GC-UV · LABIO · SINCE 1990

INSCAN LAB

Benchtop GC-UV for method development and academic research

DETECTION ENVELOPE

<155 nm → 330 nm

Vacuum-UV through near-UV — continuous full-spectrum acquisition

UV ENVELOPE	FOOTPRINT	SDK	DATA RATE
<155 – 330 nm	**Benchtop**	**Open Python**	**50 Hz**

Abstract

INSCAN LAB is the compact benchtop reference design for academic groups and contract laboratories developing new GC-UV methods. An open Python SDK and interchangeable flow cell make it the platform of choice for spectral-library generation and isomer-resolution research.

Why GC-UV

GC-UV couples capillary gas chromatography to vapor-phase electronic absorption spectroscopy. Analytes eluting from the column traverse a heated optical flow cell where a continuous deuterium source illuminates them across the deep-UV. Each species contributes a structure-specific absorbance band ($\pi \rightarrow \pi^*$, $n \rightarrow \pi^*$, Rydberg) that, free of solvent perturbation, yields reproducible vapor-phase spectra suitable for library matching [1,2].

- Vapor-phase electronic spectra: no solvent shift, no chromophore quenching
- Discriminates structural and positional isomers GC-MS cannot resolve (e.g. xylene o/m/p) [2]
- Simultaneous multi-wavelength Beer–Lambert quantification in a single run
- No vacuum, no turbomolecular pump — robust for routine and field deployment
- Continuous full-spectrum acquisition (deuterium source, 1024-pixel array)
- Orthogonal and complementary to GC-MS for unambiguous compound confirmation

Specifications

Detector	Modular deep-UV absorbance
UV range	<155 – 330 nm
Flow cell	Interchangeable, 200 °C, user-specifiable path length
Source	Deuterium lamp, ~2 000 h rated, tool-free swap
GC compatibility	All major lab GCs (Agilent, Shimadzu, Thermo, Bruker)
Data rate	up to 50 Hz
Dimensions (W×D×H)	380 × 420 × 240 mm
Power	100–240 V AC, 200 W
Operating environment	15–30 °C, standard lab
Software	Python SDK, Jupyter notebooks, INSCAN Suite, CSV/JSON export

Representative applications

Method development

Prototype new GC-UV separations and spectral libraries.

Academic teaching

Hands-on isomer chemistry for graduate analytical courses.

Contract analysis

Add isomer-level identification to existing GC services.

Reference data

Build proprietary vapor-phase UV libraries to extend ref. [2].

References

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LABIO a.s. · since 1990
Náměstí 14. října 1307/2, Praha 5, Smíchov 150 00, Czech Republic
info@labioscientific.com · www.gcuvanalysis.com