

Generate a Calibration Curve for Chlorophyll a

Purpose

To measure and graph the absorbance of light by chlorophyll at a specific wavelength (the absorbance maximum) versus chlorophyll concentration. Students will be given an unknown and determine its concentration from their calibration curve.

Overview

This exercise is designed to familiarize the student with the concept of spectroscopy or the study of the interaction of matter with electromagnetic radiation. Students will prepare solutions and use a colorimeter to measure absorbance by solutions of different concentrations.

Time

One class period.

Key Concepts

Matter absorbs electromagnetic radiation.

Absorbance is proportional to concentration and this relationship can be expressed mathematically (Beer's Law $A=abc$).

Scientists can use this relationship to measure concentrations of solutions if a calibration curve is generated.

Skills

Collecting data

Preparing serial dilutions

Making observations

Graphing data

Forming hypotheses

Materials

Mortar and pestle or glass blender (do not use plastic if you will be using nail polish remover as a solvent)

Spinach or dried algae preparations (can be obtained from health food store as dietary supplement. About five capsules will do)

Nail polish remover (**acetone or ethyl acetate**) or **ethanol or rubbing alcohol** (30 - 50 mL)

Balance

Erlenmeyer flask (or a jelly jar)

Funnel

Filter paper (or coffee filters)

Graduated cylinder (50 mL)

Vernier colorimeter interfaced to a CBL system.

Cuvetts

5 mL graduated pipettes and pipette bulbs

Generate A Calibration Curve For Chlorophyll A

Kathleen Armour



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Table of Contents Generate A Calibration Curve For Chlorophyll A

1. Understanding the eBook Generate A Calibration Curve For Chlorophyll A
 - The Rise of Digital Reading Generate A Calibration Curve For Chlorophyll A
 - Advantages of eBooks Over Traditional Books
2. Identifying Generate A Calibration Curve For Chlorophyll A
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Generate A Calibration Curve For Chlorophyll A
 - User-Friendly Interface
4. Exploring eBook Recommendations from Generate A Calibration Curve For Chlorophyll A
 - Personalized Recommendations
 - Generate A Calibration Curve For Chlorophyll A User Reviews and Ratings
 - Generate A Calibration Curve For Chlorophyll A and Bestseller Lists
5. Accessing Generate A Calibration Curve For Chlorophyll A Free and Paid eBooks
 - Generate A Calibration Curve For Chlorophyll A Public Domain eBooks
 - Generate A Calibration Curve For Chlorophyll A eBook Subscription Services
 - Generate A Calibration Curve For Chlorophyll A Budget-Friendly Options
6. Navigating Generate A Calibration Curve For Chlorophyll A eBook Formats

- ePub, PDF, MOBI, and More
- Generate A Calibration Curve For Chlorophyll A Compatibility with Devices
- Generate A Calibration Curve For Chlorophyll A Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Generate A Calibration Curve For Chlorophyll A
 - Highlighting and Note-Taking Generate A Calibration Curve For Chlorophyll A
 - Interactive Elements Generate A Calibration Curve For Chlorophyll A
- 8. Staying Engaged with Generate A Calibration Curve For Chlorophyll A
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Generate A Calibration Curve For Chlorophyll A
- 9. Balancing eBooks and Physical Books Generate A Calibration Curve For Chlorophyll A
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Generate A Calibration Curve For Chlorophyll A
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Generate A Calibration Curve For Chlorophyll A
 - Setting Reading Goals Generate A Calibration Curve For Chlorophyll A
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Generate A Calibration Curve For Chlorophyll A
 - Fact-Checking eBook Content of Generate A Calibration Curve For Chlorophyll A
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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