From cuvettes to Fiber Optics...

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New Agilent Cary 60 UV-Vis
The leader in Xenon flash lamp technology

WIDEST RANGE OF ACCESSORIES
WHAT CAN FIBER OPTICS DO FOR ME?

INCREASE PRODUCTIVITY…
LOWER COST OF ANALYSIS
What are Fiber Optics?

• A fiber optic probe is essentially a light guide that takes the UV-Visible light from the instrument into a fiber – to the sample – and then back to the instrument.

• Performance depends on:
  • Efficiency of coupling the light from the instrument to the fiber
  • Ability to shield the fiber tip from the stray light effects for ambient (room) light.

• Most commercial spectrophotometers have poor coupling (due to large beam size) and are not room-light immune, thereby, making the use of fibers impractical.
Why is the Cary 60 best suited to Fiber Optics?

• Small focused beam provides superior coupling to Fiber

• Room light immunity minimizes stray light effects
  • Photometric linearity up to 2.0 Abs

• High energy Xenon flash lamp coupled with low-noise electronics provides uncompromised data quality - better than most commercial instruments using a cuvette!

*The Cary 60 has been designed for Fiber Optic measurements*
Why is the Cary 60 best suited to Fiber Optics?

Small focused beam
  • Superior coupling into fiber optic probe
Why is the Cary 60 best suited to Fiber Optics?

Room light immunity
- Linearity even with sample compartment open
- Minimize stray light for better accuracy, linearity and reproducibility

Measuring KMnO₄ in a cuvette with the sample compartment open and closed
Why use Fiber Optics?

- No more need for expensive cuvettes!
- Improve workflow and increase productivity by taking the instrument to the sample
- Measure cold, hot, toxic/radioactive, odd-shaped samples
- Measure samples *in situ*

*Improve workflow and minimize sample preparation*

*Measure cold samples directly from the refrigerator!*
Agilent Cary UV-Vis-NIR Portfolio

Cary 60

Cary 100

Cary 300

Cary 4000

Cary 5000/6000i

Cary 60

8453

Performance
Why is the Cary 60 best suited to Fiber Optics?

**Photo linearity > 2.0 Abs**
- Measure a wide range of concentrations with the highest accuracy and precision

![Graph showing measurement of KMnO₄](image)

Measuring KMnO₄ in either a cuvette or using a Fiber Optic Micro Probe
APPLICATIONS USING FIBER OPTICS SAMPLING
Raw material QA/QC and chemical processes

QA/QC on raw materials and finished product in manufacturing

Chemical identification or study of chemical processes

Wavelength Scans – What is it?

Fiber Optics

Concentration – How much?

Kinetics – what processes are occurring?
Measuring DNA at 4°C

Challenges:

- To measure biological sample directly from storage (e.g., fridge) — without compromise to data quality - saving time and increasing sample throughput.

Solution:

- Cary 60 with Fiber Optics Microprobe

Benefits:

- Save time and money – increase no. of samples measured and use significantly less sample volume (< 40 μL)
- Improve workflow by minimizing sample handling and transfer to cuvettes
- No compromise in accuracy or reproducibility of data due to unique optical design
Measuring DNA at 4°C

Measuring cold DNA samples at 4 °C

Scans of 150 µl samples of DNA at 4 ºC at 2 concentrations showing the characteristic absorbance peak at 260 nm.

- Fast, accurate and reproducible
- Note peak absorbance of 1.0 absorbance units for 50 µg/ml DNA versus peak absorbance of 0.5 absorbance units for 25 µg/ml DNA demonstrating linear adherence to the Beer Lambert Law (A=εcl).
- Fast, accurate and reproducible measurements at 4 ºC
- Improve workflow
- Save time and money

Application Note Publication Number 5990-7863EN
SUMMARY
Summary

• Fiber optics can save you time and money by improving your workflow and productivity, and eliminating the need for expensive cuvettes.

• The Cary 60 is designed to optimize data quality when using fibers – so you get no compromise in results.

The Cary 60 is a versatile spectrophotometer; it can do the work required by our customers faster, while being accurate, reliable and having a low cost of ownership.
For further information…

Contact your local Agilent representative or visit…

http://www.agilent.com

THANK YOU