Experiment No: Date:

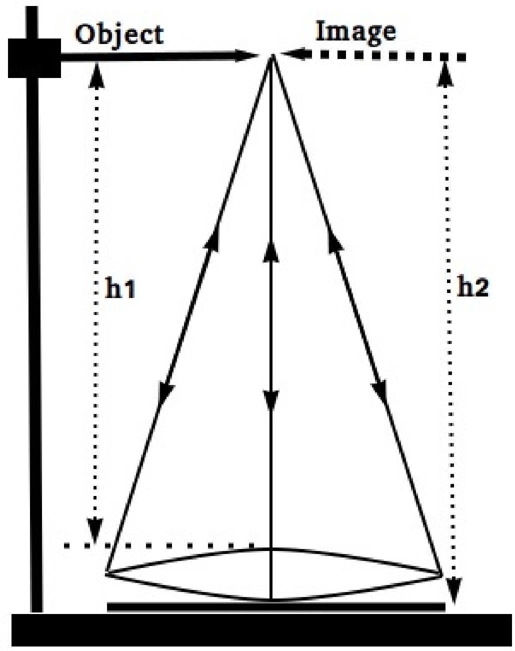
Liquid Lens

Aim:

To find the refractive index of the given liquid using convex lens and plane mirror

Apparatus:

Convex lens, Plane Mirror, given liquid, Pointer, stand etc



Theory:

We can consider the experimental set up as a combination of two lenses, a convex lens (focal length f_G) and a plano - concave liquid lens (focal length f_L)

Then the resultant focal length of the combination is given by the equation

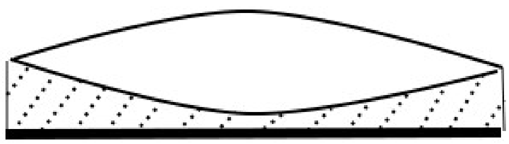
$$\frac{1}{F}=\frac{1}{f_G}+\frac{1}{f_L}$$

Then the focal length of the liquid lens ,

$$f_L=\frac{F f_G}{f_G-F}$$

And refractive index of the liquid is given by

$$n=2-\frac{f_G}{F}$$



Observations:

Lens Used	Distance of the pointer from (cm)						Mean (cm)
	Top of the lens			Bottom of the lens			
	1	2	Mean (h_1)	1	2	Mean (h_2)	
Convex Lens							f_G =
Combination of Convex Lens and Liquid Lens							F=

Calculations:

Focal length of the liquid lens , $f_L=\frac{F f_G}{f_G-F}$ = = cm =m

Refractive index of the liquid $n=2-\frac{f_G}{F}$ = =

Result:

1. Focal Length of the given Liquid (Water) = m
2. Refractive Index of the Liquid (Water) =