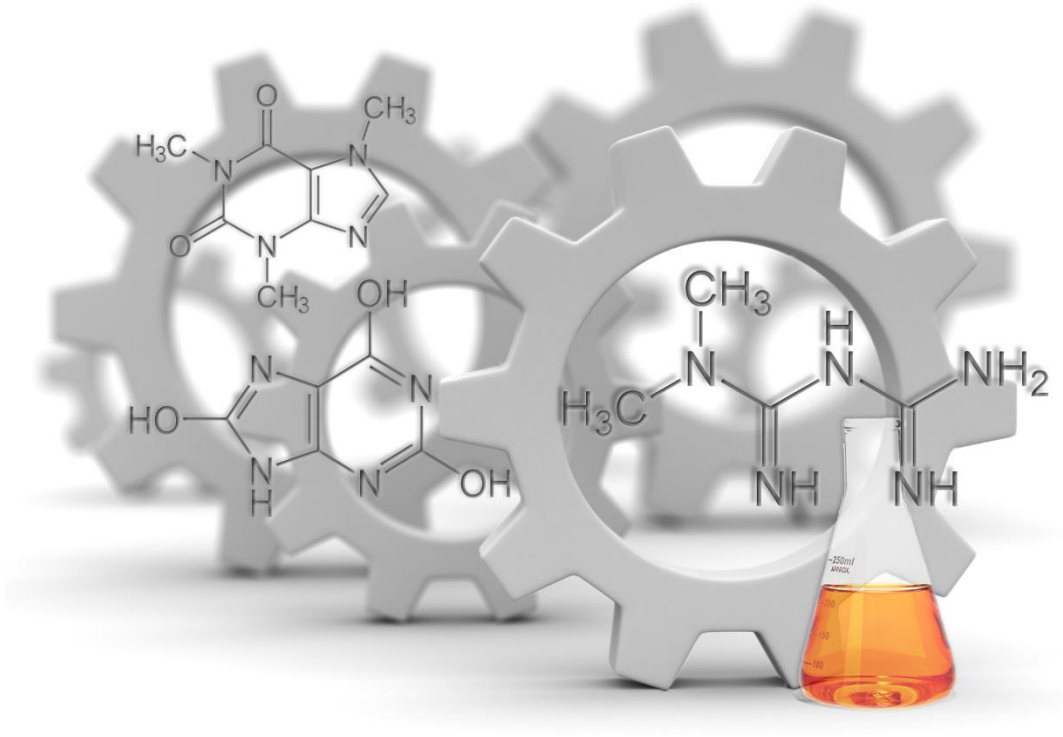
Product presentation



Knowledge through Experience

Optical measuring systems for process analytics

- **2005** founded in Nuremberg
- **40** employees currently
- **Company network**

  with ASSEMBLIFY GmbH

Core Competencies

In the field of process analytics

- **Systems and components**
  - Hyperspectral-Imaging pushbroom polychromators and cameras
  - Single-Point Raman spectrometer

- **Support along the entire process**
  - Integration
  - Commissioning
  - Application support
  - Training
  - Service
  - Development-partner

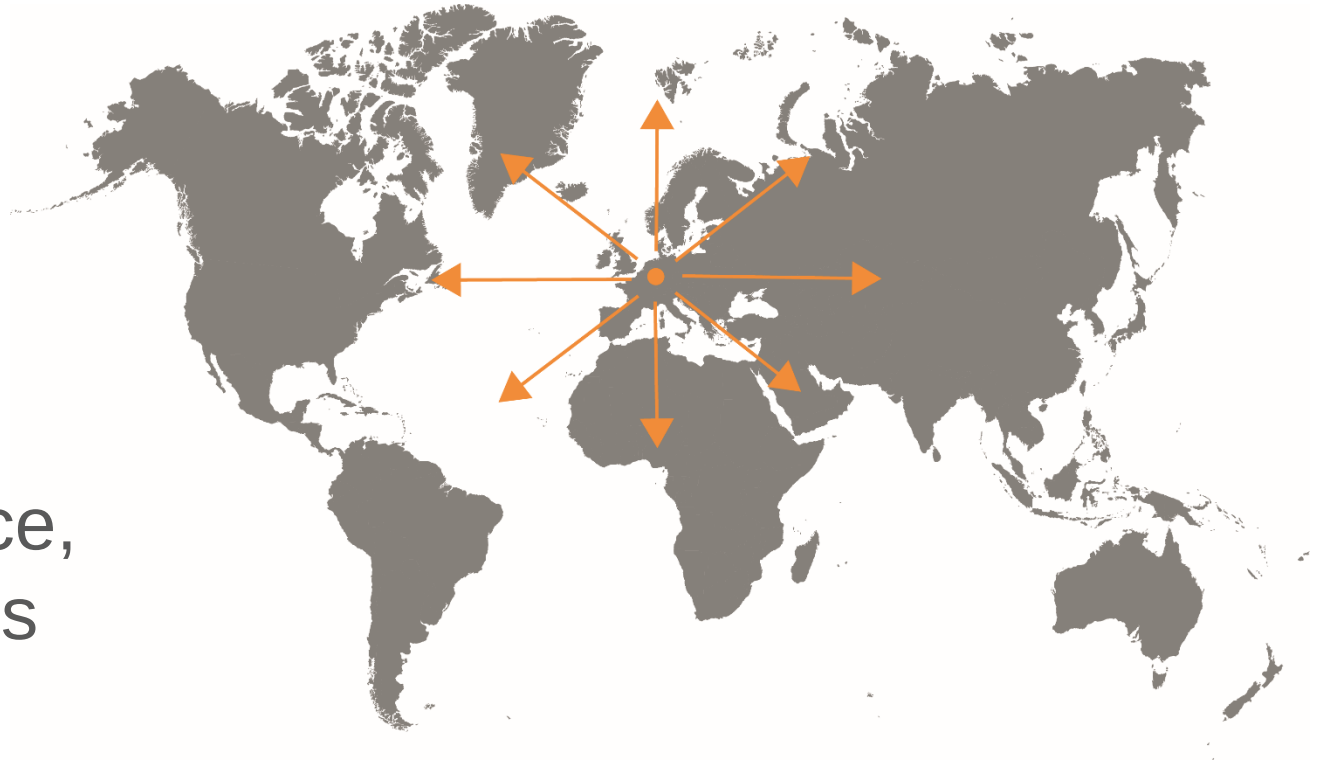
Worldwide close to the Customer

2008 China

2009 USA, Canada

2015 South East Asia, India, Taiwan, Korea

2016 Scandinavia, UK, France, Italy, Spain, Netherlands



Hyperspectral Imaging

Definition

- Spatially resolved spectroscopy to create 2d-profiles of the spectral characteristics

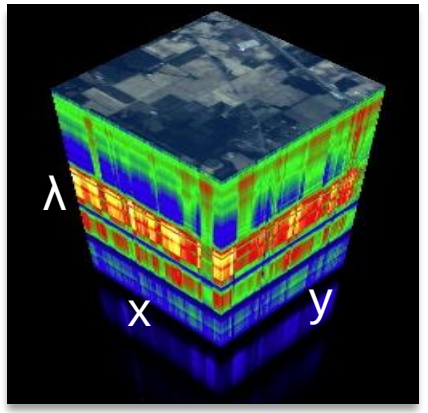
  → **Chemical Imaging**

- Three-dimensional data set with

  two spatial dimensions and

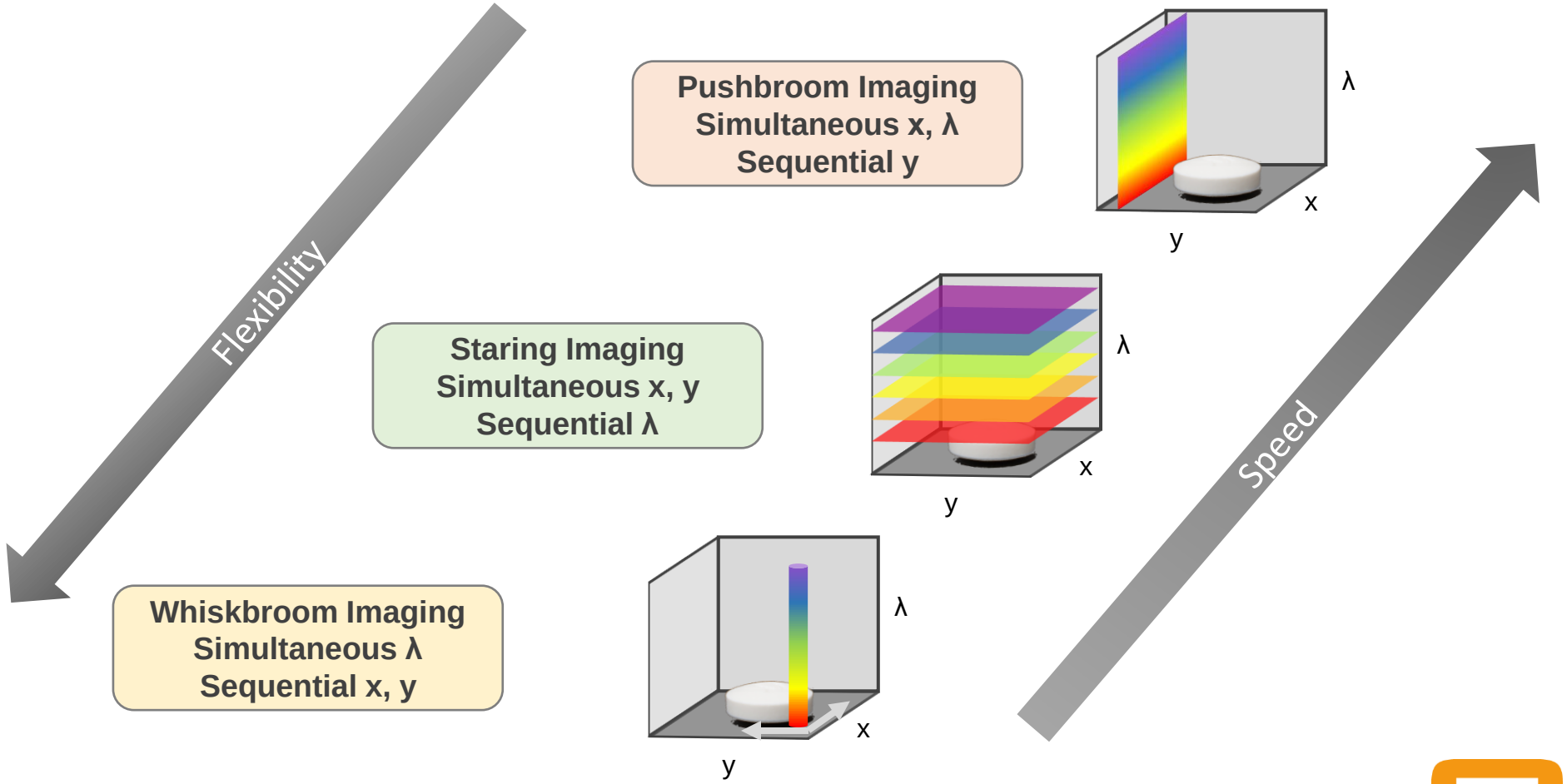
  one spectral dimension

  → **Data Cube or Hypercube**



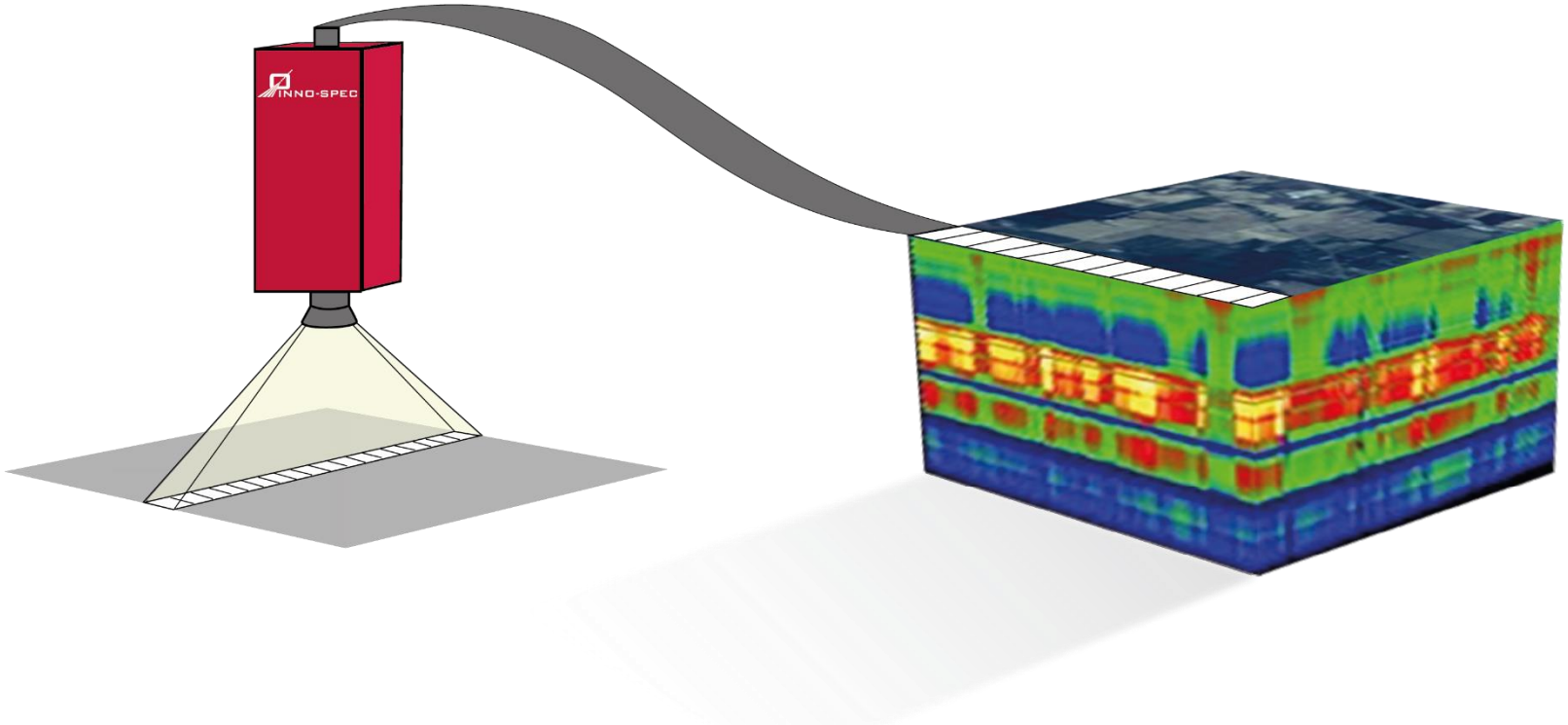
Hyperspectral Imaging

Image recording techniques

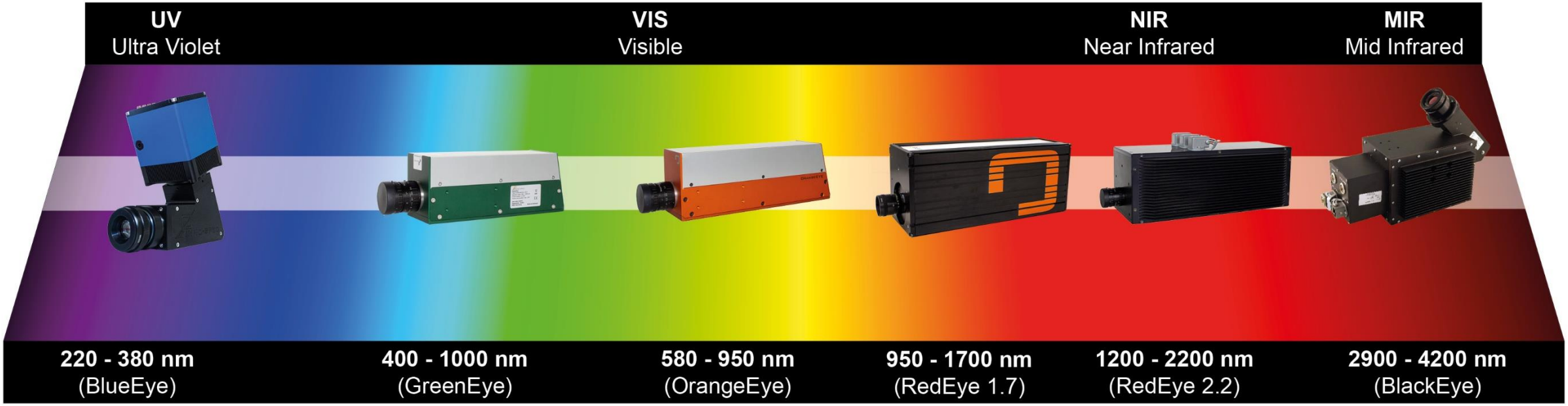


Hyperspectral Imaging

Pushbroom Imaging System



Product Overview: UV to MIR



BlueEye special features:

3 versions, different sensor and cooling (up to -100° C)

RedEye special features:

- **RGB Extension available**
- **QVGA/VGA**
- **IP 65 & 67**

UV

BlueEye Basic BlueEye TEC BlueEye Scientific

UV 220 – 380 nm

This high-sensitivity camera is an excellent solution for a vast multitude of biological (e.g. chlorophyll and carotenoid), biochemical (e.g. fluorescence diagnosis of malignancies) and environmental applications.

VIS / NIR

GreenEye and **OrangeEye**

400 – 1000 nm and 580 – 1000 nm

- Combination of color and NIR information
- Compact design
- Easy integration

NIR

RedEye 1.7 and **RedEye 2.2**

950 – 1700 nm and 1200 – 2200 nm

- NIR-spectroscopy for reliable classifications and quantifications
- High measuring rates (330 Hz frame frequency)
- Suited for harsh environmental conditions

NIR + color

Color combination (NIR plus RGB)

NIR: 950 – 1700 nm (standard RedEye)

- Identical line of view for both RedEye and RGB camera
- NIR classification combined with color sorting
- Synchronized triggering of both cameras

OEM RedEye 1.7

NIR: 950 – 1700 nm

The OEM RedEye is the functional core of our standard RedEye system. It comprises the optics, a 2D NIR sensor and readout electronics.

- High measuring rates (330 Hz frame frequency)
- Transmission grating configuration for superior sensitivity

MIR

BlackEye

2900 – 4200 nm

- MIR-spectroscopy in the fingerprint area for specific and sensitive detection
- High measuring rates (383 Hz frame frequency)
- Measurement area in an atmospheric window for distance-independent measurements

Process Analytics

Real-time quality control

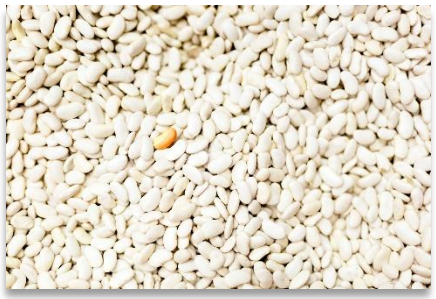
Identification

Classification

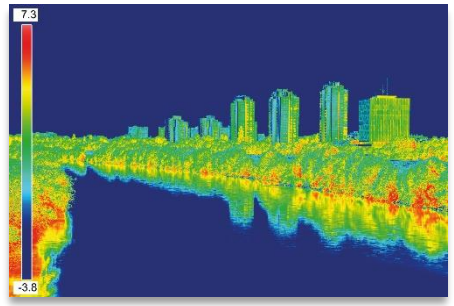
Quantification

Characterization

Differentiation



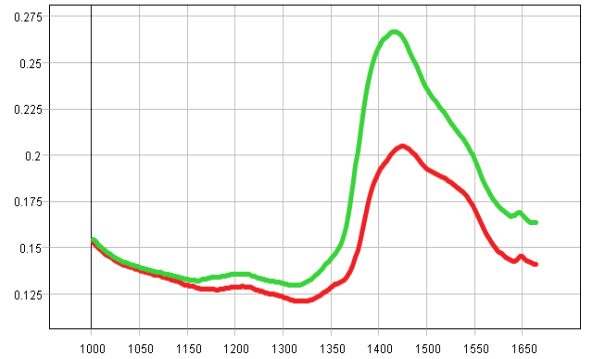
Detection



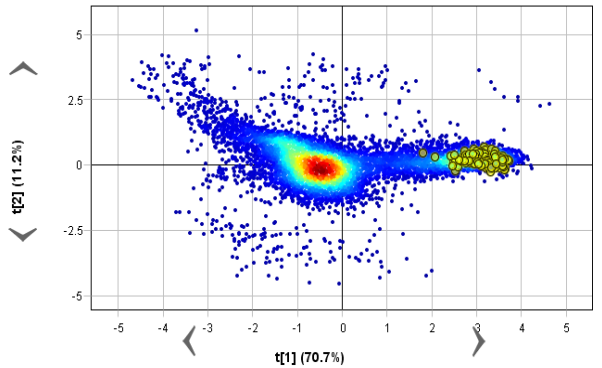
Quantification

Moisture profile measurement

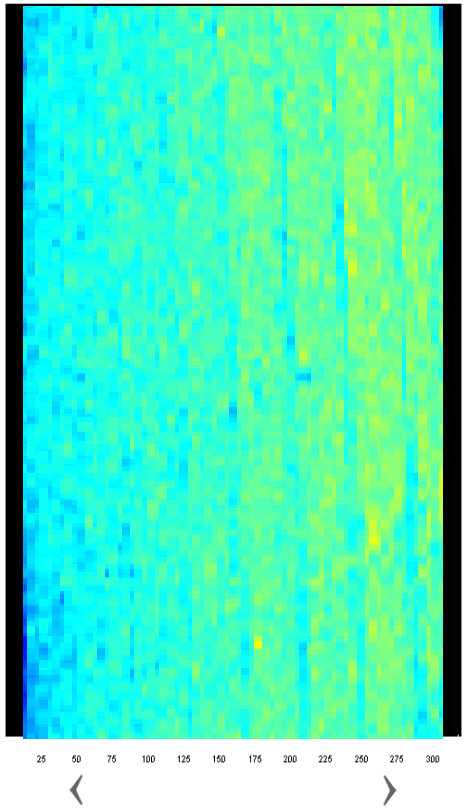
Normalised pseudo absorbance spectrum



Variance scatter

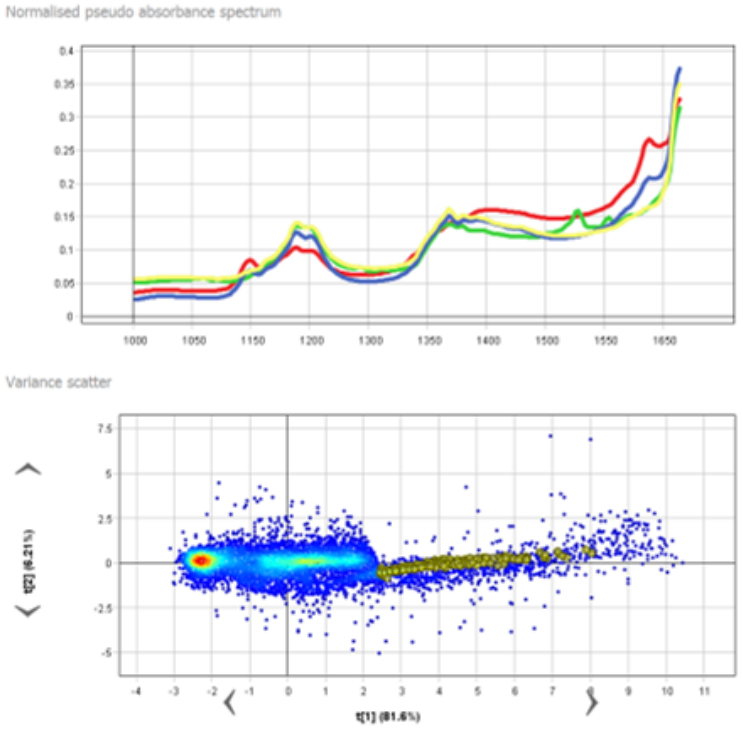


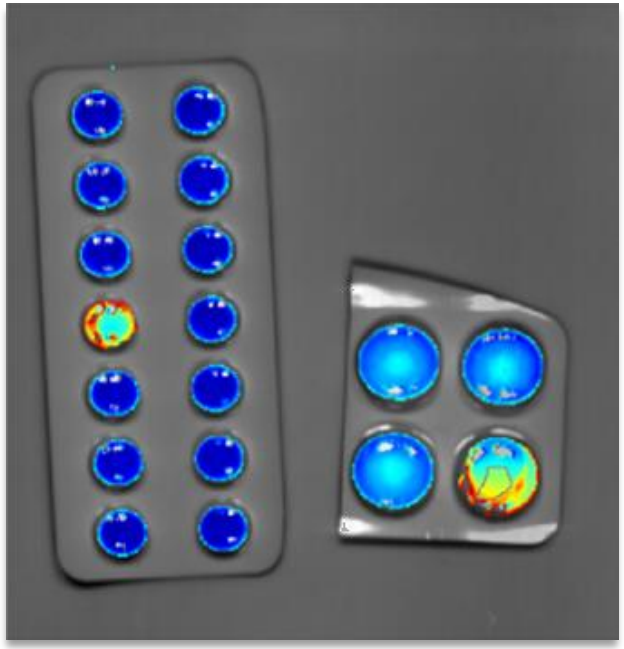
Max variance image



Identification

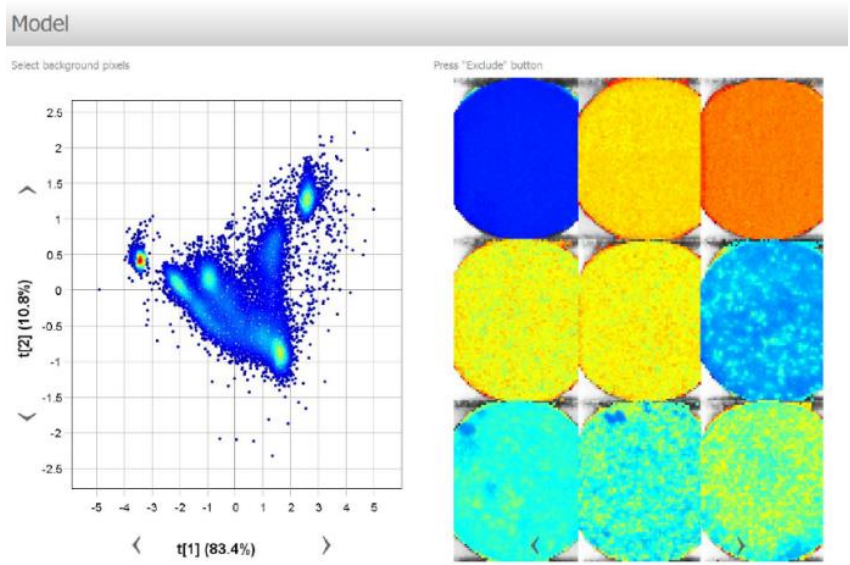
Non-transparent blister packs

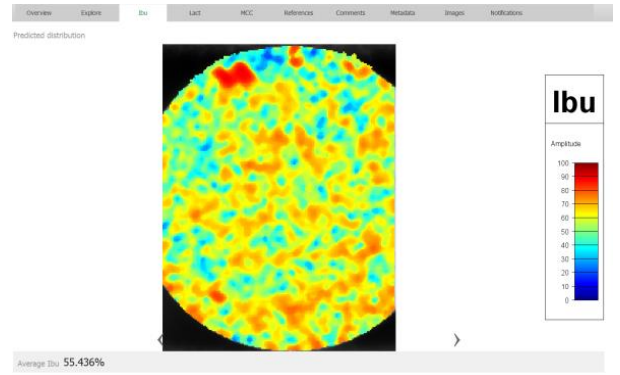


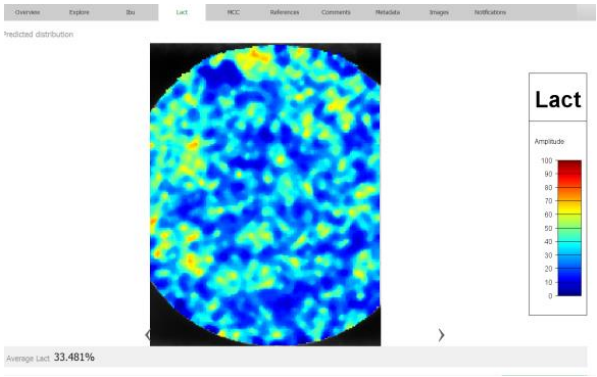


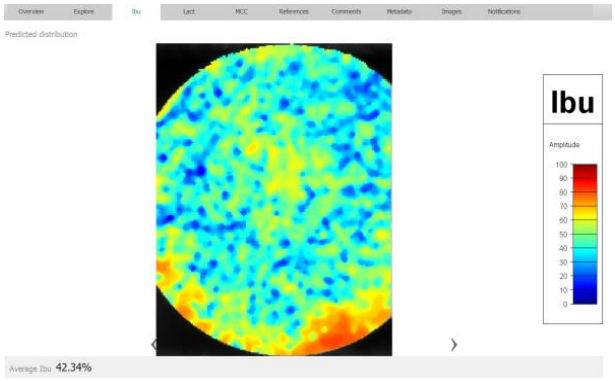
Characterization

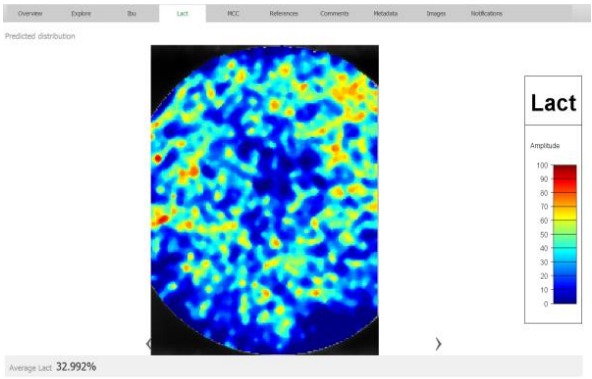
Distribution of API
(here: Ibuprofen)









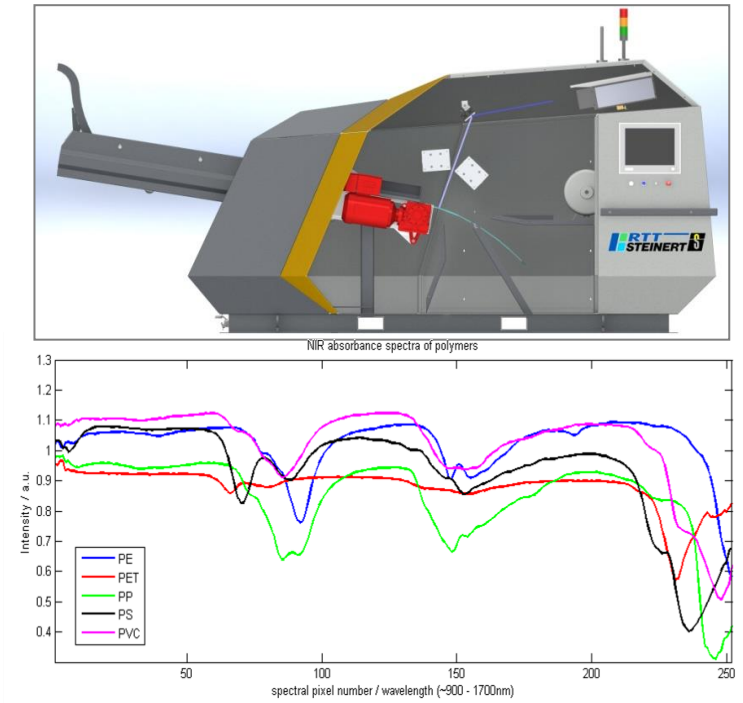


Classification

Sorting (e.g. food)

Differentiation

Plastic sorting at high speed



Many thanks.

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