basic solutions glucose is oxidized to D-gluconic acid as shown above. This reacts with the methylene blue to form a colorless solution.

When oxygen is introduced into the system, it reoxidizes the methylene blue, once again turning the solution blue.

**Waste:** If your lab is properly equipped to dispose of the KOH solution please do so. If you are not equipped with basic disposal contact Amanda Brindley after returning to the stockroom and I will ensure it is disposed of appropriately.