NEW

Molecular orientation characteristic measurement system C14234-11

The measurement result is comparable to simulation data

To develop high-efficiency OLED devices, the improvement of light extraction efficiency is recognized as the important parameter, and researchers have been aware of the importance to control and to evaluate the molecular orientation of OLED devices. The C14234-11 is functional for measuring fluorescence spectrum with multichannel analyzer PMA-12 and for angle dependency of p-polarized fluorescence with a newly designed optics.

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Automatically measure the angle dependence of P-polarized light of fluorescence spectra.

Place a sample, then get the emission pattern of OLED device accurately.

The emission pattern is indispensable to the study of molecular orientation, but it has been difficult to measure a sample to be placed exactly in the center of rotating stage.
Molecular orientation characteristic measurement system C14234-11 easily measure the angle dependence of PL emission intensity in either polarization out from a sample with simply placing a cylindrical lens on the automated rotating stage.

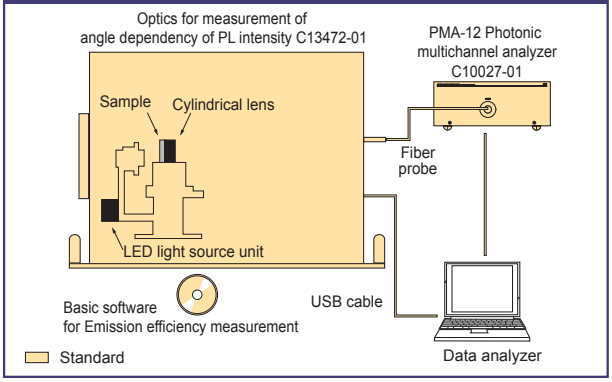
Features

- **Measurement of angle dependency of PL intensity**
- **Comparison to the simulation results is possible**
- **Easy alignment of the optics and easy Measurement**
- **Selectable excitation wavelength of LED light source unit (Options)**
- **Integrated shutter to prevent the material degradation**

Specifications

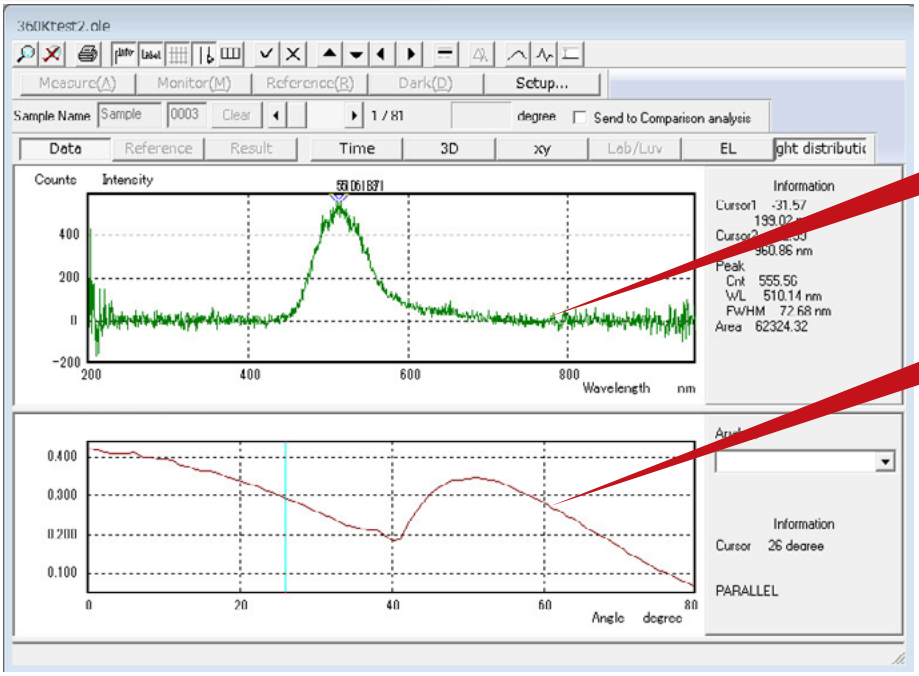
Angle range of measurement	−90° to 90° (the vertical direction of sample is 0°)
Excitation Wavelength	365 nm
Emission wavelength	350 nm to 950 nm
Angle resolution	Approx. 3.5°
Sample size	□30 mm (in case use R20 mm lens)
Angle range of Excitaiton light	−90° to 90° (the vertical direction of sample is 0°)
Excitation light source	Fiber output LED 365 nm
Spot size of excitation light	< Φ 1 mm (in case use 365 nm LED)
Maximum power of excitation light	Approx. 1.5 mW (in case use 365 nm LED and Φ365 μm fiber)
Input power supply	AC100 V to AC240 V, 50 Hz/60 Hz
Power consumption	Approx. 115 VA (without data analizer)
Ambient storage temperature	−10 ˚C to +50 ˚C
Ambient operation temperature	+10 ˚C to +30 ˚C
Ambient operation humidity	less than 70 % (with no condensation)

C14234-11 configuration example

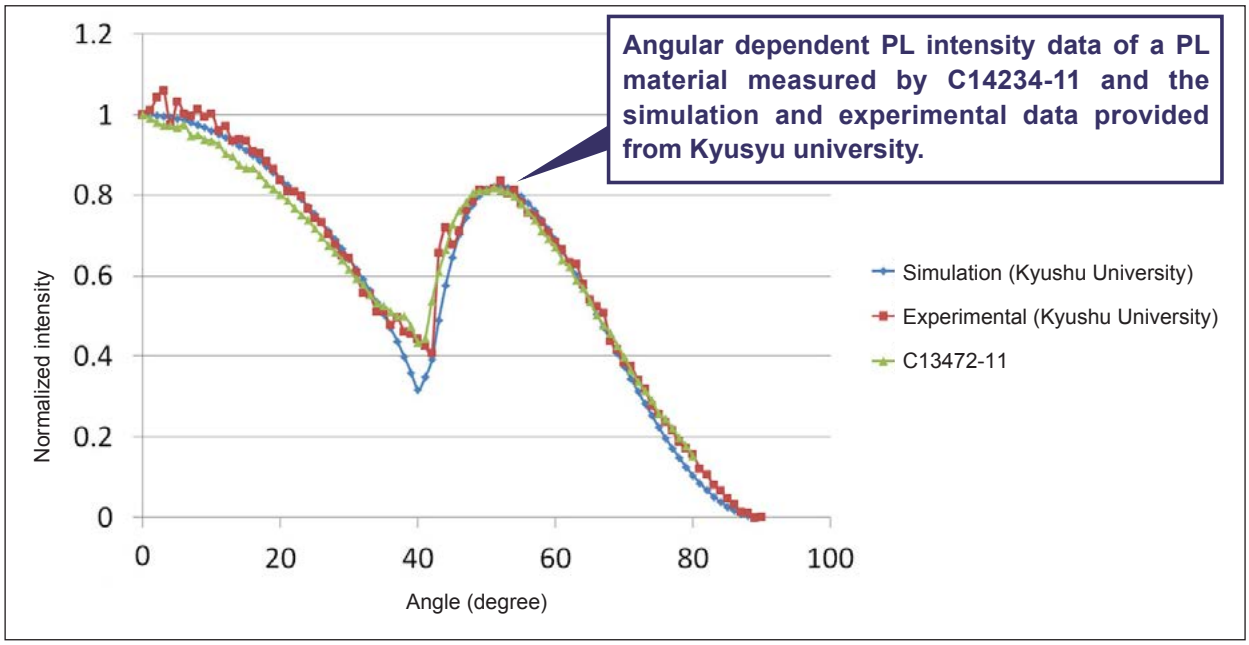


Verify the measured data with a data of a known sample to confirm the result being correspond to specified accuracy.

Example of measurement results Measure PL spectrum out from a sample .



■ Comparison with the simulation



The molecular orientation pattern in the organic EL device is reflected in the photoluminescence (PL) emission pattern versus the detection angle. This PL emission pattern can be obtained by simulation from the molecular orientation pattern in the device. In order to compare and confirm whether the sample has the characteristics as simulated, it is necessary to measure the PL emission pattern of the device. For this measurement, adjustment of a complicated optical system is necessary, and researchers have required much time and labor. With the molecular orientation characteristic measurement system C14234-11, it is possible to accurately measure the PL emission pattern of the organic EL device simply by setting the sample.

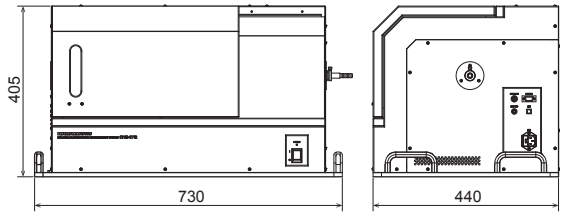
Courtesy of
Prof. Chihaya Adachi, Center for Organic Photonics and Electronics Research, Kyushu University and
Prof. Takeshi Komino, Education Center for Global Leaders in Molecular Systems for Devices , Kyushu University

A lineup of systems for measuring optical characteristics of light emitting devices is available.

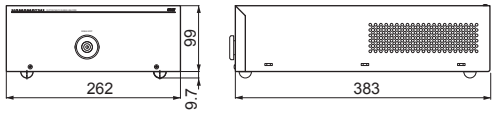
Dimensional outlines

(Unit: mm)

●Optics for measurement of angle dependency of PL intensity C13472-01 (Approx. 28 kg)



●PMA-12 Photonic multichannel anaylzer C10027-01 (Approx. 5 kg)



Related products

With many shared components, the C9920 series offers easy upgrades to the following products.

Light distribution measurement system C9920-11

Measurements such as brightness for each emission angle, emission spectrum and color coordinates are possible using a rotating stage.

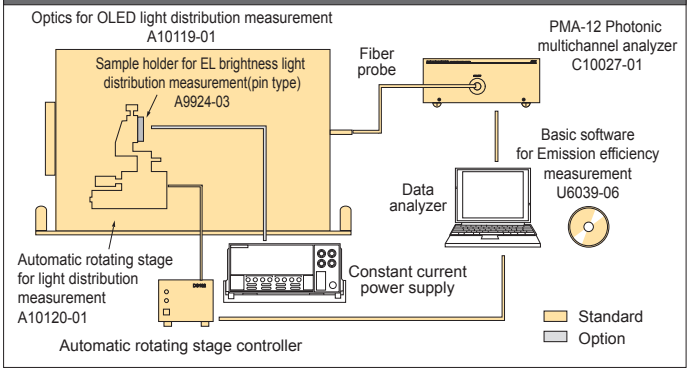
The Light distribution measurement system C9920-11 is a device where the organic LED sample supplied with current (voltage) is placed on a rotating stage and the organic LED device emission brightness, spectrum and emission angle distribution are measured for each of the angle steps that has been set.

External Quantum Efficiency Measurement System C9920-12

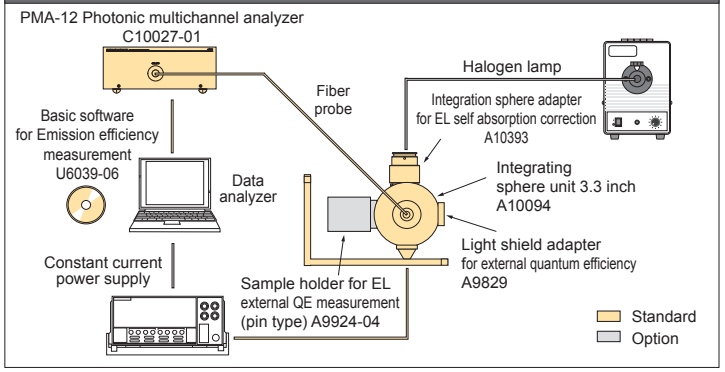
Highly precise measurement of emission efficiency does not depend on the emission angle distribution characteristics by using an integrating sphere.

The External quantum efficiency measurement C9920-12 is a device for measuring the external quantum efficiency of a sample by exciting the LED device with current (voltage) and measuring the number of emitted photons. Measurements of emissions versus the current applied can be made, inclusive of elements related to the efficiency, such as absorption by the organic LED material layer and glass substrate, and reflective mirror efficiency.

C9920-11 configuration example



C9920-12 configuration example



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