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Nota di contenuto	Introduction -- Microwave ovens: domestic and industrial -- Factors influencing microwave processing -- Dielectric & thermal properties for microwave processing -- Effect of microwaves on food microorganisms -- Effect of microwaves on food enzymes -- Thermal, non-thermal and enhanced thermal effects -- Effect of microwaves on food quality parameters -- Microwave heating: general concerns, myths, and realities -- Microwave temperature measurement methods in food processing industry -- Effect of microwaves on food proteins -- Effect of microwaves on food starches -- Effect of microwaves on animal and plant-based lipids -- Effect of microwaves on food carbohydrates -- Microwave pasteurization and sterilization -- Microwave thawing and tempering -- Microwave baking -- Microwave cooking -- Microwave extrusion -- Microwave roasting -- Microwave frying -- Microwave-vacuum dehydration in Food Processing -- Microwave osmotic drying

-- Microwave concentration -- Microwave based generation of flavor -- Microwave gadgets - domestic applications.-Microwave 3D printing -- Microwave disinfestations of postharvest agricultural products -- Microwave decontamination of personnel protective equipments - novel response to the global COVID crisis -- Applications of microwaves in dairy industries -- Applications of microwaves in chicken and poultry industries -- Applications of microwaves in meat industries -- Microwave food packaging material and package designs -- Product and package testing for microwave processing -- Chemicalsafety of Microwaves- challenges -- Microbial safety of microwave processing -- Regulatory aspects of MW heating -- Process optimization of Microwave processing -- Power modulated microwave processing -- Batch and continuous flow microwave processing -- Novel advances in simulation of microwave systems.

Sommario/riassunto

The application of microwaves has been a major advancement in food processing over the past 50 years, and yet to date there have been very few publications focusing exclusively on microwave processing and none covering the latest technological and theoretical advances. Microwave Processing of Foods: Challenges, Advances and Prospects fills this gap by covering all aspects of the microwave processing of foods including the latest novel advances in this fast-moving subject area. This text presents multidisciplinary views of novel microwave systems, novel process modeling, engineering and design, as well as practical approaches on methodology and findings regarding the effect of microwave on the food quality and process safety. The volume comprises several chapters on the newest processing and machinery aspects, engineering design and process modeling, process safety and novel processes based on full or partial application of microwave in food processing. This book also considers economic aspects, food quality issues and future trends of microwave application in the food industry. Each chapter in this text functions as a critical review, presenting the current state of knowledge based on the personal experience of the authors and the current state of published research in one particular area of food processing. While the main focus is on processing, the physical principles and the chemical and microbiological basis of the process are also covered, plus the impact of the technology on the quality and safety of food. This book presents a comprehensive and fully up-to-date reference on the principles and applications of microwave processing of food products. .