

MATRIX-1

THE MOST POWERFUL ULTRAFAST PHOTOLUMINESCENCE SPECTROMETER YET

400 - 875 nm single frame detection, femtosecond resolution, background-free, rapid acquisition, turnkey operation, intuitive software

The MATRIX-1 is the world's first ultrafast broadband photoluminescence spectrometer for amplified lasers. It uses transient grating technology to achieve background-free and broadband fluorescence detection with femtosecond temporal resolution.

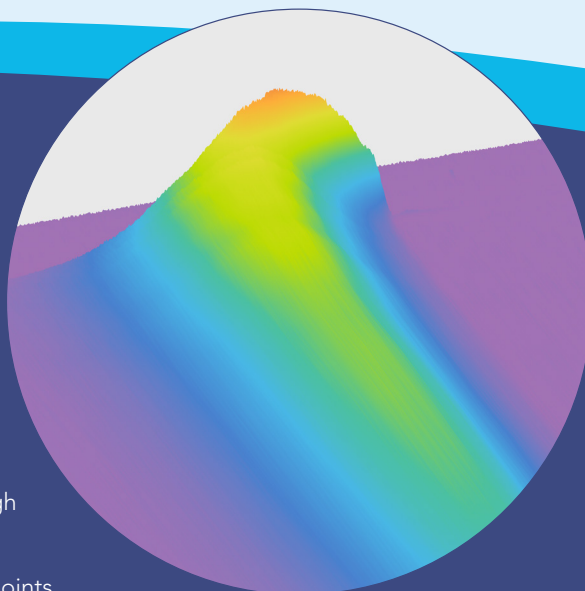
The sensitive detection scheme can measure very weak signals. This high sensitivity is intrinsic to the transient grating configuration, along with optical design that enhances the gated fluorescence throughput and blocks background light.



Discover the exceptional performance of the MATRIX-1 for your research:
Contact us about test measurements.

FEATURES

- Simultaneous detection of a broadband emission spectrum, covering 400 - 875 nm.
- fs resolution with the instrument response function being 1.6 times the longest pulse duration.
- High data quality due to the background free configuration and high repetition-rate compatibility.
- Rapid data acquisition enabled by the broadband detection and high gating efficiency.
- Minimal alignment required using straightforward alignment checkpoints.
- User-friendly software interface guides the user through the experimental steps.
- Compatible with both amplified Ti:Sapphire and Yb fiber laser systems.
- Can work alongside the **TANGENT-1** – Advento's forthcoming ultrafast transient absorption spectrometer.



APPLICATIONS

Semiconductors | Stimulated emission | Photochemistry | Photobiology | Nanoscience | Photonics

SPECIFICATIONS

Detection

400 nm - 875 nm, single frame
High throughput broadband spectrometer
Suppressed background from laser harmonics
10 ms - 60 s integration time
20 bit cooled back-thinned CCD

Delay line

600 ps - 8 ns total range

Temporal resolution

1.6 times the pulse duration

Dimensions

W465 x L660 (+ 200) x H250 mm
Externally mounted spectrometer and CCD:
W320 x L140 x H220 mm

Sample type

Solution, thin film, powder and single crystals

Interface

Laptop or NUC with pre-installed software

OPTIONS

Sample mounting

Sample translation, magnetic stirrer and/or active vacuum holder

UV or IR enhanced (coming soon)

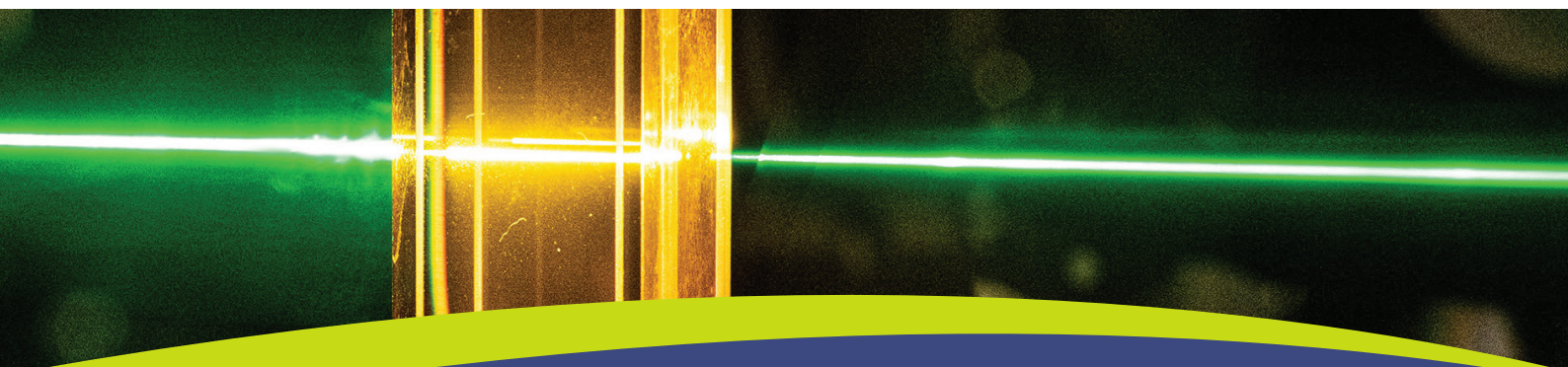
Shifts the detectable range to specific emission regions

Cryostat (coming soon)

For temperature dependent measurements

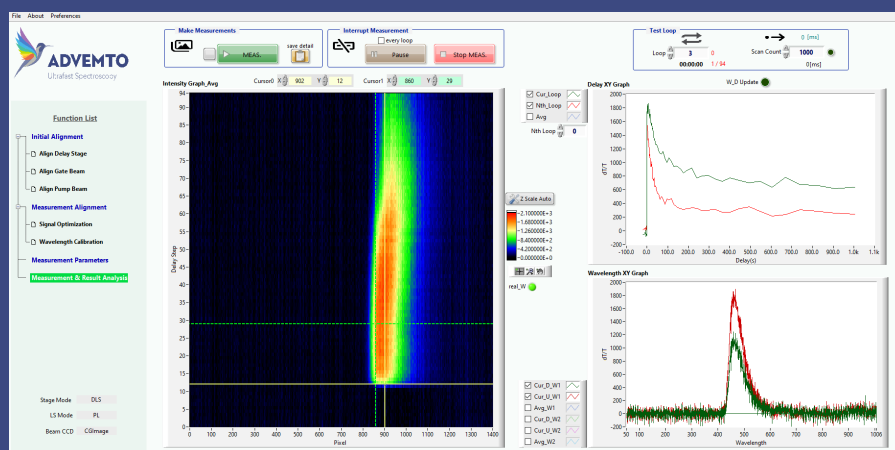
Automated alignment (coming soon)

Automation of key alignment steps and experimental operations



SOFTWARE

- Easy-to-follow workflow
- Alignment tools
- Custom time-series
- Real-time acquisition display



PUBLICATIONS USING TRANSIENT GRATING PHOTOLUMINESCENCE SPECTROSCOPY

- Ilina, A. et al, *Proc. Nat. Acad. Sci* **2022**, 119, 43.
- Boehme, S.C. et al, *Nano Letters* **2020**, 20, 1819.
- Chandrabose, S. et al, *J. Am. Chem. Soc.* **2019**, 141, 6922.
- Jin, X.-H. et al, *Science* **2018**, 360, 897.
- Zhao, B. et al, *Nature Photonics* **2018**, 12, 783.
- Stern, H. L. et al., *Nature Chemistry* **2017**, 9, 1205.
- Di, D. et al, *Science* **2017**, 356, 159.
- Chen, K. et al, *J. Phys. Chem. Lett.* **2014**, 5, 1732.

www.advemto.com | info@advemto.com

Kelburn Parade, Kelburn, Wellington, New Zealand