STUDENT HANDOUT

Student Name: _____

1 Find the angle of minimum deviation for 7 lines in the mercury spectrum

Make sure you convert the wavelength into micrometers first before you square it and take the inverse.

Use the equation given to calculate the refractive index.

$$\mu = \frac{Sin\,(\frac{d+D}{2})}{Sin\,(\frac{A}{2})}$$

color	wavelength λ (nm)	$1/\lambda^2$ $(\mu m)^{-2}$	angle of deviation β min degree	angle of deviation β decimal deg	Index of refraction n
red	690.8				
yellow 1	579.1				
yellow 2	577.0				
green	546.1				
blue- green (dim)	491.6				
blue	435.8				
violet	404.7				

Prism apex angle α=60°

- Make a graph of *n vs wavelength* (Couchy calibration curve).

- Use the Handbook of Chemistry and Physics to determine what kind of glass material your prism is made of.
- To do this, find n for the a wavelength of 589.0 nm from your graph

- Graph n vs 1/wavelength squared.
- Calculate the slope and y intercept and write an equation for this line.

STUDENT HANDOUT

2 Use a different spectrum tube, record the type of lamp below and then determine the angle of any three bright lines in its spectrum and calculate the angle of refraction.

Type of Lamp: _____

color	intensity (dim, bright etc.)	angle of deviation β min degree	angle of deviation β decimal deg	Index n	$1/\lambda^2$ $(\mu m)^{-2}$	wavelength λ

- Use the Cauchy calibration curve that you made for your prism in the previous experiment to find the wavelengths of the lines you observed.
- Is there a relationship between the color of the spectral line and the wavelength?