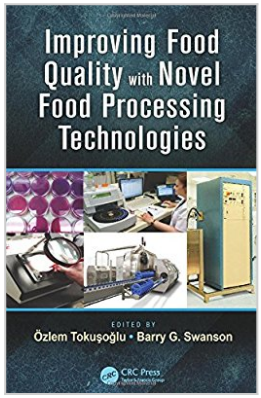

Improving Food Quality with Novel Food Processing Technologies

From CRC Press

Improving Food Quality with Novel Food Processing Technologies From CRC Press

Consumers around the world have become better educated and more demanding in their identification and purchase of quality health-promoting foods; therefore the food industry requires innovative technologies to provide their clientele with safe and stable foods that meet safety regulations . **Improving Food Quality with Novel Food Processing Technologies** details novel processing technologies including high pressure processing (HPP) and pulsed electrical fields (PEFs) that can improve the quality of food from functionality, chemistry/microbiology, bioactive quantity, and shelf-life standpoints.

The authors discuss how to improve food functionality with high hydrostatic pressure (HHP) and PEFs. They focus on improving the quality and retaining bioactive constituents of fruits and vegetables and improving the quality of dairy, egg, meat, and seafood products with HHP. Broad in scope, the book also reviews the modeling and simulations of HHP inactivation of microorganisms and the relative effects of HHP processing on food allergies and intolerances. It then discusses improving food functionality with PEF processes in dairy and egg products, fruit juices, and wine. A chapter attending to industrial applications of HHP and PEF systems and potential commercial quality and shelf life of food products concludes this discussion.

During the past decade, novel processing technologies including HHP, ultrasound, PEF, and advanced heating technologies containing microwave, ohmic heating, and radio frequency have frequently been applied in the processing of foods and beverages. Successful research and identification of economic benefits, including energy and water conservation as well as demonstrated safety and fresh-like quality attributes will improve consumer perception of nonthermal technologies and result in further development by the food industry around the world. In an in-depth exploration of these novel technologies, the book gives you the skills for product development and improvement.

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Editorial Review

About the Author

Özlem Toku?o?lu (main editor, associate professor Dr.) was born in I?zmir, Turkey, completed her bachelor's (1992) and master's (1996) at EGE University in the Department of Chemistry and completed her PhD from the same university in the Department of Food Engineering (2001), I?zmir, Turkey. She worked as a research assistant and Dr. Assistant at EGE University from 1993 to 2001. She professionally officiated at the Food Science and Nutrition Department at the University of Florida–Gainesville, Florida, USA as a research associate during 1999–2000. Dr. Toku?o?lu has worked on the faculty staff as an assistant professor at Celal Bayar University, Manisa during 2002–2007, Turkey. Toku?o?lu, is currently working as associate professor in the Department of Food Engineering of the same university as a faculty member from 2007 to date. Also, during 2012 December, she deserved the full professor degree and her promotion is in progress.

Toku?o?lu was a visiting professor at the Food Science and Nutrition Department at the University of Florida, Gainesville, Florida, USA during 1999–2000 and at the School of Food Science, Washington State University, Pullman, in the State of Washington, USA during April–May 2010. Her study focusses on food quality control, food chemistry, food safety and toxicology, shelf-life of foods and innovative food processing technologies on foods, beverages, and functional products. Her specific study areas are phenolics, phytochemicals, bioactive antioxidative components, food additives, bioactive lipids, their determinations by instrumental techniques, their effects on quality of food and beverages, oil-fats and functional food technologies and the novel food processing effects on food bioactives, food toxicants, and shelf-life of foods and beverages.

Toku?o?lu has conducted academic research studies, keynote addresses, and academic presentations at Geneva, Switzerland in 1997; Gainesville, Florida, USA in 1999; Anaheim–Los Angeles, California, USA in 2002; Sarawak, Malaysia in 2002; Chicago, Illinois, USA in 2003; Szczyrk, Katowice, Poland in 2005; Ghent, Belgium in 2005; Madrid, Spain in 2006; New Orleans, Louisiana, USA in 2008; Athens, Greece in 2008; Anaheim–Los Angeles, California, USA in 2009; Skopje/Üsküp, The Republic of Macedonia in 2009, Chicago, Illinois, USA in 2010; Munich, Germany in 2010; Jamshoro, Sindh-Hyderabad, Pakistan in 2011; New Orleans, Louisana, USA in 2011; Boston, Massachusetts, USA in 2011; Natick, Massachusetts, USA in 2011; Damghan, Tehran, Iran in 2011; Osnabrück, Germany in 2011, Otsu, Kyoto, Japan in 2012; Chicago, Illinois, USA in 2013, Philadelphia, Pennsylvania, USA in 2013.

She has professional affiliations at the Institute of Food Technologists (IFT) and American Oil Chemists' Society (AOCS) in the United States and has a professional responsibility with Turkey National Olive and Olive Oil Council (UZZK) as research and consultative board member. As conference chair she organized and directed the International Congress titled ANPFT2012 (Advanced Nonthermal Processing in Food Technology: Effects on Quality and Shelf-Life of Food and Beverages in 07–10 May 2012 at Kusadasi-Aegean, Turkey (www.anpft2012.org).

Professor Toku?o?lu is the editorial board member of the *International Journal of Food Science and Technology* (*IJFST*) by Wiley. Toku?o?lu has several editorial and reviewer assignments in Science Citation Index (SCI) and international index covered journals. Toku?o?lu has published a scientific edited book titled *Fruit and Cereal Bioactives: Chemistry, Sources and Applications* by CRC Press, Taylor & Francis, USA. She has many research papers published in peer-reviewed international journals covered by the SCI and by

the international index covered journals, international book chapters, international presentations (as oral and posters) presented at international congresses and other organizations. She was the principal investigator and advisor for the theses of two masters' students; also one doctorate student and two masters' students are in progress from 2013. Toku?o?lu delivers lectures on shelf life of foods, food contaminants and toxicology, organic chemistry, general chemistry in bachelor of science in two semesters; recent advances in food quality control, advanced fats and oils technology, food bioactives, food stability in master of science and doctorate courses in two semesters).

Barry Swanson (coeditor, professor Dr.) is Emeritus Regents Professor of the School of Food Science at Washington State University and the University of Idaho. Barry's research interests range from studies of legume protein digestibility and storage quality in collaboration with the Institute for Nutrition in Central America and Panama (INCAP) supported by the USAID Collaborative Research Support Program (CRSP), to initial studies with sucrose fatty acid polyesters, syntheses of fat substitutes, alternative fat replacers and methods to improve the quality of reduced fat cheeses, and more recent research interests focused on the implementation of ultra-high pressure to improve cheese yield and the hydrophobic functional properties of whey proteins. Barry coauthored more than 200 research manuscripts and 35 book chapters. Barry takes pride to have mentored 47 MS and 24 PhD students who now are successfully pursuing professional careers across the United States and around the world. Barry received a CAHNRS Faculty Excellence in Research Award in 2001 and was invited to Michigan State University as a prestigious G. Malcolm Trout Visiting Scholar in 2004. In July 2005, Barry was recognized as one of ISI's Most Highly Cited Researchers and is ranked 22nd among international authors in agricultural sciences, 1996–2006, by *Science Watch* 17(4), Thomson Scientific.

Barry was elected a Fellow of IFT (Institute of Food Technologists) in 2002, and a Fellow of IUFoST (International Union of Food Science and Technology) in 2006. Barry is a retired editor of the *Journal of Food Processing and Preservation*. Barry served for 6 years as executive secretary to the Washington State University (WSU) Faculty Senate, and served as interim director of the merged WSU and University of Idaho (UI) School of Food Science. Barry was promoted to the prestigious rank of Regents Professor at WSU and elected to the IFT Board of Directors in 2009. Barry retired in May 2011 and is currently serving on the IFT Education Advisory Panel and 2013 AMFE Food Chemistry Program Sub-Panel.

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