

VIRTUAL WORKSHOP SERIES

TUM Asia

Sustainable Food: Feeding the World Workshop Series

18 Feb - 25 Mar 2025



About TUM & TUM Asia

About Development in Food Sustainability

Fast track your knowledge and discover the latest mobility solutions in our transportation and logistic systems from a line-up of academic professors and industry experts.

Combining global insights and perspectives from a cadre of speakers from leading universities such as Southwest Jiaotong University, Gati Shakti Vishwavidyalaya, Petra Christian University as well as Technical University of Munich (TUM), these workshops will share some of the leading-edge development in transportation systems in India, Indonesia, China, Singapore and Germany.

The Technical University of Munich (TUM) was founded in 1868 and is one of the most research-intensive and innovative universities in Europe. It is ranked #28 worldwide in QS World Ranking 2025, #26 in Times Higher Education (THE) World University Ranking 2025, and #13 in Global Employability University Rankings 2023-24 by THE . It has since produced 18 Nobel Prize winners.

To bring German academic excellence beyond borders, TUM Asia was established in 2002 and is most successful overseas campus of any German university. Apart from providing bachelor's and master's degrees conferred by TUM and jointly with renowned universities in Singapore, TUM Asia also offers executive education courses in areas like Industrie 4.0, Precision Engineering, and Railway and Logistics. To boost competencies in the manufacturing industry, the Competence Centre for Digitalisation, Technologies and Innovation (CDTI) was set up in collaboration with FESTO Singapore to provide lifelong learning courses. To date, more than 3,000 students from 45 countries have graduated from TUM Asia, establishing their footholds in various industries.

In 2010, TUMCREATE was founded as a multidisciplinary research platform to foster bilateral research exchanges between TUM and world's leading universities, local institutions, public agencies and industry partners to contribute towards the sustainable transformation of societies. It is funded by the National Research Foundation Singapore, making advances in research topics like urban mobility, food science and technology, biomedical technology and preventive healthcare, and energy.

To know more, visit <https://tum-asia.edu.sg>

Workshops Schedule

18 Feb 2025, Tuesday

19:00 SGT
(GMT+8)

Sustainability Meets Innovation: Feeding the World Safely and Efficiently
by Prof. Dr. Johannes Sauer, TUM

25 Feb 2025, Tuesday

19:00 SGT
(GMT+8)

Innovative Food Product Development: Tackling Challenges and Transforming the Food Industry
Prof. Dr. Ir. Judy Retti B. Witono, M.App.Sc.,
Parahyangan Catholic University

4 Mar 2025, Tuesday

19:00 SGT
(GMT+8)

Non-Targeted Strategies in Assuring Food Authentication
by Assc. Prof. Boyan Gao, Shanghai Jiaotong University

11 Mar 2025, Tuesday

19:00 SGT
(GMT+8)

Dairy Product
by Assc. Prof. Ariestya Arlene Arbita,
Parahyangan Catholic University

25 March 2025, Tuesday

19:00 SGT
(GMT+8)

Pathogen Control in Chilled and Frozen Ready-to-Eat (RTE) Food Products and The Importance of Environmental Monitoring Programs
by Prof. Suwimon Keeratipibul, Chulalongkorn University

About the Workshops

To receive an e-certification from this event, participants are needed to meet a **minimum requirement of 75% attendance** to attain the e-certificate.

18 Feb 2025, Tuesday



Sustainability Meets Innovation: Feeding the World Safely and Efficiently

In the face of a growing global population, the intersection of sustainability and innovation is pivotal for ensuring food security while minimizing environmental impact.

This lecture explores advanced strategies to feed the world safely and efficiently, integrating economic theory, cutting-edge agricultural technologies, sustainable practices, and equitable policies. Using an economic perspective, key innovations, such as precision agriculture, vertical farming, and alternative protein sources, are assessed for their potential to enhance productivity while reducing resource consumption and greenhouse gas emissions.

Additionally, the role of data analytics and artificial intelligence in optimizing production, policies and supply chains while ensuring food safety is examined. Emphasis is placed on innovative agricultural practices that restore soil health and biodiversity, alongside circular economy principles that minimize waste.

The lecture highlights the importance of collaboration among stakeholders – governments, farmers, researchers, and consumers – to scale solutions that align with global sustainability goals. By synthesizing multidisciplinary approaches, this lecture underscores the potential to achieve a resilient food system that meets the demands of both present and future generations."

Prof. Dr. Johannes Sauer
TUM

25 Feb 2025, Tuesday



Innovative Food Product Development: Tackling Challenges and Transforming the Food Industry

The food industry is currently experiencing rapid growth, evident in the wide variety of food products available in the market. However, this growth is juxtaposed with the closure of numerous restaurants and food production facilities.

What challenges is the food industry facing today?

Moreover, food is now interconnected with various aspects such as health, beauty, environmental sustainability, and more. This evolution has made food products far more complex than they were in the past. To remain competitive and sustainable, creativity and critical thinking have become essential in food product development.

Prof. Dr. Ir. Judy Retti B. Witono, M.App.Sc.
Parahyangan Catholic University

4 Mar 2025, Tuesday



Assc. Prof. Boyan Gao
Shanghai Jiaotong University

Non-Targeted Strategies in Assuring Food Authentication

Food safety has been a global priority, with food authentication detection, including authenticity verification, grown region identification, quality assessment, and differentiation of cultivation methods, remaining a key focus for scientific research, regulatory policies, and industry practices.

This presentation will highlight the role of non-targeted screening strategies in ensuring food authenticity through two case studies: detecting adulteration in vegetable oils and identifying the geographic origin and assessing the quality of wheat.

The findings will demonstrate the significant advantages of this innovative analytical approach in identifying a wider range of unknown chemical hazards.

Additionally, they will provide valuable insights for the development of new food chemistry detection methods and offer solutions to real-world food safety challenges.

11 Mar 2025, Tuesday



Assc. Prof. Ariestya Arlene Arbita
Parahyangan Catholic University

Dairy Product

The global demand for cheese production exceeds the capacity of traditional rennet from young calves. While alternative milk-clotting enzymes from sources such as chicken, bovine, porcine, and fungi have been explored, many of these alternatives face challenges like excessive proteolytic activity, ethical concerns, and consumer resistance.

The ocean covering over 70% of the Earth's surface is home to a rich diversity of organisms that produce proteases capable of effectively coagulating milk. Marine proteases from species such as sponges, jellyfish, and macroalgae have demonstrated significant potential as milk-clotting agents in cheese production.

These enzymes possess unique biochemical properties that enable them to function under the extreme conditions of the marine environment, such as high salinity, pressure, and temperature fluctuations. Several studies have demonstrated that marine proteases can successfully replace traditional rennet, producing cheese with comparable sensory characteristics.

The presentation will explore the role of marine proteases in future cheese production.

25 Mar 2025, Tuesday



Prof. Suwimon Keeratipibul
Chulalongkorn University

Pathogen Control in Chilled and Frozen Ready-to-Eat (RTE) Food Products and The Importance of Environmental Monitoring Programs

Foodborne illness represents a major public health concern with wide-ranging implications for global social and economic development, many of which are not yet fully understood. According to the U.S. Centers for Disease Control and Prevention (CDC), approximately 76 million people in the United States alone are affected by foodborne illnesses annually.

In recent years, consumer awareness regarding food safety has grown significantly, particularly in the context of the globalized food supply chain. This shift has placed increasing pressure on food processing companies to adopt robust food safety management systems, such as Good Hygiene Practices (GHP) and Hazard Analysis and Critical Control Points (HACCP), to ensure product safety. Moreover, food manufacturers must possess a thorough understanding of the foodborne pathogens associated with their products and identify critical points in the food chain where these pathogens can be effectively controlled.

For chilled and frozen ready-to-eat foods, particularly those packaged after the heating step, certain pathogens—such as *Listeria monocytogenes* and *Salmonella*—pose significant challenges. These pathogens are capable of persisting in food processing environments for extended periods, leading to recurring post-process contamination across multiple product batches. Addressing this issue requires the implementation of effective environmental monitoring programs.

One promising approach is the “Zone Concept,” which categorizes areas in the production facility based on their contamination risk levels. Paired with recent advancements in rapid detection methods, this strategy enables the early identification of pathogens even at low levels in production environments. Early detection is crucial, as it allows food processors to assess risks and take timely corrective actions to prevent product contamination. Compared to traditional end-product testing, this proactive method offers more effective control measures and significantly enhances food safety assurance.

By integrating comprehensive GHP, HACCP, and environmental monitoring programs, food processing companies can gain valuable insights into pathogen presence within their products and facilities. These insights empower risk managers to implement targeted control measures, ultimately preventing contamination and ensuring the production of safer food for consumers.



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