DynaSpect Series

DynaSpect is the name for a series of spectroscopic devices.

Brightness Light Distribution Characteristics Measurement System
C9920-11

Measurement of brightness and emission angle distribution for light emitting device

Brightness, emission spectrum, chromaticity and the like can be measured for each emission angle.

The C9920-11 Brightness Light Distribution Characteristics Measurement System is a system that measures the brightness, spectrum and the emission angle distribution for a light emitting device by electro-luminescence (EL) method.

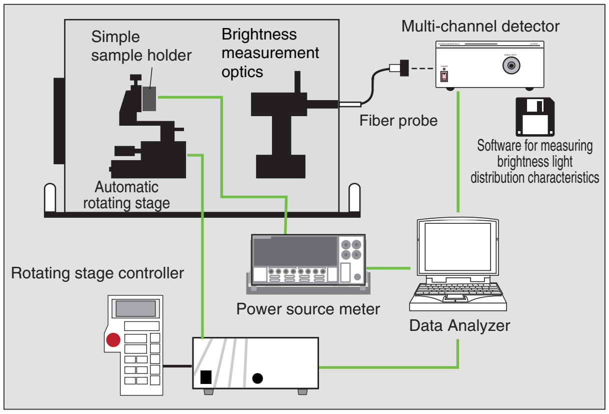
The light emitting device is set in the sample holder and made to emit light by voltage/current supplied by a power source meter. The light emitted from the device is measured with a detector after passing through a dedicated condensing lens and a fiber. Since the detector employs a spectrometer and multi-channel back side incidence, cooled CCD, the spectrum can be measured instantaneously with high precision.

With a rotating stage, it is possible to measure emission spectra while rotating the sample for each angle step. As a result, data can be acquired on the light emitting device at various emission angles, and the emission angle distribution characteristics can be obtained. From the software, the settings for minimum and maximum current/voltage values, current/voltage step value, measurement angle range, and measurement step angle and the like can be made, and measurement are executed automatically under the settings. In the results of measurements, the emission angle distribution using a polar plot, current density (or voltage)-brightness, emission spectrum and chromaticity and the like are possible, and not only can the external quantum efficiency under a Lambertian assumption be calculated, but it can be corrected using the emission angle distribution characteristics.

HAMAMATSU

Brightness, emission spectrum, and chromaticity can be measured for each emission angle

While controlling the rotating stage, it is possible to measure brightness, emission spectrum and chromaticity for each angle. With the rotating stage and power source meter control, it is possible to measure the spectrum instantaneously at each current (voltage) step and display the measurement results in various graphs, including polar plots.



FEATURES

- Brightness, emission spectrum and chromaticity can be measured for each emission angle
- The power source meter (KEITHLEY 2400) can be controlled on the software
- The spectrum can be measured instantly with Hamamatsu multi-channel detector for the angle that has been set and each step of the applied current (voltage)
- Using a high-performance BT(back thinned) cooled CCD, the system has ultra-high sensitivity are possible
- Settings, measurements and display of results are simplified by the dedicated software
- On the software, it is possible to display various types of graphs, such as current/current density/voltage-spectrum, current/current density/luminous efficiency or current/current density/voltage chromaticity.
- The system can be easily extended to absolute PL quantum yield measurement and external quantum efficiency measurement systems with additional parts

SPECIFICATIONS

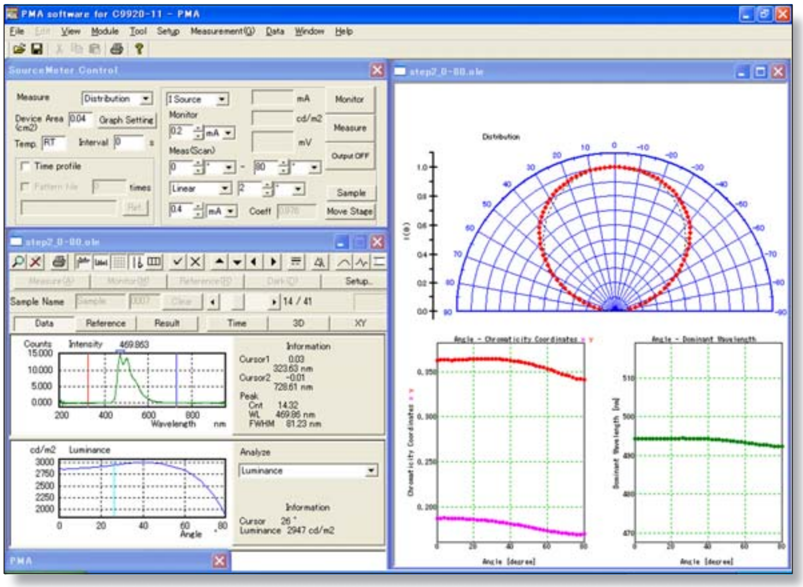
Rotating stage	minimum angle setting 1°
Angle setting range	0° to 80° , –80° to 80°
Minimum step setting	1°
Resolution	0.1° or less
Detector	BT(back thinned)cooled CCD
Cooling temperature (CCD)	–15 °C
No. of photosensitive device channels	1024 ch
Wavelength measurement range	380 nm to 780 nm (detector: 200 nm to 950 nm)
Fiber probe	1.5 m
Measurement spot size	200 µm
Range for brightness measurements	10 cd/m^2 to 10 000 cd/m^2

Simple and easy operativity is realized with the dedicated analysis software.

Software for measuring external quantum efficiency

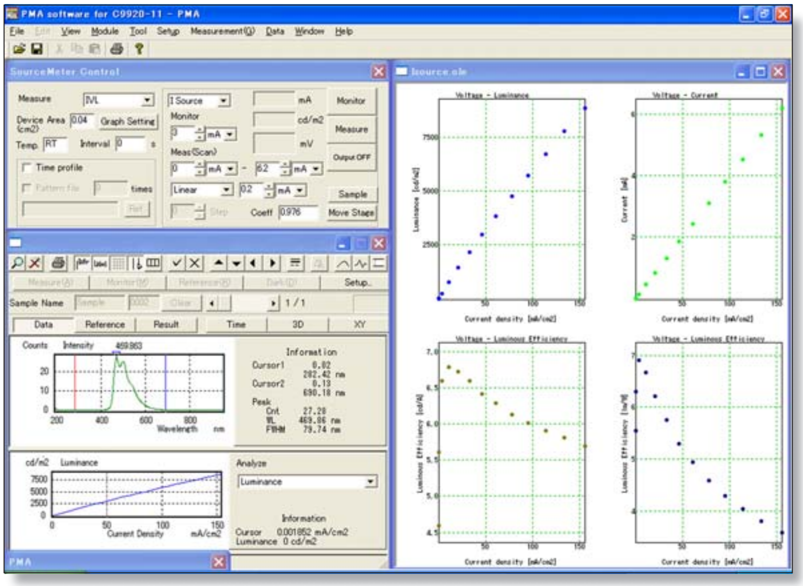
Measurements can be made automatically by the software.
Two measurement modes, brightness light distribution or Luminous efficiency measurement, can be chosen.

Screen displaying measurement results



Light distribution measurements

Minimum and maximum current/voltage values, current/voltage step value, measurement angle range, and measurement step angle and the like can be set on the software. Raw measurement data (emission spectrum etc.) is displayed in the window. Sample monitoring measurements, data during a measurement and the like are displayed. Various graphs can be displayed in the figures on the right side of the display screen.



Luminous efficiency measurements

The luminous efficiency can be calculated not only under a Lambertian assumption be calculated, but also with correction data using the emission angle distribution characteristics.

Sample provided by
Kido Laboratory, Yamagata University

Graph display

The results of measurements can be displayed in various graph formats.

- Current density/Luminance (cd/m^2)
- Current density/Luminous efficiency (lm/W)
- Current density/Luminous efficiency (cd/A)
- Current density/Chromaticity coordinates(x, y)
- Current density/external quantum efficiency under a Lambertian assumption(correctable using light distribution)
- Current density/Voltage
- Time/emission spectrum
- Time/Current (voltage)
- Current density/emission spectrum
- Time/Chromaticity coordinates(x, y)

* Voltage can also be displayed in place of current density.

A wide variety of measurement targets can be accommodated by adding optional parts and components.

OPTIONS

Sample holder for brightness measurements (pin type)

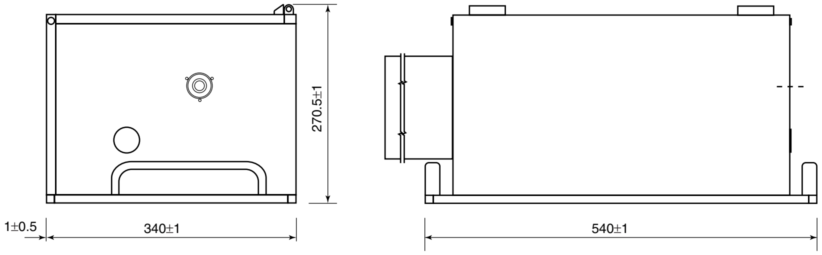
A9924-03

This is a pin-type of sample holder which a light emitting device can be attached to and removed from. The holder can be specially designed for a device of customers.

Dimensional outline

Optical black box for brightness measurements

A10119-01



Related Products

There are many products for combined configurations in the C9920 series, and expansion to the following products is easy.

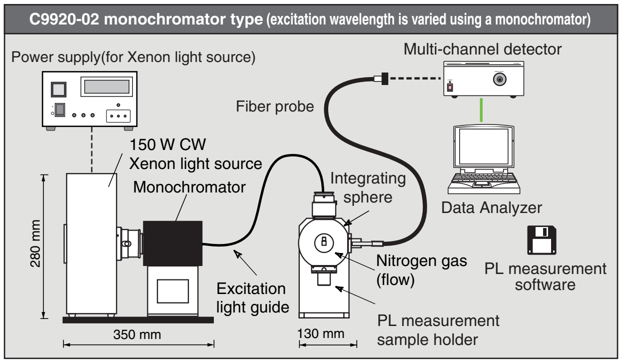
Absolute PL Quantum Yield Measurement System
C9920-01,-02

The luminescence quantum yield is measured for organic LED and fluorescent materials using photoluminescence. (PL method)

Excitation at various wavelengths is possible through the use of an interference filter and a spectrometer. Various sample holders are provided, so measurements can be made not only on thin films, but also on solutions and powders.

Block Diagram

C9920-02 monochromator type (excitation wavelength is varied using a monochromator)



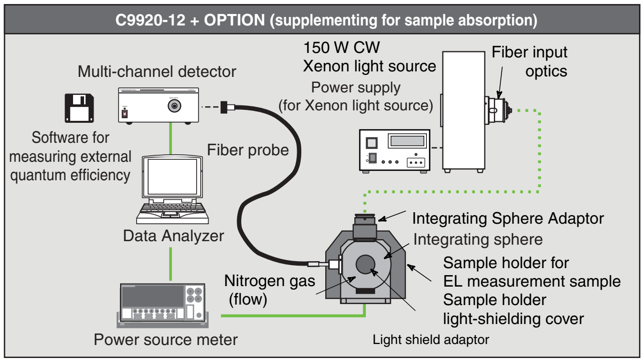
External Quantum Efficiency Measurement System
C9920-12

Highly precise measurement of emission efficiency does not depend on the emission angle distribution characteristics by using an integrating sphere.

Measurements of emissions versus the current applied can be made, inclusive of elements related to the efficiency, such as absorption by the light emitting part and glass substrate, and reflective mirror efficiency, so on.

Block Diagram

C9920-12 + OPTION (supplementing for sample absorption)



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