

# PhotonHub Demo Centre

## Spectroscopy and Food

**Course Provider**  
Vrije Universiteit Brussel,  
Brussels Photonics,  
Belgium

# Course Overview

Spectroscopy plays an important role in the screening of food products. This includes the detection of foreign objects, the classification of a product batch based on their quality, the monitoring of the (potential) presence of carcinogenic elements and authenticity tests on liquids in the framework of food fraud.

This one-day hands-on training course provides industry with a detailed overview of how photonics-based food sensors can contribute to the quality control and safety of solid and liquid food products.

In the introduction part, the theoretical aspects of the various physical phenomena that can occur during food screening together with their related measurement setups will be discussed. Different case-studies will be presented illustrating the selection of the appropriate test set-up and data-processing techniques.

The second part of the course will focus on three demonstrators where participants can make hands-on activities.

# Target Audience

It is desirable but not essential that course attendees have a basic understanding of photonics. The course is ideally for people from food and agriculture industry that want to explore the possibilities of implementing photonics-based sensors in their specific application.

## Expected Outcomes

- 1) Understand key features of different spectroscopic techniques used in food research
- 2) Evaluate various spectroscopic test set-ups (hands-on activity)
- 3) Get familiar with machine learning techniques (hands-on activity)
- 4) Understand the photonic product design and manufacturing process

# Course Schedule

<b>Time</b>	<b>Demo Activity</b>
09:00 – 10:30	<b>Course Introduction &amp; Tutorial</b>
11:00 – 12:30	<b>Demo 1: UV-VIS-NIR Absorption spectroscopy on solid and liquid food products (hands-on)</b>
14:00 – 15:30	<b>Demo 2: Fluorescence spectroscopy (hands-on) and scatter measurements on solid food products</b>
15:30 – 17:00	<b>Demo 3: The use of machine learning techniques in food spectroscopy (hands-on)</b>
17:00 – 17:30	<b>Follow-Up Questions &amp; Close</b>

# Course Trainers



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**Course Directors: Prof. Heidi Ottevaere & Prof. Wendy Meulebroeck**

**Course Manager: Nathalie Debaes**

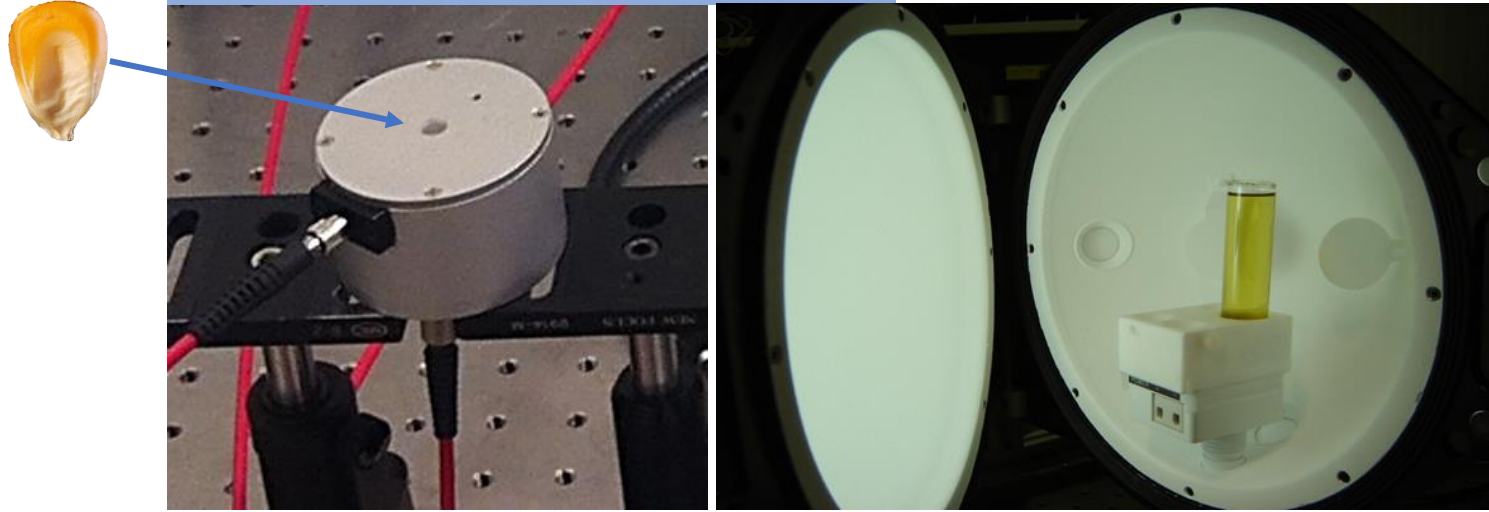
**Demo 1: Prof. Heidi Ottevaere & Prof. Wendy Meulebroeck**

**Demo 2: Dr. Lien Smeesters**

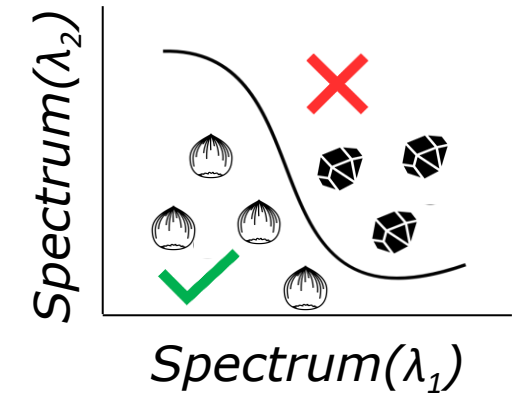
**Demo 3: Ir. Indy Magnus**

# Course Demonstrators

UV-VIS-NIR Absorption spectroscopy



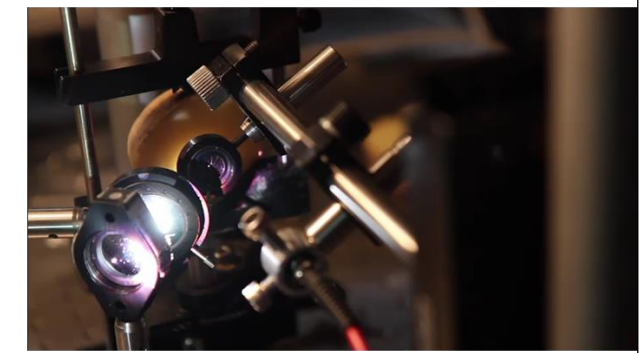
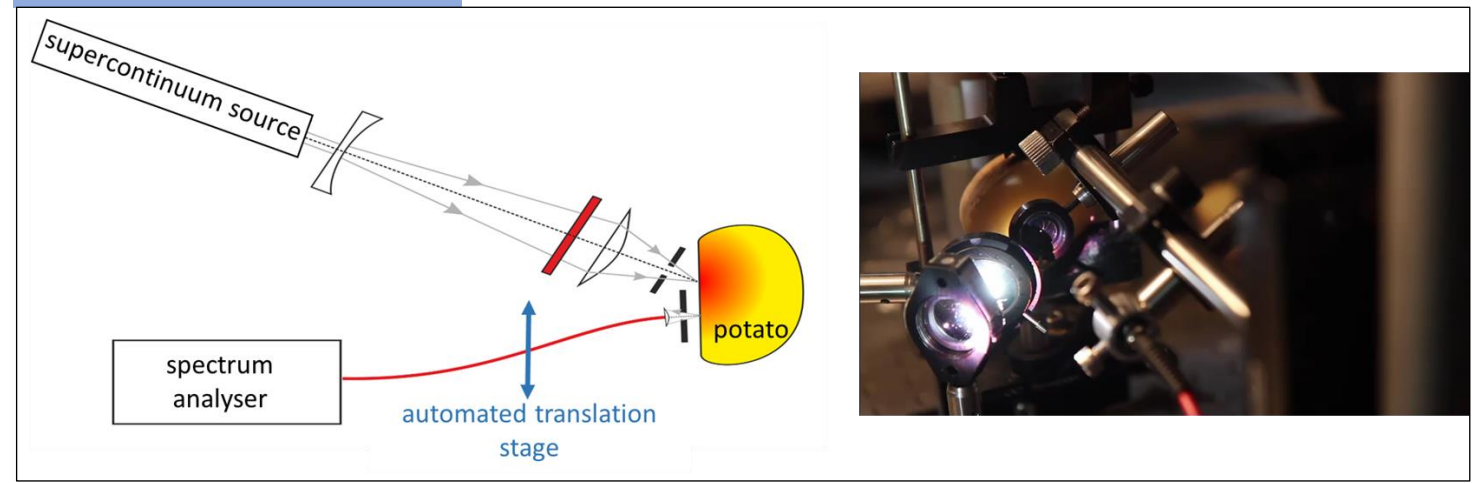
Machine learning



Fluorescence spectroscopy



UV-VIS-NIR Scattering



# Course Location, Schedule & Cost

VUB Brussels Humanities, Sciences & Engineering Campus  
Brussels, Belgium



- Course Schedule (3 times a year – exact dates to be confirmed)
- Number of people (Groups of 3 persons per hands-on station, with a maximum of 9 persons per course)
- Course Cost (250 Euros per person, includes catering and project consumables)

## Further Information

- [ExperienceCentre@b-phot.org](mailto:ExperienceCentre@b-phot.org)
- [www.b-phot.org](http://www.b-phot.org)
- [www.photonhub.eu/euphotonicsacademy](http://www.photonhub.eu/euphotonicsacademy)

# Course Material (technical hand-outs)



**PhotonHub Demo Centre**

**Course on  
Spectroscopy and Food**

**Course Provider**

**Vrije Universiteit Brussel  
Brussels Photonics  
Belgium**

**Training Course Notes**



# Keywords

**Food sensors, Solid food products, Liquid monitoring, Spectroscopy, Absorption, Fluorescence, Scattering, Machine learning, Food quality, Food safety, Food fraud, Water monitoring.**