

Spectrometer Box Dimensions



Article Overview

The size of a spectrometer box depends on the optical layout, but for DIY or small-scale spectrometers, typical dimensions range from a few centimeters to around 30 cm per side.

DIY and Educational Spectrometers

For simple educational or DIY spectrometers, a cardboard or small enclosure is often sufficient. The box needs to accommodate:

- A slit for light entry
 - A diffraction grating to separate wavelengths
 - A detector or scale to measure the dispersed light
- In practice, boxes used in classroom experiments are often 20–30 cm long, 10–15 cm wide, and 10–15 cm high, providing enough space for light to travel from the slit to the grating and then to the detector without significant overlap of spectral lines. The box should be light-tight to prevent stray light from affecting measurements.

Considerations for Box Size

- **Optical Path Length:** The distance between the slit, grating, and detector affects spectral resolution. Longer paths allow better separation of wavelengths but require a larger box.
- **Component Size:** The box must fit the diffraction grating, lenses or mirrors, and the detector (camera, photodiode, or printed scale). For example, a webcam-based DIY spectrometer requires a box sized to fit the webcam and allow a small slit in front.
- **Adjustability:** Some designs include a hinged lid or removable panels to adjust the...

Article Content

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Spectrometer Design Guide

On the following pages are shown two common spectrometer geometries; the transmission grating based and the crossed Czerny

Feb 01, 2026

USB Spectrometer | Low Price Optical Spectroscopy

A compact and reliable USB spectrometer which brings affordable UV-Vis-NIR (320 nm to 1050 nm)

Feb 20, 2026

Spectrometer design guide

Our technical note, the "Spectrometer design guide", offers easy-to-use design guidelines and formulas for creating, evaluating, and

Feb 08, 2026

Spectroscope in Cardboard Case | 1003183 | U21876 | Spectrometers

Hand spectroscope in a flat cardboard box with built-in wavelength scale for direct reading of coarse wavelengths for spectral lines

Feb 11, 2026

Take a CD and a cereal box, and what do you have? With a little help ...

Constructing a cereal-box spectrograph We can make good use of these household diffraction gratings for constructing our own

Sep 28, 2025

DIY Low Cost Spectrometer : 10 Steps (with Pictures)

DIY Low Cost Spectrometer: Being a final-year undergraduate student majoring in physics, I believe that

Jan 18, 2026

Spectrometer Specifications

In the very general sense of the word, every spectrometer is a filter and every filter is a spectrometer. Each is a device for isolating a

Mar 22, 2026

HR4000 Installation and Operation Manual

About This Manual Document Purpose and Intended Audience This document provides the user of HR4000 Series Spectrometers

Aug 26, 2025

Make your own Spectrometer

Learn how to make your own homemade spectrometer using simple materials. Use light to

Jul 14, 2026

Spectrophotometer Cuvette Box, P.P, Hinged Lid, 12 Cuvettes with 10

Manufactured from polypropylene with 120x112x60 mm dimensions for safe handling and holding 12 cuvettes with 10 mm width.

Jan 27, 2026

A Simple DIY Spectrophotometer

A Simple DIY Spectrophotometer: What's all this? This instructable will explain how to build a fairly basic but working

Jul 30, 2025

LET'S BUILD A SPECTROMETER

SPECTROMETRY Before getting to the heart of the project it is appropriate to explain what

Jun 02, 2026

The Shoebox spectrograph construction and lab investigations

Necessary items A box (ideally 30cm by 12.5cm by 7cm, but there is a lot of leeway in these dimensions) Scrap cardboard (You will

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Ibsen Photonics – Spectrometers for VIS Spectroscopy

Ibsen Photonics develops high-performance, compact spectrometers for demanding applications. Full control and customization

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Building a Spectrometer

Building a Spectrometer Build a Worthy Spectrometer This task consists of building a spectrometer using the grating handed out in

Apr 06, 2026

Calibrated Spectrometer

You'll start by constructing a simple spectrometer from a cardboard box, razor blades, and a diffraction grating. This design creates a

Apr 14, 2026

Spectrometer Sample Holder

Getting the right sample holder is an key part of reliable spectroscopy. To measure the optical properties of a sample, either it will

Apr 05, 2026

HR4000 and HR4000CG-UV-NIR Series High-Resolution Fiber Optic Spectrometers

About This Manual Document Purpose and Intended Audience This document provides the user of HR4000 Series Spectrometers

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AMERICAN OPTICAL COMPANY 4745 Spectrometer Box

Review AMERICAN OPTICAL COMPANY Spectrometer Carrying Box Working Free Ship The American Optical 4745 Spectrometer

Mar 23, 2026

Polystyrene spectrophotometer cuvette, packed in styrofoam boxes of

Products> Instrumentation Products > Polystyrene spectrophotometer cuvette, packed in styrofoam boxes of 100 pieces

Aug 20, 2025

(PDF) How to Design a Spectrometer

Designing a spectrometer requires knowledge of the problem to be solved, the molecules whose properties will

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Spectroscopy: The Slit

Resolution The primary function of the entrance slit is to control the resolution of the spectrometer. This function has two components

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Spectrometer Designs -

The Littrow design is a very compact mounting, and the whole spectrometer can be built into

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Spectrometer

Spectrometer An XPS spectrometer A spectrometer (/ spɛk'trɒmɪtər /) is a scientific instrument used to separate and measure

Dec 01, 2025

Student Spectrophotometer

Student Spectrophotometer: Inspiration: Let me first give credit where credit is due. My inspiration for this project comes from

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T60 (5) Color Light Box

TILO T60 (5) color light box can accommodate up to 5 light sources. The consistency of the light sources in all Tilo Colour

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Buyer's Guide: Portable Spectrometers | Labcompare

Buyer's Guide: Portable Spectrometers Portable and handheld spectrometers bring detection and identification

May 14, 2026

Spectrometer Design Guide

Spectrometer designs made by using this guide should only be used as a starting point in your design process. If you are going to

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kolov/spectro: Spectrometer box design tool

Shows box dimensions, component positions, light paths, and sensor span for building.

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Calibrated Spectrometer

Calibrated Spectrometer In this lab, you will construct and calibrate a working spectrometer, an instrument used by scientists to

Aug 02, 2025

The Shoebox spectrograph construction and lab investigations

Step 2: Cut the view port into the side of the box (about 4cm from the box's edge).
The easiest way to get a round view port is to use

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Spectrophotometer Cells | Spectrocell

Spectrocell manufactures a full line of spectrophotometer cells. Rectangular, cylindrical & other shapes

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Agilent 4500 and 5500 Series FTIR Instruments

Agilent 5500 Series FTIR Spectrometers Compact and versatile FTIR Agilent 5500 Series FTIR instruments are small-sized, mid

Contact Us

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