Handheld Spectroscope

Device for observing absorption and emission spectra, e.g. to observe the Fraunhofer line spectrum in sunlight for the observation of absorption spectra through liquids, the emission spectra of gas discharge tubes or for chemical analysis during flame tests.

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Hand Spectroscope

Simple spectroscope for observing spectra and spectral lines. Made of cardboard and plastic with built-in grid.

Dimensions: approx. 145 mmx28 mm diam.

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Spectroscope in Cardboard Box

Hand spectroscope in a flat cardboard box with printed wavelength scale for easy reading of spectral lines and spectra.

Dimensions: approx. 180x115x25 mm³

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Spectrophotometer S

A new and easy-to-use high resolution spectrophotometer that is ideal for schools and colleges. The solidly constructed spectrometer is designed to examine the near and infrared part of the spectrum from 360 nm to 800 nm; its removable covers allow students to see first hand the spectrum analysis process. Setup is quick and easy. The optical signal enters the device through a flexible fibre optic cable. Connection to a PC is via the USB 2.0 interface. A specially selected transmission grating and precision slit gives high resolution and excellent results. Data collection software is intuitive with real time graphical output. For easier interpretation of the spectrum, each wave band is shaded with the corresponding colour. The spectrum can be viewed either as a graph or in text form, which allows for more advanced calculations. The availability of several toolbars makes it possible to set the spectrometer parameters to exactly fit the requirements of the experiment. Spectrometer S is supplied ready to use; tested and calibrated.

Spectral range:	360 – 800 nm
Spectrometer resolution:	< 2.0 nm
Pixel resolution:	< 0.5 nm
Operating system:	Win XP and Vista
Interface:	USB 2.0
Dimensions:	60x60x120 mm³
Weight:	600 g

Contents:

Spectrometer S with USB cable, fibre optic cable, and a CD containing experimental software and an instruction manual. Laptop not included.

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S-system Spectrometer-Goniometer

Spectrometer with rotatable prism or grating and directionally-adjustable objective tube for observing and measuring emission and absorption spectra. Can also be used for precise determination of the optical parameters of prisms or gratings. Includes prism with holder and transmission grating with holder.

Objective tube:	Adjustable slit width and object distance; f = 175 mm, 32 mm diam.
Eyepiece tube:	Continuous focusing and viewing angle adjustment, eyepiece with cross-wire, f = 175 mm, 32 mm diam.
Prism:	flint glass (60°)
Dispersion ($n_F - n_C$):	0.017
Base length:	40 mm
Height:	40 mm
Transmission grating:	300 lines/mm
Angular scale:	0° to 360°
Scale divisions:	0.5°
Reading precision:	0.5' (Vernier scale)
Height:	250 mm
Weight:	approx. 12 kg

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Digital Spectrophotometer

This digital spectrophotometer is used for quantitative investigations of emission and absorption spectra and transmission curves, and for measurements related to calorimetry and chemical kinetics. Based on the Czerny-Turner principle, this device permits simultaneous, real-time recording and analysis of the entire visible range from 380 nm – 830 nm in conjunction with the user-friendly measurement and evaluation software. Light recorded by means of an optical fibre and projected on a CCD detector via two mirrors and a reflection grating. Includes an absorption module with cell and slide holders for disposable cells and colour filters, a software program and various connecting cables.

Spectral range:	380 – 830 nm
Wavelength accuracy:	0.25 nm
Resolution:	1 nm
Transmission:	0 – 100%
Resolution:	0.1%
Absorption:	0 – 100%
Resolution	0.1%
Optical configuration:	Czerny Turner
CCD detector:	2048 pixels
Absorption module:	
Quartz halogen lamp:	12 V/20 W
Optical connection:	via optical fibre
Mains voltage:	115 V/230 V, 50/60 Hz
Dimensions:	approx. 315x175x322 mm³
Weight:	approx. 6.6 kg

System requirements:

Operating system:	WINDOWS
PC:	Pentium 133 or higher, 32 MB RAM, CD-ROM drive
Free disk space:	at least 15 MB
Screen resolution:	at least 800x600 pixels (16 bit)
Computer connection :	USB interface

Contents:

1 Spectrophotometer
1 Absorption module
1 CD with software
1 Optical fibre, 1 m
1 PC connection cable (USB)
1 DIN cable for connecting the absorption module
1 Mains connection cable
100 Disposable cells
1 Operating manual

Software:

- Real-time recording of emission and absorption spectra as well as transmission curves
- Simultaneous recording of spectra over the entire wavelength range (recording time per spectrum less than 2 ms)
- Recording of spectra as a function of time (chemical kinetics)
- 3D display; functional relationship between absorption, time and wavelength
- Display of spectra in authentic colours
- Display of several spectra in one diagram
- Manual calibration option
- Wavelength measurements
- Recording and evaluation of concentration measurements (Lambert-Beer law)
- Zoom and cursor function
- Storage of recorded spectra
- Export of measured data to standard text and bitmap formats, as well as Regressi and Excel formats
- Colour printout of spectra

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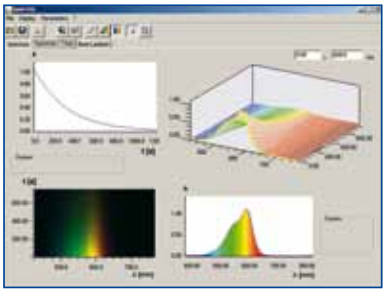
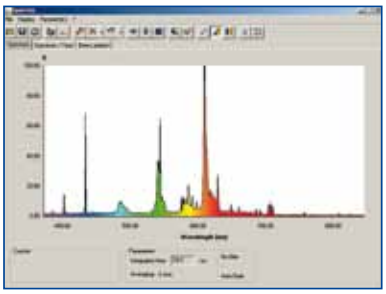


Decolourization of dissolved potassium permanganate ($KMnO_4$) with oxalic acid ($C_2H_2O_4$)



Line spectrum of a fluorescent lamp

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