

# Chemistry Lab 4 proc

1. Prepare listed solutions in clean vials. Make sure to label them with tape and to avoid fingerprints on the vials.
  1. When mixing the iron standards and unknown solutions, combine everything except the *o*-phen, which should be added to the solution after inverting for 10 minutes.
  2. Ensure everything is homogeneous, and make everything at once

The iron solution has  $8.0 \cdot 10^{-3} \text{ mg / mL Fe}_3^+$

Calculating concentration:

$$\text{iron solution (mL)} * \text{iron concentration (mg / mL)} = \text{iron (mg)}$$

$$\frac{\text{iron (mg)}}{\text{total volume (mL)}} = \text{new concentration}$$

## Standards

Sample	NaC <sub>2</sub> H <sub>3</sub> O <sub>2</sub> (mL)	NaH <sub>3</sub> OHCL (mL)	iron solution (mL)	deionized H <sub>2</sub> O (mL)	<i>o</i> - phen (mL)	Concentration of iron- <i>o</i> -phen in standard (mg/mL)	$\lambda_{max}$ = ____ Absorbance
Blank	1	1	0	7	1	0	
Std 1	1	1	1.25	5.75	1	0.001	
Std 2	1	1	2.5	4.5	1	0.002	
Std 3	1	1	3.75	3.25	1	0.003	
Std 4	1	1	5	2	1	0.004	
Std 5	1	1	6.25	0.75	1	0.005	

## Unknowns

Sample	NaC <sub>2</sub> H <sub>3</sub> O <sub>2</sub> (mL)	NaH <sub>3</sub> OHCL (mL)	Unknown sample (mL)	deionized H <sub>2</sub> O (mL)	<i>o</i> -phen (mL)	$\omega_{max}$ = ____ Absorbance
Blank	1	1	7	0	1	
Std 1	1	1	1	6	1	

## Measuring w/ spectrophotometer

1. Set up a spectrophotometer experiment, remembering to blank out wavelengths 360, 775, 850, and 990, and select "Spectrophotometric concentration"
2. Set the blank, then measure the absorbance values of all solutions starting from standard 1 as before.
  1.  $\lambda_{max}$  should be constant
3. Once all is done, construct a standard curve using the calculated concentration of iron-*o*-phen and the absorbance.
4. Enable the trendline, setting the y-intercept to 0, and enable  $R^2$ . Remember to include axis titles and such.
5.  $R^2$  values of under 0.900 indicate a weak correlation. Retake bad data, and possibly recreate any solutions that are unfit.

## Cleanup

*o*-phen is not good for the environment. Do not dump it down the drain.