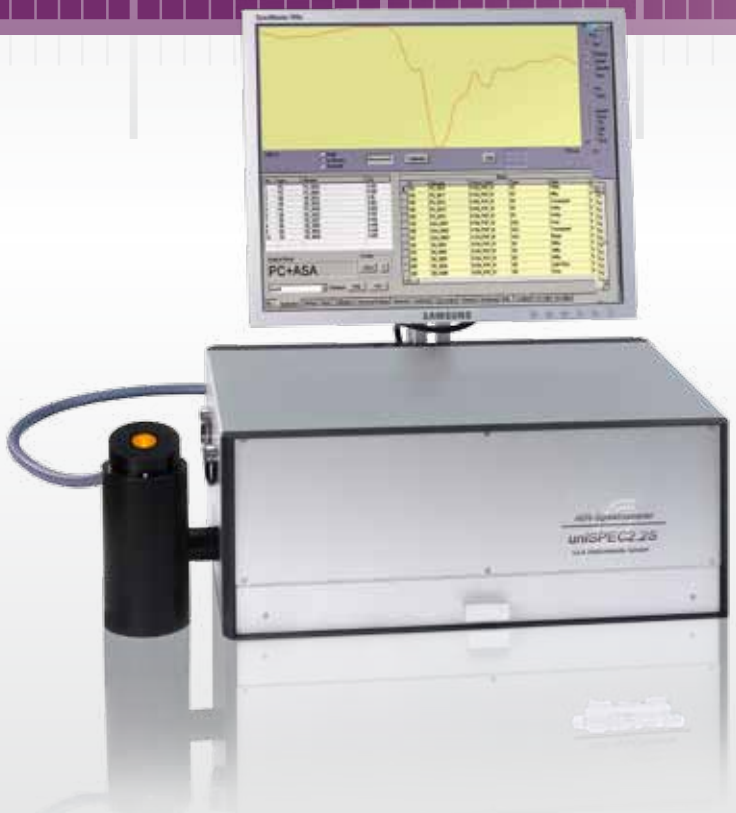
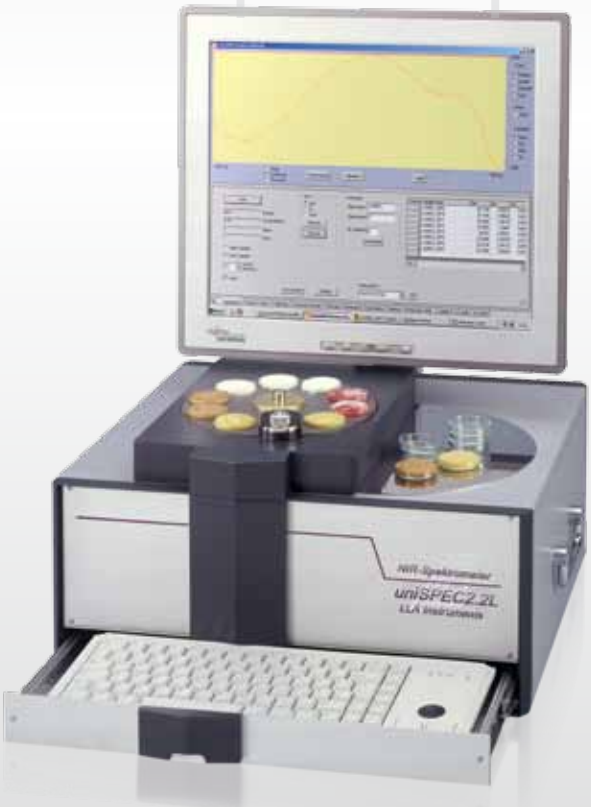
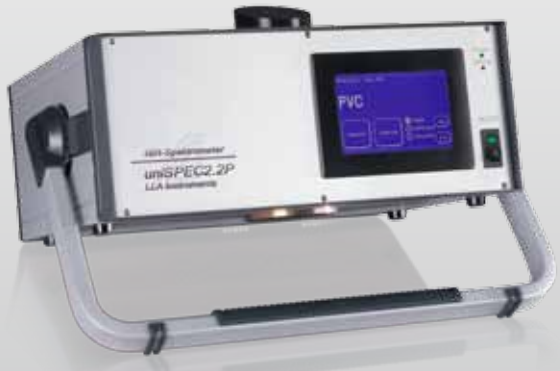
Analytical NIR Measurement devices

NIR SPECTROMETER uniSPEC







uniSPEC2.2S
uniSPEC2.2P
uniSPEC2.2L

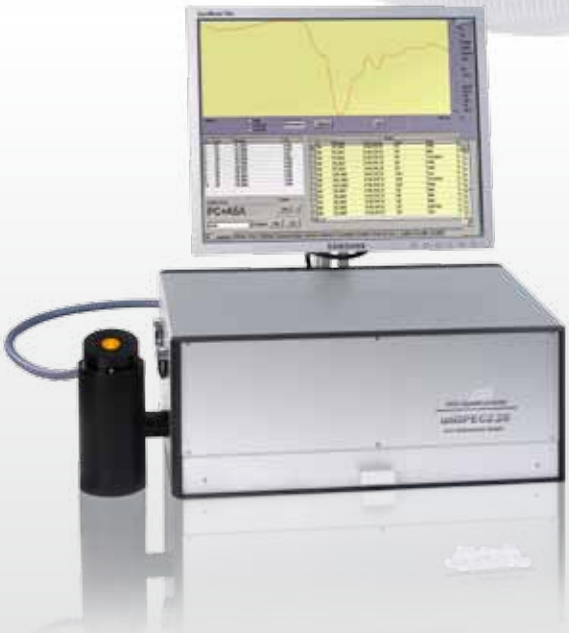
LLA Instruments GmbH

uniSPEC2.2S uniSPEC2.2P

Working principle

The application of analytical methods based on near infrared (NIR) spectroscopic measurement technique is gaining in industry and laboratory importance for different questions.
The NIR spectrometers uniSPEC are measurement instruments for the qualitative and quantitative evaluation of liquid and solid samples. Polymeric materials may be identified or analysed for their components, whether they are natural materials or are industrially manufactured semi-finished goods or final goods. The samples are measured without special sample preparation.
The uniSPEC device series includes four versions, adapted for application in laboratories, on-site as well as for the industrial manufacturing process.

Mobile spectrometer uniSPEC2.2S



The NIR spectrometer uniSPEC2.2S is a compact table top measuring device for off-line or at-line use in a laboratory or an industrial environment.
For the variety of applications different types of probes are provided. These probes are connected with a cable to the base device.

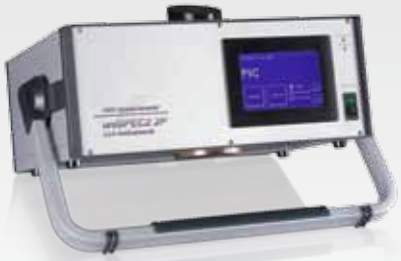
Areas of application:
- Laboratory device for quick laboratory analysis in quality control
- Industrial device for determination of quality parameters in a production process
- On-site analysis in goods receiving and shipping department

Areas of application

Independent of the application area the analysis methods can be applied for:
- Identification of material matrix (qualitative)
- Determination of ingredients (qualitative)
- Analysis of particular components (quantitative)

uniSPEC2.2L

Portable spectrometer uniSPEC2.2P



The NIR spectrometer uniSPEC2.2P is a compact, portable spectroscopic device developed for the industrial application at-site. The device is equipped with a 4,5“ touch screen. Via this screen the customised applications can be controlled. The connection between probe and base device is offered in two different versions:

Internal — The probe PSP is integrated in the base device. The measuring window is located in the cover plate of the device. Measuring is performed by placing the sample on the measuring window.

External — The probe PSP is connected to the base device by a flexible cable. In an industrial environment the probe can be directly set on the sample.

Laboratory spectrometer uniSPEC2.2L

The NIR spectrometer uniSPEC2.2L has been developed for applications in the laboratory. Special calibration routines have been developed, leading to high precision and reproducibility of the measurement results. The device has nine separate sample chambers, where load is measured and evaluated during a measurement cycle. The device is equipped with an internal PSP probe, allowing contactless, scanning measurement of the samples.

Area of application:
Laboratory analysis for quality control

Applications

Instrumental analytics for plastics
Identification of plastics, in particular standard plastics, technical plastics, electronic plastics, selected dark plastic fractions, biodegradable plastics, plastic foils

Determination of plastic additives
In particular flame retardants, fillers, pigments

Determination of industrial minerals

Application support
Development of user defined spectra libraries for flame retardants, fillers, pigments

Instrumental analytics for paper
Analytical determination of paper ingredients, in particular cellulose, lignin, moisture

Identification of inorganic additives
E.g. kaolin, calcium carbonate, titanium dioxide, talcum

Instrumental analytics of thin layers
In particular prints and layers; analysis of acrylate conversion for UV curing colours and coatings

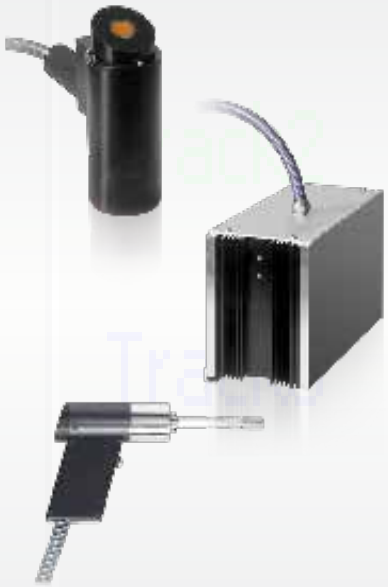
Determination of migration of UV curing colours in food packaging

Off-line NIR spectrometer

Functional principle uniSPEC2.2

The NIR spectrometers uniSPEC2.2 work on the basis of absorption spectroscopy in the near infrared wavelength band. A light source, integrated in the probe emits light that excites the sample. The sample absorbs from the irradiated light in defined wave length bands energy. Absorption bands appear in the spectra, that are characteristic for the material composition.
The remitted light from the sample, that includes as a consequence of the interaction these absorption bands, is directed to the entrance slit of the spectrograph. The resulting spectra is recorded by a line camera with an adjustable measurement time and transferred to the internal control PC for analysis and display.

Probes overview



Remissions probe PSP^W / PSP^D
Analytical evaluation of solid and pasty samples. Measurement by placing the sample directly on the measurement window or contactless from a distance of 15 mm
- Measurement area diameter about 2 mm
- Automatic calibration, internal light source

Remissions probe PPA
Probe for evaluation of solid and very inhomogeneous samples
- Measurement area about 50 x 10 mm
- Contactless measurement, measurement distance 25 mm
- Automatic internal calibration, internal light source

Transmission probe PL
Immersion probe with adjustable measurement section for analysis of liquids.
- Measurement beam diameter 10 mm
- Liquid column: adjustable 0 to 4 mm

	uniSPEC2.2S	uniSPEC2.2P	uniSPEC2.2L
Wave length band	1100 - 200 nm		
Dispersion per pixel	2 nm		
Base device	Spectrograph, control electronic, industrial PC		
Probe	PSP, connected by a 1,5 m fibre cable with the device	Device integrated	Device integrated
PC configuration	Operating system Windows XP, CPU 1,8 GHz, RAM 1 GByte, HDD min. 80 GByte Interfaces: VGA, COM, USB, Ethernet		
Software	Control software KustaWin, incl. applications- and analytical software, designed for the specific application Optional: spectrometric development tool KustaSpec		
Dimensions (W x H x D)	450 mm x 185 mm x 320 mm (without monitor)	350 mm x 135 mm x 260 mm	460 mm x 280 mm x 320 mm (without monitor)
Weight	22 kg	10 kg	22 kg

PP-MG-uniSPEC2.2S-P-L-1106

LLA Instruments GmbH
Justus-von-Liebig-Str. 9, 12489 Berlin
www.lla-instruments.com mail@lla.de
Tel.: 0049 (0)30 - 62 90 790-0
Fax.: 0049 (0)30-62 90 790-10