NanoPhotometer® NP80

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BevZero EQUIPMENT

All-in-one UV-Vis Spectroscopy for Quality Control in the Wine and Spirits Industry

Confirm product consistency and identify deviations during various stages of production

- **Higher Precision:** No dilutions needed / No calibration / Only small amount of liquid used
- **Save Time and Money:** One time investment / No consumables / Maintenance free

NanoPhotometer® NP80

All-in-one UV-Vis Spectroscopy for Quality Control in the Wine and Spirits Industry

- No dilutions required
- Rapid and complete sample analysis in as little as 2.5 seconds
- NanoVolume (5µl) and cuvette functionality for sample analysis
- Scan range: 200 – 900 nm
- Zero cost of ownership: No recalibration or regular maintenance required—ever
- World's smallest footprint in its class: 20 x 20 x 12 cm
- Stand-alone operation with built-in 7-inch glove compatible touch screen
- Mobile use (battery powered)
- Endless Connectivity (WiFi, HotSpot, LAN)
- Built-in vortex to achieve sample uniformity

UV/Vis Spectrophotometry

The NanoPhotometer NP80 has a wavelength range of 200 to 900 nm, and is suited to perform standard UV/Vis photometric (quantitation of anthocyanins, phenols, flavonoids, Folin Ciocalteu etc.), colorimetric (color parameters such as color pigments, color density, intensity/hue) and enzymatic (Lactic Acid, Ethanol, Glucose, Fructose, Sucrose, etc.) analytical procedures common in wine, spirit, and juice analysis.

The available methods include wavelength (fixed wavelengths), wavescan, kinetics and standard curve applications and all methods can be customized by the user to be compatible with most ready-to-use commercial reagent kits or for method development. Patented Sample Compression Technology™ provides unmatched precision and accuracy. A capillary film is formed between two quartz surfaces with each sample, eliminating the need for surface tension and avoiding evaporation.

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ImplenQ Software

ImplenQ is a cutting-edge software package specifically designed for quality control (QC) laboratories in a wide range of industries. Its primary function is to ensure the consistency of products by leveraging UV/Vis spectrophotometry for verifying batch-to-batch quality and identifying deviations in samples through spectral fingerprinting. A sample is scanned over the entire wavelength range from 200 – 900 nm to capture its unique spectral signature within 2.5 seconds. ImplenQ is designed for NanoVolume measurements, requiring a small droplet of only 5µl, without the need for further dilution steps.

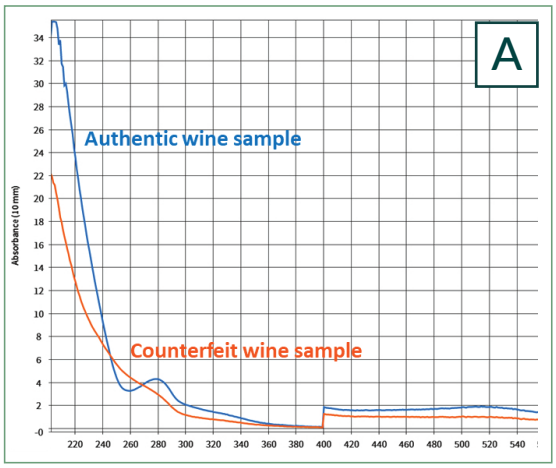
Recognition Algorithm

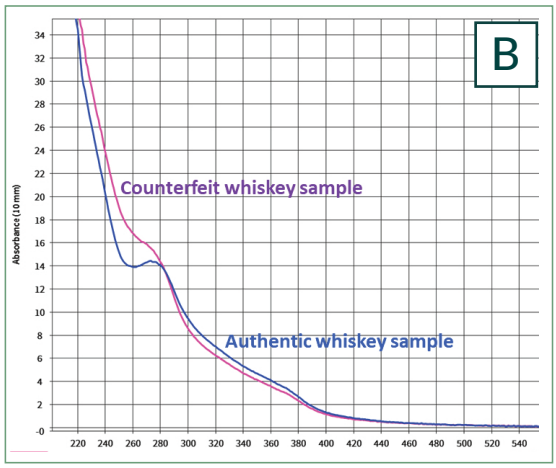
The ImplenQ software employs algorithms to compare the generated UV/Vis spectral fingerprints to the database of reference spectra. The algorithm is able to identify microscopic deviations in the spectral fingerprints, thereby providing the user invaluable insights into their product composition.

Data Management

ImplenQ stores and organizes reference spectra in a user-friendly database. Each reference spectrum serves as a digital fingerprint for a specific product sample. This database serves as a repository of trusted information for comparative analyses.

Example of Product Comparisons





Comparison of spectral fingerprint scans performed on both authentic and counterfeit wine (A) and whiskey (B) samples. Samples were scanned over the entire wavelength range of 200-900 nm and the spectral fingerprints were analyzed by the ImplenQ software algorithm to identify the counterfeit products.

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Technical Specifications

NanoVolume Performance	
Sample Volume	5 µl
Photometric Range (10 mm equivalent)	0.02 - 330 A
Path Length	0.67 & 0.07 mm
Dilution Factor	15 and 140
Vortex	2,800 rpm Tube size up to 2.0 ml

Optical Specifications	
Wavelength Scan Range	200 - 900 nm
Measure Time For Full Scan Range	2.5 - 4.0 sec
Wavelength Reproducibility	± 0.2 nm
Wavelength Accuracy	± 0.75 nm
Bandwidth	< 1.5 nm
Absorbance Reproducibility	(Cuvette): < 0.002 A @ 0 - 0.3 A @ 280 nm CV < 1% @ 0.3 - 2.0 A @ 280 nm (Lid 15): < 0.002 A @ 0 - 0.3 A @ 280 nm CV < 1% @ 0.3 - 1.7 A @ 280 nm
Absorbance Accuracy	< 1.75% @ 0.7 A @ 280 nm of the reading
Stray Light	< 0.5% @ 240 nm using NaI
Optical Arrangement	1x 4096 CMOS Array
Lamp | Lifetime	Xenon flash lamp 10^9 flashes, up to 10 years

Cuvette Performance	
Photometric Range	0 - 2.6 A
Center Height (Z-Height)	8.5 mm
Cell Types	Outside dimension 12.5 x 12.5 mm
Heating	37 °C ± 0.5 °C

Processing Power & Compatibility	
Operating System	Linux based NPOS
Onboard Processor	Intel Celeron dual core 2.4 GHz
Internal Data Storage	64 GB
In & Output Ports	2x USB A, USB B, HDMI, Ethernet, WiFi
Software Compatibility	Windows 8, 10 (32 & 64 bit) and 11 OS X (Intel x86 and Apple M1)

General Specifications	
Main Body Size	200 x 200 x 120 mm
Weight	3.8 - 5.2 kg depending on configuration
Operating Voltage	90 - 250 V ± 10%, 50/60 Hz, 90 W, 18/19 VDC
Display	1024 x 600 pixels; glove compatible touchscreen
Built-in Battery Pack: Optional rechargeable lithium ion battery	95 Wh, 6.6 Ah, 8 h Min. charging cycles: 800
Certification	CE, IEC 61010-1:2012 and EN 61326-1:2013
Battery Certification	IEC 62133 and UN38.3 transport test
Security	Slot for Kensington lock

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