

Absorption Accessory

Add UV-VIS Spectrophotometry to your Fluorometer



Inexpensive and easy-to-use accessory to achieve quality absorbance on HORIBA fluorometers

HORIBA fluorometers have been recognized for their high sensitivity and ability to adapt to various applications due to their modular design. The addition of a simple absorption accessory enhances the performance and versatility of the instrument even more.

In many fluorescence experiments, it is necessary to know the absorption properties of the sample. The ABS-ACC absorption accessory from HORIBA fits directly into a cuvette sample holder and enables the user to measure the absorption spectrum, or check the optical density, of a liquid sample without reconfiguring the fluorometer.

Absorption measurements are complementary to fluorescence. They are necessary for **fluorescence quantum yield** determination, and more accurate results are usually obtained by using the same optical path for both fluorescence and absorption measurements. The ability to check the optical density during a fluorescence experiment makes it easy **to avoid inner filter effects**. By comparing the absorption and excitation spectra, one can draw conclusions about the purity of the sample.

This absorption accessory is very easy to use and enhances a HORIBA fluorometer by offering **more versatility**. It **eliminates the need** for a separate, and often expensive, **UV-VIS spectrophotometer**.

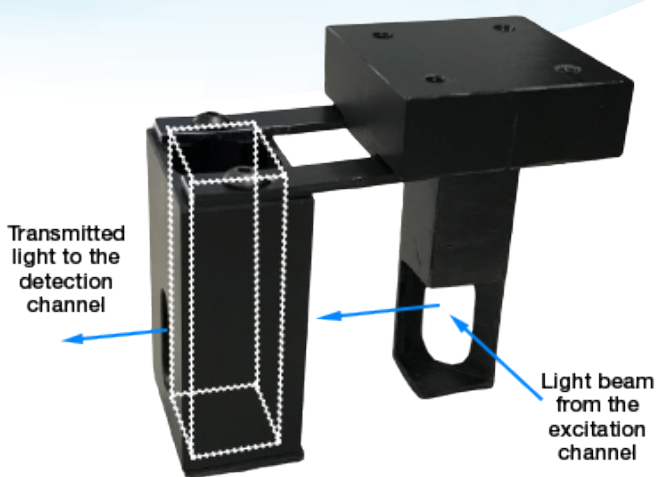


Figure 1: ABS-ACC absorption accessory with high quality reflector and remote cell holder.



Figure 2: ABS-ACC absorption accessory installed on a standard room-temperature cell holder.

A simple accessory for quality absorbance acquisitions using the standard fluorescence emission channel of the fluorometer

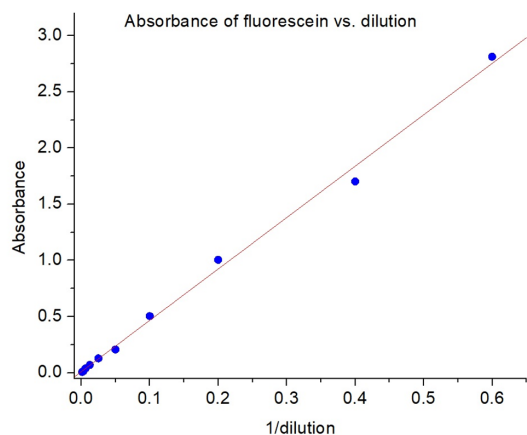


Figure 3: Linear dependence of fluorescein absorbance vs. the dilution factor measured with the HORIBA QM-400 equipped with the ABS-ACC accessory.

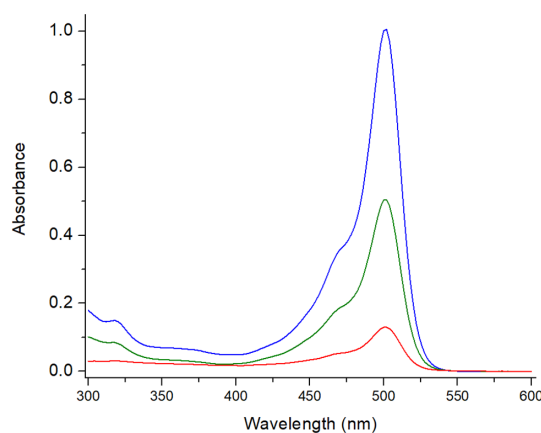


Figure 4: Fluorescein absorption spectra measured with the HORIBA QM-400 equipped with the ABS-ACC accessory.

ABS-ACC, perfect to avoid Inner Filter Effect

- The fluorescence intensity is proportional to the intensity of the light source (actually proportional to the absorbed light intensity).
- The linear relationship between fluorescence intensity and concentration holds only for dilute solutions where absorbance is lower than ~ 0.1 OD.
- At high concentrations, light absorption can make the measured fluorescence intensity lower than the true fluorescence emission: This is called the Inner Filter Effect (IFE).
- As a consequence, IFE limits the linearity of the fluorescence signal at higher sample concentrations due to primary and secondary re-absorption of fluorescence.
- The **ABS-ACC accessory is the perfect tool** to monitor the concentration of the samples to avoid the inner filter effect by easily determining if the absorbance is too high.

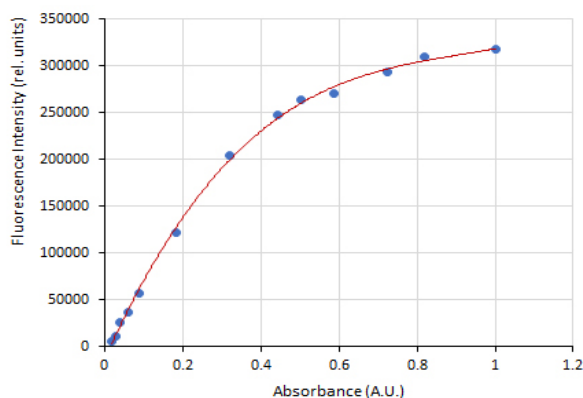


Figure 5: Demonstration of the loss of the linear relationship between the emitted fluorescence intensity and the concentration of the sample due to IFE.

Specifications

- Sample holder: Compatible with cuvette 10 x 10 mm path length cuvette
- Reflector: Wavelength range 0.20 to 2.00 μm
- Minimum absorbance: 0.005
- Maximum absorbance: 3.00
- Mode of operation: Single beam
- Wavelength range: According to the Fluorometer configuration

Compatibility

The ABS-ACC absorption accessory is compatible with the following HORIBA fluorometers.

- Fluorolog-QM™
- Fluorolog®-3
- Nanolog®
- FluoroMax®

The ABS-ACC absorption accessory requires one of the following types of sample holder trays.

- Standard room-temperature cuvette holder
- Single position water jacketed cuvette holder
- Single position thermo-electric cuvette holder

To learn more about this, and all of our other fluorescence products, visit us at:

www.horiba.com/fluorescence

HORIBA
Scientific

info.sci@horiba.com

USA: +1 732 494 8660
UK: +44 (0)1604 542 500
China: +86 (0)21 6289 6060
Taiwan: +886 3 5600606

France: +33 (0)1 69 74 72 00
Italy: +39 06 51 59 22 1
India: +91 80 41273637
Brazil: +55 (0)11 2923 5400

horiba.com/scientific

Germany: +49 (0) 6251 8475 0
Japan: +81(75)313-8121
Singapore: +65 (0)6 745 8300
Other: +33 (0)1 69 74 72 00