

# Infrared Heating Technologies for Food and Agricultural Product Processing



**Dr. Zhongli Pan**

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**Host:** Dr. Yang Hongshun

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**Venue:** S16-04-30

## **Abstract**

Developing novel and sustainable food processing technologies becomes important to solve some challenging issues related to energy and water consumption, generation of wastewater, and food quality and safety for food industry. Several sustainable technologies for peeling of fruits and vegetables, drying of walnuts and rice using infrared heating have been developed at the University of California, Davis. An infrared dry-peeling technology for fruits and vegetables has been successfully applied to tomatoes, pears, jujubes, and peaches without using water and chemicals. A simultaneous infrared dry-blanching and dehydration (SIRDBD) technology prevents nutrient leaching loss and wastewater generation that occur during current commercial practices. SIRDBD achieves blanching and dehydration in one single step with simpler equipment and higher energy efficiency than the current commercial blanching followed by hot air drying. The technology has been commercially used for producing fruits and vegetables based crispy healthy snacks. A new drying technology for walnuts by using infrared heating as pre-drying followed by hot air drying has shown significant energy reduction. When infrared heating is used for rice drying, it also inactivates enzymes to extend shelf life and kills microbes to improve food safety.

## **About the speaker**



Dr. Zhongli Pan is Adjunct Professor in the Department of Biological and Agricultural Engineering, University of California, Davis. Dr. Pan received his B.S. and first M.S. degree in Agricultural Engineering from Northeast Agricultural University, China, his second M.S. degree in Food Engineering from the University of Illinois at Urbana-Champaign, and Ph.D. degree in Food Engineering from the University of California, Davis.

He had outstanding work experience in academia, research institutions and industry. He served a Research Engineer in the Healthy Processed Foods Research Unit, Western Regional Research Center, Agricultural Research Service (ARS), U.S. Department of Agriculture (USDA) and Director of World Food Center – China, UC Davis. He has led many international cooperation activities and research projects through his academic and research career. Dr. Pan is a world-renowned expert of food engineering and sciences. He has made significant contribution in the research and development of new food and agricultural processing and postharvest technologies for producing nutritious, healthy and safe foods. He also developed effective technologies for value-added utilization of byproducts from food and agricultural product processing. He authored more than 350 scientific publications, patents, books and book chapters. Dr. Pan received several prestigious awards, including 2007 Presidential Early Career Award for Scientists and Engineers, 2007 Herbert L. Rothbart Outstanding Early Career Research Scientist Award of the USDA-ARS, 2012 Distinguished Career Award - Association of Overseas Chinese Agricultural, Biological, and Food Engineers, 2017 China Government Friendship Award, 2017 Life Achievement Award – Chinese American Food Society, 2017 Award for Outstanding Commercialization Success - Federal Laboratory Consortium (Far West), 2017 Technology Transfer Award – Pacific West Area, USDA-ARS, 2017 Life Achievement Award – Chinese American Food Society, and 2018 Research and Development Award – Institute of Food Technologists (IFT).

## **All Are Welcome !**