

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

M Carnoy



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