POLARIMETRY

READING

Instrument handout *Using the Polarimeter*

PROCEDURE

Sucrose (table sugar) is a naturally occurring compound with nine stereocenters, and even though 2^9 different stereoisomers can be drawn, only a single one is found in nature. Because sucrose is chiral, in this experiment you will determine the specific rotation of naturally-occurring sucrose.

Determine the optical activity of a solution prepared by dissolving between 2.0-2.1 g of sucrose in 25.0 mL of water. The sucrose should be completely dissolved before obtaining the optical rotation. Take at least five measurements of the optical rotation (being sure to read and record the value to the proper number of significant digits.)

From your data, you will calculate the specific rotation, as described below. (The specific rotation standardizes for differences in concentration, tube length, and so on, so that specific rotations can be tabulated.) Compare your specific rotation to the literature (cite source) and determine the percent error of your value.

For pure liquids:	For solutions:
$[\alpha]_D^{25} = \frac{\alpha}{l \times d}$	$[\alpha]_D^{25} = \frac{\alpha}{l \times c}$

$[\alpha]_D^{25}$ = specific rotation at 25°C at lamp wavelength of 589 nm (the "sodium *D* line")
α = the observed rotation (positive if the reading is to the right, negative if it is to the left)
l = length of the tube in *decimeters* (the length in mm is printed on the neck of the tube)
d = density (for pure liquids)
c = concentration (for solutions, in g/mL)