Brief Instructions for JASCO P-1010 Polarimeter

*If you have not used the polarimeter before contact the facility manager for training.*

1. Check that the lamp is turned on before analysis (look for a spot of light on the front left side). If not,  
   a. Open the Spectra Manager acquisition program through the desktop.  
   b. On the right side under the Measurement section click on the Environment icon. This will open an  
      Environment Settings window.  
   c. Select the [Light Source] tab and checkmark the internal source ON.

2. Check the wavelength of the filter in use; lift the circular plate on the top, low left hand side. 589 nm is the  
   standard, Sodium D line. We also have a 365 nm filter available, ask the facility manager for assistance.

3. Set the beam-width filter inside the sample compartment to 3 or 8 depending on the cell diameter. Typically,  
   10mm cells are used so set the beam width to 8.

4. Open the Spectra Manager acquisition program through the desktop.

5. On the right side under the Measurement section click on the Standard icon. This will open an Optical  
   Rotation window.

6. Under the {Instrument} menu, click on Start Analyzer. I should start measuring the optical rotation within  
   the left hand sidebar.

7. Need to zero the background through the {Measure} menu and selecting Zero Clear. The optical rotation  
   measurement should now read all zeroes.

8. Take measure of your blank/solvent:  
   a. Place your cell with just the solvent into the cell compartment; use straps to secure the cell.  
   b. Open the Measurement Parameters window through the {Measure} menu and select Start.  
   c. Set the following parameters: Integration = 1s, Repeat = 10 scans, Interval = 1s, Measurement Mode =  
      optical rotation, and uncheck temperature box.  
   d. Click OK.  
      The instrument will take 10 scans and output the average and statistical information. This blank value  
      should be close to zero.

9. Repeat step 8 but with your sample. Optical rotation measurement limits are between 0.0002° to ±90°. If  
   the reading disappears when you insert your sample, this indicates that your sample is absorbing too much  
   light. Reduce the concentration and try again.

10. When finished, in the {Instrument} menu click Stop Analyzer.

11. Save and/or print any data that you desire.

12. When you are completely done exit the program in the following order:  
   a. Close the Optical Reaction window through {Measure}  Exit.  
   b. Close the Spectra Manager window through {Application}  Exit.  
   c. Remove your sample from the chamber and turn off the Polarimeter P1010.
Analyzing Your Data:

\[ [\alpha]_{\lambda}^T = \frac{\alpha}{lc} \]

\([\alpha] = \text{specific rotation (deg·cm}^2·\text{g}^{-1}, \text{often reported as deg)}\]

\(\alpha = \text{optical rotation (measured)}\)

\(l = \text{cell path length in decimeters}\)

\(c = \text{concentration in g·mL}^{-1}\)