

Spectrometer Experiment Demonstration



Article Overview

A spectrometer experiment can be demonstrated by measuring light absorption through a solution to illustrate concepts like wavelength, absorbance, and Beer's Law.

Basic Setup for a Demonstration

A simple spectrometer demonstration involves a light source, a monochromator or prism, a sample holder (cuvette), and a detector. White light passes through the monochromator, which isolates a specific wavelength, then through the solution in the cuvette. The detector measures the reduction in light intensity, which corresponds to the solution's absorbance. For educational purposes, low-cost, portable spectrometers like the Spektra™ are ideal, using a tri-color LED and a light sensor for intuitive operation and minimal reagent use.

Example Experiments

- Food Dye and Beer's Law Students can prepare solutions of colored food dyes at different concentrations. By measuring absorbance at the dye's maximum wavelength, they can plot absorbance versus concentration to verify Beer's Law. This demonstrates the relationship between light absorption and solute concentration.
- Aspirin Content Analysis Using a UV-Vis spectrometer, students can determine the mass of acetylsalicylic acid in an aspirin tablet and compare it to the labeled content. This introduces quantitative analysis and real-world applications of spectrometry.
- Atomic Spectra Observation A hydrogen gas lamp or sunlight can be used with a spectrometer to observe emission and absorption lines. Students can relate these lines to electron transitions and calculate constants like the Rydberg constant, linki...

Article Content

Apr 25, 2026

Mass spectrometry (MS) | Resource | RSC Education

Mass spectrometry is a powerful technique in the modern analytic laboratory. Learn the fundamental theory behind the operation of a

May 19, 2026

Three Simple "Demo" Spectrometers -

This post describes three simple demonstration spectrometers that the home experimenter can set up, with a

Jul 18, 2026

Ciênciaão hands-on experiment "Open spectrometer ...

Tags:physics, chemistry, optics, light, spectroscopy, diffraction, colors ->
Spectrometers are usually closed boxes. This spectrometer,

Oct 30, 2025

Spectrometry, DIY Experiment & Laboratory Spectrometer | Observing ...

The setup is followed by a series of measurements using an Ocean Optics USB2000 laboratory spectrometer.

Feb 09, 2026

Lab 10: Spectroscopy – Intro Physics for Living Systems

Using spectroscopy (also called spectral analysis, spectrometry, or spectrophotometry), we will examine

Sep 18, 2025

Spectrometry at school: hands-on experiments

Hands-on experiments in spectrometry As part of the project, a range of practical spectrometry activities was developed to raise

Feb 26, 2026

Students Build their Own Spectrophotometers in the Lab to

Students worked in teams to design and construct their own spectrometers using low-cost components and a Raspberry Pi

Mar 23, 2026

The Spectrophotometer: A demo and practice experiment

In this video, we'll demonstrate how to use a spectrophotometer to perform a basic experiment: determining the

Dec 28, 2025

Modern Physics demonstrations with DIY Smartphone Spectrometers

Here, we discuss a series of demonstrations and pedagogical exercises, accompanied by our DIY diffractive spectrometer that uses

Jul 11, 2026

Low-cost Spectroscopy: Experiments in Various Spectral Ranges

Teaching the basic principles of molecular spectroscopic techniques on an experimental basis is often a particular

Jan 29, 2026

Back to basics with spectrophotometry | Ideas | RSC Education

The smartphone spectroscopy video deconstructs a common spectrophotometer into its simplest components: a light

Aug 11, 2025

The Spectrophotometer: A demo and practice experiment

The Spectrophotometer: A demo and practice experiment The spectrophotometer is an instrument used to

Mar 13, 2026

The Electromagnetic Spectrum | IOPSpark

Absorption spectrum of sodium Demonstration: Using a spectrometer to observe the absorption lines formed when white light passes

Mar 13, 2026

Spectrometry

This collection includes lab activities to be used with PASCO's UV-Vis Spectrometer (SE-3607) or Wireless Vis Spectrometer (PS

Mar 20, 2026

Virtual Spectroscopy Lab

Virtual Spectroscopy Different colors of light have different energies which is caused by the movement of electrons within the atom.

Feb 15, 2026

Spektrometer — Experimente Physikalisches Institut

Das Gitter vor der Lampe positionieren. Die Spektrometer-Faser vor der Lampe positionieren und die Intensität einstellen.

Jan 18, 2026

Mass Spectrometry Basics for Young Students:

out a mass spectrometry experiment and learn to interpret the resulting mass spectra. The multistage, inquiry-based tour contains

Mar 20, 2026

Spectrometer Experiments

A spectrometer experiment performed in a lab can range from material identification to measuring the infrared light

Dec 30, 2025

3.2B: Spectroscopy Lab

Background This experiment will introduce you to the use of spectrometers, and techniques for using them. Instructions for use of the

Feb 02, 2026

The Spectrophotometer: A demo and practice experiment

The spectrophotometer is an instrument used to measure the effect of a sample on a beam of light. We can learn a lot about a

Sep 11, 2025

14A: Atomic Emission Spectra (Experiment)

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Dec 29, 2025

Experiment 2: INTRODUCTION TO SPECTROSCOPY

EXPERIMENT 2: INTRODUCTION TO SPECTROSCOPY In Part One of this experiment you will be introduced to the fundamentals

Dec 04, 2025

Spectrometer Experiments

An IR spectrometer passes infrared light through a sample and measures the intensity of transmitted light on the other

Contact Us

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