

# Fiber Photonics to enhance Healthy Feeding

*Viacheslav Artyushenko*

A promotional banner for the EPIC (European Photonics Industry Consortium) meeting. The background is light blue with several red and white striped candy canes scattered across it. The EPIC logo is in the top left, and a list of event sponsors is in the bottom right. A red banner at the bottom contains the meeting details.

**EPIC**  
European Photonics Industry Consortium

In cooperation with

**KMZERO**  
CREATING THE FUTURE OF FOOD

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**Monday, 20 December 2021, 15:00 CET**  
**EPIC Online Technology Meeting on Photonics for the Food & Beverage Industry**

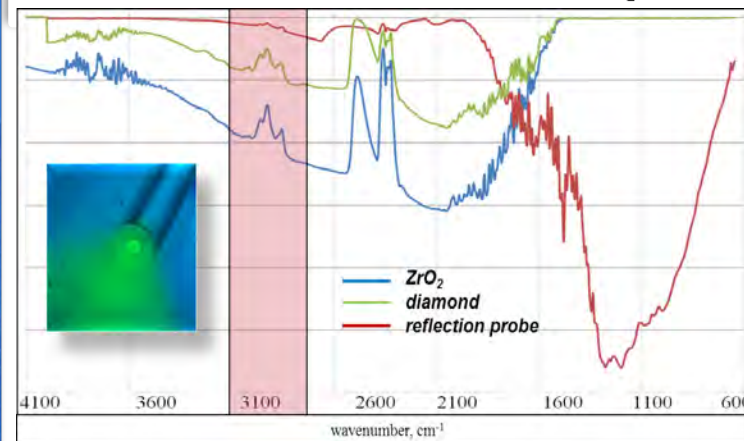
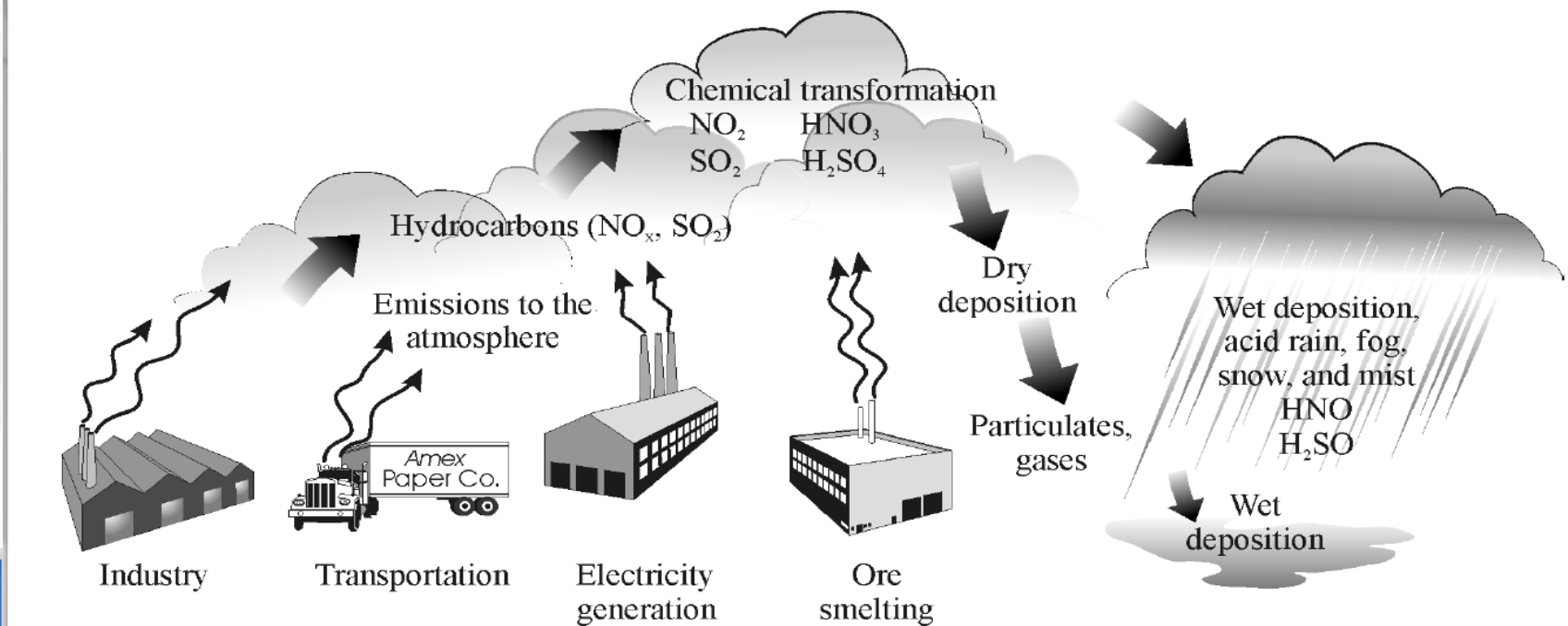
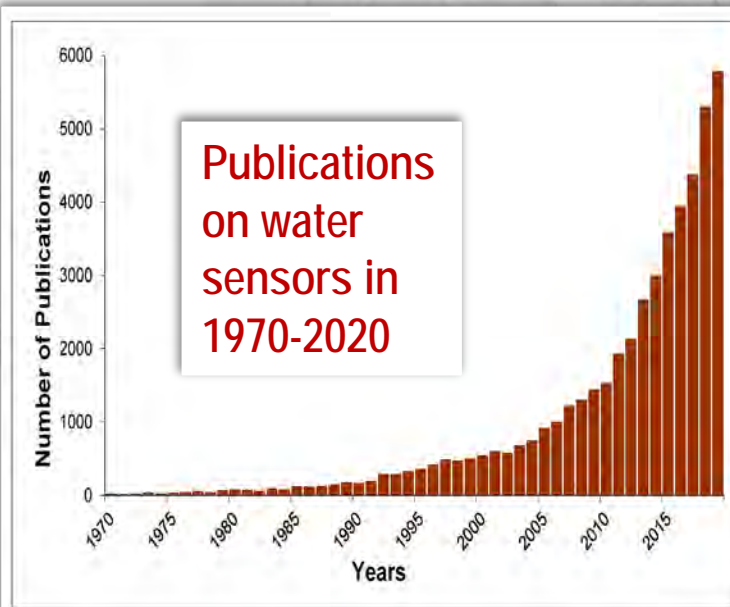


**Slava Artyushenko**

[www.artphotonics.com](http://www.artphotonics.com)



# Growing pollutions to atmosphere, soil & water

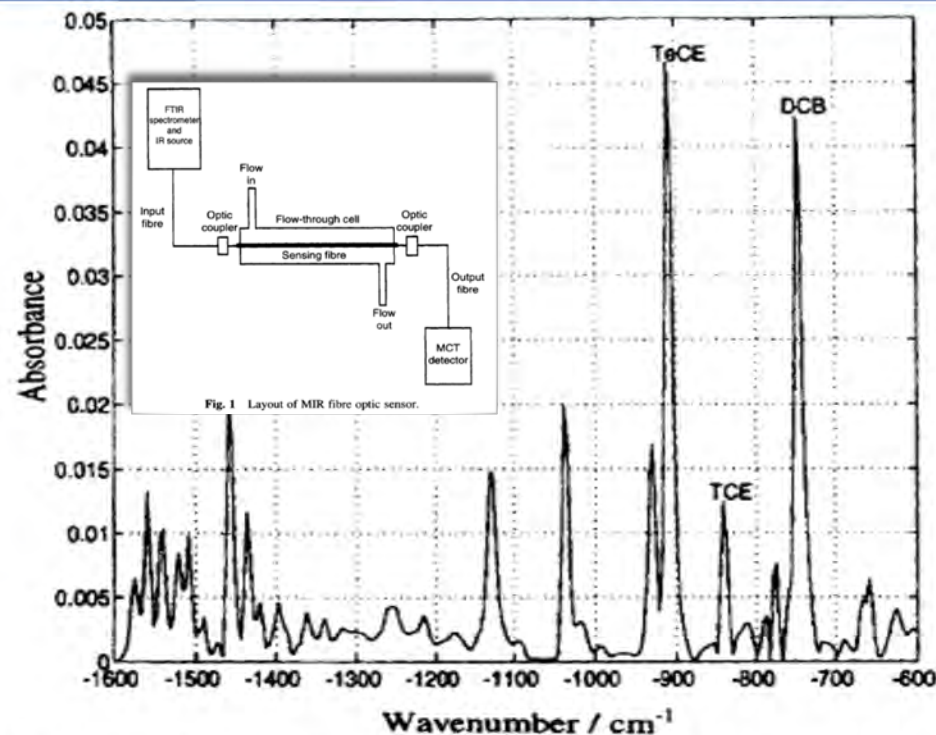




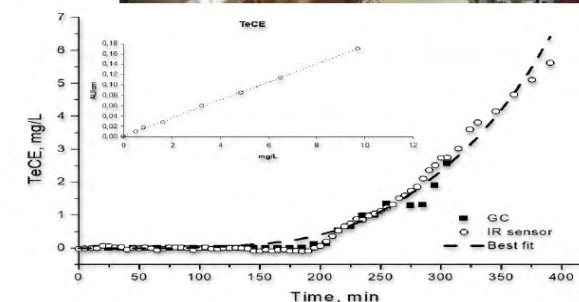
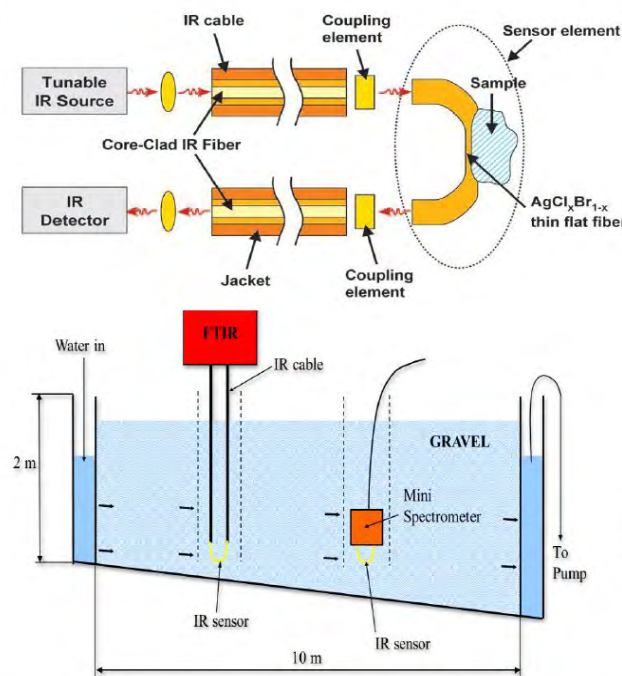
# Sensing of Chlorinated Hydrocarbons and Pesticides in Water Using Polymer Coated Mid-infrared Optical Fibres\*

*Analyst*, June 1996, Vol. 121 (789–792)

James E. Walsh<sup>a</sup>, Brian D. MacCraith<sup>a</sup>, Mary Meaney<sup>b</sup>, Johannes G. Vos<sup>b</sup>, Fiona Regan<sup>b</sup>, Antonio Lancia<sup>c</sup> and Slava Artjushenko<sup>d</sup>



## Water Pollutions control



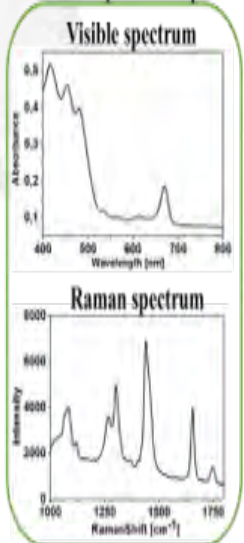
Towards the Required Detection Limits for Volatile Organic Constituents in Marine Environments with Infrared Evanescent Field Chemical Sensors  
Carina Dettenrieder<sup>1</sup>, Yosef Raichlin<sup>2</sup>, Abraham Katzir<sup>3</sup> and Boris Mizaikoff<sup>1#\*</sup>

*Sensors* 2019, 19,3644

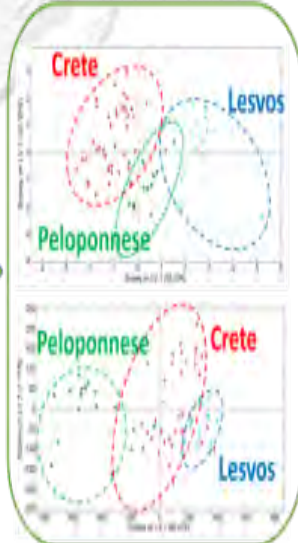
# Spectroscopy control of any media with chemometric analysis

## EXTRA VIRGIN OLIVE OIL

Olive Oil Spectroscopic Data



Classification of Olive Oils

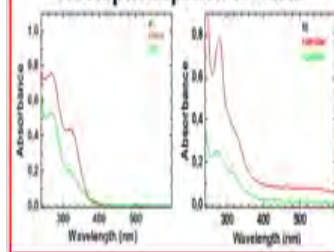


## WINE

White and red wines

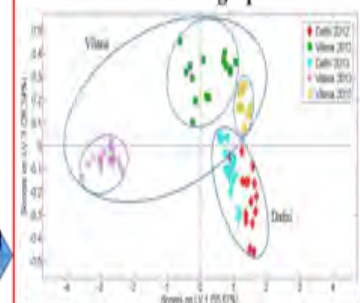


Absorption spectra of wines

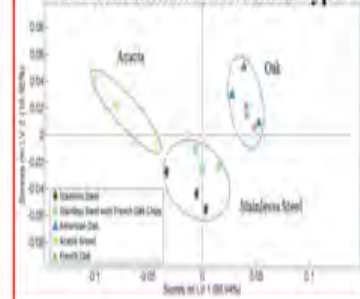


Statistical Analysis

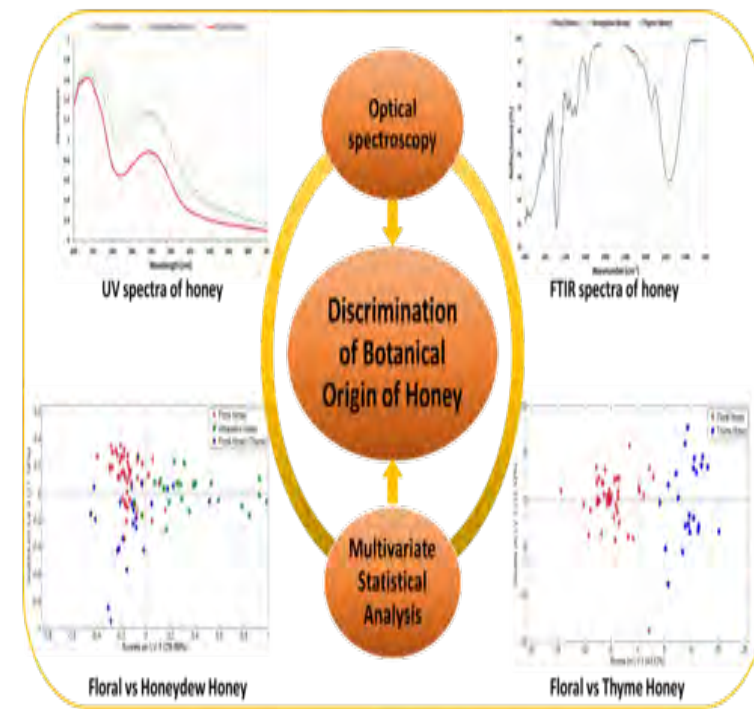
Discrimination of grape varieties



Discrimination of container type



## HONEY



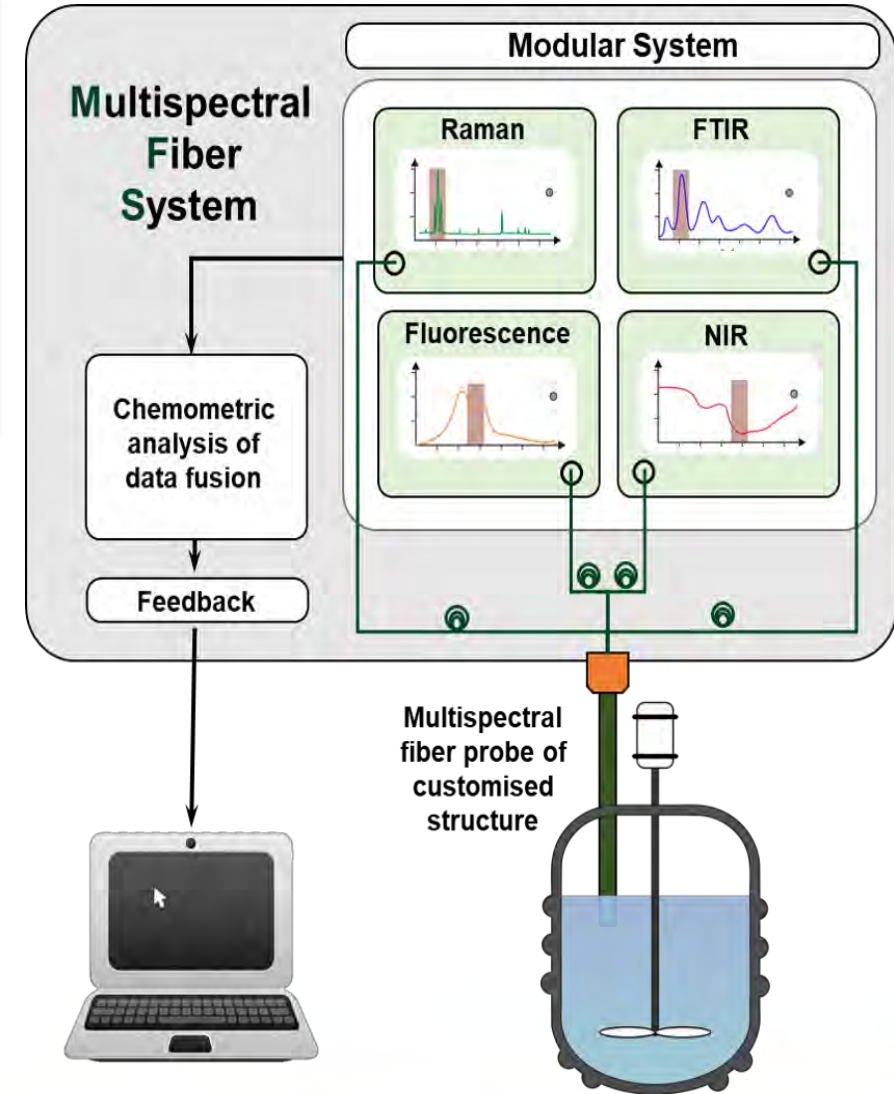
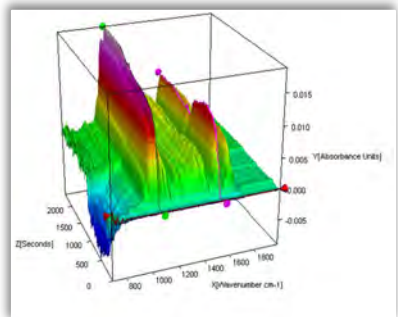
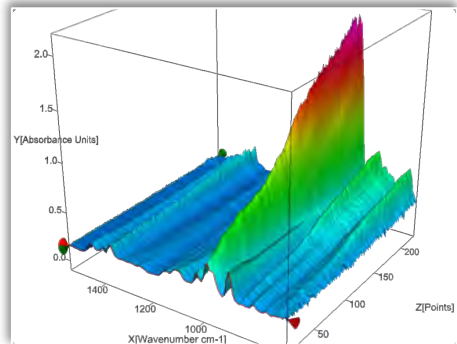
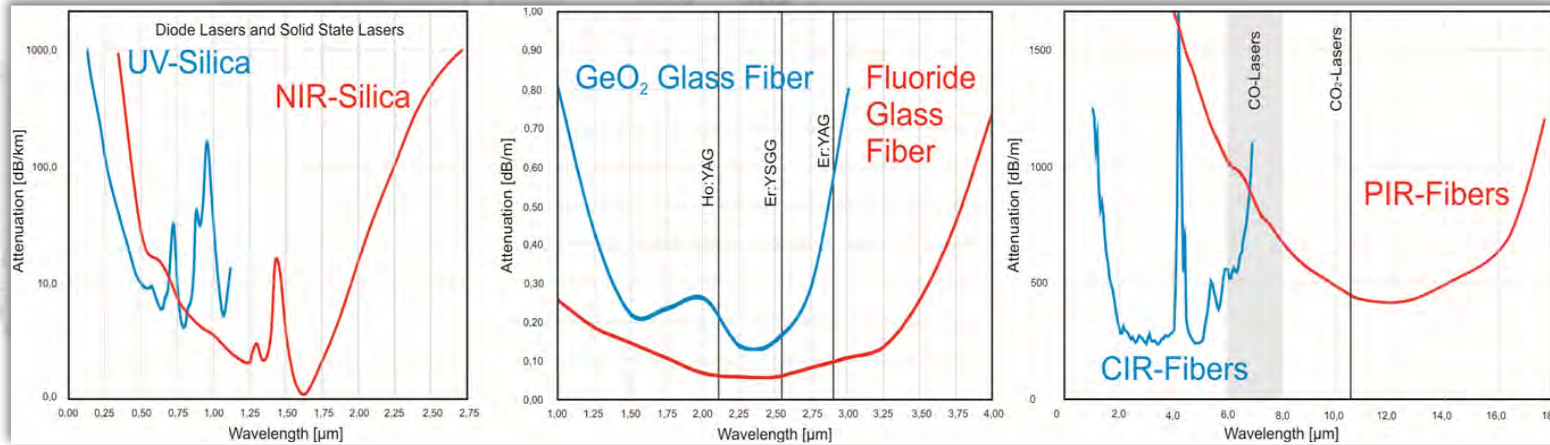
## Milk Analytics:



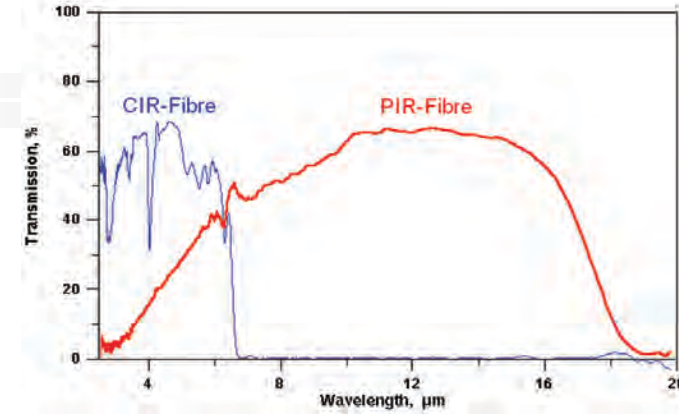
Fat, protein and lactose are responsible for milk quality and nutritional **value** (=price) should be routinely analyzed at various/ **multiple** production sites



# Multi-Spectral Fiber Systems to Find the Best Process Control Method

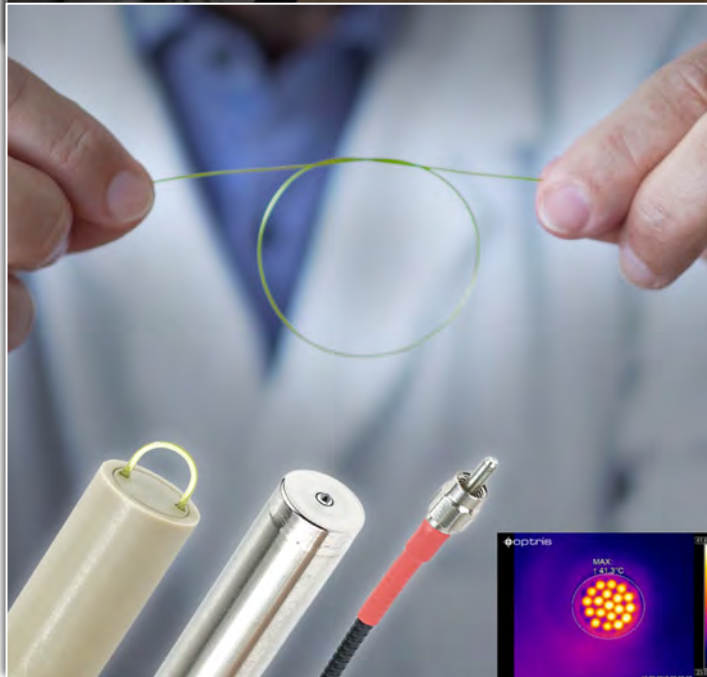






## Global Leaders in Mid-IR Fibre Optics 2020

From sample tests in lab to industrial analysis of beverages *in-line*

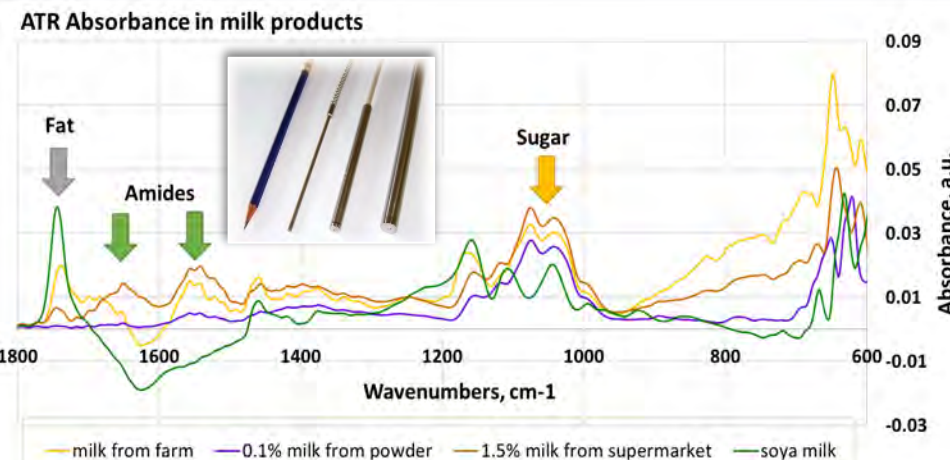
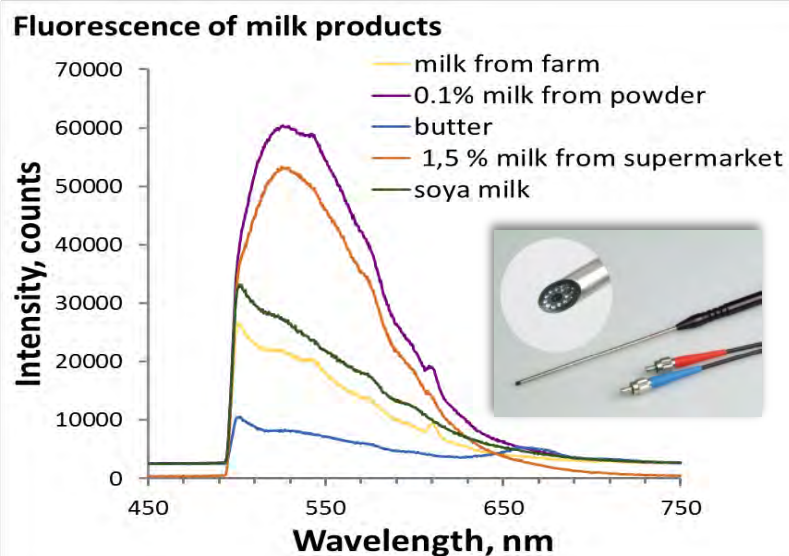
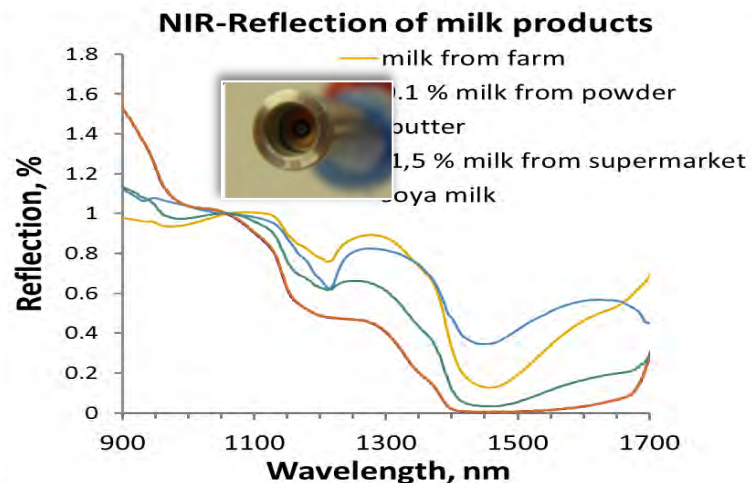




# Multi-spectral Analysis of Milk Products

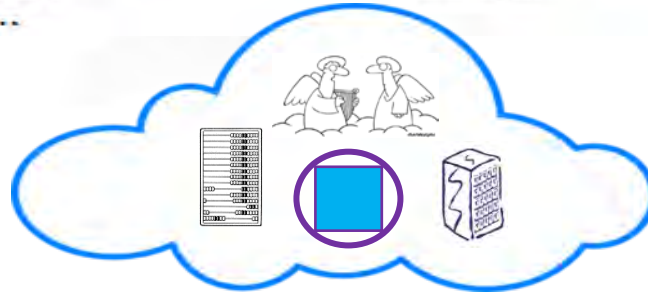
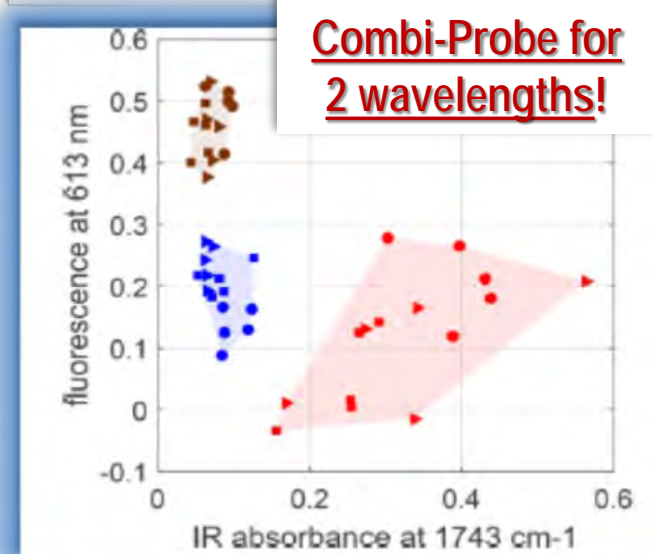
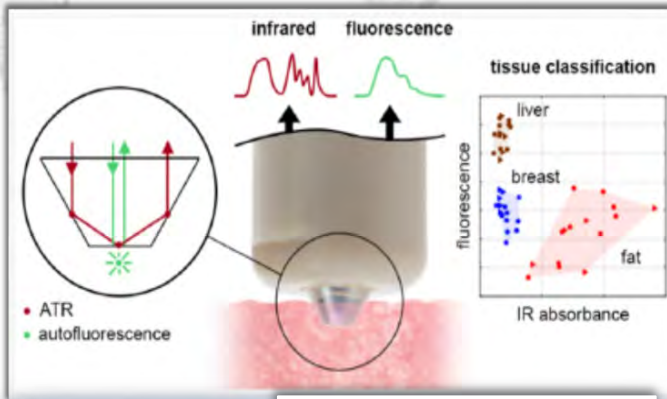
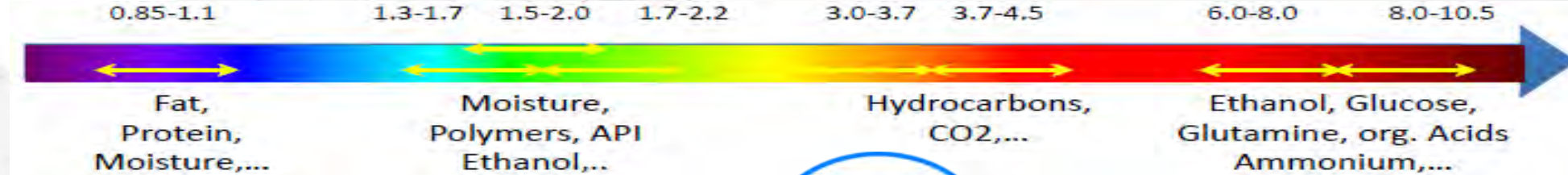
Different spectroscopy methods can provide complimentary information in-line on composition & quality of milk products

MilkoStream FT from **FOSS** accelerates milk tests *in-line* from 2/hour to 480/hour





# Monitoring of any feeding substance with spectral fiber sensors



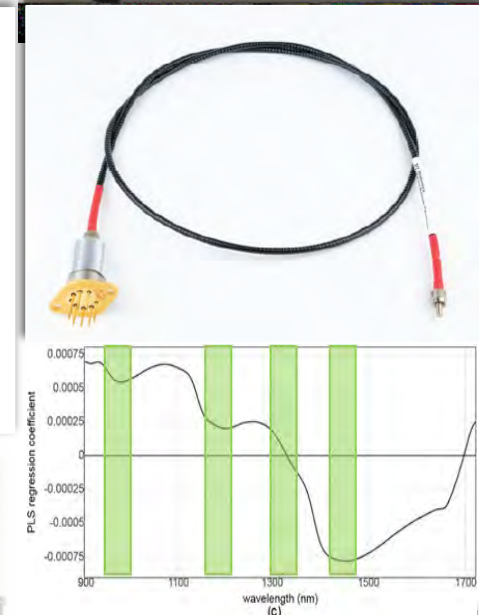
Control System



Connection by WLAN or LAN-cables

Sensors installed in critical points for data transfer via wires, Ethernet, Wi-Fi ...

Innovative IR-LED, QCL and Fabry-Perot tunable filters enable to develop compact spectral fiber sensors of customized design with data sending to iCloud as in IoT - to enable **remote process control in customized applications**



**Multi-Wavelength IR LED & QCL-Spectral Fiber Sensors**



# Fiber spectral sensors for agro- & food applications?



EPIC OTM on Photonics for Food\_20.12.21

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