

Rapid, high-throughput QC of solid samples with NIR hyperspectral imaging

Insert Analyze Check



- **Near-infrared** chemical imaging (NIR-CI)
- **Quick, non-destructive** laboratory analyses
- Measurements from **beneath the samples**
- Combination of **digital imaging and optical spectroscopy**
- **Spectral and spatial** information
- **Four possible configurations** to fit your needs

Quality inspection solution



Near-infrared chemical imaging (NIR-CI) is a versatile analytical technology. By combining digital imaging with optical spectroscopy, NIR-CI systems collect spectral data for each pixel of the image.

By moving the hyperspectral camera beneath the samples, both spatial and spectral information can be analyzed to identify chemical components and to assess their distribution within the samples.

HypeReal, a unique inspection system developed by **INDATECH**, is the ideal tool for quick, non-destructive laboratory analyses of solid dosage forms in order to:

- Identify the active pharmaceutical ingredients and check their spatial distribution
- Characterize powder blends
- Assess the residual moisture content of lyophilized products
- Detect physical aspects of the lyocakes, such as cracks or meltback
- Examine the homogeneity of the samples
- Guarantee the absence of contamination

Non-destructive, non-contact measurements

Unlike traditional chemical analyses, the HypeReal can be used to indirectly assess critical quality attributes, without destroying or modifying the sample and without using toxic reagents. The measurement can be done directly through the glass vial or quartz sample plate.

Rugged, repeatable measurement configuration

The unique measurement configuration, enables inspecting the samples from underneath, using dedicated sample trays. The constant, repeatable path length provided by this innovative measurement configuration eliminates any potential problems with the surface flatness of the samples. In addition, this highly robust design means there is no need for optical adjustments, so non-specialist lab personnel can perform precise analyses.

Easy-to-use, data-rich technology

The Breeze® software guarantees an intuitive, easy-to-use interface for data acquisition, model creation, workflow application and report generation. By substantially reducing the time required for analysis, while preserving the samples and increasing understanding of the process through its combination of spectral and spatial data, HypeReal ensures a significant return on investment for the laboratory.





Example of an industrial application: high-throughput inspection of lyophilized formulations

HypeReal is the solution for laboratory analysis of lyophilized products.

This spectroscopic equipment can be used to:

- Assess the residual moisture content of lyophilized products
- Identify the active pharmaceutical ingredients and assess their quantity and distribution
- Detect any physical defects in the lyocakes, such as cracks or meltback
- Check the homogeneity of the lyophilized product

4 configurations

- HPR-17-300: NIR-CI solution with spectral range 900-1700 nm in its standard version allowing to inspect sample trays with a width of 19 cm, characterized by a spatial resolution of about 300 μm per pixel.
- HPR-17-070: NIR-CI solution with spectral range 900-1700 nm in its version with improved resolution, for applications requiring the detection of smaller particles, characterized by an effective pixel size of 70 μm , reducing the sampling area to a width of 4.5 cm.
- HPR-19-300: NIR-CI solution with spectral range 1150-1900 nm in its standard version allowing to inspect sample trays with a width of 19 cm, characterized by a spatial resolution of about 300 μm per pixel
- HPR-19-070: NIR-CI solution with spectral range 1150-1900 nm in its version with improved resolution, for applications requiring the detection of smaller particles, characterized by an effective pixel size of 70 μm , reducing the sampling area to a width of 4.5 cm.



3 possible applications

- Physico-chemical characterization of powder blends
- Cut your lead times with NIR-CI analysis of lyophilized products
- Evaluation of the enzymatic reactivity of biomass



4 markets involved

Agri-food



Pharma



Chemicals



Biotech





Technical specifications

Technology	Benchtop near-infrared imaging system with built-in hyperspectral camera moving beneath the sample, backed by an external PC delivered with the system.
Detector	InGaAs with TEC cooling
Spacial range (bands)	900 – 1700 nm (224) or 1150 – 1900 nm (224)
Spectral resolution (FWHM*)	8 nm (average)
Spectral sampling / pixel	3.5 nm
Spatial resolution	640 pixels HPR-17-300 & HPR-19-300: 300 µm per pixel HPR-17-070 & HPR-19-070: 70 µm per pixel
Samples	Solid samples with maximum dimensions of 30 x 19 x 8 cm are measured from underneath by means of customized trays
Measurement time	Less than one minute to analyze a tray (e.g. 120 x 3 mL vials)
Analyses	Real-time prediction via the user-friendly Breeze® interface or analysis using different software chosen by the user (e.g. MATLAB, Python...)
Temperature	5 - 50 °C (without condensation)
Relative humidity	5 - 95 % (without condensation)
Dimensions	H47.39 cm x W81.98 cm x D46.44 cm (without external PC dimensions)

* Full-Width Half-Maximum

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