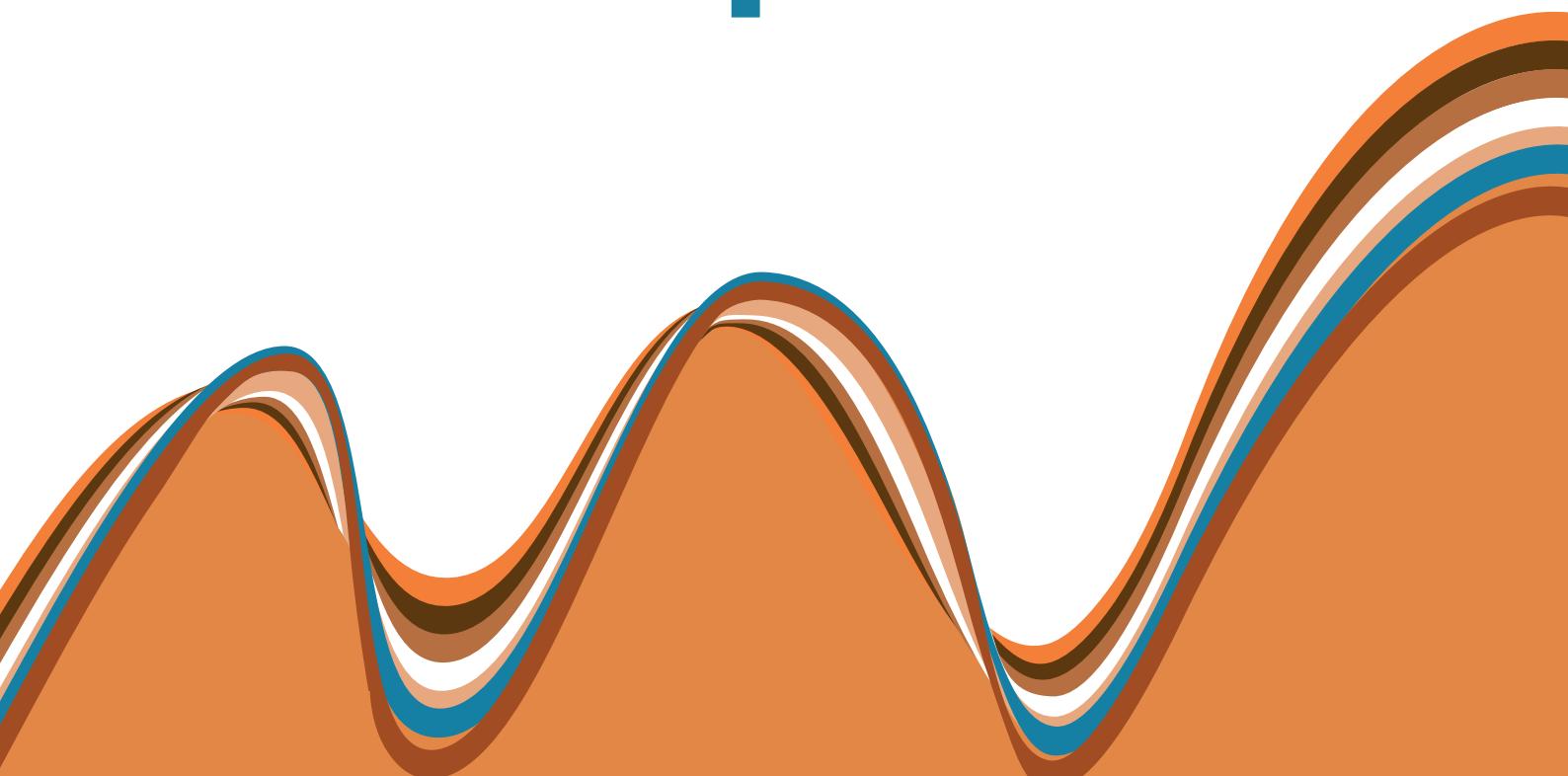


Making Spectroscopy Brighter



ABSORBANCE SPEC PACK

FLUORESCENCE SPEC PACK

REFLECTANCE SPEC PACK

PRE-CONFIGURED SOLUTIONS

www.sarspec.com

Pre-Configured Solutions

Fully configured solutions

At Sarspec we like to make the life of our customers easier and we know that with a wide variety of spectrometers, light sources, probes, optical fibers and accessories it can take a while to build a complete solution. As a consequence, for a number of measurement techniques we decided to build packages where with only one part number a specific configuration can be ordered. These pre-configured solutions can also work as examples for user configured solutions.

For all solutions we list the components and present a typical spectrum for a specific sample to help customers in the decision for the best suitable configuration.

Flexible Spectroscopy

Optical fibers allow easy coupling of different components via SMA 905 connector without the need of optical alignment. Based on this principle, when purchasing a specific solution users will be able to use some of those components for different applications, wavelength range, resolution or sensitivity. One example is someone who purchases a Reflectance SPEC PACK UV/Vis and by adding affordable accessories (cuvette holder and optical fibers or/and a transmission probe or/and flow cell) can have an additional absorbance solution. This approach is extended to all products from Sarspec as they are based on the same SMA 905 connector.

**Can't find a solution for your application?
Contact us at:
info@sarspec.com**



Absorbance SPEC PACK

There are many ways to perform Absorbance measurements, either with the traditional cuvettes, probes that can be used in reaction vessels or flow cells. With Sarspec's spectrometers the absorbance measurements can be made either with speeds up to 2857 spectra per second or optical resolutions better than 0.1 nm in a detection range from 180 to 1100 nm. The spectrometers used in these configurations have extra flexibility and robustness (with no moving parts) when compared with regular spectrophotometers and allow full spectra acquisition with time resolution down to 2 μ sec - ideal when performing Absorbance vs. Wavelength vs. Time measurements. As full pack for Absorbance measurements all SPEC Packs are configured with wide range UV/Vis/NIR spectrometers, Light Source DW (Deuterium Tungsten) and different accessories depending on application. The available pre-configured solutions from Sarspec for Absorbance are:

- Absorbance SPEC PACK CUV
- Absorbance SPEC PACK FLOW
- Absorbance SPEC PACK PROBE

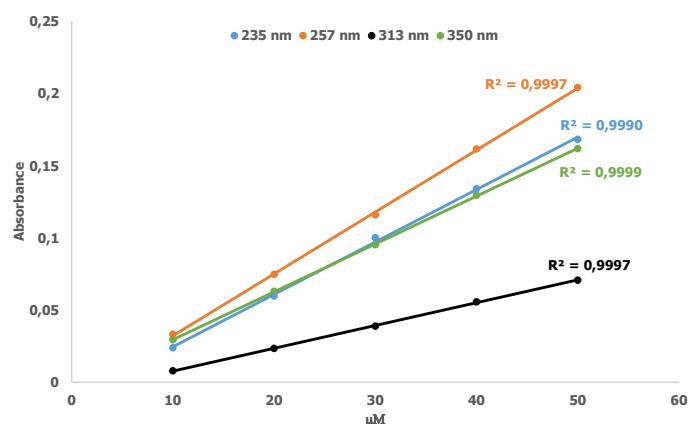
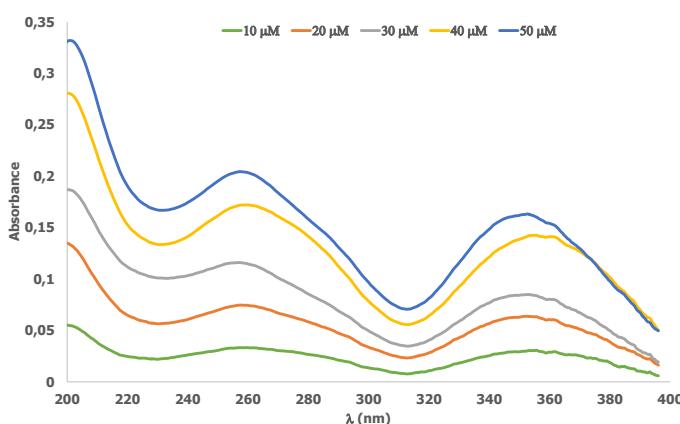
Absorbance SPEC PACK CUV (for cuvettes)

The Absorbance Full Pack CUV is an affordable and flexible solution for using traditional cuvettes in Absorbance measurements. This configuration uses a SPEC RES+ UV/Vis/NIR spectrometer with 10 µm slit, optical resolution of 0.75 nm and wavelength range of 200-1050 nm. The Light Source LS-DW is an high stability light source, emitting from 200-1100 nm with shutter and remote or local control. The solution is complete with 600 µm core diameter Optical Fibers (50 cm length) and a Cuvette Holder for Absorbance with 6 mm Collimating Lens.



Great Linearity and UV Performance

The graph shows the absorbance spectrum and the calibration of Potassium Dichromate using this configuration with software LightScan. Five solutions with different concentrations (10, 20, 30, 40 and 50 µM) were prepared and tested in the UV region. The spectra and linearity for four wavelengths (235, 257, 313 and 350nm) are shown below.



Order Info

A-PACK-CUV

Pre-configured solution for Absorbance using cuvettes including: Spectrometer SP-RES-UV-Vis-NIR; Light Source LS-DW; Optical Fibers OF-UV-600-50 (x2) and Cuvete Holder CH

Absorbance SPEC PACK FLOW (for Flow Cells)

Flow measurements are one of the best cases to take advantage of the full spectrum vs. time acquisition available in all SPEC spectrometers when using the high flexibility of Kinetics module from LightScan Software . This solution has been used in applications such as Flow Injection Analysis (FIA) and HPLC (High Pressure Liquid Chromatography) with great results and affordable price.

This configuration uses a SPEC STD UV/Vis/NIR enhanced sensitivity spectrometer with a wavelength range of 200-1050 nm, 25 µm slit with an optical resolution of 1.7 nm and minimum integration time of 2 ms for fast sample screening. Together with the light source LS-DWHP emitting from 200 to 1100 nm, the Z format flow cell FCASS / FCAPE with 1 cm path length and optical fibers with 600 µm core diameter for maximum sensitivity.



Order Info

A-PACK-FLOW

Pre-configured solution for Absorbance using flow cells including: Spectrometer SP-STD-UV-Vis-NIR-ES; Light Source LS-DWHP ; OF-UV-600-200 (x2) and FCASS or FCAPE flow cells

Absorbance SPEC PACK PROBE (for Probes)



The Absorbance SPEC Pack PROBE is quite useful when the user is unable to place the sample into a cuvette or use a flow cell. In situations where the reaction needs to be screened inside a vessel or reactor, the Absorbance SPEC Pack PROBE is the perfect solution.

Includes a Spec RES+ UV/Vis/NIR with 10 µm slit for 0.75 nm optical resolution and wavelength range of 200-1050 nm, light source LS-DW with high stability and emission from 200 to 1100 nm and Transmission Probe with 600 µm core diameter.

Order Info

A-PACK-PROBE

Pre-configured solution for Absorbance using transmission probes including: Spectrometer SP-RES-UV-Vis-NIR; Light Source LS-DW and Transmission Probe TP-UV-600-200

Fluorescence SPEC PACK

When performing Fluorescence measurements, in most applications, sensitivity is a key factor and at Sarspec we take it seriously. The configurations offered takes the sensitivity to a new level by using back thinned detectors with quantum efficiency up to 78% and 1 mm height pixel elements combined with large 200 µm slits and collecting lens. This combination makes all the difference in the detection of fluorescence signal. Combining the detector with high power LEDs from LS-LED Light Source - with easily interchangeable LEDs - customers can have a sensitive and flexible solution for a fraction of the cost of a traditional spectrofluorimeter. When high power UV excitation is required we recommend the use of the Light Source Xenon FlashLamp. The available pre-configured solutions from Sarspec for fluorescence analysis are:

- Fluorescence SPEC PACK FLOW
- Fluorescence SPEC PACK CUV
- Fluorescence SPEC PACK CUV BASIC
- Fluorescence SPEC PACK XeF

Fluorescence SPEC PACK FLOW



In the Fluorescence SPEC PACK FLOW one can combine the flow analysis technique with fluorescence measurements making it a powerful tool for research in Biology and Chemistry. The configuration of this solution consists on the highly sensitive SPEC SENSE+ FL spectrometer using a back thinned CCD (Q.E. = 78%) with collecting lens and 200 µm slit. The LS-LED light source with high power LEDs (where due to the slide principle can easily change the excitation wavelength) the Flow Cell FCFPE or FCFSS with sapphire windows and SMA connection completes this solution.

Order Info

F-PACK-FLOW

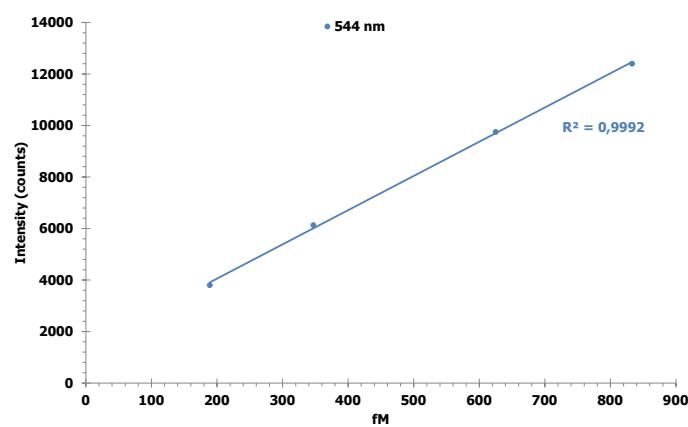
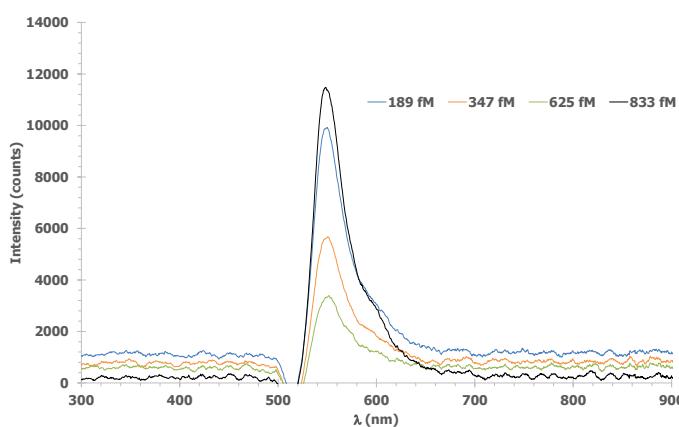
Pre-configured solution for Fluorescence using flow cells including: Spectrometer SP-SENSE-FL; Light Source LS-LED (including one LED in visible range); Flow Cell FCFPE or FCFSS and Optical Fibers OF-UV-600-200 (x2)

Fluorescence SPEC PACK CUV

This is the most sensitive configuration available, mainly due to the sensitivity of the back thinned CCD array with high quantum efficiency (up to 78%) together with 200 µm slit and collecting lens for the detector. Also, the high power LEDs from the flexible LS-LED Light Source - where many different excitation wavelengths can be used by simply changing the LED slide - contributes greatly for the final sensitivity. In this configuration the sample holder takes an important role on the sensitivity and flexibility of the solution. Sarspec's Multipurpose Cuvette Holder uses 12.7 mm diameter lens for large sample area illumination/collection and concave mirrors to employ all radiation available and supports a wide range of filters easily interchangeable.



It's important to understand the expected detection limit in Fluorescence measurements. Each compound has single behavior and quantum yield. Eosin Y is a common dye used in molecular biology applications with quantum yield of 0.67. Four solutions were prepared in ethanol with concentrations of 189, 347, 625 and 833 **femtomolar** and the emission wavelength considered was 544 nm. The instrumentation used was a Fluorescence SPEC PACK CUV from Sarspec configured with a 495 nm high power LED. The spectra and linearity are below:



Order Info

F-PACK-CUV

Pre-configured solution for Fluorescence using cuvettes including: Spectrometer SP-SENSE-FL; Light Source LS-LED (including one LED in visible range); Cuvette Holder CH-MP with signal enhancing mirrors CH-MP-EM, and Optical Fibers OF-UV-1000-50 (x2)

Fluorescence SPEC PACK CUV Basic

With great sensitivity in the Visible range, the SPEC PACK CUV BASIC is the most affordable solution for fluorescence available.

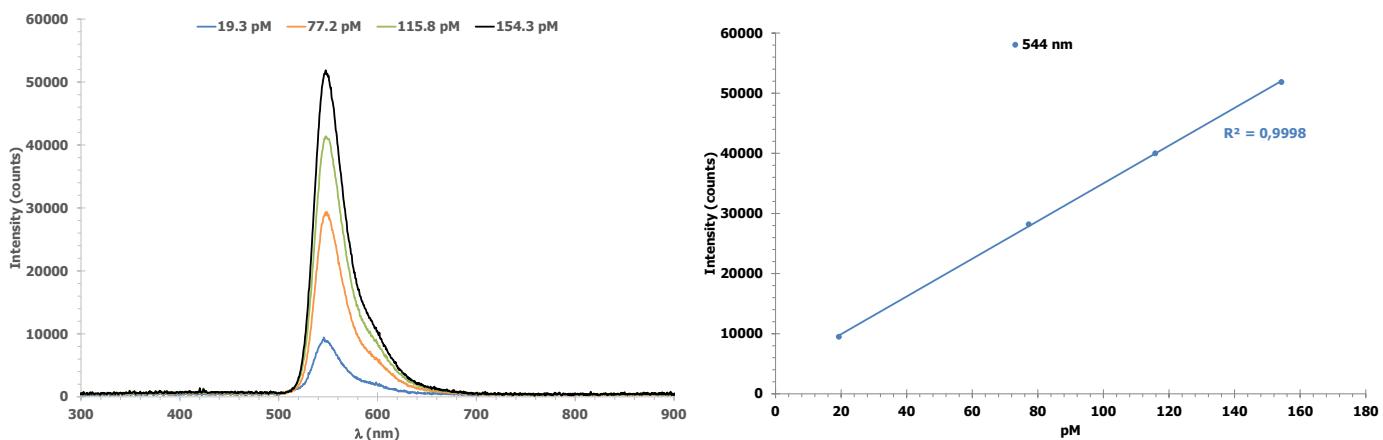
Using a SPEC STD FL spectrometer with 200 μm slit and collecting lens for greater sensitivity, the LS-LED Light Source with high power LEDs and where due to the LED slide principle can easily change the excitation wavelength, large core optical fibers and the flexible cuvette holder CH.

**BEST
PRICE**



Eosin Y was tested as a common dye used in molecular biology applications with quantum yield of 0.67. The results obtained were in the **picomolar** range. Four concentrations were prepared in ethanol with concentrations of 19.3, 77.2, 115.8 and 154.3 picomolar. The emission wavelength considered was 544 nm.

The instrumentation used was a Fluorescence SPEC PACK CUV BASIC from Sarspec configured with a 495 nm high power LED. The results are below:



Order Info

F-PACK-CUV-B	Pre-configured solution for Fluorescence using cuvettes including: Spectrometer SP-STD-FL; Light Source LS-LED (including one LED in visible range); Cuvette Holder CH and Optical Fibers OF-UV-1000-50 (x2)
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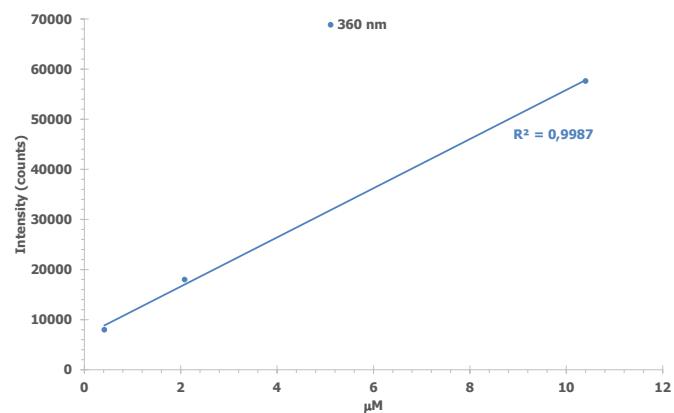
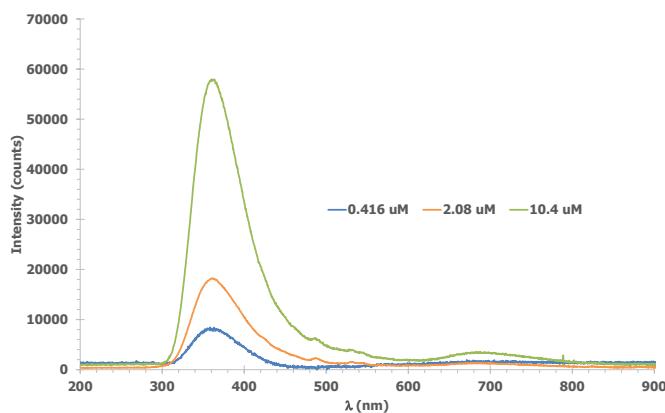
Fluorescence SPEC PACK XeF

When high power excitation in the UV is required the light source is normally quite expensive. An affordable solution for users that want to work with UV excitation and obtain good results in Fluorescence is to use the Xenon Flashlamp Light Source LS-XeF from Sarspec. With it, it's possible to obtain great fluorescence results with high flexibility.

The full configuration includes the high sensitivity spectrometer SPEC SENSE+ UV/Vis with a back-thinned CCD array with 2048 elements and great quantum efficiency in the UV Range, optical fibers with 1000 µm core diameter (50 cm length), the multipurpose cuvette holder CH-MP with filter slots, large lens and signal enhancing mirrors (CH-MP-EM).



Tryptophan was tested with this configuration. Tryptophan is an amino acid with a really low quantum yield of 0.13 and is an essential amino acid in the human diet. The configuration used to test it was the Fluorescence SPEC PACK XeF. Emission wavelength considered was 360 nm. Three solutions were prepared in HEPES with concentrations of 0.416, 2.08 and 10.4 **micromolar** and the results are shown below:



Order Info

F-PACK-XeF

Pre-configured solution for Fluorescence using cuvettes including: Spectrometer SP-SENSE-UV-Vis; Light Source LS-XeF; Cuvette Holder CH-MP with signal enhancing mirrors CH-MP-EM, and Optical Fibers OF-UV-1000-50 (x2)

Reflectance SPEC PACK Vis/NIR

The standard configuration for the Reflectance SPEC Pack Vis/NIR comprises a SPEC STD Vis/NIR enhanced sensitivity spectrometer with 25 µm slit and 600 grooves/mm grating blazed at 750 nm with an optical resolution of 1.4 nm and a linear array CCD detector Sony 2048 pixels.

The light source is the LS-W25 with tungsten lamp and wavelength range from 380 to 3000 nm. Also included is the reflectance Probe, reflectance standard RSTD98 and a probe holder that allow measurements of diffuse and specular reflectance.

One typical application for this configuration is color measurement applied to a wide field of industrial areas like textiles, food, paints, ceramics, metals and polymers. Others applications include agriculture, defense and security, remote sensing, solar power, thin film thickness , forensics, research, quality control, sorting and material characterization.



ALSO AVAILABLE AS UV/Vis VERSION

Order Info

R-PACK-Vis-NIR	Pre-configured solution for Vis/NIR Reflectance including: Spectrometer SP-STD-Vis-NIR-ES; Light Source LS-W25; Reflectance Probe RP-600-200; Probe Holder PH and Reflectance Standard RSTD98
R-PACK-UV-VIS	Pre-configured solution for UV/Vis Reflectance including: Spectrometer SP-STD-UV-Vis-ES; Light Source LS-DWHP; Reflectance Probe RP-600-200; Probe Holder PH and Reflectance Standard RSTD98



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