

Hellma. Where precision becomes an art.

■ **TrayCell**
fibre-optic ultra-micro cell
for UV/Vis analysis



- Conventional methods for biochemical analysis
- Measuring principle of standard cuvettes
- What is TrayCell
- Measuring principle of TrayCell
- TrayCell basics
- How to use TrayCell
- Application notes
- TrayCell advantages

Cuvette – Measuring Range (Concentration)

$$\text{Concentration [ng/}\mu\text{L]} = \text{Absorption (260 nm)} \times \text{Factor}$$

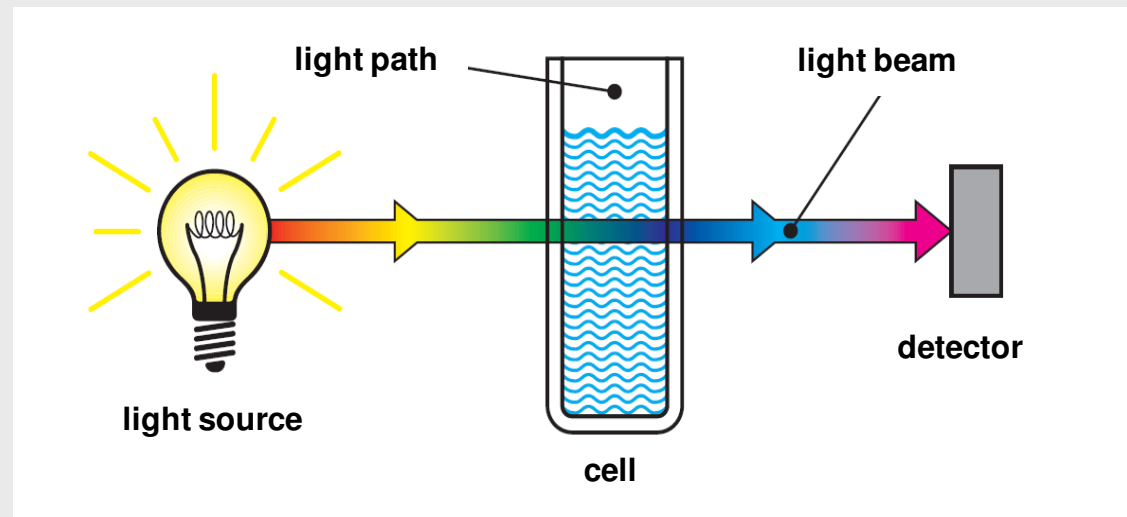
	Factor	Measuring Range [ng/μL]
dsDNA	50	2.5 – 85.0
ssDNA	37	1.9 – 62.9
ssRNA	40	2.0 – 68.0
Oligo	30	1.5 – 51.0

Typical for Photometers with linear range from 0.05 A to 1.7 A.

Photometers with a larger linear range will have a correspondingly larger measuring range (detected concentration range).

Standard Cell Measurement

Example: Diluted sample inside cell with 10mm light path



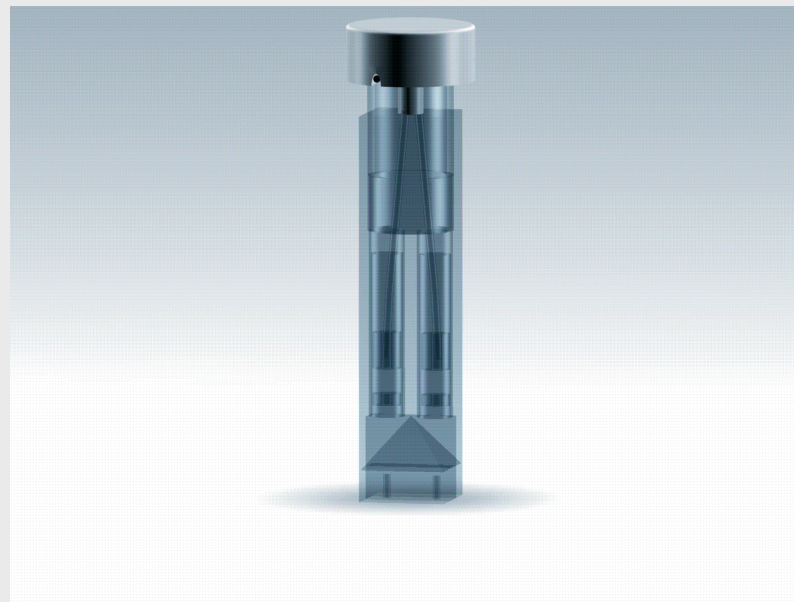
Schematic diagram of an absorption measurement using a standard cell.
(Length x Width=12.5mm x 12.5mm).

WHAT IS TRAYCELL



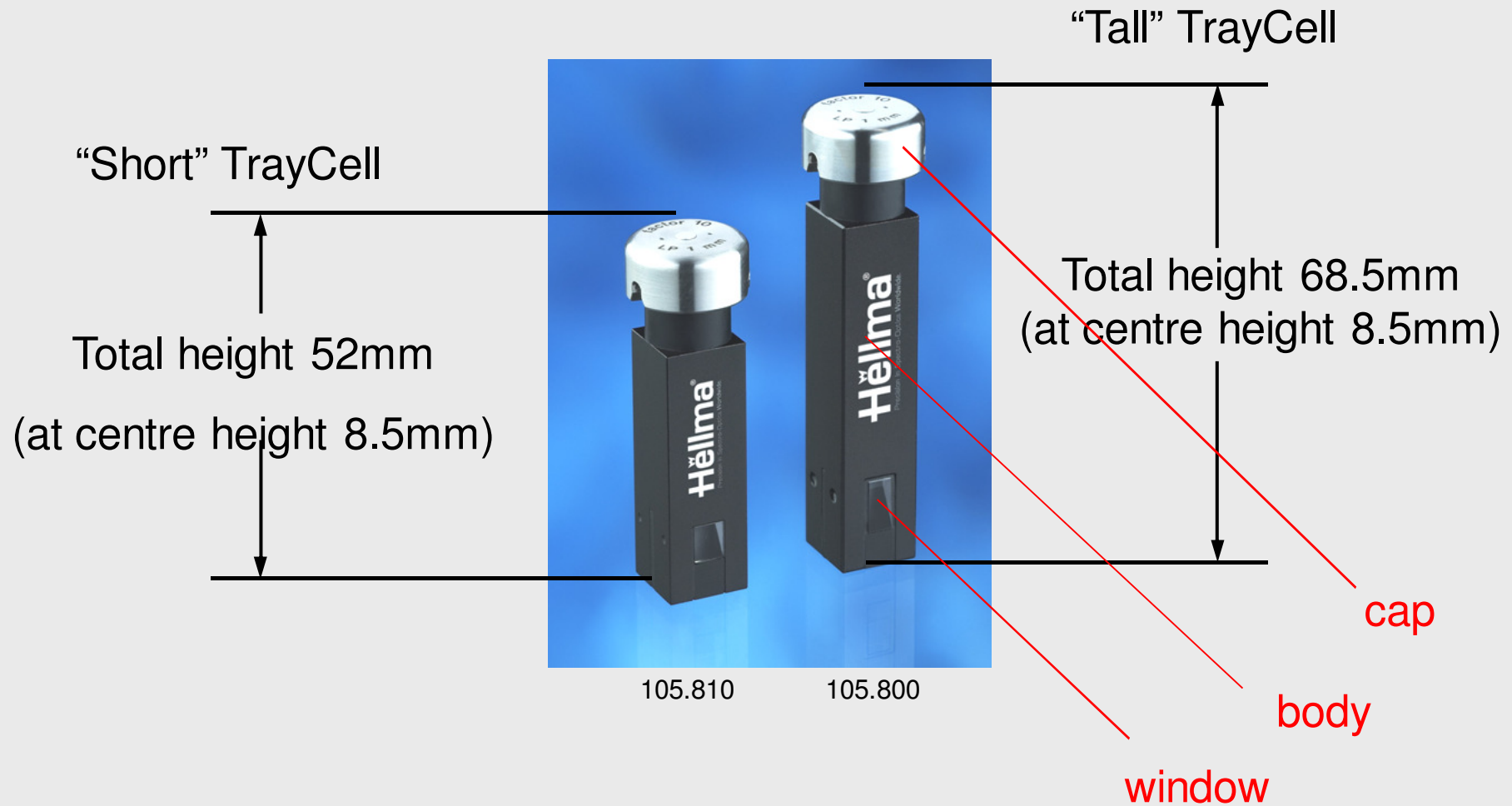
- Fibre-optic ultra-micro volume cell
- Dimension of standard cell
- For absorbance measurements
- One-drop analysis; no dilution required

TrayCell Measurement – No Dilution Needed



- Dimensions similar to standard cell (Length x Width=12.5mm x 12.5mm). Therefore the TrayCell can be used in most spectrophotometers.
- Integrated beam deflection and use of fibre-optic cables make it possible to measure the sample directly on the surface of the optical window.

Two Sizes Fit All...



Caps Establish Suitable Optical Light Path

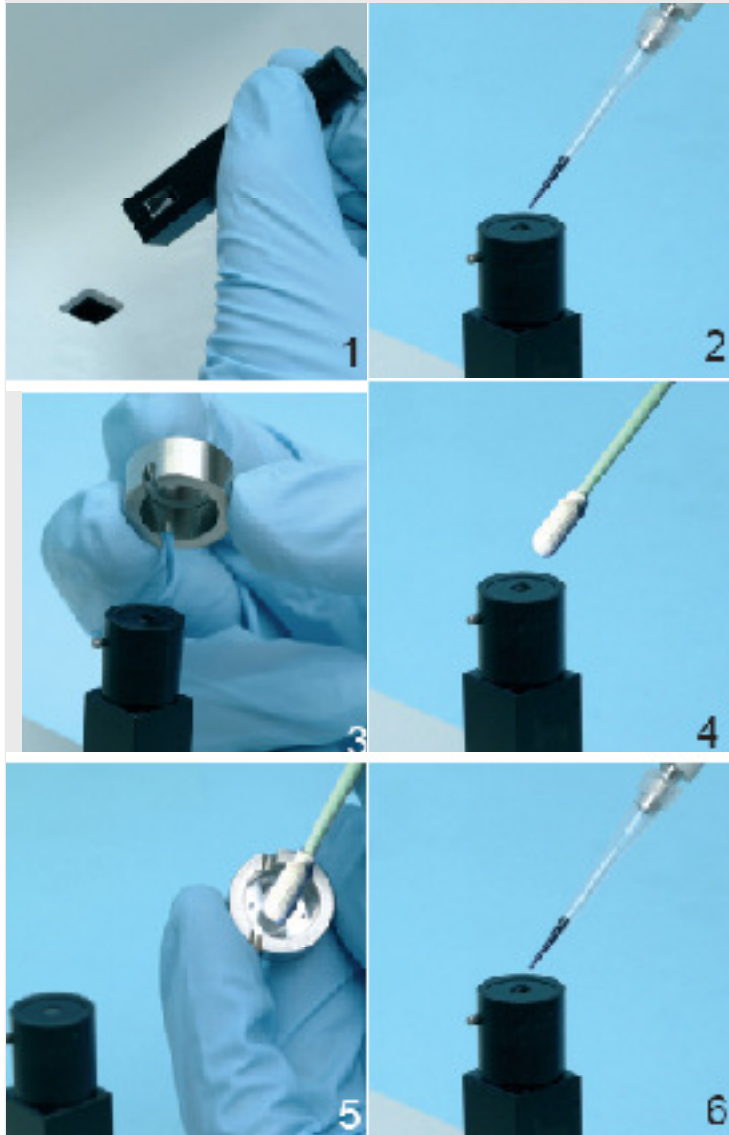
Standard caps:

light path 1mm (factor 10) or light path 0.2mm (factor 50)



Small mirror

HOW TO USE TRAYCELL

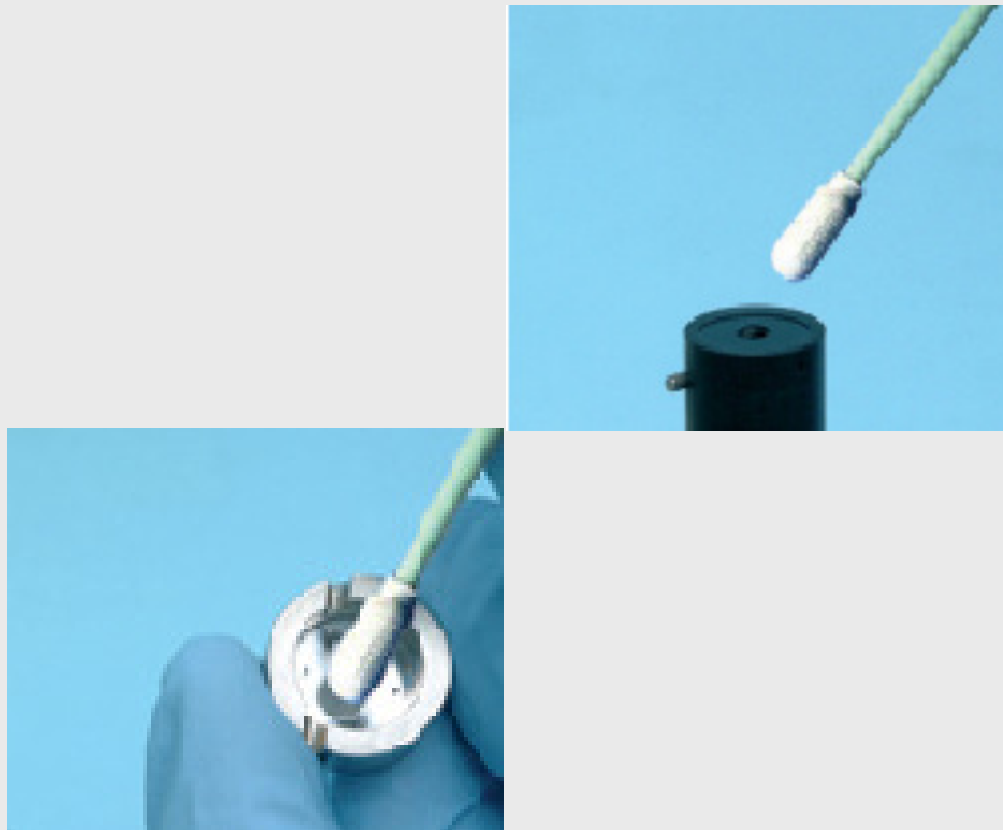


1. Position the TrayCell inside the cell holder.

After this, the TrayCell can remain in the cell holder for all further measuring and cleaning steps

2. Pipette sample onto the centre of the measuring window
3. Fit cap for the measurement, start measurement on spectrophotometer.
4. Take off cap, retrieve sample with a pipette, if desired.
5. Clean well with a lint free swab or a lint free wipe. Remove sample residues from the mirror by utilizing a lint-free swab and, if necessary, pressurised clean, dry air. The cell remains in the cell holder for cleaning
6. Pipette sample onto the centre of the measuring window, fit cap for the measurement, start measurement on the spectrophotometer.

Easy Cleaning with Lint-free Tissue or Swab



TrayCell – Measuring Range (Concentration)

$$\text{Concentration [ng/}\mu\text{L]} = \text{Absorption (260 nm)} \times \text{Factor}$$

Sample Specific Factor x Virtual Dilution Factor 

Example: dsDNA measured with light path 0.2mm use factor 50x50=2500

	Factor	SD 1 mm Factor 10*	SD 0.2 mm Factor 50*	Total Range [ng/μL]
dsDNA	50	25 – 850	125 – 4250	25 – 4250
ssDNA**	37	18 – 630	90 – 3150	18 – 3150
ssRNA	40	20 – 680	100 – 3400	20 – 3400
Oligo	30	15 – 510	75 – 2250	15 – 2250

*(Virtual Dilution-)Factor due to dilution by shorter light path

** average value – may vary from 33 to 40 depending on assay

TRAYCELL APPLICATION



The advertisement features a central image of the Eppendorf BioPhotometer plus, a light blue laboratory instrument with a digital display and a keypad. To the left of the main image are three circular callouts: the top one shows a tray of microplates; the middle one shows a pipette tip; the bottom one displays a circular graphic with the text 'DNA', '209.7', '0.10+0.90µL', and '80260/280' and '9260/230'. Below the main image is a blue circular badge with the text 'NEW! more wavelengths more methods'. The background is a purple and white gradient with a circular pattern.

It's as simple as that!

The easy, rapid and reliable BioPhotometer plus analysis system

eppendorf

Excerpt: Eppendorf BioPhotometer(TM) Brochure

TrayCell Fibre-optic ultra-micro cell

Catalogue number	105.800-UVS	105.810-UVS
Item number	105800-A3-V1-46	105810-A3-V1-46
Window material	Quartz SUPRASIL®	Quartz SUPRASIL®
Width/depth	12.5 x 12.5 mm	12.5 x 12.5 mm
Height*	68.5 mm (centre height 8.5 mm) 75 mm (centre height 15 mm) 80 mm (centre height 20 mm)	53 mm (centre height 8.5 mm) 59.5 mm (centre height 15 mm) 64.5 mm (centre height 20 mm)
Volume	0.7 - 5 µl	0.7 - 5 µl
Light path	0.2 mm or 1 mm (+/- 0.02 mm)	0.2 mm or 1 mm (+/- 0.02 mm)
Max. temperature	50°C	50°C
Centre height**	8.5 mm, 15 mm or 20 mm* (other centre heights available on request)	8.5 mm, 15 mm or 20 mm* (other centre heights available on request)
Fibre optic cable	built in, not exchangeable UV/Vis low solarisation 190 nm – 1,100 nm (52,632 cm ⁻¹ – 9,100 cm ⁻¹)	built in, not exchangeable UV/Vis low solarisation 190 nm – 1,100 nm (52,632 cm ⁻¹ – 9,100 cm ⁻¹)



Full-scale figure.

TrayCell – Unique. Precise. Flexible.

Feature	Small measuring volume	Caps for 1 mm and 0.2 mm optical light path	No evaporation due to the use of caps	Easy filling and cleaning	TrayCell remains in the Photometer
Benefit	No dilution for most samples	Saves sample; Large dynamic range	High reproducibility	Saves time; No crossover contamination	Easy handling; good reproducibility

More Benefits:

- ...no need to buy a new photometer
- ...no need to learn operation of new software
- ...no need to set up new measurement procedures
- ...no need to validate new software