944 Professional UV/VIS Detector Vario
943 Professional Reactor Vario
943 Professional Thermostat Vario

UV/VIS detection – an alternative detection method in ion chromatography

Metrohm

UV/VIS Detektion – catch the color

02

The 944 Professional UV/VIS Detector Vario enables reliable and accurate quantification of substances that absorb light in the ultraviolet or visible range. The instrument is operated by the user-friendly MagIC Net software and allows a wide variety of analytes to be determined by direct or indirect detection.

Broad area of use

The flow path of Metrohm's IC instruments is completely metal-free, as the measuring cell is made of PEEK. Thus, not only the standard anions and cations, but also transition metal ions and various organic substances can be detected without any problem. Even in complex matrices, e.g. biological samples, good detection limits can be achieved on the basis of the specific absorption properties of many analytes.

With additional precolumn or postcolumn reaction (PCR) many additional substances can be transformed into UV-active or VIS-active molecules, which makes these substances also detectable with the 944 Professional UV/VIS Detector Vario. Thus, the range of possible applications is extended even further.

943 Professional Reactor Vario for derivatizations

For derivatizations of all kinds, the 943 Professional Reactor Vario is the ideal complement to your analytical system. Its robust design and reaction temperatures of up to 150 °C open up a diversity of possible uses for the 943 Professional Reactor Vario.

The 944 Professional UV/VIS Detector Vario is an alternative to the well-established conductivity detector and extends the family of intelligent detectors from Metrohm. All Metrohm detectors can be swapped round or combined with each other in a flexible way.

944 Professional UV/VIS Detector Vario extends the range of use of the intelligent IC series. The 944 Professional UV/VIS Detector Vario can be combined with the 940 Professional IC Vario and the 930 Compact IC Flex.

Highlights

- UV/VIS detector equipped with diode array
- Up to 8 variable wavelengths
- Variable band widths and integration times
- Spectrum recording possible at any time
- User-friendly operation thanks to MagIC Net
- Many options for data evaluation and representation
- Universal use, many combination possibilities
- Robust, heatable reactor for precolumn and postcolumn derivatizations
- iReactor (intelligent derivatization reactor)
- High precision and measuring accuracy
- Low detection limits even in complex matrices

Very flexible and easy to use

The diode array detector opens up the possibility to detect a variety of substances across the entire UV/VIS range. Maximum performance in method development is enabled by flexible settings for data recording. For substances with different absorption maxima there are 8 measuring channels and 1 reference channel available. Furthermore, data of the first 4 measuring channels can be read out via an analog output.

The possibility of connecting a leak sensor makes unattended measuring easier. The combination of the preadjusted lamps (UV – deuterium, VIS – halogen) fitted from above and the user-friendly software provide for unsurpassed ease of use.

The extensive range of possibilities for data evaluation allow the user to obtain, for example, up to 10 absorption maxima of a spectrum automatically. That makes it easier to choose the optimum wavelength for a particular application.

Complete system for UV/VIS analysis. The minimum setup consists of a 944 Professional UV/VIS Detector Vario, a 943 Professional Thermostat Vario as column compartment and a 942 Extension Module Vario ONE/Deg.

Applications

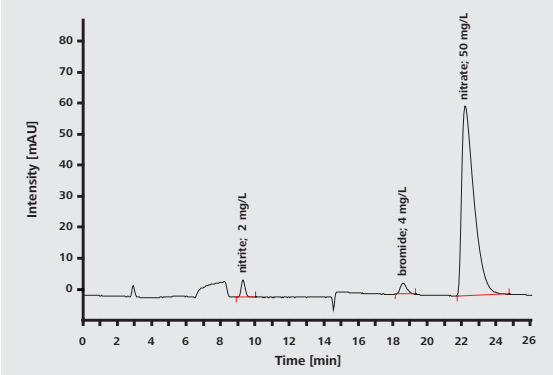
Direct extinction
• Nitrogen compounds NO_2^-, NO_3^-, ...
• Sulfur compounds: S^{2-}, $S_2O_3^{2-}$, SO_3^{2-}, ...
• Halogen compounds: IO_3^-, Br^-, I^-, ...
• Organic substances:
- organic acids
- vitamins
- sweeteners
- caffeine, melamine
• Other ions: CrO_4^{2-}, SCN^-, ...

Postcolumn derivatization
• Transition metals
• Chromate
• Bromate
• Silicate
• Cyanide
• Ammonium
• Aluminum
• Amino acids
• ...

Precolumn derivatization
• Complexing agents: EDTA, NTA, PBTC, THPC, ...

Nitrite and nitrate in sea water

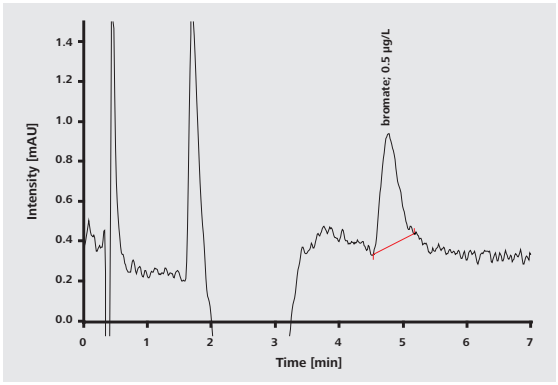
If the conductivity signal of the analyte (e.g. nitrite) is hidden by the high conductivity of other matrix components (e.g. chloride), detection by way of the specific extinction of the analyte is often a good alternative.



Nitrite (2 mg/L), bromide (4 mg/L) and nitrate (50 mg/L) in artificial sea water (28 g/L NaCl), column: Metrosep A Supp 10 - 250/4.0, eluent: 5.0 mmol/L Na_2CO_3, 5.0 mmol/L $NaHCO_3$, flow 0.7 mL/min, 50 °C, sequential suppression, sample volume 5 µL, wavelength 218 nm.

Bromate in drinking water

Bromate in drinking water and mineral water can be determined in accordance with the standards and with detection limits in the ng/L range using the triiodide method. Specific derivatization reduces matrix effects to a minimum.



Bromate (0.5 µg/L), column: Metrosep A Supp 16 - 100/4.0, eluent: 100 mmol/L H_2SO_4, 19.3 µmol/L ammonium heptamolybdate, flow 0.8 mL/min, 45 °C, postcolumn reagents: 0.27 mol/L KI, flow 0.2 mL/min, sample volume 1 mL, wavelength 352 nm.

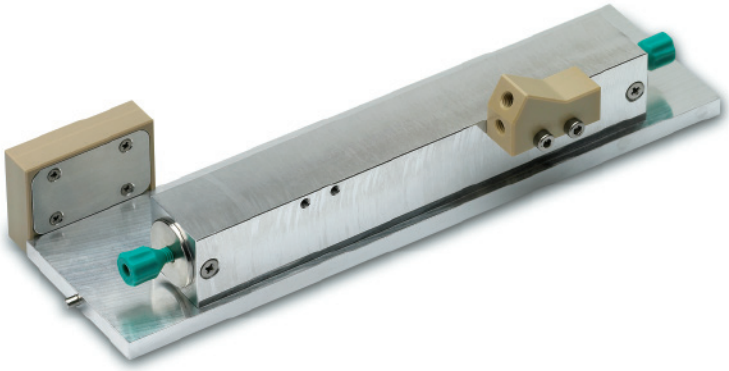
943 Professional Reactor Vario and 943 Professional Thermostat Vario – the ideal supplement to the 944 Professional UV/VIS Detector Vario

The 943 Professional Reactor Vario and the 943 Professional Thermostat Vario are highly flexible. The instrument has metal-free flow paths and can serve as host for other 942 Extension Modules Vario, such as modules with additional pumps or valves. The module can be used both as a heatable precolumn- and postcolumn-reactor and as a column thermostat. Hence, it is offered in two versions:

943 Professional Reactor Vario: Reactor for precolumn or postcolumn reactions

The 943 Professional Reactor Vario features a rapid heating rate and enables precolumn and postcolumn reactions at temperatures as high as 150 °C. Owing to direct heat transfer it is heated up faster and more precisely than conventional reactors or column ovens. Depending on the requirement of your application, postcolumn reagent and eluent can be brought to the right temperature beforehand or the residence time in the reactor can be flexibly adjusted.

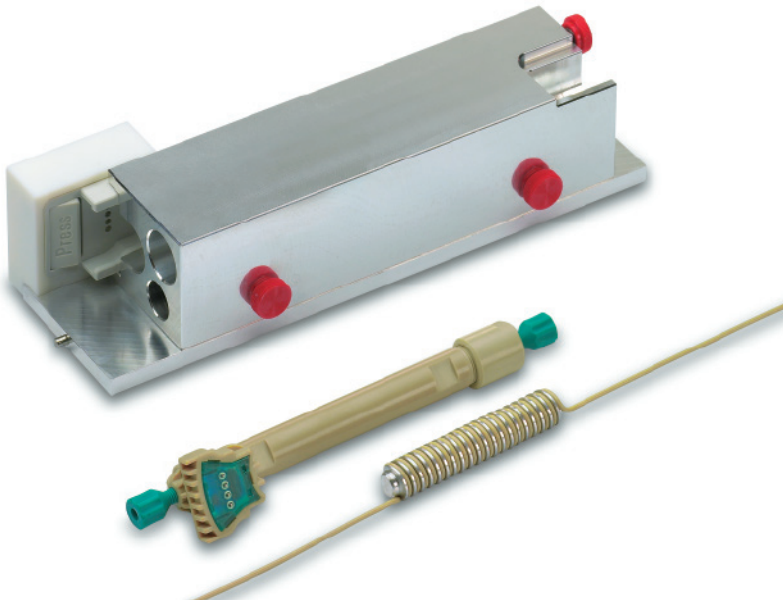
Traceability and monitoring are guaranteed in the iReactor by means of a data chip. This integral component of the intelligent IC concept minimizes operator errors and improves the reliability of analysis throughout the analytical system.



The design of the iReactor enables fast and direct heat transfer.

943 Professional Thermostat Vario: Thermostat for column heating

The heated column oven can be operated with temperatures as high as 80 °C. Temperature stability is ensured by a preheating capillary. Up to two columns can be fitted. Monitoring and traceability are also guaranteed in the 943 Professional Thermostat Vario, as a component of intelligent IC.



In the column thermostat it is possible to monitor, for example, an iColumn with its precolumn by the column chip. Temperature fluctuations are ruled out by the integral preheating capillary.

Technical information

944 Professional UV/VIS Detector Vario		
Wavelength	190–900 nm	(Increment 1)
Band width	± 1–50 nm	(Increment 1)
Integration duration	10–247 ms	
Measuring duration	50–2'000 ms	
Measuring principle	Diode array with 512 diodes	

943 Professional Reactor Vario and 943 Professional Thermostat Vario	
Temperature stability	< 0.05 °C deviation
Reproducibility of temperature	< ± 0.2 °C
Temperature accuracy	< 1 °C
Heating time	< 10 min. from 20 °C to 40 °C
Column thermostat	Ambient temperature + 5 °C to 80 °C, adjustable in 0.1 °C steps
Reactor exchange unit intelligent	Ambient temperature + 5 °C to 120 °C, adjustable in 0.1 °C steps
Reactor exchange unit high temperature	Ambient temperature + 5 °C to 150 °C, adjustable in 0.1 °C steps
Without exchange unit	Ambient temperature + 5 °C to 150 °C, adjustable in 0.1 °C steps

Ordering information

2.944.0010 944 Professional UV/VIS Detector Vario
2.943.0110 943 Professional Reactor Vario
2.943.0210 943 Professional Thermostat Vario

Accessories for the 944 Professional UV/VIS Detector Vario

6.2804.050 Halogen lamp (VIS)
6.2804.060 Deuterium lamp (UV)

Accessories for the 943 Professional Reactor Vario

6.2744.330 Y-connector 3 × UNF 10/32
6.2845.100 Reactor plate complete to Professional Reactor
6.2845.200 Reactor complete for 6.2845.100
6.1015.100 Metrosep BP 1 Guard/2.0

Accessories for the 943 Professional Thermostat Vario

6.1836.020 Preheating capillary with core, 1.44 m
6.2845.600 Column holder complete for 943 Professional Thermostat Vario

Peripheral devices and other accessories

2.942.0040 942 Extension Module Vario HPG
2.942.1060 942 Extension Module Vario ONE/Deg
2.942.0020 942 Extension Module Vario Prep 2
6.2061.100 Bottle holder for Professional IC Vario instruments
6.2061.110 Tray with sensor for Professional IC Vario instruments
6.2061.120 System Connector

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Subject to change
Layout by Ecknauer+Schoch ASW, printed in Switzerland by Metrohm AG, CH-9100 Herisau
8.944.5000EN – 2013-12

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