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Integrated Optics - Refractive Index

Apparatus Available:

- · spectrometer

- Magnifying glass Glass prism Sodium Vapour Lamp

To determine sufractive index of a glass prism using a spectrometer.

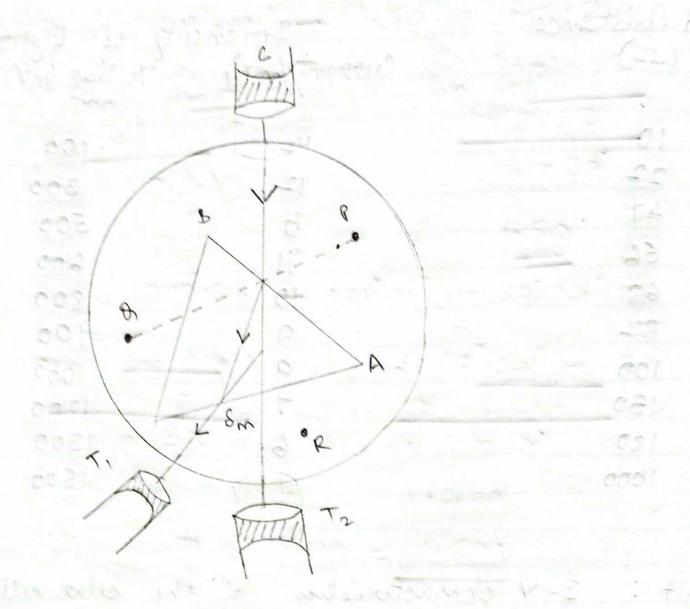
Formulae:

$$H = \frac{\sin \left(A + \sin \frac{1}{2}\right)}{\sin \left(A\right)}$$

H= Referentive Index of glass prism

A = Angle of Proism

Sm = Angle of Minimum deviation



Determination of angle of minimum deviation

Calculations:

$$8m \text{ for } A = 89^{\circ}.15' - 1^{\circ}.50' = 37.25'$$
 $M = 8im \left(\frac{3m + A}{2}\right) = 8im \left(\frac{37.25' + 60'}{2}\right)$
 $Sin(\frac{A}{2})$

Sm for B = 218.26' - 181' 11' = 37' 14'

$$M = \frac{\sin(\frac{\sin + A}{2})}{\sin(\frac{x}{2})} = \frac{\sin(\frac{x}{2}) \cdot 14' + 60}{\sin(\frac{x}{2})}$$

Sin(A)

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Tabulation	<u>n:</u>	1							
	Address of the second	~ C.	2						
Least Cou	mt =	500	A Substant	=	1'				
· A - D	1						. 0		
Angle of	burn	, A (as	, Obtai	ned la	elier)	= (60		
Nan I D I O I O I						10		11	
Vernies	for m	for min.		direct nay Rz			+	M	
	<u>deviation</u> p						dire		
	****	.14.0	10	110	1100	10			
10.4									
		15	29°15′	Care	5 S	1051	22000	1.	501
- A	3-1		3110		E	A 18/-1	उन २०		
D	218	26	218,26	181	Ш	181.11	37° 14'	1.	499
D			A .						T , 1
			Mesing		- (G.	0			
			19BC 120	74	tie	9/			
Result:			3.11	1).					
The sufer	ractive i	nder (C		e gi	ren		
glass	perism	is:	1.50	<u> </u>	<u>nite</u>)				
U			•						
	Tabulation Least Cou Angle of Vernier Result: The super	Vernier Reading deviate MSR (deg) A 39 Result: The supractive i	Tabulation: Least Count = 0.5° 30(1) Angle of proism, A (as Vernies Reading for middle deviation position position MSR VSR (deg) (mins) A 39 15 B 218 26 Result: The supractive index (Least Count = 0.5° 30 (divisions) Angle of proism, A (as obtained of proism, A (as obtained of position R, Nernier Reading for min. deviation position R, MSR VSR TR (deg) (mins) (deging) A 39 15 39°15′ B 218 26 218,26′ Result: The supractive index (at 589)	Tabulation: Least Count = 0.5° = 30 (divisions) Angle of proism, A (as obtained early deviation position R, directly and the superactive index (at 589.3 mm) Least Count = 0.5° = 30 (divisions) Read Read Nernies Reading for min. Read deviation position R, directly and a directly a directly and a dir	Least Count = 0.5° = 1' 30 (divisions) Angle of proism, A (as obtained earlier) Vernies Reading for min. Reading for deviation position R, direct may MSR VSR TR MSR VSR (deg) (mm) Cappin (deg) (mm) A 39 15 39°15' 1 5 B 218 26 218,26' 191 11 Result: The supractive index (at 589.3mm) of the	Tabulation: Least Count = 0.5° = 1' 30 (divisions) Angle of proism, A (as obtained earlier) = 6 Vernier Reading for min. Reading for deviation position R, direct may R, MSR VSR TR MSR VSR TR (deg) (min) (deglin) (deg) (min) (deshin) A 39 15 39°15′ 1 5 1°5′ B 218 26 218,26′ 191 11 181°11′ B laby 19 19 19 10 10 11 181°11′ Result: The supractive index (at 589-3 ma) of the givening the givening that the givening the givening the givening that the givening the givening the givening that the givening the	Tabulation: Least Count = 0.5° = 1' 30(divisions) Angle of proism, A (as obtained earlier) = 60° Vernier Reading for min. Reading for Sm deviation position R, direct may R = Re Re Re MSR VSR TR MSR VSR TR (deg) (mins) (degline (deg) (mins) (degline) A 39 15 39°15' 1 5 1°5' 27°25' B 218 26 218126' 191 11 181'11' 37°14' Result: The supractive index (at 589.3000) of the given	Tabulation: Least Count = 0.5° = 1' 30(divisions) Angle of proism, A (as obtained earlies) = 60° Vernies, Reading for min. Reading for Sm deviation position R, direct ray R = Re Re Re (deg) (mino) Codin (deg)