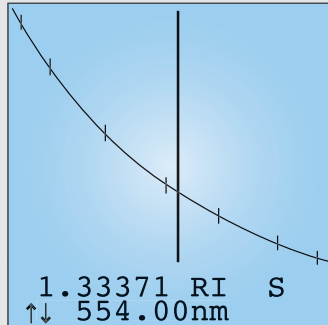


DSR- λ *

Digital multiple wavelength refractometer



Method 1
05.12.2004 11:26:24
25.11°C
401.5 nm 1.34253
435.8 nm 1.33971
486.1 nm 1.33664
546.1 nm 1.33398
589.3 nm 1.33250
656.3 nm 1.33067
706.5 nm 1.32955
Abbe: 56.77
25.01°C → 25.00°C
Start measurement



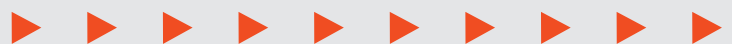
DSR- λ characteristics

- Automatic dispersion measurement at 7 wavelengths over the full visible range (intermediate values interpolated)
- Dispersion measurement of Carbohydrates according to ASTM, viscous materials, glasses and polymers
- Automatic Abbé-number measurement
- High resolution and accuracy
- Peltier-thermostatically controlled

DSR- λ applications

- Research and development
- Quality control
- Product purity
- Product fingerprinting
- Optical material characterisation

New



SCHMIDT + HAENSCH

Optisch-elektronische Messinstrumente seit 1864

Research and development



Exact knowledge of material properties is of great importance for successful research and development.

DSR- λ can be used for example in medical development (plastic lenses, proteins...) and in the optical communication technology (polymer materials, special optical liquids, glasses and glues). In the petrochemical industry DSR- λ can perform valuable services in scientific research and standard ASTM measurements.

Quality control



The measurement principle of DSR- λ relies on a complete refractive index measurement at visible wavelengths, which is also sensitive to absorption, leading to a full optical characterisation of the measured substance.

For example measuring a fruit juice will not only determine the sugar content but also provide valuable information on colour and turbidity.

Product characterisation and identification



The measuring principle of the DSR- λ is similar to a DNA analysis giving unique **fingerprint**-like data for a particular product. Using this fingerprinting characterisation; high quality products like wine, perfumes, alcoholic beverages etc. can be easily identified along with possible forgeries.

Working principle of DSR- λ

Refractometers are widely used in food, oil, fuel and other industries to measure the concentration of components in order to monitor and control the fabrication process.

They measure the critical angle of total reflection and calculate the refractive index from this value. The refractive index of a substance depends on the wavelength of light and usually increases towards shorter wavelengths. For a better characterisation of this behaviour, Abbè introduced the so-called Abbè-number which is an arithmetical dimensionless value calculated from measured refractive indices at 486, 589 and 656 nm.

Nowadays, this is not used frequently, since the development of high-resolution refractometers made it possible, to measure refractive index differences of 0.00001 RI easily. But information regarding refractive index behaviour at other wavelengths is then lost, which could have given a **fingerprint** about the material itself. The so-called **dispersion** shows clear differences for chemically different substances, which do appear more pronounced at short wavelengths than at the longer end of the visible spectrum. The use of discrete LEDs makes it possible to implement any combination of customer-specified wavelengths in the instrument and carry out quasi-spectral measurements in almost real time.

DSR- λ is designed for long lasting stability in measurement accuracy and wavelength achieved using LED light sources and proprietary optical design without moving parts.

Technical data

Refrac. index (RI) skale:	1.33200 – 1.70000 RI at 589 nm
Display resolution:	0.00001 RI and 0.01°C
Accuracy:	± 0.00005 RI at 20°C
Active temp. control:	Thermo. controlled solid state Peltier
Operating temp.:	+18°C to +30°C (other on request)
Temp. control stability:	± 0.01°C
Ambient temp.:	+10°C to +40°C
Light source:	LED, 7 discrete wavelengths: approx: 400, 436, 486, 546, 589, 656, 707 nm (other on request)
Detector:	High resolution CCD-linear array
Sample compartment:	Stainless steel, Black Delrin®, Teflon®, FFKM
Anzeige:	LCD, 16x16 characters, back illum.
Data output:	RS232 seriell and parallel, USB optional

Subject to modification without notice
Änderungen vorbehalten
02/06

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Opto-electronic measuring device since 1864



ISO 9001:2000

