

CHEM4 Spectrometers

Smart Systems for Education

The CHEM4 Series Spectrometers from Ocean Optics are small, PC-based systems that are ideal for science and chemistry educators in the classroom or the teaching laboratory. These fully integrated systems include spectrometer, light source and cuvette holder and are available at reasonable pricing for qualified educators and learning institutions.

For bringing the excitement of learning to your classroom or teaching lab, nothing is easier.

USB for Easy Startup

The spectrometers feature a USB interface and are fully calibrated. Just plug and play.

Programmable Microcontroller

CHEM4 Series Spectrometers feature an onboard microcontroller that delivers incredible flexibility and control with your system and accessories. Through a 22-pin connector, you can implement operating parameters in your software, control light sources, create processes and retrieve information on external objects.

Light Source and Sample Holders

CHEM4 Fiber Systems come with a spectrometer, an integrated sampling system and an optical fiber.

CHEM4-UV-FIBER

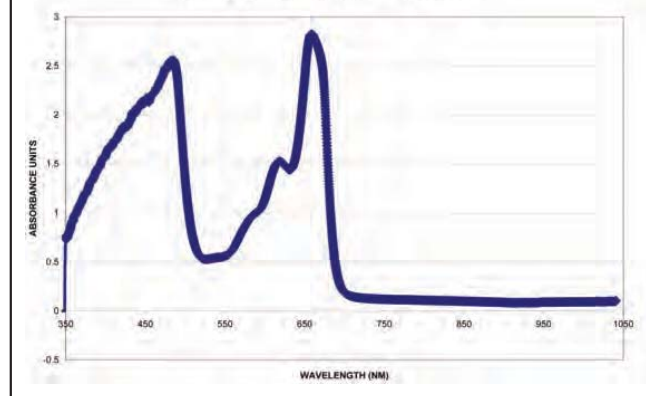
The CHEM4-UV-FIBER is ideal for absorbance measurements and combines a USB4000 Spectrometer with modular accessories including an ISS-UV-VIS Integrated Sampling System, a 300 μm solarization-resistant optical fiber and a 1-cm cuvette holder.

Item Code: CHEM-4-UV-FIBER



Spectrometer	USB4000
Wavelength range:	200-885 nm
Light source and sample holder:	ISS-UV-VIS integrated deuterium tungsten halogen light source and cuvette holder for 1-cm square cuvettes
Optical fiber:	Light source/sample holder connects to spectrometer via 300 μm solarization-resistant fiber
Software:	SpectraSuite (available for an additional charge) Overture (no charge)

Chlorophyll Absorbance with CHEM Series Spectrometer



CHEM4-VIS-FIBER

Our CHEM4-VIS-FIBER is perfect for relative irradiance and emission measurements. The CHEM4-VIS-FIBER combines our USB4000 Spectrometer with an ISS-2 Integrated Sampling System, a 400 μm optical fiber and a 1-cm cuvette holder. Add accessories like reflectance probes or dip probes for even more measurement options.

Item Code: CHEM4-VIS-FIBER



Spectrometer	USB4000
Wavelength range:	430-990 nm
Light source and sample holder:	ISS-2 integrated tungsten halogen light source and cuvette holder for 1-cm square cuvettes
Optical fiber:	Light source/sample holder connects to spectrometer via 400 μm fiber
Software:	SpectraSuite (available for an additional charge) Overture (no charge)

ChemUSB Spectrometer

Smart Systems for Education

Our CHEMUSB4 Spectrometer Systems are the ideal combination of our USB-interface spectrometer technology and modular accessories. This system is made up of our popular USB4000 spectrometer, a deuterium tungsten halogen or tungsten halogen and LED light source and 1-cm cuvette holder.

With its high-speed electronics and small footprint, the CHEMUSB4 makes a perfect teaching tool in the classroom or lab.

The CHEMUSB4-UV-VIS covers the 210-880 nm range at 1.0 nm (FWHM) optical resolution and the CHEM4-VIS-NIR covers 370-985 nm at 1.0 nm resolution.

- Fully integrated, preconfigured system
- Small footprint
- Fast, hassle-free spectrometer-to-PC connection

Item Codes: CHEMUSB4-UV-VIS, CHEMUSB4-VIS-NIR



CHEMUSB4-UV-VIS

Physical	
Spectrometer dimensions:	89.1 mm x 63.3 mm x 34.4 mm
Spectrometer weight:	190 g
Light source dimensions:	89.1 mm x 77.79 mm x 34.4 mm
Light source weight:	200 g
Detector Specifications	
Detector:	Toshiba TCD1304AP Linear CCD array
Pixels:	3648 pixels
Pixel size:	8 μm x 200 μm
Pixel well depth:	100,000 electrons
Sensitivity:	130 photons/count at 400 nm; 60 photons/count at 600 nm
Optical Bench	
Design:	f/4, Asymmetrical crossed Czerny-Turner
Focal length:	42 mm input; 68 mm output
Entrance aperture:	25 μm wide slit
Spectroscopic	
Wavelength range:	210-880 nm
Optical resolution:	1.0 nm FWHM
Signal-to-noise ratio:	300:1 (at full signal)
A/D resolution:	16 bit
Dark noise:	50 RMS counts
Integration time:	3.8 ms to 10 seconds
Dynamic range:	3.4 x 10 ⁶ (system), 1300:1 for a single acquisition
Stray light:	<0.05% at 600 nm; 0.10% at 435 nm
Light Source/Sample Holder	
Light source:	Deuterium tungsten
Bulb life (hours):	800 deuterium; 2,000 tungsten

CHEMUSB4-VIS-NIR

Physical	
Spectrometer dimensions:	89.1 mm x 63.3 mm x 34.4 mm
Spectrometer weight:	190 g
Light source dimensions:	40.7 mm x 88.8 mm x 34.1 mm
Light source weight:	130 g
Detector Specifications	
Detector:	Toshiba TCD1304AP Linear CCD array
Pixels:	3648 pixels
Pixel size:	8 μm x 200 μm
Pixel well depth:	100,000 electrons
Sensitivity:	130 photons/count at 400 nm; 60 photons/count at 600 nm
Optical Bench	
Design:	f/4, Asymmetrical crossed Czerny-Turner
Focal length:	42 mm input; 68 mm output
Entrance aperture:	25 μm wide slit
Spectroscopic	
Wavelength range:	370-985 nm
Optical resolution:	1.0 nm FWHM
Signal-to-noise ratio:	300:1 (at full signal)
A/D resolution:	16 bit
Dark noise:	50 RMS counts
Integration time:	3.8 ms to 10 seconds
Dynamic range:	3.4 x 10 ⁶ (system), 1300:1 for a single acquisition
Stray light:	<0.05% at 600 nm; 0.10% at 435 nm
Light Source/Sample Holder	
Light source:	Tungsten halogen and violet LED
Bulb life (hours):	2,000 (tungsten); 45,000 (LED)