

EleQuant

Absolute photo/electroluminescence spectra, PL/EL quantum yields, and IV testing of solar cells and other semiconductor devices

EleQuant is designed to support laboratories in the development of semiconductor devices such as solar cells and LEDs. The system is able to measure both absolute photo-emission spectra and IV curves under various electrical, optical and thermal conditions. It is also capable of directly measuring the area-averaged implied open-circuit voltage of solar cells.



Features

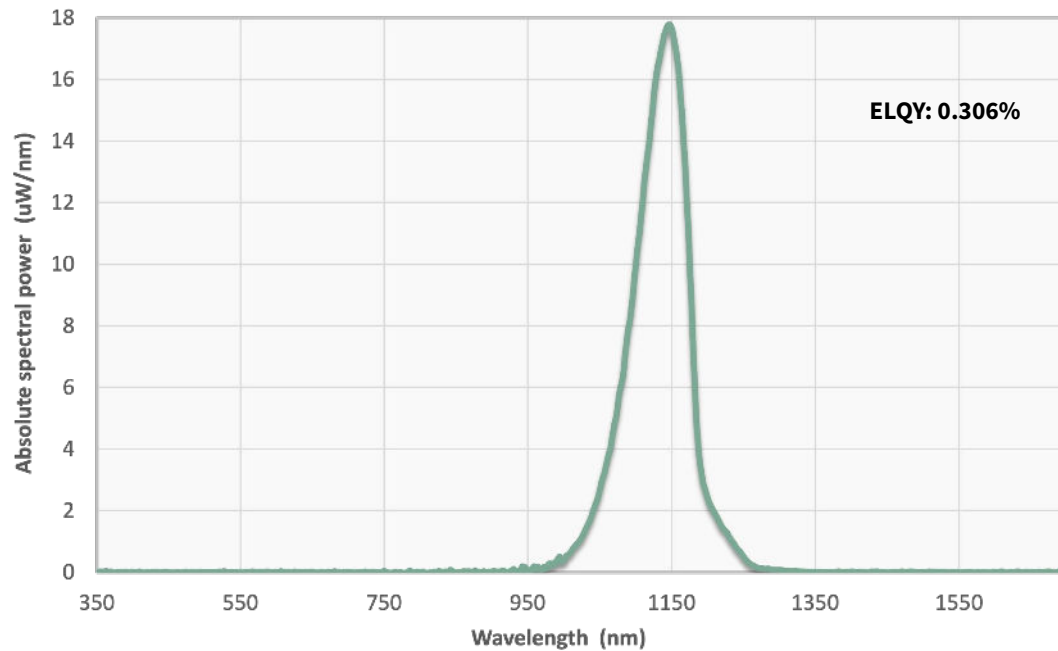
- PL excitation with absolute control of irradiance
- Seamless fluorescence measurement from 350 to 1700 nm (EL) or 550 to 1,700 nm (PL)
- Semi-automated calibration procedure for NIST-traceable absolute quantum yields
- Automated acquisition with variable electrical, optical and thermal conditions
- Remote sensing (4-point probe) supported for all devices
- Maintains accurate thermal control during measurement of back-contacted devices
- Front contacting possible via probes with magnetic bases
- Supports multiplexed measurement of substrates with multiple devices
- Automated protection against cooling below dew point avoids condensation on devices
- Double interlocked enclosure with light baffle, compliant to laser safety standards

Applications

- Photovoltaics
- Novel nanomaterials
- Semiconductors
- Nanoparticles
- LEDs / OLEDs
- Quantum dots
- Display devices
- Laser diodes
- Rare-earth doped materials
- Paints and coatings



Absolute EL emission spectrum of a silicon PERC solar cell under 500mA current injection



Specifications

Material compatibility	Perovskites, silicon, or others with PL emission between 350 and 1700 nm (EL) or 550 and 1700 nm (PL)
Sample size	Up to 30 mm x 30 mm
Measurements	Temperature-resolved absolute PL/EL quantum yield and IV trace
Calibration	NIST traceable
Spectral range	350 to 1700 nm
Temperature range	0° to 100° C
Voltage range	±20 V @ ±1 A, extended range: ±42 V @ ±105 mA
Current range	±1 nA to ±1 A
Sample contacting	Both 4 point contacts, Rear spring pins, Front magnetic probes
Sample mounting	Clamped by leaf spring
Sensors	Ambient temperature, humidity (for dew point protection)
Input power	110-240 VAC +/- 10%, 50-60 Hz, 410 W
Dimensions	Control unit: 490 mm x 550 mm x 580 mm (W x H x D), Measurement unit: 490 mm x 760 mm x 73 mm (W x H x D)
Weight	Control unit: 47 kg, Measurement unit: 26 kg
Compliance	EN60950-1, EN60824-1, and EU Machinery Directive 2006/42/EC

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