Moisture measurement solutions

For on-line quality and control applications

ALPhA NOV

Optics & Lasers Technology Center

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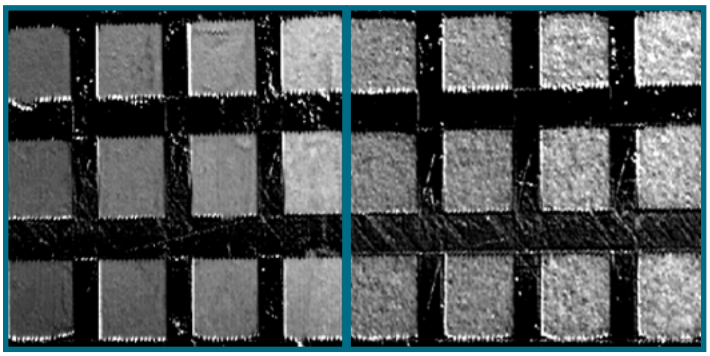
For on-line quality and control applications

Innovative technological building blocks have been integrated in optoelectronical systems and assessed for typical on-line moisture measurement applications.



Processed cartographies obtained with the scanner on ground coffee (left) and on sawdust (right) (decreasing moisture content from left to right). Dimension of each small box is 40 x 40 mm².

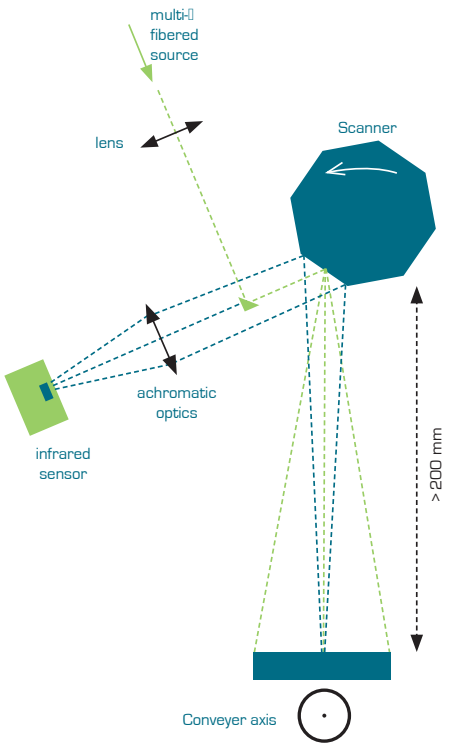
[coming publication]

Two sensors for multispectral sensing have been designed for process control applications: one is based on imaging technology with SWIR laser illumination, the other is based on scanner coupled with specific multi-SLEDs fibered source.

Features:

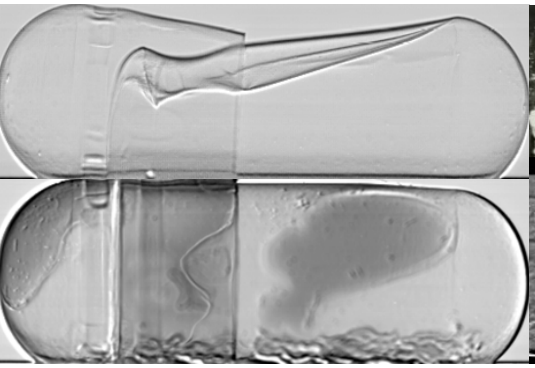
- Embeds smart and flexible multispectral fibered SWIR sources
- Operation wavelengths to be chosen in the range 1000-1600 nm
- Multispectral imaging mode for transparent materials or parts inspection
- 2D mapping mode for diffuse materials quality control on conveyer belts
- Adjustable working distance (from 200 mm)
- Adaptable for various process control and sorting applications in the visible, NIR or SWIR spectral ranges

Scanner principle

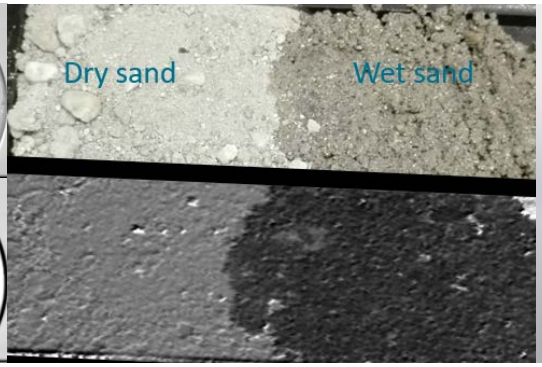


Principle of SWIR multispectral scanner for web surfaces inspection and composition monitoring.

Technical Specifications



Exemple of SWIR images of transparent pharmaceutical caps. High-moisture area in dark grey.



2D moisture mapping with SWIR multispectral scanner. High moisture level in dark grey.

SWIR multispectral fibered source for process control, inspection and sorting applications.

Multispectral imaging device

	Min	Max
Spectral range	1000 nm	1600 nm
Working distance	200 mm	Application dependent
FOV	-	
Spatial resolution	200 µm	1000 µm
Moisture content range*	10 %	40 %
Absolute moisture level accuracy*	+/- 1 %	+/- 2 %
Typical dimensions	300 x 300 x 100 mm	

Multispectral scanner

	Min	Max
Spectral range	1000 nm	1600 nm
Working distance	200 mm	Depends on source power
FOV	+/- 35°	
Spatial resolution	Millimetric range	
Moisture content range*	10 %	40 %
Moisture level accuracy*		<10 % rel.
Typical dimensions	450 x 300 x 150 mm	

* Typical values for moisture measurement application using moderate absorption bands, these values are usually very specific to each application.

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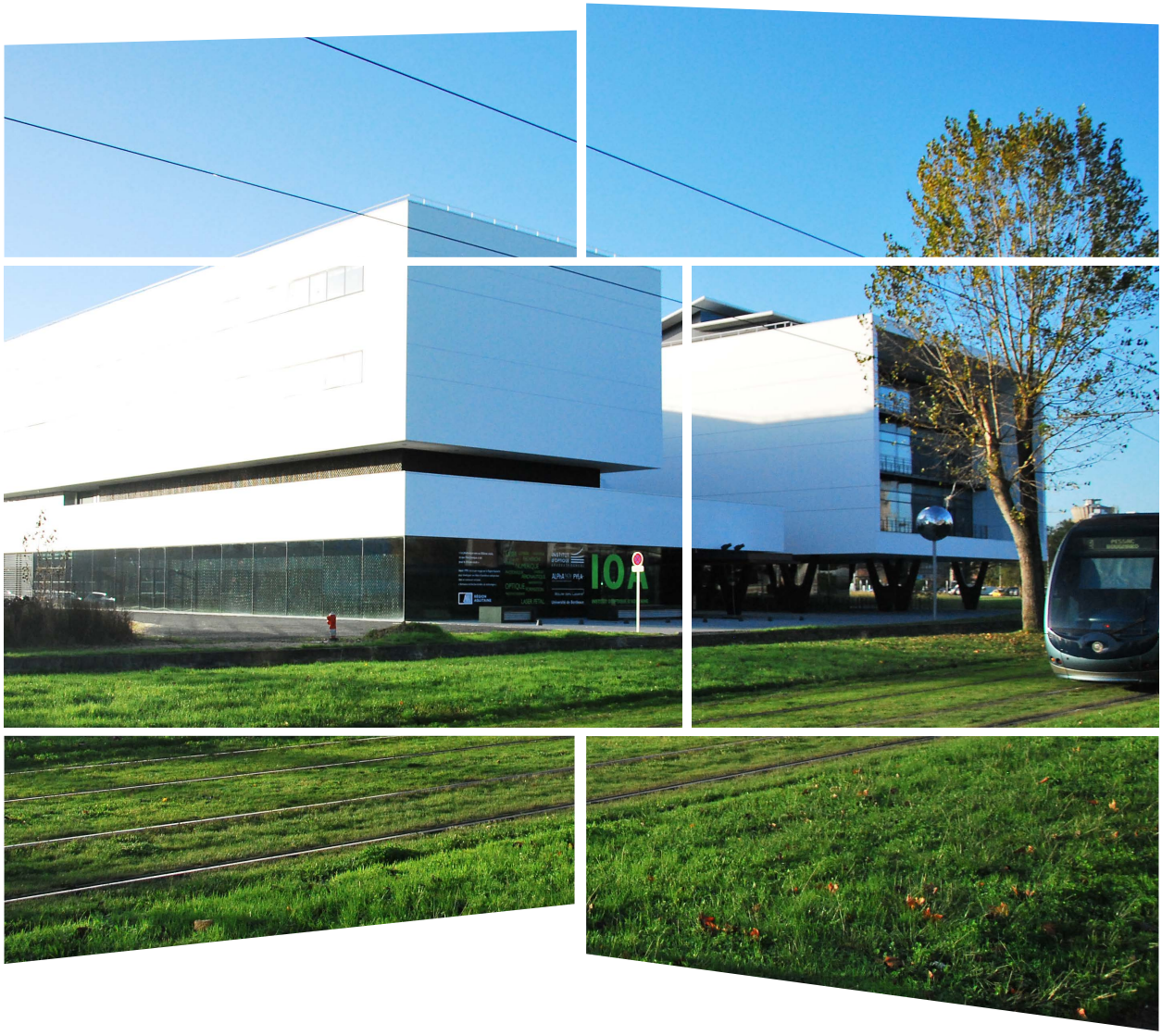

Institut d'optique d'Aquitaine
Rue François Mitterrand
33400 Talence - France

Ph. +33 (0)5 24 54 52 00

www.alphanov.com

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