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Your guide to fiber optic probes

Simplify your measurements with versatile fiber optic probe solutions for UV-Vis spectrophotometers

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6 mm Stainless Steel Dip Probe

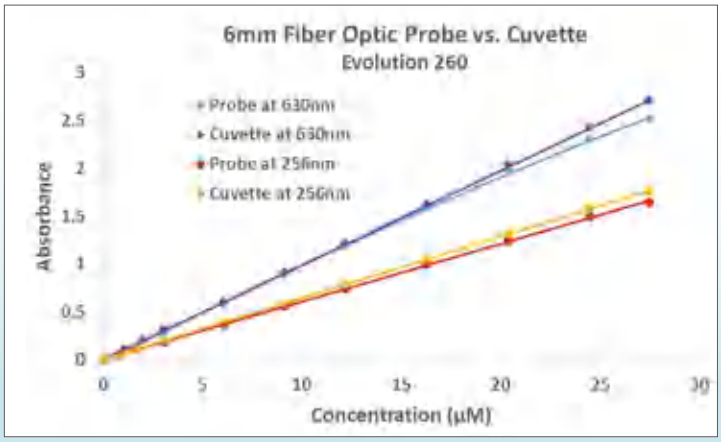
Make precise UV-Vis measurements with a durable fiber optic dip probe

Combine the high accuracy and wide photometric range of a Thermo Scientific™ GENESYS™ or Thermo Scientific™ Evolution™ UV-Vis Spectrophotometer with the convenience of cuvette-free measurements. Eliminate expensive, fragile cuvettes from your lab.

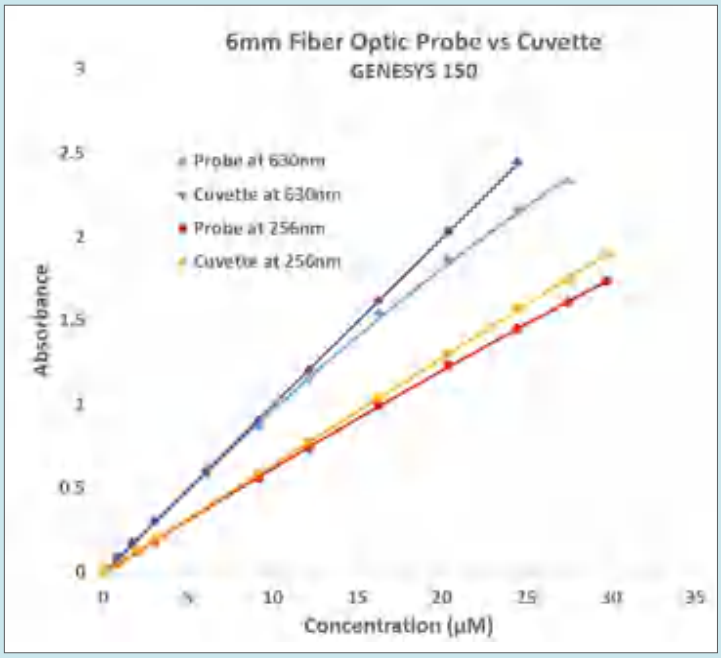
The 6 mm stainless steel dip probe is a rugged, easy-to-use probe that is ideal for applications ranging from daily use by students in instructional laboratories to performing at-line measurements in manufacturing settings. A perfect tool for measuring aqueous solutions, the probe attaches to the spectrophotometer via a two meter cable and can be mounted to a clamp or used in-hand to measure solutions in beakers or flasks.

Say *goodbye* to cuvettes

Free yourself from the hassle and expense of scratched cracked, dropped, or fogged cuvettes. The 6 mm probe is made from chemical resistant 316 stainless steel and can be used in pH environments from 2 to 14 and in a number of common organic solvents such as acetone, hexanes, ethyl acetate, and ethanol. With no need to fill, insert or clean cuvettes, a dip probe saves you both time and money.



The 6 mm Fiber Optic Probe delivers results comparable to those given by a full-size (3.5 mL) quartz cuvette at wavelengths of 256 and 630 nm. Using the Evolution 260 Bio Spectrophotometer, the probe delivers excellent linearity to ~2A in both the UV and at longer wavelengths. Using the GENESYS 150 Spectrophotometer, linearity is observed to ~1.5A at both wavelengths. At higher absorbance levels, a second order fit may be applied to standard data to obtain quantitative results.



Fiber Optic Microprobe

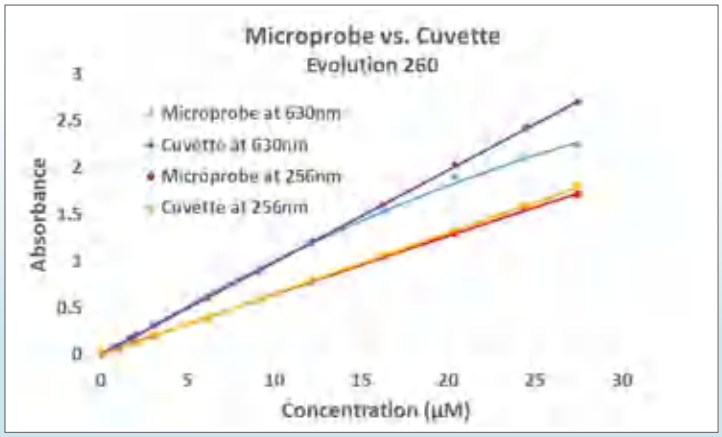
Make UV-Vis measurements directly in PCR tubes and other small containers

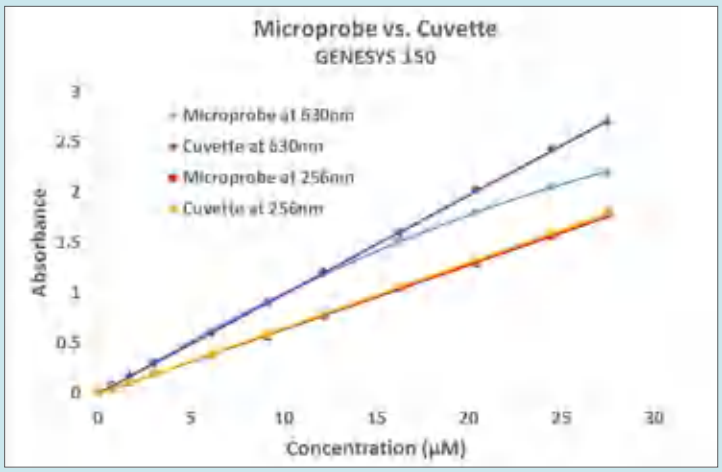
Streamline your SOP, reduce sample loss, and eliminate consumables costs for low volume cuvettes. Enjoy the accuracy and wide photometric range of a GENESYS or Evolution UV-Vis Spectrophotometer as you measure samples as small as 300 µL directly in PCR tubes, microcentrifuge tubes, or well plates.

Small samples are no longer an obstacle to enjoying the convenience of measurement with a fiber optic dip probe. At only 3.2 mm diameter, the microprobe fits into the smallest preparation tubes and wells to allow you to make measurements in-situ without removing an aliquot of your sample or interrupting your experiment. The 2 m long glass fiber cables give you the freedom to measure at a significant distance from the spectrophotometer, and specially shortened collars on the SMA connectors make the probe compatible with both GENESYS or Evolution UV-Vis Spectrophotometer platforms.

Simplify small volume measurements

Free yourself from the time consuming processes surrounding the use of low volume cuvettes for UV-Vis measurements. Pipetting and transferring liquids takes time. Small quantities of cleaning solution or buffer trapped in a cuvette can cause sufficient dilution to contaminate measurements and cleaning quartz cuvettes between measurements is time consuming and comes with a risk of breaking an expensive consumable. Cleaning the microprobe is as simple as rinsing off the tip with a wash bottle of water or buffer. Dab it with a laboratory tissue to remove excess droplets and you are ready to measure the next sample with minimal rinse solution carry-over. The microprobe is made from chemical-resistant 316 stainless steel and can be used in all chemical environments commonly encountered in life science applications.





The microprobe delivers results comparable to those given by a full-size (3.5 mL) quartz cuvette at wavelengths of 256 and 630 nm. Note that at high absorbances at longer wavelengths, the microprobe requires a quadratic fit. Below 2.0 A the data maintains excellent linearity.

VERSA Fiber Optic Dip Probe

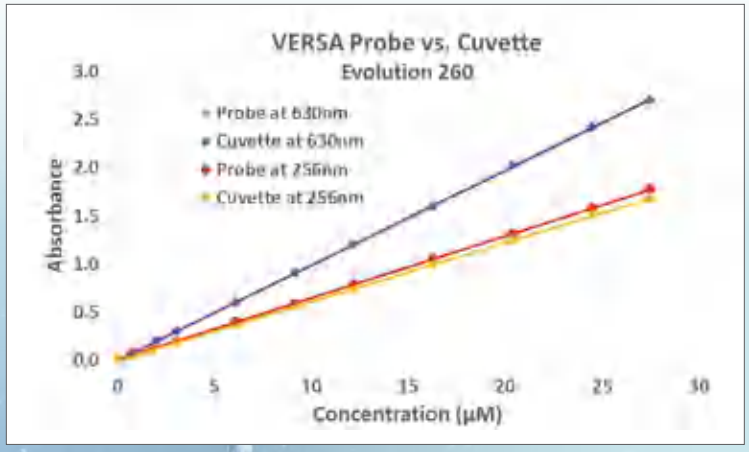
Minimize sample handling with remote measurements

Placing only a replaceable quartz sheath and precision 10 mm pathlength gap in contact with the sample, the VERSA probe allows measurements of oxidizing solutions, strong acids, and organic solvents that attack materials used in traditional metal dip probes.

Dip probes are ideal tools for performing in-line measurements in manufacturing settings or measuring large volumes of potentially dangerous solutions while wearing bulky personal protective equipment. The VERSA probe attaches to the spectrophotometer via a two meter cable and can be mounted on to a clamp or used in-hand to measure solutions in beakers or flasks. The quartz is the only material to come into contact with the solution, so both the steel body and the lens are fully protected. The VERSA probe's design makes it highly resistant to chemical attack from oxidizing solutions, strong acids, ketones, and most other materials that are incompatible with traditional steel probes.

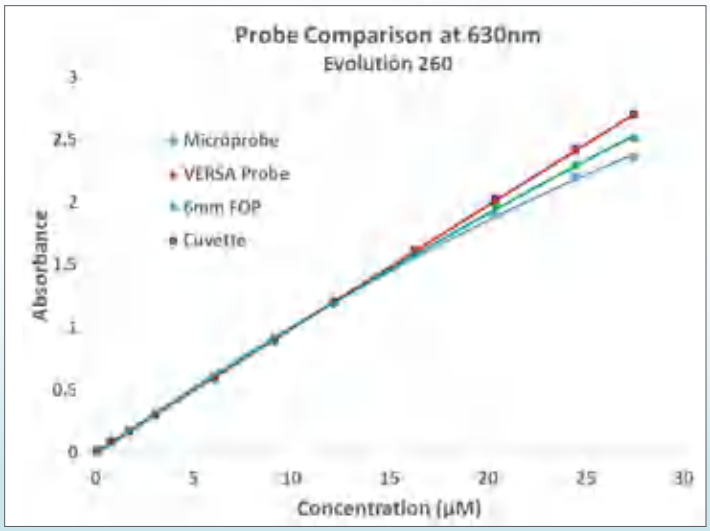
Fewer Limitations…and a Backup Plan

The VERSA probe's customer-replaceable quartz tips mean that it is compatible with a wider range of solutions than traditional probes. The ability to replace the tip at less than 10% of the cost of the entire probe also allows you to experiment with new samples with lowered risk. If your challenging sample proves to be incompatible with the tip material, you can replace the tip with limited cost and no downtime to your primary process.



The VERSA probe delivers excellent results compared to a full-size (3.5 mL) quartz cuvette. Linearity is observed to at least 2.5A for visible wavelengths with nearly identical results obtained between the two measurement techniques. For UV wavelengths linearity is observed to at least 2A.

Fiber optic probes deliver excellent results compared to standard cuvettes



The VERSA probe maintains linearity at higher absorbances while other probes may require a second order fit. The VERSA probe exhibits excellent photometric accuracy to 1.5A and beyond. This allows users to utilize the probe with a diverse range of sample absorbance levels.

Limitations when using fiber optic probes

While dip probes offer significant advantages and conveniences relative to cuvettes, it is important to remember that the measurement is being made under room light, and that the light used to make the measurement is being attenuated by passing it into, through, and back out of a pair of fiber optic cables. Working at lower signal strength and with high levels of background light limits the photometric performance of the spectrophotometer system relative to what is possible with a quartz cuvette in a dark sample compartment.

The proof statement data presented here shows the levels of photometric performance that the user should expect from the probe at wavelengths representing the range of most analyses. While measurement performance with the probe is excellent, it may not equal the printed specifications for the instrument as these are based upon measurements with cuvettes in the sample compartment.

The noise measurements listed for each probe were obtained using aqueous solutions and are intended to give a representative assessment of the probe performance and are not guaranteed specifications.

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Fiber Optic Probe Specifications

Description		6 mm Fiber Optic Dip Probe w/ 10 mm Tip	Fiber Optic Microprobe	VERSA Fiber Optic Dip Probe
Part Number		840-305000	840-305100	222-214100
Fiber Type		Solarization resistant quartz	Solarization resistant quartz	Solarization resistant quartz
Wavelength Range		220 nm-1100 nm	220 nm-1100 nm	220 nm-1100 nm
Fiber Diameter		600 micron	400 micron	600 micron
Cable Length		2 m	2 m	2 m
Measurement Pathlength		10 mm (Standard) 5 mm (Available option) 20 mm (Available option)	10 mm	10 mm
Probe Length (Overall)		19 cm	17.5 cm	27 cm
Compatibility		GENESYS 150, 180 BioMate 160 Evolution 220, 260 Bio Evolution 350	GENESYS 150, 180 BioMate 160 Evolution 220, 260 Bio Evolution 350	Evolution 220, 260 Bio Evolution 350
		Example Noise Level[c]		
Noise	**GENESYS[a]** (at 500nm) ≤0.00020A at 0.0A ≤0.00030A at 1.0A ≤0.00040A at 2.0A	≤0.00049A at 0.5A at 256nm ≤0.00040A at 1.0A at 256nm ≤0.00062A at 2.0A at 256nm ≤0.00040A at 0.5A at 630nm ≤0.00081A at 1.0A at 630nm ≤0.00614A at 2.0A at 630nm	≤0.00050A at 0.5A at 256nm ≤0.00037A at 1.0A at 256nm ≤0.00685A at 2.0A at 256nm ≤0.00094A at 0.5A at 630nm ≤0.00270A at 1.0A at 630nm ≤0.02009A at 2.0A at 630nm	N.A.
	Evolution[b] (at 260nm) ≤0.00015A at 0.0A ≤0.00025A at 1.0A ≤0.00080A at 2.0A	≤0.00040A at 0.5A at 256nm ≤0.00050A at 1.0A at 256nm ≤0.00044A at 2.0A at 256nm ≤0.00068A at 0.5A at 630nm ≤0.00037A at 1.0A at 630nm ≤0.00359A at 2.0A at 630nm	≤0.00061A at 0.5A at 256nm ≤0.00047A at 1.0A at 256nm ≤0.00050A at 2.0A at 256nm ≤0.00080A at 0.5A at 630nm ≤0.00102A at 1.0A at 630nm ≤0.00657A at 2.0A at 630nm	≤0.00034A at 0.5A at 256nm ≤0.00025A at 1.0A at 256nm ≤0.00049A at 2.0A at 256nm ≤0.00025A at 0.5A at 630nm ≤0.00062A at 1.0A at 630nm ≤0.00210A at 2.0A at 630nm

[a]Noise specification for instrument with cuvette and closed sample compartment. RMS at 500 nm. [b]Noise specification for instrument with cuvette and closed sample compartment. 260 nm. 1.0 SBW. [c] Example noise levels measured with representative probes and instruments. These values are for information and guidance regarding typical performance only. The noise values listed are not guaranteed performance levels and each specific probe, tip, and instrument combination will show some variation.

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