

Final Program



7 – 11 April 2024
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General Information

1.1 Conference Location

The FOODSIM'2024 Conference itself is held at



University of Leuven/Campus Ghent

BUILDING L - ROOM L226

Gebroeders de Smetstraat 1
9000 Ghent

Tel: +32.9 265 86 10

Email: iiw.gent@kuleuven.be

See the Campus map for more info at the back of the programme.

The meeting room is in building L located to the LEFT of the main entrance of the campus. (the way to the meeting room will be signposted) Registration will start on Sunday at 4.00 p.m. and end at 5.30 p.m. On Monday from 8.00 a.m. till 5.00 p.m. On Tuesday from 8.30 a.m. till 5.00 p.m. On Wednesday from 9.00 a.m. till 12.30 p.m. The registration desk will be located in front of room **L226** on the same level as the meeting rooms in **Building L**.

Reaching the University Leuven – Campus Ghent

By Plane:

Ghent lies some 40 km to the west of the airport of Brussels and some 70 kms from Charleroi-(Brussels South Airport) if you fly Ryanair. See below how to get reach Ghent from these different airports.

On arrival at Brussels Airport, probably with Brussels Airlines take a train towards Brussels, where you can change trains for Ghent at either Brussels North, Central or South (Midi). At each of these stations you can take the IC-Train either to Ostend, Knokke-Blankenberge or De Panne and exit in Ghent Sint-Pieters station. First stop after Brussels. (travel time approx. 35 mins)

From Charleroi airport you can take a bus to Charleroi Station. From there you take the train to Brussels South and change trains there for Ghent. At this station you can take the IC-Train either to Ostend, Knokke-Blankenberge or De Panne and exit in Ghent Sint-Pieters station. First stop after Brussels. (travel time approx. 35 mins)

By Train:

From Germany see the German Railway Information Site and also check the information on the ICE train from Cologne to Brussels.

From London see the EUROSTAR Information Site for information on trains between London and Brussels.

From Paris see the THALYS Information Site for information on trains between Paris and Brussels.

General Information

From Amsterdam see the [THALYS Information Site](#) for information on trains between Amsterdam (Schiphol Airport) and Brussels. If you take this train then you can also change trains in Antwerp and take the Ostend or Lille bound trains to reach Ghent Sint-Pieters station.

More information about timetables of [trains in Belgium](#).

By Tram:

Ghent has an excellent network of trams and busses run by the [De Lijn](#) company which cover everywhere you could wish to go. You can buy tickets from De Lijn offices, some newsagents, ticket machines at the bus/tram stops, by SMS or from the drivers. Tickets bought before boarding are substantially cheaper than those bought from the drivers and the present-time cost of a single ticket, bought in advance, is 2.50 Euro. Single tickets must be validated in the machine on board and are then good for 60 minutes. There are also day tickets (dagpas) valid for 24, 72 or 120 hours costing respectively 7,5 and 15 Euros. These also must be validated at the start of the first journey. The machines are quite simple to use and those at the train station have several language options. Payment can be credit/debit card or cash and the machines give change for notes up to 10 Euro. Or you can send an SMS (textmessage) to 4884 to pay for your ticket or download DeLijn app on your phone to make payments.

To view the tram network go to this [webpage](#). The tram to take is line 4 direction Rabot/Moscou from Ghent Sint-Pieters Station.

By Bus:

You can reach Ghent from anywhere in Europe by [EUROLINES](#). The EUROLINES coach stops at Ghent St.Pieters Station and at Ghent Dampoort. Within to use a bus Ghent see the information on [De Lijn](#) website.

ALL OTHER MAPS ARE AT THE BACK OF THIS PROGRAMME

1.2 Badges

Each registrant will receive a name badge upon registration. The badge must be worn in order to be admitted to the technical sessions, lunches and social event.

1.3 Tickets

Extra tickets for the social event and lunches are available from the Registration desk. (**at conference prices**)

Price: (or equivalent in another currency) for extra tickets. All participants will be issued with tickets for lunch and the conference dinner. **Or just the badge will apply.**

General Information

conference dinner: lunch	€ 80 € 10/lunch
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1.4 Registration

The **FOODSIM'2024** Registration Desk will be open for information and registration **in front of meeting room L226** on the second floor of **BUILDING L** in the same hallway as the meeting rooms:

Sunday, April 7	4.00 p.m. to 05.30 p.m.
Monday, April 8	8.00 a.m. to 05.00 p.m.
Tuesday, April 9	8.30 a.m. to 05.00 p.m.
Wednesday, April 10.....	9.00 a.m. to 12.30 p.m.

1.5 Conference Proceedings

Each fully paid registrant will be provided with a copy of the Conference Proceedings (printed format and/or electronic format) after the conference. Price: (or equivalent in another currency) for an extra printed copy

FOODSIM'2024 Proceedings	€ 50 (plus 6% VAT)= € 53
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Other Proceedings can be ordered from the EUROSIS website.

1.6 Meeting Rooms

The **FOODSIM'2024** meeting room is room **L226**, located to the left of the main entrance of the University entrance in **BUILDING L on the second floor**. To enter the buildings use the ground floor entrance for Building L. Directions to the rooms will be signposted.

1.7 Internet Connection

There is full free WIFI at the conference site. Participants are advised to log in using their EDUROAM account.

1.8 Need Help?

Please see the conference desk in front of **ROOM L226** for your questions

1.9 Social Events and Lunches

All registrants are invited: To the **Welcome Drink** on **Sunday April 7th**. **Reception** on **Monday April 8th**, **Coffee Breaks** and the **Lunches** for 3 days and the **Conference Dinner** on **Tuesday the 9th of April** at 20.00 hours at **De Acht Zaligheden, Oudburg 4, Ghent**.


General Information

Lunch and Coffee Breaks



University of Leuven/Campus
Ghent

Gebroeders de Smetstraat 1
9000 Ghent

 Tel: +32.9 265 86 10

To the Conference Dinner




From 20.00 p.m to 23.00 p.m.

The conference dinner will be held
on **Tuesday the 9th of April** in
the evening at

De Acht Zaligheden

Oudburg 29
9000 Gent

 Tel: + 32. 9 224 31 97

Website:

<https://www.deachtzaligheden.be/en>



General Information

1.10 Best Paper Award

During the conference the papers, which were accepted as extended papers will be judged by the committee and participants in order to choose the best paper of the FOODSIM'2024 conference. The best paper candidate receives a certificate signed by the General Conference and Program Chairs and also a **free registration to any EUROSIS conference within 2 years of receipt ONLY** of the prize.

1.11 Paper Legend:

Each paper is designated before each paper by its number. This number has to be entered on the form for the best paper award.

The room has an LCD projector and an overhead projector

SESSION CHAIRPERSONS

ALL NAMES OF SESSION CHAIRPERSONS IN THIS PROGRAM ARE PROVISIONAL. Session Chairs are chosen on a voluntary basis by proposals by either authors or local committee members or are appointed by the Track Chairs, General Program Chair or General Conference Chair. They are responsible for their assigned session. They make sure their speakers are available, take care of the timing within the session, chair the discussion after each presentation and introduce each speaker based on the CV's given to them by the authors. **If a session chair is not available then the first author takes on the responsibility to chair**

Sessions with extended papers: If you are a session chair in a session with extended papers make sure the session participants have a copy of the best paper award form and ask them to return them to you at the end of the session. After the session hand over the collected forms to Philippe Geril.

THE NUMBERS NEXT TO THE PRESENTATIONS DENOTE THE PAGE-NUMBERS IN THE PROCEEDINGS. IF NO NUMBERS ARE MENTIONED THEN THIS PAPER IS NOT PUBLISHED IN THE PROCEEDINGS

THE AUTHORS WHO ARE UNDERLINED ARE NORMALLY THE PRESENTERS

ONLY PAPERS IN GREY BOXES ARE THE EXTENDED PAPERS ELIGIBLE FOR THE BEST PAPER AWARD

PAPER NUMBERS IN THE FINAL PROGRAMME FOLLOWED BY "ONL" MEAN THESE PAPERS WILL BE PRESENTED ONLINE

FINAL PROGRAMME FOODSIM'2024 QUICK OVERVIEW

SUNDAY, 7th APRIL 2024	
16.00-17.30	REGISTRATION IN FRONT OF ROOM L-226, BUILDING L, 2 ND FLOOR
16.00-17.30	WELCOME DRINK IN MEETING SPACE IN FRONT OF ROOM L-226, 2ND FLOOR BUILDING L
MONDAY, 8th APRIL 2024	
08.00-17.00	REGISTRATION IN FRONT OF ROOM L226, BUILDING L, 2 ND FLOOR
08.30-09.00	MEETING ROOM BUILDING L ROOM L-226
	INTRODUCTION TO FOODSIM'2024
09.00-10.00	SESSION I - BUILDING L ROOM L-226
	MULTISCALE MODELING: FROM MICRO TO MACRO
10.00-10.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
10.30-11.30	KEYNOTE SESSION BUILDING L ROOM L-226
	KEYNOTE SPEAKER ASHIM DATTA CORNELL UNIVERSITY, USA
11.30-12.30	SESSION BUILDING L ROOM L-226
	INNOVATIVE FOOD PRODUCTION AND PROCESSING I
12.30-13.30	LUNCH BREAK MEETING AREA IN FRONT OF ROOM L-226
13.30-14.30	SESSION BUILDING L ROOM L-226
	INNOVATIVE FOOD PRODUCTION AND PROCESSING II
14.30-16.00	WORKSHOP SESSION BUILDING L ROOM L-226
	ASHIM DATTA CORNELL UNIVERSITY, ITHACA USA
16.00-16.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
16.30-18.10	SESSION BUILDING L ROOM L-226
	SUSTAINABLE PROCESSING METHODS FOR VARIOUS FOOD PRODUCTS
18.30-21.00	WELCOME RECEPTION MEETING AREA IN FRONT OF ROOM L-226

TUESDAY, 9th APRIL 2024	
08.30-17.00	REGISTRATION IN FRONT OF ROOM L-226, BUILDING L, 2ND FLOOR
09.00-10.00	SESSION BUILDING L ROOM L-226
	ANALOG AND DIGITAL SIMULATION FOR HUMAN HEALTH
10.00-10.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
10.30-11.30	INVITED SPEAKER SESSION BUILDING L ROOM L-226
	INVITED SPEAKER JOËL COLLOC UNIVERSITÉ LE HAVRE, FRANCE
10.30-12.30	SESSION BUILDING L ROOM L-226
	MODELING AND SIMULATION IN FOOD CHAINS
12.30-14.00	LUNCH BREAK MEETING AREA IN FRONT OF ROOM L-226
14.00-16.00	SESSION BUILDING L ROOM L-226
	PREDICTIVE MODELING: MICROBIAL GROWTH AND INTERACTIONS
16.00-16.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
16.30-18.30	SESSION BUILDING L ROOM L-226
	NOVEL METHODS AND DATA FOR NOVEL MODELS
20.00-23.00	Conference dinner at De Acht Zaligheden, Oudburg 4, 9000 Gent

WEDNESDAY, 10th APRIL 2024	
09.00-12.30	REGISTRATION IN FRONT OF ROOM L-226, BUILDING L, 2ND FLOOR
09.00-10.00	SESSION BUILDING L - ROOM L-226
	MODELING AND SIMULATION IN FOOD PROCESS SYSTEMS ENGINEERING
10.00-10.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
10.30-11.30	KEYNOTE SESSION BUILDING L - ROOM L-226
	KEYNOTE SPEAKER JESÚS ANDRÉS PICÓ MARCO UPV, VALENCIA SPAIN
11.30-12.30	SESSION BUILDING L - ROOM L-226
	PREDICTIVE MODELING: MICROSCALE MODELING
12.30-14.00	LUNCH BREAK MEETING AREA IN FRONT OF ROOM L-226
14.00-14.30	E-MUSE – SUPREME – TRANSIT INTRODUCTORY SPEAKER SESSION BUILDING L - ROOM L-226
	INTRODUCTORY SPEAKER EVA BALSA-CANTO IIM-CSIC, VIGO SPAIN
14.30-16.00	WORKSHOP E-MUSE – SUPREME – TRANSIT SESSION 1 BUILDING L - ROOM L-226
	SYSTEMS MODELING & DATA-BASED MODELING: METHODS DEVELOPMENT
16.00-16.30	COFFEE BREAK AND POSTER PRESENTATION MEETING AREA IN FRONT OF ROOM L-226
16.30-18.00	WORKSHOP E-MUSE – SUPREME – TRANSIT SESSION 2 BUILDING L - ROOM L-226
	SYSTEMATIC METHODS TO CHARACTERISE FUNCTIONAL CHANGES IN BIOLOGICAL SYSTEMS
18.00-18.15	CLOSING SESSION FOODSIM'2024 AND BEST PAPER AWARD ROOM L-226

THURSDAY, 11th APRIL 2024	
09.00-09.30	E-MUSE – SUPREME – TRANSIT INTRODUCTORY SPEAKER SESSION BUILDING L - ROOM L-226
	INTRODUCTORY SPEAKER LUIS CUNHA UNIVERSITY OF PORTO, PORTO PORTUGAL
09.30-11.00	WORKSHOP E-MUSE – SUPREME – TRANSIT SESSION 3 BUILDING L - ROOM L-226
	ANTIMICROBIAL EFFICIENCY OF NON-THERMAL TECHNOLOGIES AND MODE OF ACTION
11.00-11.30	COFFEE BREAK MEETING AREA IN FRONT OF ROOM L-226
11.30-13.00	WORKSHOP E-MUSE – SUPREME – TRANSIT SESSION 4 BUILDING L - ROOM L-226
	DECONTAMINATION EFFICACY AND CONSUMER PERCEPTION OF SUSTAINABLE TECHNOLOGIES
13.00	END OF CONFERENCE

Sunday, 7th April 2024

16.00 - 17.30

**HALLWAY BUILDING L – 2ND Floor
Registration in front of Room L-226**

16.00 - 17.30

**WELCOME DRINK IN MEETING SPACE IN FRONT OF ROOM L-226,
2ND FLOOR BUILDING L**



Registration - Sunday

Monday, 8th April 2024

REGISTRATION

08.00 - 17.00

IN FRONT OF ROOM L226, BUILDING L, 2ND FLOOR

08.30 – 09.00

MAIN ROOM L226 BUILDING L – 08.30-09.00
WELCOME ADDRESS

WELCOME

Introduction to FOODSIM'2024

Jan F.M. Van Impe, Katholieke Universiteit Leuven, Campus Ghent, Belgium
FOODSIM'2024, General Conference Chair

09.00 – 10.00

ROOM L226 – 09.00-10.00

SESSION I

MULTISCALE MODELING: FROM MICRO TO MACRO

Chairs: Artemio Plana-Fattori and Jan F.M. Van Impe

FOODSIM_MULTISCALE_01

Modelling Ice Nucleation and Growth during Food Freezing: A Microscale Approach

Christophe Doursat, Hayat Benkhelifa, Denis Flick, Violette Mulot
and Fatou-Toutie Ndoye 57

FOODSIM_PRED_08

Experimental and Numerical Study of Heat and Mass Transfer during Contact Heating of Pancake Dough

Thibaut Viné, Emmanuel Bernuau, Denis Flick and Bertrand Broyart 24

FOODSIM_PRED_01

Simplified Zonal Model of Fluid and Heat Transfer inside a Pallet of Cheese Accounting for Free/Mixed Convection

Dhia Aguenihanaï, Steven Duret, Jean Moureh and Denis Flick 21

Monday, 8th April 2024

10.00 - 10.30

COFFEE BREAK - MEETING AREA IN FRONT OF ROOM L-226

10.30 - 11.30

ROOM L226 - 10.30-11.30

SESSION II

KEYNOTE

Chair: Satyajeet Sheetal Bhonsale



FOODSIM_KEY_01

[Food Process Simulation: Which way to go and how to grow?](#)

Ashim Datta, Cornell University, Ithaca, New York, USA

11.30 - 12.30

ROOM L226 - 11.30-12.30

SESSION III

INNOVATIVE FOOD PRODUCTION AND PROCESSING I

Chairs: Ferruh Erdoğan and Davy Verheyen

FOODSIM_INNOV_PROC_01_ONL

Effect of Drying Methods on Drying Kinetics and Quality of Black Chokeberries

Merve Silanur Yilmaz and Necla Ozdemir-Orhan 115

FOODSIM_INNOV_PROC_02

Numerical Characterization of Continuous Food Sterilization: A Predictive Working Tool for OHMIC Heating

Jorge Rivera and Felix Schottroff 120

Sessions - Monday

Monday, 8th April 2024

FOODSIM_INNOV_PROC_08

Transport Phenomena in OHMIC Heating of Heterogeneous Food Systems

Fabrizio Sarghini, Angela De Vivo, Ezgi Son and Francesco Marra..... 143

12.30 – 13.30

LUNCH BREAK - MEETING AREA IN FRONT OF ROOM L-226

13.30 - 14.30

ROOM L226 - 13.30-14.30

SESSION IV

INNOVATIVE FOOD PRODUCTION AND PROCESSING II

Chair: Fabrizio Sarghini and Torstein Skåra

FOODSIM_FOOD_SAFE_06

Modelling Microbial Inactivation by Radio Frequency Heating: Handling Variation in Processing Temperatures

Davy Verheyen, Maria Tonti, Simen Akkermans, Dmytro Kozak, Torstein Skåra and Jan F.M. Van Impe 84

FOODSIM_INNOV_PROC_03

Radio Frequency Processing of Peanut Butter: Computational Model Development and Process Design

Eda Coskun, Samet Ozturk, Caner Tasci, Kubra Polat, Shuxiang Liu, Rui Li, Shaojin Wang, Behic Mert, Francesco Marra and Ferruh Erdogdu 125

FOODSIM_FOOD_PROCESS_01

Calibration of Multi-Scale Heat and Mass Transfer Simulations of Coffee Roasting towards Development of a Digital Twin

Mark Al-Shemmeri, Estefania Lopez-Quiroga, Robert Farr and Peter Fryer 156

14.30 - 16.00

ROOM L226 - 14.30-16.00

SESSION V

WORKSHOP SESSION

Chair: Ashim Datta

Monday, 8th April 2024



FOODSIM_WORK_01

[Food Physics and Modeling: Take Your Teaching and Learning to the Next Level](#)

Ashim Datta, Cornell University, Ithaca, New York, USA

16.00 - 16.30

COFFEE BREAK - MEETING AREA IN FRONT OF ROOM L-226

16.30 - 18.10

ROOM L226 - 16.30-18.10

SESSION VI

SUSTAINABLE PROCESSING METHODS FOR VARIOUS FOOD PRODUCTS

Chairs: Vasilis Valdramidis and Efstathia Tsakali

FOODSIM_INNOV_PROC_04

Modeling High Pressure Homogenization Process of Dairy Products

Marine Haas, Artemio Plana-Fattori, Raphaël Gondallier de Tugny,

Veronique Bosc, Delphine Huc Mathis and Denis Flick..... 133

FOODSIM_SUSTAIN_01

Mathematical Modeling of Hamburger Grilling in an Infrared System

Ozan Karatas, Yasar A. Ozkaya and Ferruh Erdogdu..... 97

FOODSIM_FOOD_SAFE_07

Effect of Fat Presence on Radio Frequency Inactivation and DNA Damage of Listeria Monocytogenes and Salmonella Typhimurium in Meat Model Systems

Julian Espitia, Davy Verheyen, Shubhangi Mehrotra, Dmytro S. Kozak and Jan F.M. Van Impe 89

FOODSIM_INNOV_PROC_09

Modeling and Optimization of UV-C Intensity Distribution for Safe and Sustainable Postharvest Orange Preservation

Jakia Sultana Jothi, Fumina Tanaka and Fumihiko Tanaka 107

Sessions - Monday

Monday, 8th April 2024

FOODSIM_CHAIN_02

Numerical Modelling of Airflow and Heat Transfer within Strawberries

Multi-Packaging

Ahmad Nasser Eddine, Steven Duret, Jean Moureh and Denis Flick..... **186**

18.10 - 21.00

RECEPTION - MEETING AREA IN FRONT OF ROOM L-226

Tuesday, 9th April 2024

REGISTRATION

08.30 - 17.00

IN FRONT OF ROOM L226, BUILDING L, 2ND FLOOR

09.00 - 10.00

ROOM L 226 – 09.00-10.00 **SESSION VII**
ANALOG AND DIGITAL SIMULATION FOR HUMAN HEALTH
Chairs: Rajat Nag and Dmytro Kozak

FOODSIM_SUSTAIN_03

Effect of the Methanol Concentration on the Production Rate of Thaumatin and Consumption Rate of Methanol by *Pichia Pastoris*

Nivedita Parsekar, Simen Akkermans, Dmytro Kozak and Jan F.M. Van Impe..... **103**

FOODSIM_RISK_01

Risk-Benefit Assessment of using Chlorine-Based Treatment in the Process Chain of Ready-to-Eat Fresh Produce

Vaibhav Bhatia, Rhea Sanjiv Chhaya, Rajat Nag, Martin Danaher, Michael Gaffney, Catherine M. Burgess, Jesús María Frías Celayeta and Enda Cummins **47**

FOODSIM_FOOD_PROCESS_05

Development of a Dynamic in Vitro Food Digestion Simulator (FoodSIM): A Deterministic Model System for Human Digestion

Sotiria Gaspari, Simen Akkermans and Jan F.M. Van Impe..... **166**

10.00 - 10.30

COFFEE BREAK - MEETING AREA IN FRONT OF ROOM L-226

10.30 - 11.30

ROOM L226 - 10.30-11.30 **SESSION VIII**
Invited Speaker
Chair: Monika Polańska

Sessions - Tuesday

Tuesday, 9th April 2024



FOODSIM_INV_01
A Coloured Indicator based on Object Fuzzy Vector Spaces to advise Customers on Healthy Feeding
Joël Colloc.....5

11.30 - 12.30

ROOM L226 - 11.30-12.30 **SESSION IX**
MODELING AND SIMULATION IN FOOD CHAINS
 Chair: Denis Flick and Lydia Katsini

FOODSIM_CHAIN_04
Climate Change impacts Dairy
Lydia Katsini, Satyajeet S. Bhonsale, Styliani Roufou, Sholeem Griffin,
Vasilis Valdramidis, Simen Akkermans, Monika Polanska and Jan F.M. Van Impe . 175

FOODSIM_RISK_03
Behavioural Descriptor and Human Exposure Assessment of Residual Fish-Pathogen-Trapping Biomolecular Protein Solutions
Rajat Nag and Enda Cummins 52

FOODSIM_CHAIN_01
A Simulation Approach to investigating Disruption Events in a Food Supply Chain
 Andrew Greasley and Daniel Chicksand 178

12.30 - 14.00

LUNCH BREAK - MEETING AREA IN FRONT OF ROOM L-226

14.00 - 16.00

Tuesday, 9th April 2024

ROOM L226 - 14.00-16.00

SESSION X

PREDICTIVE MODELING: MICROBIAL GROWTH AND INTERACTIONS

Chairs: Dominique Swennen and Simen Akkermans

FOODSIM_SAFE_01

Impact of Probiotic *Lactocaseibacillus rhamnosus* on *Cronobacter sakazakii* in Infant Formula during In-Vitro Simulated Digestion

Spiridon J. Konteles, Anthimia Batrinou, Vasileios Bartzis, Natalia Stavropoulou, Ekaterini Pyrovolou and Efstathia Tsakali 71

FOOD_EMUSE_12

From Growth to Lysis, Metabolism shapes it All – A Deep Dive into *Lb. Helveticus* Physiology

Teresa Osset Ojea, Lokanand Koduru, Solvej Siedler, Bas Teusink and Ahmad Zeidan

FOOD_EMUSE_05

Modelling the Coculture Dynamics of Yoghurt Lactic Acid Bacteria starting from Single Culture Data

Geoffrey Roudaut, Francesco Moro, Bas Teusink and Eva Balsa Canto

FOODSIM_PRED_03

Interactions between *Bacillus subtilis* and *Escherichia coli* in the Presence of Ampicillin

Simen Akkermans, Meike T. Wortel, Ruben Claus, Stanley Brul and Jan F.M. Van Impe 37

FOOD_EMUSE_09

Exploring the Influence of Iron Addition on Microbial Succession and Metabolomic Changes during Cheese Ripening

Mahtab Shoukat, Eric Dugat-Bony, Dominique Swennen, Vincent Hervé and Pascal Bonnarme

FOOD_EMUSE_08

Dynamic Modeling of Iron's Effects on the Cheese Ecosystem

Hamza Faquir, Mahtab Shoukat, Eric Dugat-Bony, Irene Otero Muras

16.00 - 16.30

COFFEE BREAK - MEETING AREA IN FRONT OF ROOM L-226

Sessions - Tuesday

Tuesday, 9th April 2024

16.30 - 18.30

ROOM L226 - 16.30-18.30 **SESSION XI**
NOVEL METHODS AND DATA FOR NOVEL MODELS
 Chairs: Anthimia Batrinou and Olivier Vitrac

FOODSIM_FOOD_PROCESS_03
I-Optimal Experimental Design in Non-Standard Design Regions for Solubility Studies in Food-Related Products
Gustavo L. Quilló, Satyajeet S. Bhonsale and Jan F. M. Van Impe..... 169

FOODSIM_SAFE_02
Bacterial Fingerprinting of Traditional Cheese by 16S rRNA Next Generation Sequencing: A Pilot Study in Anthotyros Cheese
 Anthimia Batrinou, Spiridon Konteles, Efstathia Tsakali, Ekaterini Pyrovolou, Despina Vougiouklaki and Dimitra Houhoula.....81

FOODSIM_MULTISCALE_03
Physics-Informed Image Analysis for Mechanical Stress Reconstruction in Food Systems
Han Chen, Murielle Hayert, Brian Guthrie and Olivier Vitrac 64

FOODSIM_FOOD_SAFE_04
A Combined Experimental and Computational Approach to detect Sheep, Goat and Cow Milk Adulteration using Cryoscopy
 Simen Akkermans, Sofia Pavlaki, Jan F.M. Van Impe and Efstathia Tsakali 76

FOODSIM_PRED_09
Simulation-Based Synthetic Training Environments for AI-Driven Agricultural Robots
Mariano Crimaldi, Angela De Vivo and Fabrizio Sarghini 161

FOODSIM_CHAIN_05
Sensitivity Analysis of a Continuous Powder Mixing Process using Flowsheet Modeling
Pau Lapiedra Carrasquer, Satyajeet S. Bhonsale and Jan F.M. Van Impe 183

Tuesday, 9th April 2024

20.00 - 23.00

20.00 - 23.00
CONFERENCE DINNER




From 20.00 p.m to 23.00 p.m.

The conference dinner will be held
on **Tuesday the 9th of April** in
the evening at

De Acht Zaligheden

Oudburg 29

9000 Gent

 Tel: + 32. 9 224 31 97

Website:

<https://www.deachtzaligheden.be/en>



Conference Dinner

Wednesday, 10th April 2024

REGISTRATION

09.00 – 12.30

IN FRONT OF ROOM L226, BUILDING L, 2ND FLOOR

09.00 - 10.00

ROOM L226 - 09.00-10.00 **SESSION XII**
MODELING AND SIMULATION IN FOOD PROCESS SYSTEMS
ENGINEERING

Chairs: Sébastien Déjean and Eva Balsa-Canto

FOOD_EMUSE_11

Theoretical Analysis of a Dynamic Model for Phage Attack in Milk Acidification

Michèle Bou Habib, Emmanuel Bernuau, Dominique Swennen, Jannik Vindeloev, Benjamín José Sánchez and Ioan-Cristian Trelea

FOODSIM_FOOD_PROCESS_04

A Tutorial on Interpreting GC-MS Data in Foods

Huabin Luo, Simen Akkermans, Satyajeet Bhonsale, Dominique Swennen and Jan F.M. Van Impe 151

FOOD_EMUSE_03

Introducing MLOps to facilitate Reproducible Model Development on Omics Data

Dario Ruggeri and Vidács László 198

10.00 - 10.30

COFFEE BREAK - MEETING AREA IN FRONT OF ROOM L-226

10.30 - 11.30

ROOM L226 - 10.30-11.30 **SESSION XIII**
KEYNOTE SPEAKER

Chair: Jan Van Impe

Wednesday, 10th April 2024



FOODSIM_KEY_02

Synthetic Biology. Challenges from the Control Engineering Perspective

Jesús Andrés Picó Marco, UPV, Valencia, Spain

11.30 - 12.30

ROOM L226 - 11.30-12.30

SESSION XIV

PREDICTIVE MODELING: MICROSCALE MODELING

Chair: Jesús Picó and Ihab Hashem

FOODSIM_PRED_05

Interaction Types Determine the Emergent Stability in Microbial Communities

Jian Wang, Ihab Hashem, Satyajeet Sheetal Bhonsale

and Jan F.M. Van Impe 32

FOOD_EMUSE_01

EndPointFBA: A Novel Mechanistic Modelling Approach to Predict Cross-Feeding Interactions in Yogurt Starter Cultures

Francesco Moro, Steven Wijnen, Sebastian Mendoza, Julia Lischke, Brett Olivier, Frank Bruggeman and Bas Teusink

FOODSIM_PRED_06

Approximating Metabolic Behaviour of E. COLI using Reduced Extreme Pathway Matrices

Wannes Mores, Satyajeet S. Bhonsale, Filip Logist and Jan F.M. Van Impe 42

12.30 - 14.00

LUNCH BREAK - MEETING AREA IN FRONT OF ROOM L-226

Sessions - Wednesday

Wednesday, 10th April 2024

WORKSHOP E-MUSE – SUPREME – TRANSIT – Addressing the Challenges in developing future foods – PART I

To reach a breakthrough in achieving a more sustainable food system that feeds a growing population, sustainable solutions to produce healthy foods should be explored and implemented. The workshop ADDRESSING THE CHALLENGES IN DEVELOPING FUTURE FOODS is centered around sustainable approaches to develop high quality and safe food. The workshop will share the sustainable routes that are explored in three EU-funded projects; E-MUSE, TRANSIT, and SUPREME. Advances and novel approaches in the field of fermentation, minimal processing, and development of antimicrobial surfaces will be presented as well as technical and societal challenges that are associated with implementation of new sustainable solutions.

14.00 - 14.30

ROOM L226 - 14.00-14.30

SESSION XV

**WORKSHOP E-MUSE – SUPREME – TRANSIT
INTRODUCTORY SPEAKER**

Chair: Dominique Swennen

E-MUSE_INTRO

Modelling Microbial Interactions in Food Fermentation. E-MUSE Illustrative Examples

Eva Balsa-Canto, IIM-CSIC, Vigo, Spain

14.30 - 16.00

ROOM L226 - 14.30-16.00

SESSION XVI

WORKSHOP E-MUSE – SUPREME – TRANSIT

Systems Modeling & Data-Based Modeling: Methods Development

Chair: Sébastien Déjean

TRANSIT

Non-Thermal Plasma Decontamination: Insights and Challenges from a Data-Driven Lens

George Pampoukis

E-MUSE ESR

Multi-Omics Data Mining and Integration with Kernel Methods: A Nutrigenomic Case Study

Mitja Briscik 204

Wednesday, 10th April 2024

FOOD_EMUSE_02

Metabolic-Informed Neural Network for Multi-Omics Data Integration

Gabriele Tazza, Vidács László, Francesco Moro and Bas Teusink..... 193

FOOD_EMUSE_06

Quantifying Microbial Dynamics in Food Products: Harmonizing Multi-Scale Approaches

Jian Wang, Ihab Hashem, Satyajeet Sheetal Bhonsale, Jan F.M. Van Impe

16.00 – 16.30

**COFFEE BREAK AND POSTER PRESENTATIONS- MEETING AREA
IN FRONT OF ROOM L-226**

16.30 - 18.00

ROOM L226 - 16.30-18.00

SESSION XVII

WORKSHOP E-MUSE – SUPREME – TRANSIT

Systematic Methods to Characterise Functional Changes in Biological Systems

Chair: Jan F.M. Van Impe

FOOD_EMUSE_07

Iron Scarcity induces Metabolic Alterations and promotes Interactions in Cheese Ripening Bacteria

Rina Mekuli, Dominique Swennen, Sarah Chuzeville and Sophie Landaud

FOOD_EMUSE_10

In Vitro Assessment of Probiotics, and Technological Properties of LAB (Lactic Acid Bacteria) isolated from Sheep Milk and Cheese

Muhammad Ahmed Ihsan, Alina Kyrylenko, Sholeem Griffin, Herwig Bachmann, Marjon H.J. Wells-Bennik and Vasilis P. Valdramidis

SUPREME

Systematic Assessment of Antifungal Properties of Metal Nanoparticles

Foteini Gerodimou and Vasilis P. Valdramidis

FOODSIM_INNOV_PROC_06 - SUPREME

Modeling the Antibacterial Effect of Copper Oxide Nanoparticles

Büşra Erol Aygün, Tomás Guillermo Cerda Drago, Simen Akkermans, Dmytro Kozak and Jan F. M. Van Impe.....137

Wednesday, 10th April 2024

18.00 - 18.15

ROOM L226 - 18.00-18.15

CLOSING SESSION

Chairs: Philippe Geril – Monika Polanska – Jan F.M. Van Impe

FOODSIM'2024 Closing Session and Best Paper Award

Thursday, 11th April 2024

WORKSHOP E-MUSE – SUPREME – TRANSIT – Addressing the Challenges in developing Future Foods – PART II

09.00 - 09.30

ROOM L 226 – 09.00-09.30

SESSION XVIII

**WORKSHOP E-MUSE-SUPREME-TRANSIT
INTRODUCTORY SPEAKER**

Chair: Heidy den Besten

Involving Consumers in Developing Future Foods
Prof Luis Cunha, University of Porto, Porto, Portugal

09.30 - 11.00

ROOM L 226 – 09.30-11.00

SESSION XIX

WORKSHOP E-MUSE-SUPREME-TRANSIT

Antimicrobial Efficiency of Non-Thermal Technologies and Mode of Action

Chair: Heidy den Besten

TRANSIT

Investigation of Strain Variability Resistance of Foodborne Pathogenic and Spoilage Microorganisms under PEF Treatments

Fotios Lytras

TRANSIT

Opportunities and Challenges of Pulsed-Electric Field (PEF) Application in Plant-Based Milk Alternatives

Arisa Thamsuaidee

TRANSIT

Exploring Pre-Culturing Effects on *Listeria Monocytogenes* Pressure Resistance in Real Food Matrices

Theocharia Tsagkaropoulou

TRANSIT

Combining High Hydrostatic Pressure (HHP) and Nisin to reduce *L. monocytogenes*

Nikolaos Giannoulis

Sessions - Thursday

Thursday, 11th April 2024

11.00 - 11.30

**COFFEE BREAK AND POSTER PRESENTATION - MEETING AREA
IN FRONT OF ROOM L-226**

11.30 - 13.00

ROOM L 226 – 11.30-13.00

SESSION XX

WORKSHOP E-MUSE-SUPREME-TRANSIT

Decontamination Efficacy and Consumer Perception of Sustainable Technologies

Chair: Vasilis Valdramidis

TRANSIT

Exploring the Efficacy of Non-Thermal Plasma Inactivation of Foodborne Microorganisms and the Impact of Strain Variability

Domiziana Battaglia

TRANSIT

Physicochemical Key Parameters Influencing Efficacy of Non-Thermal Plasma (NTP) in Spices Sanitation

Yijiao Yao

TRANSIT

Optimisation of Manothermosonication in the Liquid Whole Egg Pasteurisation: Food Safety and Quality Assessments

Enrique Beitia

TRANSIT

Assessing Consumers' Choice towards Innovative Foods Resulting from New Sustainable Processing Technologies

Aline Silva

FOODSIM'2026

FOODSIM'2026



Proposals for workshops, special tracks, exhibitions etc. can be sent in by **December 2024** to Philippe.Geril@eurosis.org & Jan.VanImpe@cit.kuleuven.be

FOODSIM'2026

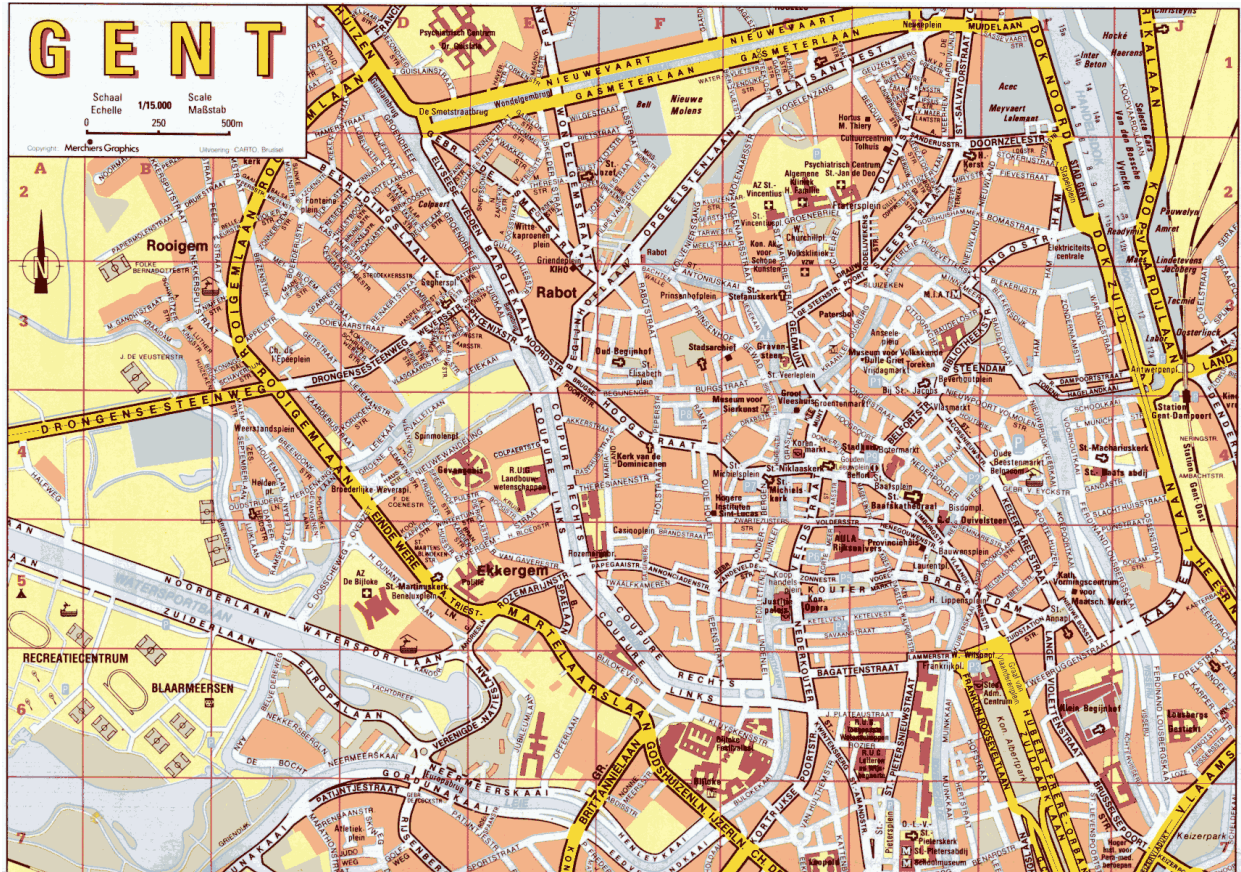
Conference Site Map

Conference Site Map



The conference takes place in room L 226 in Building L. The coffee breaks and lunches are in Building L in the meeting space in front of room L226

Conference Site Map

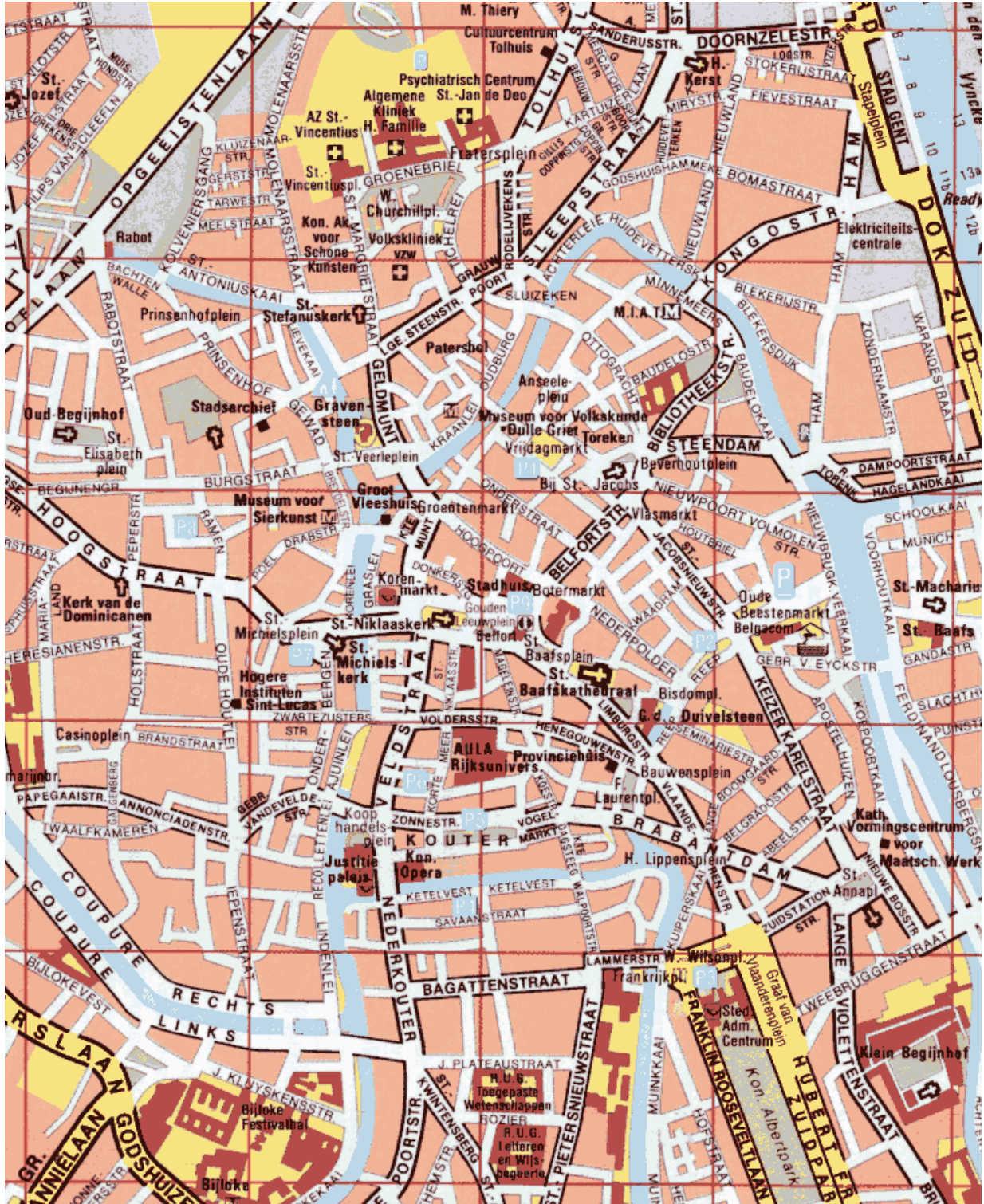


You will find the conference location on this map in quadrant E3
(KIHO/ODISEE)

Conference Site Map

Conference Site Map

Conference Dinner site location from left 2 down/3 across



NOTES

Conference Notes

FOODSIM'2024

At-Conference Registration Form

Please legibly print or type and fill out completely. (Check appropriate boxes where necessary)

FIRST NAME	LAST NAME	M.I.
COMPANY OR AFFILIATION		
Mailing address (tick one): <input type="checkbox"/> HOME <input type="checkbox"/> BUSINESS		
STREET		
CITY		
ZIPCODE	COUNTRY	
TELEPHONE	FAX	
E-MAIL		
DATE	SIGNATURE	
1. <input type="checkbox"/> EUROSIS member € 605 Member Number: _____		€ _____
2. <input type="checkbox"/> Members of Sponsor or Affiliate Society € 605		€ _____
3. <input type="checkbox"/> Non-Member Participant € 645		€ _____
4. <input type="checkbox"/> Student Participant € 415		€ _____
5. <input type="checkbox"/> Students, <u>who are not authors</u> but who wish to attend the conference, or ONE DAY PARTICIPANTS pay: € 380		€ _____
(Above registration fees include, one copy of the PROCEEDINGS, all midday meals, cocktail, refreshments, coffees and social program,) One Day Participants and Non-Author Students cannot participate in the conference dinner.		
6. <input type="checkbox"/> Tutorial registration ONLY - €30 (students) Or €80 (non students)/ per tutorial		€ _____
6. <input type="checkbox"/> Conference Dinner Ticket for Companion € 80 <input type="checkbox"/> Lunch Ticket for Companion € 10/day		€ _____
7. <input type="checkbox"/> Extra Conference Proceedings € 50 Cash and Carry (plus 6% VAT)		€ _____
VAT Number if applicable: _____		
TOTAL AMOUNT DUE		€ _____
<u>ADD 21% VAT (Value Added Tax) OBLIGATORY</u>		€ _____
TOTAL AMOUNT REMITTED		€ _____

[12) Pay by **CREDIT CARD** and fill in the information below:

Charge my (tick one): Visa Euro/Mastercard American Express

CARD NO: _____ : _____ : _____ : _____ EXP.DATE: ____ / ____

Authorizing Signature:

Print Signature in CAPITALS



EUROSIS was borne out of discussions with the European Community to set up a new kind of Society, which would be project driven instead of driven by pure membership and conferences.

The aim of EUROSIS is to set up topic related Technical Committees which will link directly to European Projects in the field of computer simulation and related areas and to act as a knowledge pool for future European Networks of Excellence, like MOSAIC.

If you would like to receive more information about EUROSIS, please contact

Philippe Geril
EUROSIS-ETI
European Simulation Office
Torhoutsesteenweg 162 B.04.02
B- 8400 Ostend, Belgium
☎ Tel: +32.473.231.297
✉ Email: Philippe.Geril@eurosis.org

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