

Curriculum Vitae

MUKUND V. KARWE

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EDUCATION

- 1987 **Ph.D. degree**, Mechanical and Aerospace Engineering, Rutgers University.
- 1983 **M.S. degree**, Mechanical and Aerospace Engineering, Rutgers University.
- 1981 **B.Tech. degree**, Mechanical Engineering, Indian Institute of Technology Bombay, India.

PROFESSIONAL EXPERIENCE

- 10/07 – Present **Chair**: Department of Food Science, Rutgers University.
- 07/06 – Present **Professor I**: Department of Food Science, Rutgers University.
- 2010 – Present **Adjunct Professor** South China University of Technology, Guangzhou, China.
- 2007 – Present **Honorary Professor** Institute of Chemical Technology, Mumbai, India.
- 9/05 – 2010 **Member**, Higher Education Review Board (HERB), formerly Committee on Higher Education (CoHE), Institute of Food Technologists.
- 1999 – 06/06 **Associate Professor**: Department of Food Science, Rutgers University.
- 7/99 – 2007 **Undergraduate Program Director**: Department of Food Science, Rutgers University.
- 8/07 – 7/08 **Chair**, Committee on Higher Education (CoHE), Institute of Food Technologists.
- 12/03 – 04/04 **Visiting Faculty**: Department of Chemical Engineering, Indian Institute of Technology, Bombay, India.
- 07/03 – Present **Cluster Coordinator**: “Health Promotion Attributes of Foods” cluster of the Cooperative Research Program of the Center for Advanced Food Technology, Rutgers University.
- 1/06 – 12/07 **Associate Editor**: Food Engineering and Physical Properties, Journal of Food Science.
& 1/01 – 12/03
- 2000-2003 **Cluster Coordinator**: “Safety and Health Promotion in Processed Foods” cluster of the Cooperative Research Program of the Center for Advanced Food Technology, Rutgers University.
- 7/97-2000 **Co-Project Manager**: “Process Control and Simulation” cluster of the Cooperative Research Program of the Center for Advanced Food Technology, Rutgers University.

- 1993-1999 **Assistant Professor:** Department of Food Science, Rutgers University.
- 1/95 - Present **Faculty Member:** Graduate Program in Mechanical Engineering, Rutgers University.
- 1992-1997 **Assistant Project Manager:** “Physical Forces in Foods (extrusion)” project in the Basic Research Program of the Center for Advanced Food Technology, Rutgers University.
- 1/92 - 9/93 **Assistant Research Professor:** Center for Advanced Food Technology, Rutgers University.
- 1988-1991 **Research Associate:** Center for Advanced Food Technology, Rutgers University.
- 1987-88 **Post-Doctoral Fellow:** Department of Mechanical Engineering and Center for Advanced Food Technology, Rutgers University.

AWARDS, HONORS AND PROFESSIONAL AFFILIATIONS

Ernest E. McMahon Award (2010) from Rutgers University Alumni Association (RUAA) for the first “ReConnect with Rutgers Food Science” event held on April 23-24, 2010. The award recognizes an alumni event or program for creative programming excellence.

William V. Cruess award (2009) for excellence in teaching food science and technology, from the Institute of Food Technologists. This is the highest teaching excellence award in the field of food science and technology in US. Only one award is given every year.

Warren I. Susman Award for Excellence in Teaching (2008): This award is presented annually to faculty members “in recognition of outstanding service in stimulating and guiding the intellectual development of students at Rutgers University.”

Professor Endel Karmas Teaching Excellence Award (2007, 2002, 2000, and 1995) from the students of the Department of Food Science, Rutgers University for Excellence in Teaching Food Science at Rutgers University.

Certificate of Appreciation for Outstanding Service (2006), Douglass Project for Rutgers Women in Math, Science, and Engineering.

Chair’s Appreciation Award (2005) from the Chair of the Department of Food Science, Rutgers University, in recognition of the outstanding service to the department.

Prof. B.D. Tilak Visiting Fellow (2004) Institute of Chemical Technology, University of Mumbai, Mumbai, India.

Chair (2005), **Vice-chair** (2004), **and Secretary** (2003) of NC-136 (1023), a multi-state project on “Improvement of Thermal and Alternative Processes for Foods” of the USDA. Also served as the sub-committee chair of the re-write committee (2004).

Chair's Appreciation Award (2003) from the Chair of the Department of Food Science, Rutgers University, in recognition of the outstanding service to the department as Undergraduate Program Curriculum Coordinator.

Academic Professional Excellence Award for Excellence in Research (2002) from the New Jersey Agricultural Experiment Station and Cook College, for exceptional performance in research, demonstrated by a series of papers published in peer-reviewed journals.

Academic Professional Excellence Award for Excellence in Teaching (2001) from the New Jersey Agricultural Experiment Station and Cook College, for exceptional performance in teaching and an outstanding contribution to the instructional program of the college for a period of at least three years.

Faculty Friend Award from Rutgers Food Science Graduate Student Association (2001).

Conference Presentation/Poster Awards

Khurana and **M.V. Karwe**, "Numerical Simulation of Temperature Distribution in Vertical and Horizontal High Hydrostatic Pressure Food Processing Vessels," *Institute of Food Technologists Annual Meeting*, Anaheim, CA, June 5-9, 2009. (This poster won 2nd Prize \$ 500).

S. P. Narwankar, George E. Flimlin, Donald W. Schaffner, Beverly J. Tepper, & **Mukund V. Karwe**, "Process Optimization for Microbial Quality and Sensory Evaluation of High Pressure Processed Hard clams (*Mercenaria mercenaria*)," *Food Innovation: Emerging Science Technologies, and Applications I (FIESTA)*, Brisbane, Australia, Sept. 17-18, 2008. (This poster/presentation won 3rd Prize \$ AU250).

Khurana and **M.V. Karwe**, "Numerical Simulation of Temperature Distribution and Estimation of Transient Temperature Lag in a High Hydrostatic Pressure Food Processing Vessel," *Institute of Food Technologists Annual Meeting*, Chicago, July 27-August 1, 2007. (This poster won 1st Prize \$ 700).

R. Tikekar and **M.V. Karwe** "Effect of processing on stability of squalene in amaranth," *Conference on Functional Foods and Nutraceuticals*, Istanbul, Turkey, May 4, 2006. (this poster won 2nd prize \$ 400).

Maro Future Technology Award for Special Achievement in Research of Future Developments in the Field of Polymers. The award was for the best paper presented in the Extrusion session during the Society of Plastic Engineers Annual Technical Conference in Atlanta, May 1998.

Professional Affiliations

Member of the Editorial Board of the Journal of Food Engineering, Food Science and Technology Elsevier Ltd, Oxford, U.K.

Member of the Editorial Board of the Journal of Food Process Engineering, Food and Nutrition Press, Trumbull, Connecticut.

Member of the Editorial Board of the Food Engineering and Physical Properties section of the Journal of Food Science (IFT).

Member of the Industrial Advisory Board of the Mechanical and Aerospace Engineering department of Rutgers University

Panel Member, U.S. Department of Agriculture, National Integrated Food Safety Initiative, 2007.

Ad-hoc reviewer forRefereed Journals:

ASME Journal of Engineering for Industry
ASME Journal of Heat Transfer
Computational Mechanics
Food Science and Technology International
Heat Transfer Engineering
International Journal of Heat and Mass Transfer
International Journal of Numerical Methods for Heat & Fluid Flow
Journal of Food Engineering
Journal of Food Process Engineering
Journal of Food Processing and Preservation
Journal of Food Science
Journal of Numerical Methods in Engineering
Lebensmittel-Wissenschaft und -Technologie
Numerical Heat Transfer
Polymer Engineering & Science

Funding Agencies:

National Science Foundation
New Jersey Commission on Science and Technology
National Center for Supercomputer Applications, Urbana-Champaign, Illinois
Southern Food and Dairy Research Center, North Carolina State University, Raleigh
U.S. Department of Agriculture, National Integrated Food Safety Initiative
U.S. Department of Agriculture, National Research Initiative for Competitive Grants Program
U.S. Department of Agriculture, Office of Grants and Program Systems, Small Business
Innovation Research Program
University of California Energy Institute, Berkeley

Professional Member of

American Association of Cereal Chemists (AACC)
American Institute of Chemical Engineers (AIChE)
American Society of Mechanical Engineers (ASME)
Institute of Food Technologists (IFT)
Institute for Thermal Processing Specialists (IFTPS)

Consultant for

PepsiCo of North America (PCNA) 2009-present
Micronutrient Initiative, CIDA, Canada (2006-present)
Cibusconsulting, State College, PA (2007-present)
Schwan Foods, Minnesota (2007)
Frito-Lay North America (FLNA), Texas (2007-present)
Reading Bakery Systems, Reading, PA (2006-present)
Elmhurst Research Inc., Albany, NY (2006)
Winston Laboratories, New Jersey (1997- 2005)
Corn-Products Company, Illinois (1997- 2000)
Bestfoods, New Jersey (1997- 99)
Merck Sharp & Dohme, Puerto Rico (1999)
Ross Laboratories, Ohio (1998)
Product Genesis, Boston (1996)

2003 American Maize-Products Company, Illinois (1994-95)
David Sarnoff Research Laboratory, New Jersey (1987-88)

RESEARCH and TEACHING GRANTS

- 2010-2012 “Alert to Temperature Abuse of UGR-As,” a CORANET short term project from U.S. Army with Rieks Bruins (PI) and Dr. Don Schaffner (Co-PI).
- 2009-2012 Process non-uniformity During High Hydrostatic Pressure Processing of Heterogeneous Foods,” from Agricultural and Food Research Initiative, U.S. Department of Agriculture, Principal Investigator, Don Schaffner (Co-PI) and Alberto Cuitino (Co-PI).
- 2009-2010 “Total phenolics and anti-oxidant capacity of cocoa (*Theobroma cacao* L.) pulp: Investigation, Processing, and Storage Study ,” iTi Tropicals, Inc., New Jersey, Principal Investigator, with Co-PI: Rick Ludescher.
- 2009-2010 “Inactivation of salmonella typhimurium in peanut butter by high hydrostatic pressure ,” Industrial Cooperative Research Program, CAFT, Rutgers University, Principal Investigator, with Co-PI: Don Schaffner.
- 2009-2010 “Effect of thermal processing and high hydrostatic pressure processing (HHPP) on the antioxidant capacity of muscadine grape, blueberry, and cranberry juices,” Industrial Cooperative Research Program, CAFT, Rutgers University, Principal Investigator, with Co-PIs: Rong Di and Chi-Tang Ho.
- 2009-2011 “Enhanced Infusion of Antioxidants into Combat Rations Using High Pressure Process,” a CORANET short term project from U.S. Army for. Principal Investigator, with Rieks Bruins (Co-PI) and Dr. Bill Franke (Co-PI).
- 2008-2010 “Culinary Food Science.” Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Principal Investigator. It is a subcontract of a larger grant that was awarded to Bergen County Technical Schools, New Jersey.
- 2007-2009 Wet-Pack Fruits: a CORANET short term project from U.S. Army. Principal Investigator, with Rieks Bruins (Co-PI) and Dr. Bill Franke (Co-PI).
- 2006-2010 “Improving the safety of hard clams, *Mercenaria mercenaria*, through post harvest treatment with high hydrostatic pressure processing (HHP),” Integrated Research, Education, and Extension Competitive Grants Program – National Integrated Food Safety Initiative, U.S. Department of Agriculture. Principal Investigator with Co-PI: George E. Flimlin.
- 2006-2009 “Effect of High Hydrostatic Pressure (HHP) Treatment on the Flavor Profile and Proanthocyanidins in Cranberry Juice - Industrial Cooperative Research Program, CAFT, Rutgers University. Principal Investigator, with Co-PIs: C.-T. Ho and N. Vorssa.
- 2006-2007 “The Science of Food: A bridge to the future, connecting secondary, post-secondary, and higher education,” Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Principal Investigator with Co-PI Richard L. Ludescher. It is a subcontract of a larger grant that was awarded to Gloucester County College, Sewell, NJ 08080.

- 2004-2010 Multi-state assistance grants from the New Jersey Agricultural Experiment Station, for the multi-state project “Improvement of Thermal and Alternative Processes for Foods” of the USDA. Principal Investigator.
- 2003-2006 “Advantages and Challenges of Using Amaranth and Quinoa in Food Products: Nutraceutical Viewpoint,” Industrial Cooperative Research Program, CAFT, Rutgers University. Principal Investigator.
- 2003-2005 “Foods Fortified with Stable Omega-3 Fatty Acids: Health Benefits in Ulcerative Colitis (UC),” from the New Jersey Commission on Science and Technology. Co-Principal Investigator (with Geetha Ghai).
- 2002-2005 “Modulation of Gene Expression of Inflammation Mediators by Processed Foods,” from the New Jersey Commission on Science and Technology (one of the eleven co-principal investigators).
- 2004-2005 “Virtual Collaboratory for Food Nutrition Business Information,” from the Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture (one of the eleven co-principal investigators).
- 2000-2001 High Hydrostatic Pressure equipment grant from the Equipment Leasing Fund of the State of New Jersey. Principal Investigator.
- 2000-2001 “Fortification of Foods with Omega-3 Fatty Acids,” a planning grant from the New Jersey Agricultural Experiment Station, Principal Investigator.
- 2001 “Modernizing Undergraduate Laboratories for Multi-disciplinary Teaching,” from Rutgers University's Reinvesting in Rutgers Programs, Phase IV. Co-investigator (With K. Schaich and B. Tepper).
- 2000-2003 “Enhancements of Nutraceutical Potential in Quinoa through Processing,” from Center for Advanced Food Technology, Rutgers University. Co-investigator (with Dr. C-T. Ho).
- 2000 “Modernizing Undergraduate Laboratories for Multi-disciplinary Teaching,” from Rutgers University's Reinvesting in Rutgers Programs, Phase III. Co-investigator (With K. Schaich and B. Tepper).
- 1999-2000 “Food Engineering Virtual Laboratory,” from Rutgers University's New Brunswick Advisory Committee for Instructional Computing. Principal Investigator.
- 1998-2002 “Thermal Transport in a Hot Air Jet Impingement Oven,” from the National Research Initiative Competitive Grants Program of the U.S. Department of Agriculture. Principal Investigator.
- 1998-2000 Small Business Initiation Research Phase II Project from Foster-Miller, Inc., Massachusetts. Co-Investigator (with J.L. Kokini and T.C. Lee).
- 1997-98 “Effect of Preconditioning on Palatability and Nutritional Quality of Extruded Cat Food,” from the Ralston Purina Company, St. Louis, Missouri. Principal Investigator.

- 1997-98 “Rutgers Summer Institute in Food Science,” from the Institute of Food Technologists, Career Guidance Committee, Teacher Workshop Grant Proposal. Co-Investigator (with R.D. Ludescher and K. Matthews).
- 1996-98 “Processing Food Wastes to Create New Animal Feedstuffs,” a Sustainable Agriculture Research and Education grant from the New Jersey Agricultural Experiment Station. Co Investigator (Principal Investigator: Mike Westendorf.)
- 1996-97 Small Business Initiation Research Phase I contract grant from Foster-Miller, Inc., Massachusetts. Co-Investigator (with J.L. Kokini and T.C. Lee).
- 1996-97 “Effect of a Bulking Agent on Extruded Products,” Opta Food Ingredients, Massachusetts. Principal Investigator.
- 1996-97 “Feasibility Study of Developing a New Breakfast Cereal with a Novel Grain,” from Seven Star Cereal, New York. Principal Investigator.
- 1995-97 “Measurement of Flow Field and Mixing in a Co-rotating Twin-screw Extruder,” from the National Research Initiative Competitive Grants Program of the U.S. Department of Agriculture. Principal Investigator.
- 1995-96 “Effect of Extrusion Parameters on Expanded Product Quality,” from Ralston Foods, St. Louis, Missouri. Principal Investigator.
- 1995-97 “Transport Phenomena in a Jet Impingement Cooking Oven,” from Center for Advanced Food Technology, Rutgers University. Principal Investigator.
- 1994-99 “Simulation of Transport Phenomena in an Extruder Die,” from Center for Advanced Food Technology, Rutgers University. Principal Investigator.
- 1994-99 “Application of Laser Doppler Anemometry in Screw Extrusion,” from the New Jersey Agricultural Experiment Station. Principal Investigator.
- 1994-96 “Measurement of Heat Transfer Coefficient and Energy Balance on a Twin-Screw Extruder,” from Center for Advanced Food Technology, Rutgers University. Principal Investigator.
- 1994-95 “Starch Modifications Using Extrusion,” from American Maize-Products Company, Hammond, Indiana. Principal Investigator.
- 1994-95 “Computerization of Food Engineering Laboratory,” from Teaching Excellence Center, Rutgers University. Principal Investigator.
- 1994-95 “LDA in Screw Extrusion,” Undergraduate Research Internship Award, Office of the Provost and Graduate Dean, Rutgers University. Principal Investigator.
- 1991-92 45 CPU Hours on CRAY Y-MP, from the National Center for Supercomputer Applications at Urbana-Champaign, Illinois - Project Title: “Transport Phenomena in Food Extrusion.” Principal Investigator.

- 1990-94 “ZSK-30 Data Acquisition and Control,” from Center for Advanced Food Technology, Rutgers University. Principal Investigator.
- 1989-91 75 CPU Hours on CYBER 205 and CRAY X-MP, from the John von Neumann Supercomputer Center, Princeton and National Center for Supercomputer Applications at Urbana-Champaign, Illinois - Project Title: “Transport Phenomena in Extrusion.” Principal Investigator.

RESEARCH SUPERVISION

Visiting Faculty

- (1) Professor Ligia Merczak, Federal University of Rio Grande do Sul, Brazil (2009-10)
- (2) Dr. Francesco Donsi, University of Salerno, Italy (2008)
- (3) Dr. Uday Annapure, UICT, Mumbai, India (2007)
- (4) Dr. Shashank Mhaske, UICT, Mumbai, India (2007)

Post-doctoral Fellows:

- (1) Dr. Kiran Desai (2011)
- (2) Dr. Rafael Borneo (2003 - 04)
- (3) Dr. Ilkay Sensoy (2002 - 04)
- (4) Dr. Hülya Doğan (2000)
- (5) Dr. Murali Chandrasekaran (1995-97)

Doctoral (Ph.D.) students, past and current:

1. Jose Antonio Maldonado, Food Science (2013, expected)
2. Swetha Mahadevan, Food Science (2011, expected)
3. Meenakshi Khurana, Food Science (2011, expected)
4. Raymond Carroll, Food Science (2011, expected)
5. Nitin Nitin, Food Science (2009)
6. Dilek Kocer, Food Science (2005)
7. Indrani Deo, Mechanical Engineering (2001)
8. Serafim Bakalis, Food Science (1999)

Masters (Plan A, Thesis) students, past and current:

1. Karthikeyan Jagadeesan Shankaran (2012, expected)
2. Neha Bhide, Food Science (2012, expected)
3. Siddhi Thakkar, Food Science (2011, expected)
4. Tanya D’Souza, Food Science (2011, expected)
5. Nidhi Singla, Food Science (2011)
6. Yijing Zhou, Food Science (2011, expected)
7. Rajay Teraiya, Food Science (2011, expected)
8. Li Zhang, Food Science (2011, expected)
9. Anand Atre, Food Science (2011)
10. Vidya Endraiyani, Food Science (2011, expected)
11. Gabriel Mootian, Food Science (2010)
12. Jose Antonio Maldonado, Food Science (2010)
13. Gabriella Chiappe, Food Science (2008)
14. Meenakshi Khurana, Food Science (2008)
15. Shalaka Narwankar (2008)
16. Rohan Tikekar, Food Science (2006)
17. Kevin Brady, Food Science (2004)

18. Rama Padmini Gadiraju, Food Science (2003)
19. Nitin Nitin, Food Science (2001)
20. Lalithya Yerramilli, Food Science (2001)
21. Heather E. Marcroft, Food Science (1998)
22. Serafim Bakalis, Food Science (1996)
23. Shankar Godavarti, Food Science (1996)

M.S. (Plan B, Paper) students, past and current:

- (1) Thomas Kiessling, Food Science (1998)

Foreign Interns Supervised:

- (1) Andrea De Stefano, University of Bologna, Italy (Summer 2006)

Thesis/Dissertation Committee Member for

- 14 M.S. Thesis (2 in Mechanical Engineering)
- 18 Ph.D. Dissertations (4 in Mechanical Engineering)

External examiner in the Ph.D. dissertation defense of Yan Wu, Department of Agriculture and Bioresource Engineering, University of Saskatchewan (Sept. 1996). I went to Saskatoon, Canada, to participate in the dissertation defense of Yan Wu.

External examiner for

- (1) Anna University, Chennai, India
- (2) The University of West Indies, St. Augustine, Trinidad and Tobago.

Supervised following students from Douglass Project for Rutgers Women in Math, Science and Engineering:

Project SUPER (Stepping Up in the Physical Sciences, Engineering, and Research)

- (1) Kosomalasmy Tea (2001)
- (2) Aalia Chaudhry (1997)
- (3) Eun Hae Engebretsen (1996)
- (4) Chiniqua Gallop (1995)

Supervised following students from Cook College Honors Program:

- (1) Jason Wu (2001)

Supervised following summer interns who worked in my laboratory:

- (1) Sughra Naqvi, Cornell University (2002, 2005)

Undergraduate students supervised under Cook College Cooperative Education Program:

1. Richard Mamaril, worked in Firmenich, NJ (2000)
2. Art Pierkowski, B T & C Research and Consulting, NJ (2000)
3. David Warmington, Firmenich (2000)
4. Karen Shieh, International Flavors and Fragrances (2000)
5. Varsha Savalia, Bioresource Engineering, McNeil Specialty Products (1999)
6. Joyce Vacca, Food Science (1999)
7. Michael Russo, Food Science, McNeil Specialty Products (1999, 2000)
8. Matthew Zawoysky, Food Science, General Spice, Inc. (1999)
9. Joseph Baaklini, Food Science (1998)
10. Jennifer Matthews, Food Science, Flavor International (1997, 1998)
11. Lauren Rush, Food Science, M & M Mars, (1996)

12. Irene Robles, Bioresource Engineering (1995)
13. Shizuko Itsukaichi, Food Science, FMC, (1993)

High school students supervised:

1. Nikkia Scott, New Brunswick High School (2005), Project SEED
2. Michelle Chelnik and Lydia Horvath, Woodbridge High School. Their work was presented at the North Jersey Regional Science Fair (2002 and 2003)
3. Colena Samuels, Plainfield High School (2000 and 2001), Project SEED

INVITED INTERNATIONAL and NATIONAL SEMINARS

1. "High Pressure Processing of Foods," South China University of Technology, Guangzhou, China, October 11, 2010.
2. "Minimizing browning of pears in MRE rations," The Institute of Chemical Technology at Mumbai University, Mumbai (Bombay), India, January 8, 2010.
3. "Food Science Curriculum Evaluation and Continuous Improvement," The Institute of Chemical Technology at Mumbai University, Mumbai (Bombay), India, August 20, 2009.
4. "Institute of Food Technologists (IFT) USA Approval Requirements for Undergraduate Food Science Programs," Department of Family Sciences, College of Women at Kuwait University, Kuwait, March 15, 2009.
5. "Curriculum Design and Evaluation Based on Competencies, Outcomes, and Assessment," Department of Family Sciences, College of Women at Kuwait University, Kuwait, March 16, 2009.
6. "Advances in High Pressure processing of Foods," Department of Family Sciences, College of Women at Kuwait University, Kuwait, March 17, 2009.
7. "Effect of Processing on Nutraceuticals in Amaranth, Buckwheat, and Quinoa," Department of Family Sciences, College of Women at Kuwait University, Kuwait, March 18, 2009.
8. "Thermal Transport in Emerging Food Processing Applications," Central Institute for Post Harvest Engineering and Technology (CIPHET), Ludhiana, India, Dec. 29, 2008.
9. "Process Optimization for Microbial Quality and Sensory Evaluation of High Pressure Processed Hard clams (*Mercenaria mercenaria*)," Plenary Lecture, CHEMCON 2008, Chandigarh, India, Dec. 27-30, 2008.
10. "Thermal Transport in Selected Food Processing Operations," The Institute of Chemical Technology at Mumbai University, Mumbai (Bombay), India, December, 23, 2008.
11. "Thermal Transport in Selected Food Processing Operations," The Ohio State University, Department of Food Science, Columbus, Ohio, October 6, 2008.
12. "Nutritional Solutions for Prediabetics and Diabetics," Club 55, Laurence Harbor, New Jersey, May 3, 2008.

13. "Thermal Transport in Emerging Food Processing Applications," Department of Mechanical and Aerospace Engineering, Rutgers University, New Jersey, April 16, 2008.
14. "Transport Phenomena in Jet Impingement and Hybrid Microwave Jet Impingement Baking," University of Salerno, Salerno, Italy, September 27, 2007.
15. "Jet Impingement and Hybrid Microwave Jet Impingement Baking: Mathematical Modeling", Kansas State University, August 27, 2007.
16. "Food Science & Technology" National Agricultural Education Association Region VI Conference, Cranberry, NJ, July 11, 2007.
17. "Food, Health & Genes" New Jersey State Police Office of Forensic Sciences, Hamilton, NJ, May 30, 2007
18. "Nutritional Solutions," First conference in Successful Ageing (for people 51+ yrs) sponsored by United Way, Sayerville, NJ, July 22-23, 2006.
19. "Food Extrusion Modeling and Experiments," Istanbul Technical University, Istanbul, Turkey, May 5, 2006.
20. "Effect of processing on nutraceuticals in quinoa, buckwheat, and amaranth," invited talk during the Conference on Functional Foods and Nutraceuticals, Istanbul, Turkey, May 4, 2006
21. "Omega-3s: Food Technology Issues," Pluses and Minuses of Omega-3 as Functional Food Ingredients, Rutgers University, New Jersey, April 12, 2006.
22. "Thermal and non-thermal processing of foods," Assam College of Engineering, Guwahati, Assam, India, January 6, 2006.
23. "Food Extrusion: Challenges in Mathematical Modeling and Experimental Investigations," First joint meeting of the Indian Institute of Chemical Engineers & the American Institute of Chemical Engineers, Mumbai, India, December 28-30, 2004.
24. "Nutraceuticals," during the Workshop on Challenges, Opportunities, and Developments in Food Processing, Directorate of Technical Education, Government of Goa, Porvorim Goa, India, April 2, 2004.
25. "Non-thermal Food Processing Technologies," Institute of Chemical Technology (UICT), University of Mumbai, Mumbai, India, March 25, 2004.
26. "Food Extrusion and Baking: Effect on Nutraceuticals," Institute of Chemical Technology (UICT), University of Mumbai, Mumbai, India, March 19, 2004.
27. "Transport Phenomena in a Food Extruder: Numerical and Experimental Investigations," Chemical Engineering Department, Sinhgad College of Engineering, Pune, India, March 12, 2004.
28. "Food Extrusion: Modeling and Experiments," Department of Chemical Engineering, Indian Institute of Technology, Bombay, Mumbai, India, January 22, 2004.
29. "Food Science," College of Science, Dapoli, Maharashtra, India, January 7, 2002.

30. "Application of Statistical Techniques for Food Process Optimization," New Jersey Institute of Technology, Newark, NJ, February 23, 1998.
31. "Extrusion: A Multi-Disciplinary Approach to Processing and Structuring," Unilever Company, U.K., February 10, 1998.
32. "Extrusion Technology," Food Waste Recycling Symposium, Harrah's Marina, Atlantic City, NJ, January 22-23, 1996.
33. "Screw Extrusion of Foods," Central Food Technological Research Institute, Mysore, India, December 1995.
34. "Product Opportunities," Workshop on Extrusion Technology (Foods and Feeds), Mysore, India, September 28-29, 1995. This workshop was organized by the USAID sponsored Centre for Technology Development, Bangalore and Central Food Technological Research Institute, Mysore, India.
35. "Recent Advances in Food Processing/Engineering," Association of Food Scientists and Technologists (India), Bangalore Chapter, Bangalore, India, September 26, 1995.
36. "Transport Phenomena in Screw Extrusion of Foods," Department of Mechanical Engineering, Tufts University, Medford, MA, March 7, 1994.
37. "Transport Phenomena in Food Extrusion," Department of Chemical Technology, University of Bombay, India, December 1993.
38. "Transport Phenomena in Food Extrusion," Department of Chemical Engineering, Indian Institute of Technology, Bombay, India, December 1993.
39. "Transport Phenomena in Screw Extrusion," Department of Mechanical Engineering, Polytechnic University, Brooklyn, New York, November 5, 1992.
40. "Center for Advanced Food Technology, Rutgers University: Its role in basic research and technology transfer to industry," Indian Institute of Technology, Bombay, India, August 1991.
41. "Screw Extrusion in Food Processing," Department of Mechanical Engineering, Indian Institute of Technology, Bombay, India, August 1991.
42. "Center for Advanced Food Technology, Rutgers University: Its role in basic research and technology transfer to industry," M. N. Regional Engineering College, Allahabad, India, July 1991.

SESSIONS CHAIRED AT PROFESSIONAL MEETINGS

Session Chairman: organized and chaired a session on *Advances in Transport Phenomena* for the Topical Conference on Food Engineering (CoFE) during the AIChE Annual Meeting, San Francisco, November 16-21, 2003.

Session Co-Chairman: organized and co-chaired a session on *Food Processing with Air Impingement Systems: Innovations and Opportunities* at Institute of Food Technologists Annual Meeting, Anaheim, California, June 2002.

Chair, Ad-hoc Committee on Calibration Fluids, NC-136 Project on “Improvement of Thermal and Alternative Processes for Foods” of the USDA, 2000-2003.

Session Chairman: organized and chaired a session on *Physical Properties of Foods* for the AIChE Conference on Food Engineering (CoFE), Reno, November 4-9, 2001.

Session Chairman: organized and chaired *Extrusion* session at Institute of Food Technologists Annual Meeting, New Orleans, June 1996.

Session Chairman: organized and chaired a session on *Extrusion* for the AIChE Conference on Food Engineering (CoFE), Chicago, November 2-3, 1995.

Session Co-Chairman: organized and co-chaired a session on *Transport Phenomena in Manufacturing and Materials Processing*, for the ASME/AIChE National Heat Transfer Conference, Portland, Oregon, August 5-8, 1995.

Session Co-Chairman: organized and co-chaired a session on *Heat Transfer in Manufacturing and Materials Processing*, during AIAA/ASME Thermophysics and Heat Transfer Conference, Colorado Springs, Colorado, June 1994.

Session Co-Chairman: organized and co-chaired a technical session on *Heat Transfer in Food Processing*, ASME/AIChE National Heat Transfer Conference, Atlanta, Georgia, August 1993.

Session Chairman: organized and chaired a Panel Discussion session on *Current Issues in Heat Transfer in Food Processing*, ASME/AIChE National Heat Transfer Conference, Atlanta, Georgia, August, 1993.

Session Co-Chairman: organized and co-chaired *Extrusion* sessions at Institute of Food Technologists Annual Meeting, Chicago, July 1993.

Session Co-Chairman: organized and co-chaired a session on *Engineering and Mathematical Modeling* session at Institute of Food Technologists Annual Meeting, Chicago, July 1993.

Session Chairman: organized and co-chaired a session on *Heat Transfer in Food and Polymers*, Winter Annual Meeting of the American Society of Mechanical Engineers, Dallas, Texas, Dec. 1990.

Session Co-Chairman: organized and co-chaired a session on *Chemical Reactions and Transport Phenomena in Food Processing*, Summer National Meeting of the American Society of Chemical Engineers, San Diego, California, August, 1990.

Session Chairman: organized and chaired a session on *Control and Scale-up of Extruders*, 2nd International Symposium on Extrusion and Rheology of Foods, East Brunswick, New Jersey, August 1990.

TEACHING

Full Semester Courses

1. **Instructor**, "Thermal and Non-thermal Processing of Foods," an advanced graduate course (3 credits) in the Department of Food Science, Rutgers University. Developed this new course and taught for the first time in Fall 2002, 2004, 2006, 2008, and 2009.
2. **Instructor**, "Thermal and Non Thermal Food Processing," a graduate/undergraduate course in the Department of Chemical Engineering, Indian Institute of Technology, Bombay, Mumbai, India. Spring 2004.
3. **Instructor and Co-coordinator**, "Food Engineering Fundamentals and Processes," a core course (4 credits) in the graduate curriculum of the Department of Food Science, Rutgers University: Fall 1991(2/5), Spring 1993 (2/5), Spring 1995(1/2), Spring 1996(1/2), Spring 1997(3/5), Spring 1998(3/4), Spring 1999 (3/4), Spring 2000(3/4), Spring 2001(3/4), Spring 2002(3/4), Spring 2003 (3/4), Spring 2005* (full), Spring 2006 (full), Spring 2007 (full), Spring 2008 (full), Spring 2009* (full). * also taught via our distance learning program to students at Pepsi (NY), and Quakeroots (IL).
4. **Instructor**, "Food Process Engineering (11:400:302)," a required *undergraduate* course (4 credits) in the Department of Food Science, Rutgers University: Spring 2008 (1/3). Fully responsible for lectures, examinations, homework, laboratory experiments and grading. Supervised one teaching assistant.
5. **Instructor**, "Introduction to Food Engineering Fundamentals (11:400:401)," a required *undergraduate* course (4 credits) in the Department of Food Science, Rutgers University: Fall 1988(full), Fall 1991(1/2), Fall 1992(1/2), Fall 1993(1/2), Fall 1994(1/2), Fall 1995(1/2), Fall 1996(1/2), Fall 1997(1/2), Fall 1998(1/2), Fall 1999(1/2), Fall 2000(1/2), Fall 2001(1/2), and Fall 2003 (1/4). Fully responsible for lectures, examinations, homework, laboratory experiments and grading. Supervised one teaching assistant.
6. **Instructor and Co-coordinator**, "Food Science Forum," a 1credit course for seniors in food science. In this course we discuss current issues related to food science. It is a highly interactive course. Spring 2000 and Spring 2001.
7. **Coordinator**, "Seminar in Food Science," a graduate course (1 credit) in the Department of Food Science, Rutgers University, Fall 1995. This course is a requirement for every graduate student in the Department of Food Science. I was responsible for organizing student seminars related to their research (M.S. and Ph.D.), guiding students on how to prepare and give technical presentations, evaluating their presentations and assigning final grades.
8. **Co-Coordinator**, "Seminar in Food Science," a required graduate course (1 credit) in the Department of Food Science, Spring 1995. Assisted the Coordinator (Dr. K. Schaich) in the evaluation of student seminar presentations.

Short Courses

1. **Instructor**, "Dehydration," and "New Food Processing Technologies," in Culinology for Chefs course, January 2006, August 2007, and October 2008.

2. **Instructor**, “Baked Snack Foods,” Reading Bakery Systems, Reading, Pennsylvania, August 15-17, 2007.
3. **Coordinator and Instructor**, Gloucester Summer Institute in Food Science for Middle- and High-School Teachers. Workshop title: “The Science of Food: A Bridge Connecting Secondary, Postsecondary, and Higher Education,” July 24-26, 2007.
4. **Coordinator and Instructor**, “Food Engineering for Non-Engineers,” at the Cook College Office of Continuing Professional Education, Rutgers University, offered mainly for industrial participants. Summers of 1998, 1999, 2000, 2001 and 2002 (with Leon Levine).
5. **Instructor**, “Rutgers Summer Institute in Food Science for High School Science Teachers,” July 1998, and July 1999.
6. **Instructor**, “Extrusion Technology,” offered by the Center for Advanced Food Technology and the Cook College Office of Continuing Professional Education at Rutgers University. March 1991.
7. **Coordinator and Instructor**, “Food Engineering Principles, Practice and Problem Solving,” at the Cook College Office of Continuing Professional Education, Rutgers University, offered mainly for industrial participants with engineering background. June 2-4, 1997 (with Leon Levine).
8. **Coordinator and Local Host**, “Particle Image Velocimetry,” offered by Dantec Measurement Technology, Mahwah, NJ. January 31, 1996 and June 29-30, 1998.

DEPARTMENTAL, SCHOOL and UNIVERSITY ACTIVITIES

Serving as the Chair of the Department of Food Science since October 1, 2007.

Duties include but not limited to: Day-to-day functioning of the department, supervision of staff, assignment of courses to faculty members, preparation of promotion packages and conducting post-tenure reviews, overall supervision of UG and graduate academic programs, budget planning and disbursement, fund-raising, special initiatives, develop strategic plan coherent with the mission of the Department and School, work with the External Advisory Council, Alumni Committee, etc.

Undergraduate Program Director from July 1, 1999 to December 31, 2007.

Duties included curriculum review and modifications, advising undergraduate student, reviewing senior transcripts before graduation, representing department at the college level, participating in freshman and transfer student orientations, arranging tours for parents, high school students and youngsters.

- Helped develop Associate Degree in Food Science curriculum at Gloucester County College. Worked on developing the articulation agreement.
- Led the development of new options in Food Science including Food Science Research and Culinology[®]. Coordinated with my counterpart at the Mercer County Community College to develop the articulation agreement between MCCC and Rutgers University.
- Facilitated the development of Culinology[®] curriculum at Bergen Technical High School in Teterboro, New Jersey.
- Held several (5) workshops on Careers in Food Science, for High School Science Teachers and Guidance Counselors.
- Helped the Chair of the Department to prepare the document for the External Review (2004).

- Led the preparation of the document for IFT's review of Rutgers undergraduate Food Science program (2005). The program was approved for 5 years.
- Visited several high schools and middle schools to talk about Food Science program at Rutgers. Also hosted several visits by high schools students, teachers, and parents to Food Science department.

Served on the following committees

- Served as a jury on Rutgers University wide Teaching Excellence (Warren I. Susman) and Teacher-Scholar award committee (2009, 2010)
- Served on the External Advisory Board of the Department of Mechanical Engineering, Rutgers University (2009)

School of Biological and Environmental Sciences/Cook College/New Jersey Agricultural Experiment Station

- Search committee for the Director of the New Jersey Institute of Food, Nutrition, and Health (2008)
- Chair, Dean's Ad Hoc Advisory Committee on Instructional Computing (2006)
- School of Environmental and Biological Sciences Budget Committee (2006)
- Scholarship Committee (2005-07)
- Judicial Panel (2002-03)
- Cook College's College-wide Curriculum Review Committee (2002)
- Member of the NJAES Mission and Program for the Strategic Planning Phase of the Visioning and Planning Effort (2000)

Department of Food Science

- Capital campaign committee (2005-06)
- Computing infrastructure committee (1993-06)
- Chair, recruitment and scholarship committee (2000-06)
- Strategic issues advisory committee (2005-06)
- Chair's undergraduate program advisory committee (2005-06)
- Pilot Plant committee (1993-present)
- Search committee chair for Assistant Research Professor Faculty Position (2004)
- Faculty mentoring committee for Dr. Sean Liu (2000-)
- Faculty mentoring committee for Dr. Mikhail Tchikindas (2001-)
- Search committee co-chair for Non-thermal Food Processing Faculty Position (2002)
- Member of search committee for Food Nanotechnology Faculty Position (2002)
- Strategic planning committee (2000-02)
- Faculty Advisory Council of CAFT (2000-01)
- Teaching committee, (2001-03)
- Vision committee (2001-02)
- Member of search committee for Food Biology Faculty Position (2000)
- Member of search committee for Food Engineering Faculty Position (1999)
- Member of the admissions committee for Graduate Program in Food Science (1997-99)
- Safety committee (1993-95)

PUBLICATIONS

BOOKS:

1. Food Extrusion Science and Technology, J.L. Kokini, C.-T. Ho and **M.V. Karwe**, (Editors), Marcel Dekker, Inc., New York, 1992.

EDITED VOLUMES:

1. Transport Phenomena in Manufacturing and Materials Processing, **Co-Editor**, Proceedings of the ASME 1995 National Heat Transfer Conference, Portland, Oregon, HTD-Vol. 306, August 1995.
2. Transport Phenomena in Materials Processing and Manufacturing, **Co-Editor**, Proceedings of the 6th AIAA/ASME Thermophysics and Heat Transfer Conference, Colorado Springs, Colorado, HTD-Vol. 280, June 1994.
3. Heat Transfer in Food Processing, **Co-Editor**, Proceedings of the National Heat Transfer Conference of the American Society of Mechanical Engineers, Heat Transfer Division, HTD-Vol. 254, 1993.
4. Transport Phenomena in Materials Processing, **Co-Editor**, Proceedings of the Winter Annual Meeting of the American Society of Mechanical Engineers, Heat Transfer Division, HTD-Vol. 146, 1990.

CHAPTERS IN EDITED BOOKS:

1. Dilek Kocer, **Mukund V. Karwe**, and Gulum Sumnu: "Alternative Baking Technologies," Food Engineering Aspects of Baking of Sweet Goods, Taylor & Francis, 2007.
2. Dilek Kocer, Nitin Nitin, and **Mukund V. Karwe**, "Applications of CFD in Jet Impingement Ovens," Computational Fluid Dynamics in Food Processing, Da-Wen Sun (ed.), CRC Press-Taylor and Francis, 2007.
3. **Mukund V. Karwe** and Indrani Deo, "Grashof Number," The Encyclopedia of Agricultural, Food, and Biological Engineering, D.R. Heldman (Ed.), Marcel Dekker, Inc., pp. 454-456, 2003.
4. N. Nitin and **M.V. Karwe**, "Heat Transfer Coefficient for Model Cookies in a Turbulent Multiple Jet Impingement System," Chapter 24, pp. 357-375, Transport Phenomena for Food Processing, CRC Press, Boca Raton, FL, 2003.
5. **M.V. Karwe**, "Food Extrusion," chapter 5.10.4.9 under theme Food and Agricultural Engineering Resources, edited by G. V. Barbosa-Conovas and Pablo Juliano, in the Encyclopedia of Life Support Systems (EOLSS), developed under the auspices of the UNESCO, EOLSS Publishers, Oxford, UK, pp. 545-563, 2003.
6. H. Daun, Z. Shi, M. Nair, **M.V. Karwe**, and C.-T. Ho, "Collection and characterization of volatile compounds released at the die during twin-screw extrusion of corn meal," American Chemical Society Symposium Series 543, Thermally Generated Flavors : Maillard, Microwave and Extrusion Processes, Edited by T.H. Parliment, M.J. Morello and R.J. McGorin, American Chemical Society, Washington DC, Chapter 27, pp. 335-347, 1994.

7. S. Tanaka, C.-T. Ho, and **M.V. Karwe**, "Glycoside as a flavor precursor during extrusion cooking," *American Chemical Society Symposium Series 543, Thermally Generated Flavors : Maillard, Microwave and Extrusion Processes*, Edited by T.H. Parliment, M.J. Morello and R.J. McGorin, American Chemical Society, Washington DC, Chapter 31, pp. 371-379, 1994.
8. H.I. Hwang, T.G. Hartman, **M.V. Karwe**, H. Izzo, and C.-T. Ho, "Aroma generation in extruded and heated wheat flour," *American Chemical Society Symposium Series 558, Lipids in Food Flavors*, Edited by C.-T. Ho and T.G. Hartman, American Chemical Society, Washington DC, Chapter 10, pp. 144-157, 1994.
9. T. Sastrohartono, **M.V. Karwe**, Y. Jaluria and T.H. Kwon, "Numerical Simulation of Fluid Flow and Heat Transfer in a Twin-Screw Extruder," *Food Extrusion Science and Technology*, Edited by J.L. Kokini, C.-T. Ho and M.V. Karwe, Marcel Dekker, Inc., New York, Chapter 5, pp. 89-104, 1992.
10. T.H. Kwon, Y. Jaluria, **M.V. Karwe** and T. Sastrohartono, "Numerical Simulation of the Transport Processes in a Twin-Screw Polymer Extruder," *Modeling of Polymer Processing*, Hanser Publications, New York, A.I. Isayev(Ed.), Chapter 4, pp. 77-115, 1991.

BOOK REVIEW:

"The Technology of Extrusion Cooking," Edited by N.D. Frame, Blackie Academic & Professional New York, 1994. The review appeared in *Food Technology*, pp. 85, December 1995.

REFEREED JOURNAL ARTICLES:

1. Supriya Varma, **Mukund V. Karwe**, and Tung-Ching Lee, "Effect of high hydrostatic pressure processing on lycopene isomers," accepted for publication, *International Journal of Food Engineering*, 2010.
2. **Mukund V. Karwe**, "Crues Award Winner Essay: As I Teach How to Learn, I learn How to Teach Better," *Journal of Food Science Education*, 9:4-5, 2010.
3. S. Sheetal, R. Singhal and **M.V. Karwe**, "Pre-extrusion coloring with lycopene," accepted for publication, *Journal of Food Process Engineering*, 2009.
4. M. Khurana and **M. V. Karwe**, "Numerical Simulation of Temperature Distribution Measurement of Temperature In A High Hydrostatic Pressure Food Processor, *Food and Bioprocessing Technologies*, 2:279-290, 2009.
5. R.V. Tikekar, R.D. Ludescher, and **M.V. Karwe**, "Processing stability of squalene in amaranth and antioxidant potential of amaranth extract," *Journal of Agricultural and Food Chemistry*, accepted for publication, 56:10675-10678, 2008.
6. R.V. Tikekar and **M.V. Karwe**, "Development of a continuous method for puffing amaranth (*Amaranthus spp.*) seeds," *Journal of Food Process Engineering*, 32(2):265-277, 2008.
7. R. Borneo, D. Kocer, G. Ghai, B. Tepper, and **M.V. Karwe**, "Stability and consumer acceptance of long-chain Omega-3 fatty acids (Eicosapentaenoic Acid, 20:5, n-3 and Docosahexaenoic Acid,

- 22:6, n-3) in cream filled sandwich cookies. *Journal of Food Science*, Vol. 72, No. 1, pp. S49-S54, 2007.
8. K. Brady, R.T. Rosen, C.-T. Ho, and **M.V. Karwe**, "Effects of Processing on the nutraceutical profile of quinoa," *Food Chemistry*, Vol. 100, pp. 1209-16, 2007.
 9. N. Nitin, R.P. Gadiraju, and M.V. Karwe, "Conjugate heat transfer associated with a turbulent hot air jet impinging on a cylindrical object," *Journal of Food Process Engineering*, Vol. 29, No. 4, pp. 386-399, August 2006.
 10. I. Sensoy, R.T. Rosen, C.-T. Ho, and **M.V. Karwe**, "Effect of processing on buckwheat phenolics and antioxidant activity," *Food Chemistry*, Vol. 99, Issue 2, pp.388-393, 2006.
 11. D. Kocer and **M.V. Karwe**, "Thermal transport in a multiple jet impingement oven," *Journal of Food Process Engineering*, Vol. 8, pp. 378-396, 2005.
 12. A. Sarkar, N. Nitin, **M.V. Karwe**, and R.P. Singh, "Jet impingement technology in food processing: a review," *Journal of Food Science*, Vol. 69, Nr. 4, pp. CRH 113-122, 2004.
 13. L.Yerramilli and **M. V. Karwe**, "Velocity distributions and mixing in the translational region of a kneading section in a co-rotating twin-screw extruder," *Food and Bioproducts Processing, Trans. IChemE* (UK), Part C, pp. 5-12, March 2004.
 14. N. Nitin and **M.V. Karwe**, "Numerical simulation and experimental investigation of conjugate heat transfer between a turbulent hot air jet impinging on a cookie-shaped object," *Journal of Food Science*, Vol. 69, Nr. 2, pp. FEP59-FEP65, 2004.
 15. H. Dogan and **M.V. Karwe**, "Physico-chemical Properties of Quinoa Extrudates," *Food Science and Technology International*, Vol. 9, No. 2, pp. 101-114, 2003.
 16. N. Haladjian, R. Fayad, I. Toufeili, S. Shadarevian, M. Sidahmed, E. Baydoun, and **M. Karwe**, "Effect of pH and temperature on hydration kinetics of faba beans (*vicia faba l.*)," *Journal of Food Processing and Preservation*, Vol. 27, No. 1, pp. 9-20, 2003.
 17. C. I. Moraru, T.-C Lee, **M.V. Karwe**, and J.L. Kokini, "Plasticizing and antiplasticizing effects of water and polyols on a meat-starch extruded matrix," *Journal of Food Science*, Vol. 67, Nr. 9, 2002.
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 19. I.Deo and **M.V. Karwe**, "Flow distribution of food materials in an annular extrusion die," *Journal of Food Science*, Vol. 67, No. 2, pp. 658-664, 2002.
 20. Zhu, Nanqun; Sheng, Shuqun; Sang, Shengmin; Wang, Mingfu; Li, Jimmy; Jhoo, Jin-Woo; Bai, Naisheng; Li, He; **Karwe, Mukund V.**; Rosen, Robert T.; Ho, Chi-Tang, "Triterpene Saponins from Debittered Quinoa Seeds," *Journal of Agricultural and Food Chemistry*, Vol. 50, pp. 865-867, 2002.

21. S. Bakalis and **M.V. Karwe**, "Velocity distributions and volume flow rates in the nip and translational regions of a co-rotating, self-wiping, twin-screw extruder," *Journal of Food Engineering*, Vol. 51, Issue 4, pp. 273-282, 2002.
22. Nanqun Zhu, Hiroe Kikuzaki, Bret C. Vastano, Nobuji Nakatani, **Mukund V. Karwe**, Robert T. Rosen and Chi-Tang Ho, "Ecdysteroids of Quinoa Seeds (*Chenopodium quinoa* Willd)," *Journal of Agriculture and Food Chemistry*, Vol. 49, pp. 2576-78, 2001.
23. Nanqun Zhu, Shuqun Sheng², Dajie Li, Edmond J. LaVoie, **Mukund Karwe**, Robert T. Rosen and Chi-Tang Ho, "Antioxidative flavanoid glycosides from quinoa seeds (*Chenopodium quinoa* Willd)," *Journal of Food Lipids*, Vol. 8, No. 1, pp. 37-44, 2001.
24. O. Popescu, D.C. Popescu, J. Wilder, and **M.V. Karwe**, "A new approach to modeling and control of a food extrusion process using artificial neural network and an expert system," *Journal of Food Process Engineering*, Vol. 24, No. 1, pp. 17-36, 2001.
25. N. Nitin and **M.V. Karwe**, "Heat transfer coefficient for cookie-shaped object in a hot air jet impingement oven," *Journal of Food Process Engineering*, Vol. 24, No. 1, pp. 51-69, 2001.
26. S. Prakash, **M.V. Karwe**, and J.L. Kokini, "Measurement of velocity distribution in a model mixer using laser Doppler anemometry," *Journal of Food Process Engineering*, Vol. 22, pp 435-454, 1999.
27. S. Bakalis and **M.V. Karwe**, "Measuring of velocity distributions in the nip region of a co-rotating, twin-screw extruder," *Journal of Food and Bioproducts Processing*, Transactions of the Institution of Chemical Engineers (U.K.), Vol. 77, Part C, pp. 205-212, September 1999.
28. H. Marcroft, M. Chandrasekaran, and **M.V. Karwe**, "Measurement of flow field in a jet impingement oven, Part II: Multiple Jets," *Journal of Food Processing and Preservation*, Vol. 23, pp. 235-248, 1999.
29. H. Marcroft and **M.V. Karwe**, "Measurement of flow field in a jet impingement oven, Part I: Single Jet," *Journal of Food Processing and Preservation*, Vol. 23, pp. 217-233, 1999.
30. S. Bakalis and **M.V. Karwe**, "Measurement of three-dimensional velocity field in a co-rotating twin-screw extruder," *Polymer Engineering and Science*, Vol. 38, No. 9, pp. 1549-1558, September 1998.
31. M. Chandrasekaran and **M.V. Karwe**, "Velocity profiles in the nip region of a co-rotating twin-screw extruder: transitions between forward and reverse elements," *Journal of Reinforced Plastics and Composites*, Vol. 17, No. 5, pp. 382-388, 1998.
32. M. Chandrasekaran, H. Marcroft, S. Bakalis, and **M.V. Karwe**, "Application of laser Doppler anemometry in understanding food processing operations," *Trends in Food Science and Technology*, Vol. 8, No. 11, pp. 369-375, 1997.
33. M. Chandrasekaran and **M.V. Karwe**, "Measurement of velocity profiles in the translational and nip regions of a reverse flighted screw element in a co-rotating twin-screw extruder," *AICHE Journal*, Vol. 43, No. 10, pp. 2424-2431, 1997.

34. S. Bakalis and **M.V. Karwe**, "Velocity field in a twin-screw extruder," *International Journal of Food Science and Technology*, Vol. 32, No. 3, pp. 241-253, 1997.
35. C.-F.Hwang, W. E. Riha III, J. Baoping, **M.V. Karwe**, T. G. Hartman, H. Daun, and C.-T. Ho, "Effect of cysteine addition to volatile compounds released at the die during twin-screw extrusion of wheat flour," *Lebensmittel-Wissenschaft und -Technologie*, Vol. 30, pp. 411-416, 1997.
36. **M.V. Karwe**, S. Bakalis, and V. Sernas, "Velocity measurements in the NIP region of a co-rotating twin-screw extruder using laser Doppler anemometry," *Advances in Polymer Technology*, Vol. 16, No. 2, pp. 97-104, 1997.
37. **M.V. Karwe** and S. Godavarti, "Accurate measurement of extrudate temperature and surface heat loss on a twin-screw food extruder," *Journal of Food Science*, Vol. 62, No.2, pp. 367-372, 1997.
38. S. Godavarti and **M.V. Karwe**, "Determination of specific mechanical energy distribution in a twin-screw extruder," *Journal of Agricultural Engineering Research*, Vol. 67, pp. 277-287, 1997.
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42. B.K. Koh, **M.V. Karwe** and K. M. Schaich, "Effects of cysteine on free radical production and protein modification in extruded wheat flour," *Cereal Chemistry*, American Association of Cereal Chemists, Vol. 73, No. 1, pp. 115-122, 1996.
43. R.V. Chiruvella, Y. Jaluria, **M.V. Karwe**, and V. Sernas, "Transport in a twin-screw extruder for the processing of polymers," *Polymer Engineering and Science*, Vol. 36, No. 11, pp. 1531-1540, 1996.
44. T. Sastrohartono, Y. Jaluria, and **M.V. Karwe**, "Numerical simulation of fluid flow and heat transfer in twin-screw extruders for non-Newtonian materials," *Polymer Engineering and Science*, Vol. 35, No. 15, pp. 1213-1221, Aug. 01, 1995.
45. **M.V. Karwe**, R.V. Chiruvella, and Y. Jaluria, "Coordinate system independence of shear rate during isothermal single-screw extrusion of a Newtonian fluid," *Journal of Food Process Engineering*, Vol. 18, pp. 55-69, 1995.
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47. K. Yam, S.S. Wang, **M.V. Karwe**, and B.K. Gogoi, "Shear conversion of corn meal by reverse screw elements during twin-screw extrusion at low temperatures," *Journal of Food Science*, Vol. 59, No. 1, pp. 113-114, 1994.
48. S. Gopalakrishna, Y. Jaluria, and **M.V. Karwe**, "Heat and mass transfer in single screw extruder for non-Newtonian materials," *International Journal of Heat and Mass Transfer*, Vol. 35, No. 1, pp. 221-237, 1992.
49. **M.V. Karwe** and Y. Jaluria, "Experimental investigation of thermal transport from a heated moving plate," *International Journal of Heat and Mass Transfer*, Vol. 35, No. 2, pp. 493-511, 1992.
50. **M.V. Karwe** and C.H. Tong, "Effect of filling material on the temperature distribution in a thermal conductivity probe and thermal conductivity measurements: A numerical study," *Journal of Food Processing and Preservation*, Vol. 15, pp. 339-357, 1991.
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53. **M.V. Karwe** and Y. Jaluria, "Numerical simulation of fluid flow and heat transfer in a single screw extruder for non-Newtonian fluids," *Numerical Heat Transfer*, Part A, Vol. 17, pp. 167-190, 1990.
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2. S. Bakalis, M. Chandrasekaran, and **M.V. Karwe**, "Flow field in kneading and conveying elements of a self-wiping, co-rotating, twin-screw extruder," *COMPOUNDING'98*, Boston, August, 1998.

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4. A.H. Abib, Y. Jaluria, and **M.V. Karwe**, "Heat and Mass Transfer in the Extrusion of Food Materials," Proceedings of the *2nd Indian Society of Heat and Mass Transfer-American Society of Mechanical Engineers Heat and Mass Transfer Conference*, Surathkal, India, December 28-30, 1995.
5. **M.V. Karwe**, "Food Extrusion: Product Opportunities," Proceedings of the *Workshop on Extrusion Technology*, Mysore, India, September 28-29, 1995, pp 38-56. The Workshop was organized by the USAID sponsored Centre for Technology Development, Bangalore and Central Food Technological Research Institute, Mysore, India.
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1. Swetha Mahadevan and **Mukund V. Karwe**, "Enhanced infusion of natural antioxidants into cranberries using high hydrostatic pressure processing," XVIIIth Congresso Brasileiro de Engenharia Química - COBEQ2010, Foz Do Iguacu, Brazil, Sept. 18-22, 2010.
2. Nidhi Singla, Ligia Damasceno Ferreira Marczak, and **Mukund V. Karwe**, "Value added extruded product from Pinhao flour," XVIIIth Congresso Brasileiro de Engenharia Química - COBEQ2010, Foz Do Iguacu, Brazil, Sept. 18-22, 2010.
3. Meenakshi Khurana and **Mukund V. Karwe**, "Temperature non-uniformity during high hydrostatic pressure processing and its impact on food safety," *HEAT AND MASS TRANSFER'2010*, Proceedings of the 20th National and 9th International ISHMT-ASME Heat and Mass Transfer Conference, Mumbai, India, January 4-6, 2010. ISBN: 978-981-08-3813-3 doi:10.3850/9789810838133 011
4. **Meenakshi Khurana and Mukund V. Karwe**, "Numerical Simulation of Thermal Transport during Combined High Pressure High Temperature Process in a High Hydrostatic Pressure Food Processing Vessel," CHEMCON-2008, Dec. 27-30, 2008, Chandigarh, India.
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2. M.G. Sajilata, A. Atre, R. S. Singhal, and **M.V. Karwe**, “Prextrusion Flavoring and Coloring of Foods,” submitted to *International Journal of Food Engineering*, 2010.
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4. D. Kocer, N. Nitin, and **M.V. Karwe**, “Numerical simulation of baking process in a hybrid jet impingement oven,” to be submitted to *Journal of Food Engineering*, 2010.
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Integrated, Compiled and Edited 33 semi-annual Research Accomplishment Reports (from 1992-2009) for the Center for Advanced Food Technology Rutgers University.

Each report was put together from the individual reports of research groups (4-10). Each individual report was carefully read to extract new and important information to generate the final integrated report, which was submitted to the sponsors of Center for Advanced Food Technology.

CONFERENCE PRESENTATIONS:

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2. Nidhi Singla, Ligia Damasceno Ferreira Marczak, and **Mukund V. Karwe**, “Value added extruded product from Pinhao flour,” XVIIIth Congresso Brasileiro de Engenharia Química - COBEQ2010, Foz Do Iguacu, Brazil, Sept. 18-22, 2010.
3. **Gabriel K. Mootian**, Mukund V. Karwe, Donald Schaffner, “The effect of high-pressure processing on *Vibrio parahaemolyticus* concentration and the volume and mass of hard clams

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