

VideometerLab 2

Multispectral Imaging System for Laboratory Analysis

Imaging

VideometerLab 2 is a vision-based lab analyser designed for fast and accurate determination of surface colour, texture, shape, size and chemical composition.

The easy-to-use system integrates illumination, camera, and computer technology with advanced digital image analysis and statistics. VideometerLab 2 provides a rapid assessment of uniform and non-homogeneous samples by combining information on all of the above parameters automatically in just a few seconds, requiring no sample preparation and leaving the sample intact.

Using strobed LED technology VideometerLab 2 combines measurements at up to 20 different wavelengths into a single high-resolution multispectral image. Every pixel in the image is a spectrum and the system can include wavelengths outside the range detected by traditional RGB technology.

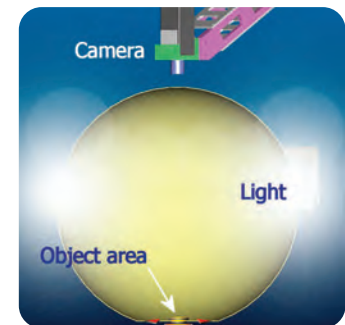
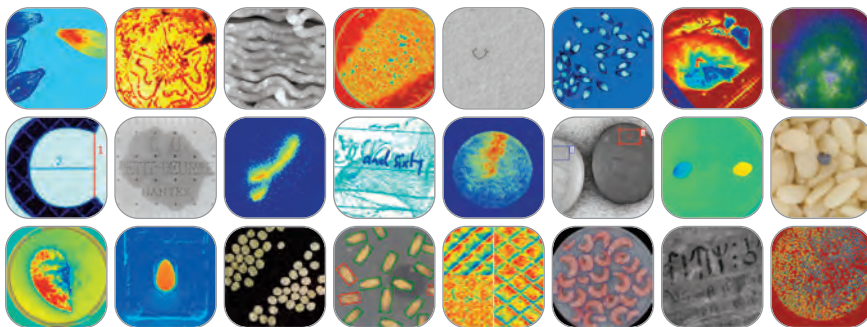
Key features:

- ♦ Integrating sphere provides homogeneous and diffuse illumination
- ♦ Multispectral analysis in less than 6 seconds
- ♦ Up to 20 spectral bands in the range 230 nm to 1050 nm
- ♦ Near-infrared, ultraviolet and fluorescence options available
- ♦ Improved signal-to-noise ratio by individual and automated adjustments of the light intensity in each wavelength band
- ♦ Improved colour determination compared to traditional RGB technology
- ♦ Increased stability due to strobed LED source technology



VideometerLab 2:

Based on a patented high-intensity integrating sphere illumination featuring light emitting diodes (230 – 1050 nm) and a black and white high resolution CCD camera (2056x2056 pixels).



Why use VideometerLab 2?

Currently, the non-destructive investigation of materials with non-uniform colour and texture can be difficult, tedious and expensive. Conventional techniques such as NIR spectroscopy only measure a single point or average over a fixed area and do not give an objective overall assessment of visual quality.

Studies have shown that VideometerLab 2 is as accurate as a test panel with significantly higher repeatability, removing subjective judgement. Specific areas of special interest such as shape, size or texture can be studied automatically.

The choice of illumination wavelength ensures each application can be optimised and using LEDs in the UV or NIR adds information not visible to the human eye. As an example, most objects are white or transparent in the NIR region, which allows for the separation of the colour and surface properties of the object.

Schematic of integrating sphere:

Internal reflection of the LEDs by the diffuse white inner surface of the sphere ensures diffuse homogeneous light for increased reproducibility, dynamic range, low scatter and shadow effects.

Manufactured by:

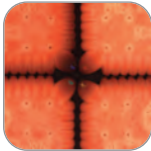


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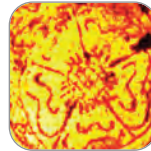
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Shown below is a limited selection of VideometerLab 2 applications, details of a great many more are available:



Food and Feed

Product conformity, quality grading, contamination, shelf life/spoilage and formulation studies of bread, biscuits, snack foods, cheese, meat, seafood, sugar, fruit and vegetables.



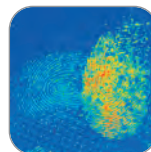
Heritage

Ideal for non-destructive, unobtrusive studies of historical artefacts such as manuscripts and metal objects (left) to highlight previously unseen detail. In-situ pigment analysis of paintings.



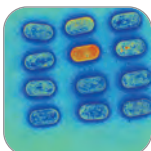
Grains and Seeds

Fusarium detection, hydration and germination studies for brewing and malting. Counterfeit and adulteration testing. Variety checks and auto seed sorting (left) by size, shape, colour and translucency.



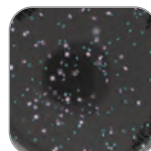
Forensics

Fingerprint analysis on difficult backgrounds and irregular surfaces (left), questioned document examination, substance matching and trace powder identification.



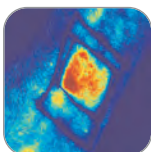
Pharmaceuticals

Screening for contaminated materials and out of specification product including shape, colour, impurities, chipping and cracks. Counterfeits detected by drug and packaging analysis.



Biological Sciences

Microbiological culture monitoring and automation. Separation of colonies into species and phenotype, distinguishing live colonies from foreign matter. Auto identification of pathogens.



Dermatology and Cosmetics

Assists dermatological diagnosis and assessment. Separation of skin and hair, psoriasis scoring, freckle detection and skin sensitisation analysis (left). Wear analysis of lipstick, foundation and sunscreen.



Surfaces and Materials

Texture and colour of paper, coatings, metal and ceramics. Extensive textiles analysis including texture, colour, weave, fuzz and pill, dose response and enzymatic treatment efficiency.

Technical Specifications

Light sources	18 high power LEDs emitting wavelengths from 405 to 970 nm and two extra channels for illumination options or additional wavelengths. Customisation from 1 to 20 selected wavelengths in the range from 370 to 1050 nm
Camera	1600 × 1200 pixels camera. Customisation using 2056 × 2056 pixels camera or higher
Optics	Special full-spectrum lens. Customisation according to the required spatial resolution using other C-mount lenses
Dynamic range	Optimised according to the application and wavelength used
Sample size	Height max. 90 mm, diameter of inspection opening 110 mm
Time of analysis	6 seconds including movement, capture of 20 wavelengths and data processing. Customisation with multiple accumulations of images or long time exposure. This may increase the signal-to-noise ratio at the cost of acquisition time
Dimensions	571 mm (h) × 423 mm (w) × 610 mm (d)
Weight	18 kg
Ambient temperature	Operation: 5 – 40 °C, Storage: -5 – 50 °C
Hardware options	<ul style="list-style-type: none">♦ High resolution camera♦ Extra or customised LEDs (wavelengths)♦ Darkfield / brightfield backlight illumination♦ Barcode reader
Software options	<ul style="list-style-type: none">♦ Multispectral imaging toolbox♦ Image processing toolbox♦ Multispectral imaging toolbox for MATLAB®♦ Application modules