

Partner search

Company: CERTA-UAB (Universitat Autònoma de Barcelona)

CIF/CNPJ: Not applicable (public university)

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Short Company presentation

(R & D guidelines, international activities, etc.)

CERTA-UAB (Centre for Food Technology Research, Innovation and Transfer), based at the Universitat Autònoma de Barcelona, is a TECNIO-accredited research entity, officially recognised by ACCIÓ (Generalitat de Catalunya) for its differential and transferable technological capabilities. With more than 30 years of trajectory in the agri-food sector, the group's activity is structured around three strategic research areas: food safety, food processing and control technologies — including UV-C treatment, ultra-high-pressure homogenisation and high hydrostatic pressure — and food quality and innovation, with particular emphasis on sustainability and the circular economy, alternative protein sources, and digitalisation under an Industry 4.0 framework.

CERTA-UAB's mission is to promote excellence in research and to facilitate the exchange and transfer of technology and knowledge, generating a positive impact on both industry and society. This is materialised through a comprehensive R&D&I service model — encompassing support from concept generation to final product validation, technical consultancy and specialised professional training — supported by dedicated laboratory facilities, a pilot plant and a technology demonstration showroom. Over the past five years, this model has resulted in 29 technology transfer agreements, 31 R&D projects, 3 licensed, sold or active patents (2 more under review), 14 doctoral researchers transferred to industry, and the creation of 3 spin-off companies and another in the process of being created.

The centre's international projection is a further hallmark of its activity, sustained through participation in European mobility and cooperation programmes (Erasmus+,

COST Actions and MSCA-RISE/Horizon Europe) and bilateral institutional agreements with many foreign universities both in Europe and America. This collaboration translates into an average of six incoming visiting researchers and students per year from institutions in Mexico, Colombia, Uruguay, Argentina, Brazil, and China, as well as outgoing research stays undertaken by CERTA-UAB staff in Portugal, Ireland, the Netherlands, Denmark, and Argentina. The group is also an active member of the China-Europe Joint Research Institute and the China-Europe International Food Innovation Forum (CEIFIF) and currently participates in European-funded projects such as PathFood and LAKTO.

DESCRIPTION OF ITS TECHNOLOGY AND CAPABILITIES IN R & D

(Products, technologies, applications, services, etc.)

CERTA-UAB has extensive R&D capabilities in food processing, process monitoring and control, food safety, and food quality and innovation.

A key area of expertise is the development and application of optical sensing technologies for real-time monitoring and optimization of industrial food processes. CERTA-UAB develops optical systems based on UV, VIS, NIR and fluorescence technologies for the inline measurement of physicochemical, functional and technological properties of foods. These technologies can be applied to monitor process evolution, detect quality changes, determine optimal production endpoints and even detect food frauds.

CERTA-UAB has specialized laboratory infrastructure for optical sensing, including spectrophotometers, front-face spectrofluorometry equipment, optical fibres, light sources, detectors, data acquisition systems, PLC-based monitoring systems and dedicated data-processing software. Applications include monitoring of dairy processing, pH, gel formation, thermal damage, texture, functional properties and other food quality parameters.

The group also has expertise in emerging food-processing technologies, including high hydrostatic pressure (HHP), ultra-high pressure homogenisation (UHPH), ultraviolet processing, combined processes, food safety and quality assessment. CERTA-UAB provides integrated R&D and technology-transfer services ranging from laboratory studies and pilot-scale development to validation under industrial conditions.

PROPOSED COLLABORATIVE PROJECT IN R & D

(As much detail as possible, both in what it offers and what you want in a potential partner)

1. Technology Offered to International, Industrial Partners (In Spain)

CERTA-UAB can provide R&D expertise in food process monitoring, physicochemical and quality analysis, applications of optical sensing technologies, data analysis, and artificial intelligence modelling.

Within this project, CERTA-UAB can provide the following technical and research capabilities:

- Analysis and evaluation of key quality parameters during dulce de leche production, including soluble solids, moisture, colour, thermal damage, and texture;
- Development of databases linking the physicochemical properties of real production samples with optical signals;
- Acquisition, processing, and analysis of optical sensing data;
- Development of artificial intelligence and predictive models to estimate key product quality parameters from optical signals;
- Development and optimization of models for determining the production endpoint;
- Validation of the system under real industrial production conditions, including assessment of its accuracy, stability, and applicability;
- Expertise in food processing, food quality control, and the transfer of research and technological results to industrial applications.

2. Technology / Capabilities Sought from an International Partner (in Spain) A

food company in Spain is being sought to participate, in collaboration with a Brazilian entity, in the research activities. The company must have industrial production capacity for *dulce de leche*.

Ideally, the partner company should operate an actual dulce de leche production line and be able to provide product samples from different stages of production and from different batches, together with relevant process information where available. These samples and data will be used to build the project database, perform product quality analyses, and develop predictive models (end point of production and quality attributes).

The partner is also expected to provide access to a real industrial production environment for testing and validating the online optical monitoring system. This will allow the applicability and performance of the system to be assessed under actual processing conditions and according to the company's production needs.

3. Proposed Collaborative Project in R&D

The project aims to develop an online optical monitoring and intelligent decision-support system for the production of *dulce de leche*. By combining optical sensing technologies, data acquisition systems, and artificial intelligence models, the system will enable real-time monitoring of product status and more accurate determination of the production endpoint.

Currently, dulce de leche production commonly relies on manual sampling and Brix measurements to monitor process progression and determine the final processing endpoint. This approach requires continuous manual intervention,

depends on sampling frequency and operator experience, and provides only limited information. Brix mainly reflects soluble solids content and does not simultaneously provide information on other key quality parameters such as moisture, colour development, thermal damage, or texture.

The project will collect product samples and optical signals at different stages of production under real processing conditions. Key physicochemical and quality parameters will be measured simultaneously. Based on these data, a database will be established and artificial intelligence and statistical modelling methods will be used to develop predictive relationships between optical signals and key quality parameters.

The final objective is to develop a monitoring system capable of rapidly predicting key indicators during production, including soluble solids, moisture, colour, thermal damage, and texture, and to use this information to support the determination of the optimal production endpoint for dulce de leche.

Through the collaboration, the project aims to develop a prototype system suitable for operation on a real food production line. The system is expected to reduce manual sampling and repetitive analyses, improve the objectivity, stability, and automation of process control, and contribute to reducing energy consumption, production losses, and batch-to-batch variability.

The technology will initially be developed and validated for dulce de leche production, with the potential for future application to other dairy products.

General comments:

- By sending this information document authorizing its dissemination.
- A profile of the company must be attached

Infrastructure

Specialized laboratories for microbiological, physicochemical and optical analysis, a pilot plant for process development and validation, and a technology showroom for industrial demonstrations (UHPH, UV-C)



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Centre for Innovation,
Research and Technology
Transfer in Food
Technology

Innovation and Excellence in
Agri-Food Research

Who are we?

The Centre for Innovation, Research and Technology Transfer in Food Technology is a TECNIO-accredited centre with over 30 years of experience in innovation and knowledge transfer. We collaborate with companies, institutions and organizations to develop solutions that promote competitiveness, sustainability and innovation in food technology.



45+
clients
per year

52%
SME
clients

53% of the
team hold
PhDs

3 spin-offs
created

Core services



From idea to product: supporting every stage of innovation

01 R&D&I

- Application of emerging technologies and new processes to improve food processing, safety, functionality, nutritional value and sensory quality
- Industrial validation and optimization

02 Technical Consulting

- Development of new products and processes
- Solving processing problems
- Regulatory advice and guidance
- Technology and competitive intelligence

03 Specialized Training

- Theoretical and practical courses tailored to companies
- Pilot plant demonstrations of thermal and non-thermal technologies (UHPH and UV-C)

Research areas

Food Safety

Microbial biofilms on food-contact surfaces, pathogenic and spoilage microorganisms, biocontrol and antimicrobial strategies, biocomputational and genomic models of microorganisms, food misinformation and risk perception

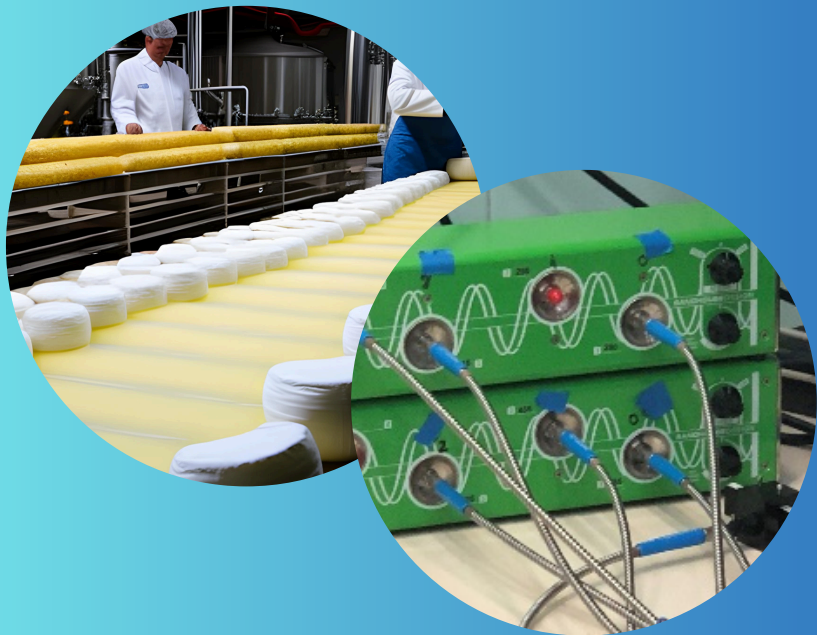
Processing and Control

Food processing using innovative technologies and alternatives to heat treatments; development of optical sensors for process control

Quality and Innovation

Development of nutritionally improved products and products for population groups with special needs, bioactive compound delivery systems, and valorization of food by-products





Scan the QR code for more information



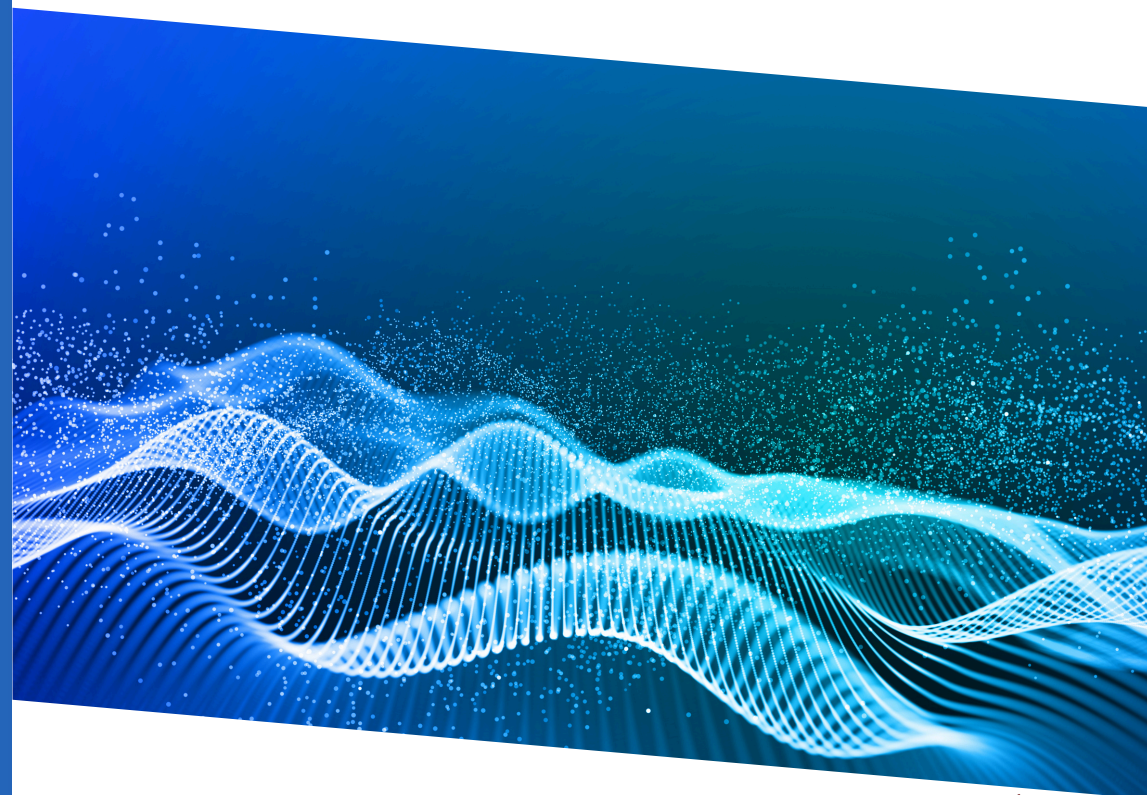
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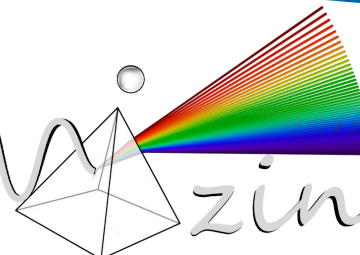
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Optic  *zing*
Research Group

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Actuació del Pla estratègic de la PAC 2023-2027 cofinançada per:



Research lines

Our work focuses on the development and application of optical sensor technologies for in-situ monitoring and control of food processing, as well as for real-time quantification of chemical compounds of food and evaluation of their functional and/or technological properties.

1. Determination of gel firmness in dairy gels
2. Determination of pH in yogurt and fermented milk
3. Combined control of milk coagulation and curd syneresis
4. Determination of the degree of denaturation of whey proteins during heat treatment of milk
5. Determination of casein micellar size in heat-treated milk
6. Determination of various thermal damage markers in milk
7. Determination of functional properties of sweet and acid whey
8. Determination of the degree of meat emulsification during chopping and cooking losses.
9. Predicting the Endpoint of Dulce de Leche Processing Using Optical Methods

Advantages

-  Optical systems for optimizing the production of healthy and sustainable food
-  Optical systems to reduce food waste in the industry
-  Optical systems for monitoring and optimizing continuous production processes
-  Optical systems for *in-situ* AI-based prediction of cheese-making capacity and milk composition
-  Non-thermal dehydration of liquid foods

