



23. ROTATING LIGHT

Laplace Witches

Nanjing Foreign Language School
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2017 IYNT 23 ROTATING LIGHT

Laplace Witches

OUTLINE



01. Problem Review

02. Theoretical Analysis

03. Experimentation and Conclusion

04. Further Discussion and Improvements

05. References

01

PROBLEM REVIEW



Problem 23

Problem

Some molecules have a property called optical activity: they rotate polarized light. This property can be observed using a polarizer and a laptop/phone screen as a source of plane polarized light.

KEY WORDS ANALYSIS

KEY WORDS

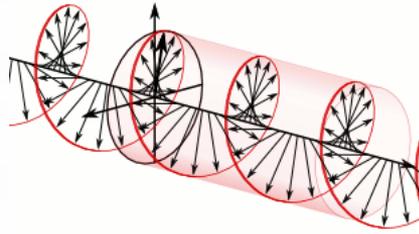
1. Optical Activity

Optical Activity is the ability of a substance to rotate the plane of polarization of plane-polarized light.

KEY WORDS ANALYSIS

KEY WORDS

2.polarized light



02

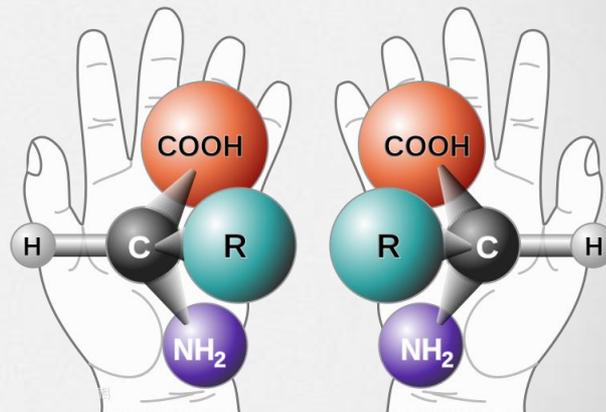
Theoretical Analysis



Theoretical Analysis

chiral molecules= optical activity

(Chirality=An object or a system is *chiral* means that it is distinguishable from its mirror image; that is, it can not be superposed onto it.)



optical rotation

$$[\alpha]_D^t = \frac{\alpha}{l \cdot C}$$

alpha(°): the inclination of the light

L(dm): the length of the test tube
(filled with solution = the length of
solution)

C(g/ml): the concentration of the
solution

t: temperature

D: the wavelength of the light

03

**EXPERIMENTATION
AND CONCLUSION**



PRELIMINARY EXPERIMENT



data

D-Glucos (+53 [deg dm⁻¹cm³g⁻¹], clockwise)

D-Fructose (-92 [deg dm⁻¹cm³g⁻¹], counter clockwise)

Surcrose(+66 [deg dm⁻¹cm³g⁻¹], clockwise)

Penicillin V (+233 [deg dm⁻¹cm³g⁻¹], clockwise)

EXPERIMENT



We used the polarized mirror to measure the angle of light which is through the solution.

	1	2	3	4	5
experiment	45-60	60-70	90	45-60	(180) +45
standard	53	66	92	53	223
conclusion	Glucose	Surcrose	Fructose	Glucose	Penicillin V

04

**FURTHER DISCUSSION
AND IMPROVEMENTS**



IMPROVEMENTS

Use lights of other colors, such as red light

repeat the experiment

use equipment with higher accuracy(use a light sensor to measure the light intensity to determine whether the light intensity has reached its maximum point.)

consider the influence of the glass beaker

A dark blue envelope is shown from a top-down perspective. On the left side, there are two red circular buttons with silver centers. A red ribbon is tied around the bottom button. The envelope is centered on a light gray background.

THANK YOU