ModuSpec Spectral Analysis Kit

BEX-8205

Summary

Each atom owns its unique energy level structure, absorbing or emitting specific spectral lines during transitions. By measuring these characteristic spectral lines, we can determine a substance's chemical composition and relative content—this identification method is called spectral analysis.

In this experimental kit, a refrigerated halogen-tungsten lamp serves as the reference light source, while a miniature spectrometer acts as the detector. When equipped with the transmission module, the setup can measure liquid absorbance to calculate solution concentration or determine the transmittance of light-permeable materials such as optical filters. When fitted with the reflection module, it can measure surface reflectance spectra to compute color parameters of materials.

Features

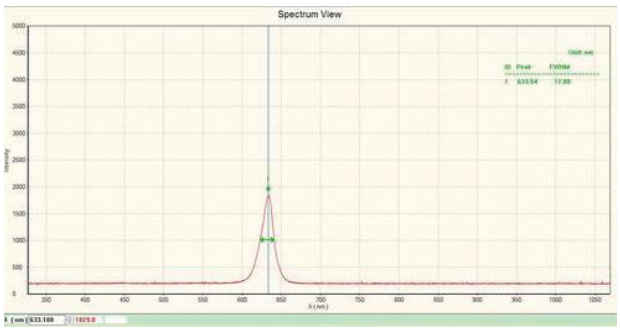
1. Simple and modular structure with strong versatility.
2. Rich experiment content, capable of various spectroscopic measurements and analyses.
3. High expandability—additional components can be integrated for extended functionalities.
4. Suitable for both teaching experiments and scientific research.

Main Experiment Contents

1. Observation of emission spectra from various light sources.
2. Transmittance measurement of solid samples.
3. Absorbance and concentration measurement of liquid samples.
4. Reflectance spectroscopy and acquisition of colorimetric parameters.

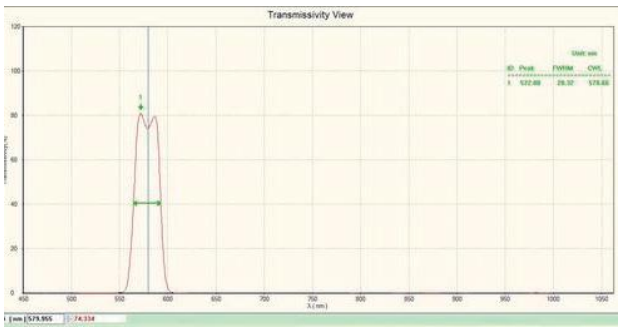
Experiment Contents and Typical Data

1. Observe the emission spectra distribution of various light sources, such as sunlight, LED lights, etc.



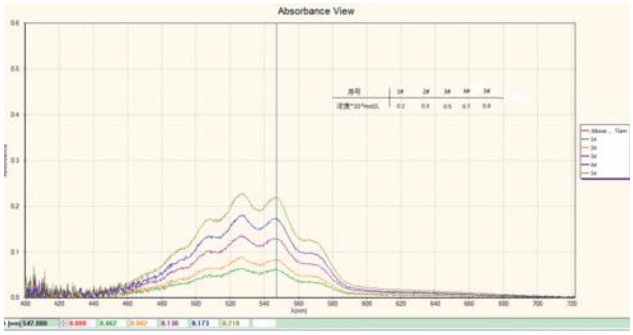
The spectral distribution of LED lights

2.By measuring the transmittance curve, the optical characteristic parameters such as the central wavelength, transmittance and half-width of the half-maximum of the sample can be obtained.



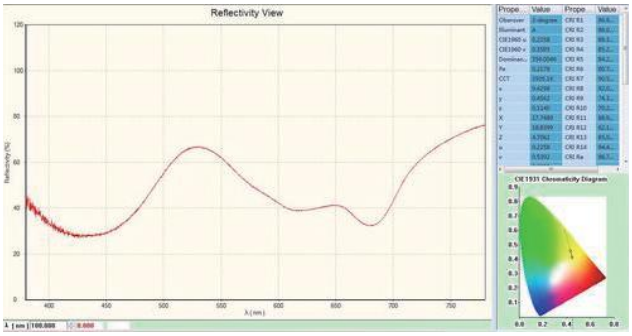
Measurement of Filter Characteristics

3.By measuring the absorbance curve of the liquid sample and applying Lambert-Beer's Law, the concentration of the sample can be determined.



Measurement of potassium permanganate concentration

4.Utilizing the standard A light source as the reference light, the reflectance curve of the sample can be measured, thereby obtaining the chromaticity parameters of the sample.



The chromaticity diagram of the paper under the standard A light source

Specifications

NO.	Part Name	Main Parameter
1	Fiber Spectrometer	wavelength range: 350nm-1050nm, resolution: ~ 1nm
2	Fan Cooling Tungsten Light Source	wavelength range: 400 nm-2000 nm, cooling method: fan
3	Quartz Fiber	Length 5cm, Φ600μm
4	Reflectivity Module	adopt a unique "L" shaped structure
5	Transmittance Module	adopt a unique "Zhong" shaped sample slot
6	Standaed Whiteboard	The material of the protective cover is aluminium alloy

Configuration List

NO.	Part Name	Model	Qty.
1	Fiber Spectrometer	BIM-6001-06	1
2	Fan Cooling Tungsten Light Source	BIM-6210	1
3	Quartz Fiber	SIM-6102-060005-S/S-M	1
4	Reflectivity Module	BIM-6328	1
5	Transmittance Module	BIM-6327	1
6	Standard Whiteboard	SEM-5424-20	1
7	Transmittance Test Sample Set	BEM-5420	1
8	Reflectivity Test Sample Set	BEM-5421	1
9	Plastic Cuvette	SIM-6301-PT10	6