

**Patrick Healy**

## **Beers Law Introduction Lab**

### **Materials:**

12 - 1000 mL Pyrex Flasks

12 500mL Pyrex Flasks

Assorted test tubes, graduated cylinders and volumetric flasks

Adjustable Pipets

Pipet Tips

DI water

Food coloring

Different color papers

Flashlight

Vis Spec. (If available)

### **Pre-Lab**

One 1000mL flask is filled with water and a predetermined amount of green food coloring is added to this flask and it is labeled as the standard (20 drops work well as to perform well the students need to do serial dilutions). Warm up the spec if applicable.

### **Lab**

The students are shown the standard bottle and all the materials. They are allowed to take 50mL of the standard solution. Their goal is to reproduce the standard solution as closely as possible.

### **Grading**

Points are assigned along the following criteria (out of 50 total):

Groups with a standardized written and reproducible procedure (20 points)

Good scientific techniques such as: using micro-pipets to control volumes delivered, making serial dilutions of the standard, using white paper as a background, using the flashlight to illuminate the sample (20 points)

Accuracy to the standard, the closest group gets full points, the farthest group gets zero. (10 points)