



Post Harvest Management & Food Processing Technologies for Entrepreneurs and Industry Professionals

Overview

Food processing is essential for reducing food losses and increasing the availability of wholesome and nutritious products to the consumer. In order to do it one must understand why and how the food spoilage occurs, what can be done in order to prevent it, what techniques are available, how they should be used and optimized so that the processed food remains safe, but quality loss is minimized. This optimization is essential to reduce the severity of processing steps that result in destruction of spoilage and pathogenic microorganisms to the essential level that ensures safety, but not necessarily unduly long in order to prevent quality degradation. Understanding these issues can be challenging to students and researchers and can be puzzling/befalling to entrepreneurs and industrial professionals. New and alternative food processing methods &/or novel combinations of existing methods are continually being investigated by the industry in pursuit of producing better quality foods more economically. Food processing industry is continuously expanding to meet the increasing needs of population in general, educated consumers in particular who strives to get not only for safe foods with extended shelf-life but also for the maximum retention of original quality in the processed foods. Traditional methods include thermal processing, freezing and dehydration. Novel thermal processing methods such as agitation/aseptic/thin-profile processing or product acidification to reduce thermal processing severity, and there are novel thermal processing media such as microwave, RF and ohmic heating to promote better quality retention. Further, to protect the quality even better, there are non-thermal or minimal processing techniques through the use of high pressures, pulsed electric field and pulsed light. Advances in conventional drying and freezing techniques are also influenced by novel heating techniques such as MW/RF, combinations of MW and Vacuum, and modified spray or adsorption drying; spiral freezing, twin screw extrusion, ozone treatment etc. are a few examples of successful emerging technologies.

This short course addresses most of these aspects and helps to provide the participants with the needed knowledge and tools for successful implementation of a number of commercial concepts. The course will be delivered by pooling the combined expertise of the Foreign and National Experts, by a combination of lectures, laboratory tutorials, and hands on exercises.

Course participants will

- 1) Get familiarized with fundamentals of post-harvest management and food processing.
- 2) Understand the concepts in thermal, MW/RF, high pressure processing, dehydration, and extrusion processing.
- 3) Be able to establish and optimize novel food processing techniques based on sound scientific principles.
- 4) Be exposed to practical problems and their solutions, through case studies and lab sessions.
- 5) Be prompted for creative thinking, entrepreneurship, and business development.

Dates	December 4-8, 2023 Number of participants for the course will be limited to fifty.
Who should Attend?	<ul style="list-style-type: none">• Food professionals including engineers & technologists from manufacturing, service, and government organizations• Faculty and researchers from universities, colleges, and R&D laboratories.• M. Tech. and PhD research students
Fees	The participation fees for taking the course are as follows: Participants from abroad : US \$ 500 Industry/ Research Organizations : ₹ 30000 (Can send up to 4 participants) Academic Institutions : ₹ 10000 (Can send 2 participants) Individual students/scholars: ₹ 1000 The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 h free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Dr. Hosahalli Ramaswamy is a Professor of Food Processing at McGill University, Montreal Canada. During the past 36 years at McGill University, he has established a very strong research program in several areas of postharvest technology and food processing: thermal processing (conventional canning, agitation processing, microwave processing), aseptic processing, ohmic heating, ultra-high pressure processing, computer simulation and modeling, and use of artificial neural network for process calculation, characterization, kinetics, optimization, and control. He is a professional member of several societies: Canadian Inst. Food Science and Technology (Canada); Inst. Food Technologists, USA; American Society of Agricultural Engineering (USA); Canadian Society of Agricultural Engineering; Institute For Thermal Processing Specialists (USA); Assoc. of Food Science & Tech. (India). He was also the past President of Canadian Institute of Food Science and Technology.

Dr. Ramaswamy has been conferred the several prestigious awards: *W.J. Eva Award by the Canadian Institute of Food Science and Technology John Clark Award* of Canadian Society of Agricultural Engineering; Fellow of the Association of Food Scientists and Technologists; CIFST President's Award; Fellowship of the Canadian Society of Bioresource Engineering; Merit Pin of IFTPS, Fellow of the International Union of Food Science and Technology (IUFOST), of Canadian Institute of Food Science and Technology (CIFST); Life Time Achievement Award of International Association of Food Engineers. He served as an Editor of Journal of Food Engineering and Science Editor of Journal of Food Science and current Editor-in-Chief of Applied Food Research journal. He has extensive collaborations with many institutes and universities in India.



Dr. Hari Niwas Mishra, an Emeritus Professor of Food Technology at the Agricultural and Food Engineering Department of Indian Institute of Technology Kharagpur, is the former President of the Association of Food Scientists and Technologists (India). He has over 37 years of teaching & research experience and has published 625 research papers including 267 in peer reviewed international journals & 358 in conference proceedings. He has written 4 books, 4 e-books, 35 book chapters, and several popular articles in newspapers and magazines and has 14 Indian patents to his credit. He has supervised more than 286 student research projects including 8 post-Doctoral and 30 PhD research scholars. Professor Mishra has worked in different capacities on various academic and administrative committees of IIT Kharagpur and many other institutions in the country and in Editorial boards of various journals. He is an Expert Member on the National Mission Steering Group, Integrated Child Development Services (ICDS), Ministry of Women & Child Development, Government of India. Professor Mishra has many laurels and awards to his credit. To name a few are All India Food Processors' Association Presidents award for his outstanding contribution to growth and development of food processing industry, GYTI Award, NRDC Award, Best Teacher Award, Dr. JS Pruthi award for new product & process development, Best paper Award of the Association of Food Scientists & Technologists (India), and other professional bodies.

Prof. Mishra has made remarkable contributions in the growth of knowledge in the field of food science & technology. He has developed several novel food products and process technologies such as iron-fortified health rice, nutri dal; gluten free bread & pasta; low-cholesterol cream powder, synbiotic non-dairy yoghurt, probiotic vegetable beverage, dahi & yoghurt powder, instant tea, edible coating of tomato & mushroom; active packaging of tomato, banana & guava; extraction of bioactives from algal biomass, mushroom, etc. RTE Food Pilot Scale Unit, Multi Product CA & MA storage Unit and pilot scale unit for production of 'Iron Fortified Health Rice', have been established at IIT Kharagpur under the guidance of Professor Mishra.

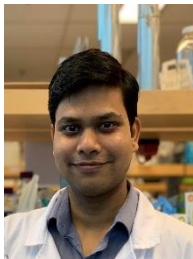
International Faculty

Prof. Hosahalli S. Ramaswamy, PhD, FCSBE, FAFST(I), FCIFST, FIUFoST
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Dr. Ronit Mandal is an Assistant Professor in the Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur. He completed his B. Tech in Dairy Technology from West Bengal University of Animal and Fishery Sciences, Kolkata, India. He did his M. Tech. in Food Process Engineering from Indian Institute of Technology Kharagpur in 2018 and obtained PhD from University of British Columbia, Canada on *non-thermal processing of liquid foods* in 2022. Later on, he did his post-doctoral research on *Computational modeling of plant proteins functionality* at Plant Protein Innovation Center, Department of Food Science and Nutrition, University of Minnesota until July 2023. His research interests include novel food processing, physical and biochemical changes in foods during processing, AI/ML applications in food processing, computer-aided food engineering.



Dr. Brajesh Kumar Panda is an Assistant Professor in the Agricultural and Food Engineering Department at the Indian Institute of Technology Kharagpur. He holds a B. Tech in Agricultural Engineering from CAET, OUAT, Odisha, and an M. Tech in Food Process Engineering from IIT Kharagpur, West Bengal. Dr. Panda earned his Ph.D. from IIT Kharagpur, specializing in process development and mechanization in the postharvest processing of cereal grains. Following the completion of his Ph.D., he gained valuable experience as a Post-doctoral Research Associate at the University of South Australia and Lethbridge College, Alberta, Canada. During this time, his research focused on process mechanization, non-destructive quality estimation, and on-farm grain handling and drying. Dr. Panda's research interests encompass process mechanization, product development, grain storage, and handling, and study on the engineering properties of food materials.

Course Co-coordinators

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