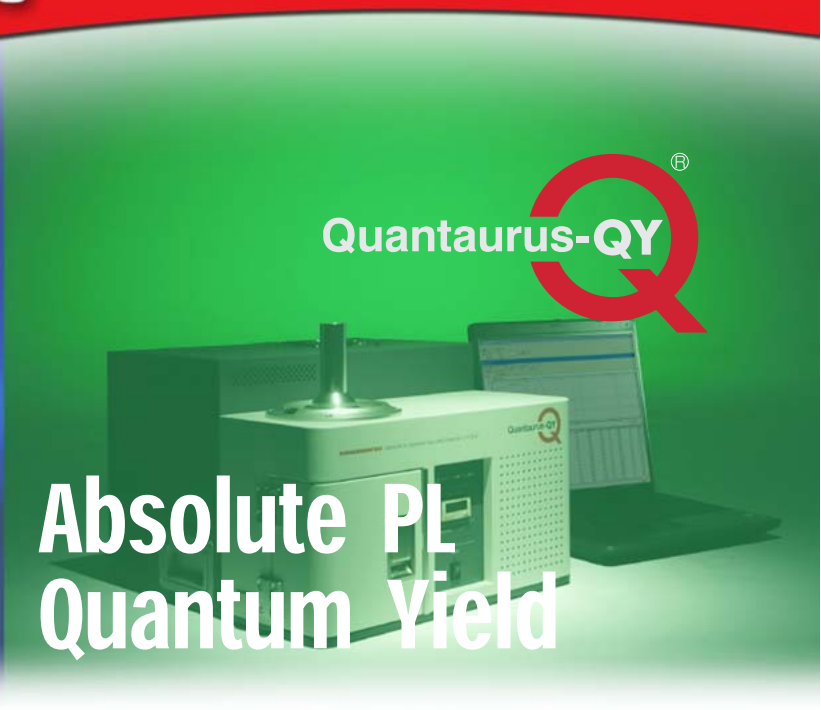
Quantaurus series

for luminescence materials

Fluorescence Lifetime



Absolute PL Quantum Yield

A diversified evaluation of the luminescence materials is now available!!

Newly developed Quantaurus-Tau for measuring fluorescence lifetime and Quantaurus-QY for absolute PL quantum yield with user-friendly operating procedure are now available.

Combination of Quantaurus-Tau and Quantaurus-QY allow users to obtain complementary analysis results.

Fluorescence Lifetime and Absolute PL Quantum Yield

There are two processes when substances are excited by light irradiation from the ground state to excited singlet state (S1), then deactivated to the ground state again. One is radiative process such as fluorescence or phosphorescence, and the other one is a non-radiative process released as heat.

The fluorescence lifetime τ (tau) is defined as

$$k_f + k_{nr} = 1/\tau$$

where k_f is the radiative rate constant and k_{nr} is the non-radiative constant.

On the other hand, the PL quantum yield (ϕ) is expressed as the ratio of the number of photons emitted from molecules (PN_{em}) to that absorbed by molecules (PN_{abs}).

$$\phi = PN_{em} / PN_{abs}$$

However the PL Quantum Yield ϕ is also written as

$$\phi = k_f / (k_f + k_{nr})$$

Thus, there is a close relationship between τ (tau) and ϕ as shown in the following equation, and they are very important parameters for controlling the emission mechanisms of the materials.

$$k_f = \phi / \tau$$

HAMAMATSU

PHOTON IS OUR BUSINESS

Compact Fluorescence Lifetime Spectrometer

Quantaurus-Tau

Easy and rapid measurements

Place the sample in the sample holder, and operate using the user-friendly software interface.

7 excitation wavelength choices

Use the software to select from 7 excitation wavelengths: 280 nm, 340 nm, 365 nm, 405 nm, 470 nm, 590 nm, or 630 nm.

Analyzing diffrent sample forms

Thin-film, solid, solutions and powder can be measured.

2 models available

The standard model covers 300 nm to 800 nm. NIR is also available.

Standard	NIR
C11367-11	C11367-12
wavelength 300 nm to 800 nm	wavelength 380 nm to 1030 nm

Absolute PL Quantum Yield Spectrometer

Quantaurus-QY

Instantaneous measurement

Measures entire spectrum by employing a high-sensitivity CCD detector.

Fully automated hardware

Various measurements are possible, such as automatic spectrum measurement and excitation wavelength dependency.

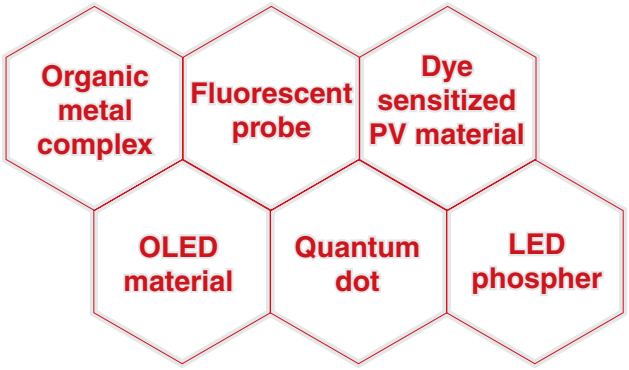
Analyzing diffrent sample forms

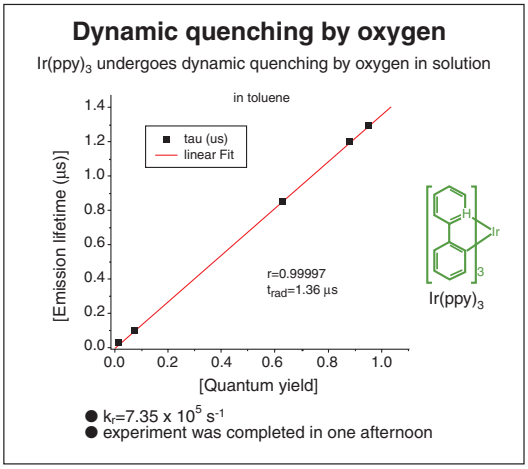
Thin-film, solid, solutions and powder can be measured.

2 models available

The standard model covers 300 nm to 950 nm. An NIR model for 400 nm to 1100 nm is also available.

Standard	NIR
C11347-11	C11347-12
wavelength 300 nm to 950 nm	wavelength 400 nm to 1100 nm





HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Systems Division
812 Joko-cho, Higashi-ku, Hamamatsu City, 431-3196, Japan, Telephone: (81)53-431-0124, Fax: (81)53-435-1574, E-mail: export@sys.hpk.co.jp
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P. O. Box 6910, Bridgewater. N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658 E-mail: info@hamamatsu.de
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road Welwyn Garden City Hertfordshire AL7 1BW, United Kingdom, Telephone: 44-(0)1707-294888, Fax: 44(0)1707-325777 E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Thorshamnsgatan 35 16440 kista, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia: S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39)02-935 81 733, Fax: (39)02-935 81 741 E-mail: info@hamamatsu.it
China: HAMAMATSU PHOTONICS (CHINA) Co., Ltd.: 1201 Tower B, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

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