

## **K.P. Sandeep**

100 Schaub Hall, FBNS, NC State, Raleigh, NC 27695; 919-515-2957, sandeep@ncsu.edu

### **a. Professional Preparation**

IIT Kharagpur (India)	Agricultural Engineering	B.S., 1991
Pennsylvania State University	Agricultural & Biological Engineering	M.S., 1993
Pennsylvania State University	Agricultural & Biological Engineering	Ph.D., 1996
Pennsylvania State University	Agricultural & Biological Engineering	1996-1997

### **b. Appointments**

July 2012-present: Associate Department Head in Department of Food, Bioprocessing and Nutrition Sciences at North Carolina State University

July 2011-present: Research Leader in Department of Food, Bioprocessing and Nutrition Sciences at North Carolina State University

July 2008 - present: Professor in the Department of Food, Bioprocessing and Nutrition Sciences at North Carolina State University; Associate faculty member of the Biological and Agricultural Engineering Department at North Carolina State University.

May 2007 - present: Site director of Center for Advanced Processing and Packaging Studies (CAPPS) at North Carolina State University

July 2003 - June 2008: Associate Professor in the Department of Food Science at North Carolina State University; Associate faculty member of the Biological and Agricultural Engineering Department at North Carolina State University.

September 1997 - June 2003: Assistant Professor in the Department of Food Science at North Carolina State University; Associate faculty member of the Biological and Agricultural Engineering Department at North Carolina State University.

### **c. Professional Scholarly Activities**

Coordinated 16 short courses for the food industry

Operational Advisory Committee, Southeast Dairy Foods Research Center, 2007-present

Received 2 US patents

### **d. Honors and awards**

IFT Industrial Achievement Award, 2009

USDA Superior Efforts in Technology Transfer Award, 2009

Outstanding Instructor, Food Science Club, 2004-2005

Phi Tau Sigma (Honor Society for Food Science), 1998

Gamma Sigma Delta (Honor Society for Agricultural Sciences), 1993

Alpha Epsilon (Honor Society for Agricultural Engineering), 1992

### **e. Collaborators & Grants**

**Sandeep, K.P.** 2013. Development of a Superior High pressure processing fluid. (Center for Advanced Processing and Packaging Studies – \$5,000 – Jan. 2014 to Oct. 2014).

**Sandeep, K.P.** 2013. Mitochondrial DNA as molecular indicators of thermal processing efficacy. (Center for Advanced Processing and Packaging Studies – \$10,000 – Jan. 2014 to Oct. 2014).

- Green, D.P., Arritt, F.M., Harris, G.K., Jaykus, L.A., **Sandeep, K.P.** 2011. Building a stronger bridge in acidified food products training and certification. (US Department of Health and Human Services – \$1,202,361 – Sept. 2011 to Aug. 2014)
- Sandeep, K.P.**, Simunovic, J., Swartzel, K.R., Perez-Diaz, I., Harris, G.K. 2011. Continuous Flow Microwave Processing of Acid and Low-Acid Particulate Foods. (USDA-AFRI – \$495,038 – Nov. 2011 to Oct. 2014).
- Sandeep, K.P.**, Simunovic, J., Cheng, J., Clare, D.E. 2011. Pilot-Scale Continuous Flow Microwave Pre-Treatment of Switchgrass and Bermudagrass. (Biofuels Center of North Carolina -- \$141,082 – July 2011 to June 2012).
- Sandeep, K.P.**, Franzon, P., Simunovic, J. 2010. Development of a sensor to determine the forces experienced by particulates during continuous flow thermal processing of multiphase foods. (Center for Advanced Processing and Packaging Studies – \$85,034 – Dec. 2010 to Nov. 2011).
- Sandeep, K.P.**, Simunovic, J., Truong, V.D., Swartzel, K.R., Sanders, T.H. 2010. FBNS Equipment Grant for the purchase of a 5 kW microwave generator (FBNS, NCSU – \$5,000).
- Simunovic, J., **Sandeep, K.P.**, Sanders, T.H., Truong, V.D., Cartwright, G.D., Swartzel, K.R. 2010. CALS Equipment grant for the purchase of a microwave generator (CALs, NCSU – \$12,000).
- Green, D.P., **Sandeep, K.P.** 2010. Validation of microwave cooking instructions for not-ready-to-eat (NRTE) seafood. (North Carolina Sea Grant – \$23,500 – May 2010 to Mar. 2011).
- Sandeep, K.P.**, Swartzel, K.R. 2010. CAPPs Phase III Support. (National Science Foundation – \$73,314 – Feb. 2010 to Jan. 2015)
- Sandeep, K.P.**, Franzon, P., Simunovic, J. 2009. Determination of time-temperature history during thermal processing using MEMS and RF telemetry. (Center for Advanced Processing and Packaging Studies – \$48,172 – July 2009 to June 2010)
- Simunovic, J., **Sandeep, K.P.**, Gray, D. 2008. Quality of foods processed using selected alternative processing technologies. (USDA IREE Competitive Grants Program: National Integrated Food Safety Initiative – \$664,016 – OSU was the lead institution; NCSU grant – 90% of \$144,018 – Sept. 2008 to Aug. 2011)
- Alavi, S., **Sandeep, K.P.**, Zhong, Z. 2008. Development of Cross-Linked Bio-Nanocomposite Packaging Films with Enhanced Barrier and Mechanical Properties. (USDA-NRICGP – \$498,130 – KSU was lead institution; NCSU grant – \$87,962 – Sept. 2008 to Aug. 2011)
- Zhong, Q., Golden, D.A., **Sandeep, K.P.** 2007. Inactivation of Pathogens by dense carbon dioxide to enhance safety of small fruits. (Southern Region Small Fruit Consortium – \$5,000 – Apr. 2007 to Mar. 2008)

#### **f). Publications**

- Kumar, P., **Sandeep, K.P.** 2014. Thermal principles and kinetics. In “Food Processing: Principles and Applications”, 2<sup>nd</sup> ed, Edited by Clark, S., Jung, S., Lamsal, B. Wiley-Blackwell Publishing. pp. 17-32.
- Kumar, P., **Sandeep, K.P.**, Simunovic, J. 2012. Aseptic process design. In “Handbook of food process design”, Edited by Ahmed, J. and Rahman, M.S. Wiley-Blackwell. pp. 682-709.
- Tang, X, Kumar, P., Alavi, S., **Sandeep, K.P.** 2012. Recent advances in biopolymer-based food packaging materials. Critical Reviews in Food Science and Nutrition. Vol. 52: 426-442.

- Kumar, P., **Sandeep, K.P.**, Alavi S., Truong, V.D. 2011. A Review of Experimental and Modeling Techniques to Determine Properties of Biopolymer-based Nanocomposites. *Journal of Food Science*. Vol. 76(1): E2-E14.
- Sandeep, K.P.** 2011. Editor. *Thermal processing: Automation and control*. Wiley-Blackwell Publishing. 212 pages.
- Sandeep, K.P.** 2011. Introduction. In "*Thermal processing: Automation and control*", Wiley-Blackwell Publishing. pp. 1-6.
- Kumar, P., **Sandeep, K.P.**, Alavi S., Truong, V.D., Gorga, R.E. 2010. Preparation and characterization of bio-nanocomposite films based on soy protein isolate and montmorillonite using melt extrusion. *Journal of Food Engineering*. Vol. 100(3): 480-489.
- Kumar, P., **Sandeep, K.P.**, Alavi S., Truong, V.D., Gorga, R.E. 2010. Effect of type and content of modified montmorillonite on the structure and properties of bio-nanocomposite films based on soy protein isolate and montmorillonite. *Journal of Food Science*. Vol. 75(5): N46-N56.
- Breidt, F., **Sandeep, K.P.**, Arritt, F. 2010. Use of linear models for thermal processing of acidified foods. *Food Protection Trends*. Vol. 30(5): 268-272.
- Kumar, P., **Sandeep, K.P.**, Alavi, S. 2009. Extrusion. In "*Mathematical analysis of food processing*", Edited by Farid, M. CRC Press. pp. 795-827.
- Kumar, P., **Sandeep, K.P.** 2009. Heat Exchangers. In "*Mathematical analysis of food processing*", Edited by Farid, M. CRC Press. pp. 201-223.
- Kumar, P., Reinitz, H.W., Simunovic, J., **Sandeep, K.P.**, Franzon, P.D. 2009. Overview of RFID technology and its applications in the food industry. *Journal of Food Science: Concise reviews and hypotheses in Food Science*. Vol. 74(8): R101-R106.
- Steed, L., Truong, V.D., Simunovic, J., **Sandeep, K.P.**, Kumar, P., Cartwright, G.D., Swartzel, K.R. 2008. Continuous flow microwave-assisted processing and aseptic packaging of purple-fleshed sweetpotato purees. *Journal of Food Science*. Vol. 73(9): E455-E462.
- Coronel, P., **Sandeep, K.P.** 2008. Heat transfer coefficient in helical heat exchangers under turbulent flow conditions. *International Journal of Food Engineering*. Vol. 4(1): Article 4.
- Jasrotia, A.K.S., Simunovic, J., **Sandeep, K.P.**, Palazoglu, T.K., Swartzel, K.R. 2008. Design of conservative simulated particles for validation of a multiphase aseptic process. *Journal of Food Science*. Vol. 73(5): E193-E201.
- Coronel, P., Simunovic, J., **Sandeep, K.P.**, Kumar, P. 2008. Dielectric properties of pumpable food materials at 915 MHz. *International Journal of Food Properties*. Vol. 11(3): 508-518.
- Brinley, T., Truong, V.D., Coronel, P., Simunovic, J., **Sandeep, K.P.** 2008. Dielectric properties of sweetpotato puree at 915 MHz as affected by temperature and chemical composition. *International Journal of Food Properties*. Vol. 11(1): 158-172.
- Zhu, J., Kuznetsov, A.V., **Sandeep, K.P.** 2008. Investigation of a particulate flow containing spherical particles subjected to microwave heating. *Heat and Mass Transfer*. Vol. 44: 481-493.
- Batmaz, E., **Sandeep, K.P.** 2008. Overall heat transfer coefficients and axial temperature distribution in a triple tube heat exchanger. *Journal of Food Process Engineering*. Vol. 31(2): 260-279.
- Kumar, P., Coronel, P., Truong, V.D., Simunovic, J., Swartzel, K.R., **Sandeep, K.P.**, Cartwright, G.D. 2008. Overcoming issues associated with the scale-up of a continuous flow microwave system for aseptic processing of vegetables purees. *Food Research International*. Vol. 41(5): 454-461.

- Coronel, P., Simunovic, J., **Sandeep, K.P.**, Kumar, P. 2008. Sterilization solutions for aseptic processing using a continuous flow microwave system. *Journal of Food Engineering*. Vol. 85(4): 528-536.
- Kumar, P., Coronel, P. Simunovic, J., **Sandeep, K.P.** 2008. Thermophysical and dielectric properties of *salsa con queso* and its vegetable ingredients at sterilization temperatures. *International Journal of Food Properties*. Vol. 11(1): 112-126.
- Schirack, A.V., Sanders, T.H., **Sandeep, K.P.** 2007. Effect of processing parameters on the temperature and moisture content of microwave-blanched peanuts. *Journal of Food Process Engineering*. Vol. 30(2): 225-240.
- Kumar, P., Coronel, P. Simunovic, J., **Sandeep, K.P.** 2007. Feasibility of aseptic processing of a low-acid multiphase food product (salsa con queso) using a continuous flow microwave system. *Journal of Food Science*. Vol. 72(3): E121-E124.
- Brinley, T.A., Stam, C.N., Truong, V.D., Coronel, P., Kumar, P., Simunovic, J., **Sandeep, K.P.**, Cartwright, G.D., Swartzel, K.R., Jaykus, L.A. 2007. Feasibility of utilizing bio-indicators for testing microbial inactivation in sweetpotato purees processed with a continuous flow microwave system. *Journal of Food Science*. Vol. 72(5): E235-E242.
- Zhu, J., Kuznetsov, A.V., **Sandeep, K.P.** 2007. Mathematical modeling of continuous flow microwave heating of liquids (Effects of dielectric properties and design parameters). *International Journal of Thermal Sciences*. Vol. 46(4): 328-341.
- Kumar, P., Coronel, P. Simunovic, J., **Sandeep, K.P.** 2007. Measurement of dielectric properties of pumpable food materials under static and continuous flow conditions. *Journal of Food Science*. Vol. 72(4): E177-E183.
- Zhu, J., Kuznetsov, A.V., **Sandeep, K.P.** 2007. Numerical modeling of a moving particle in a continuous flow subjected to microwave heating. *Numerical Heat Transfer, Part A*. Vol. 52: 417-439.
- Zhu, J., Kuznetsov, A.V., **Sandeep, K.P.** 2007. Numerical simulation of forced convection in a duct subjected to microwave heating. *Heat and Mass Transfer*. Vol. 43(3): 255-264.
- Sandeep, K.P.**, Irudayaraj, J., Jun, S. 2007. Introduction to modeling and numerical simulation. In "*Food Processing Operations Modeling: Design and Analysis*". 2<sup>nd</sup> ed., Edited by Jun, S. and Irudayaraj, J. Marcel Dekker, Inc. pp. 1-11.
- Sandeep, K.P.**, Puri, V.M. 2007. Aseptic processing of liquid and particulate foods. In "*Food Processing Operations Modeling: Design and Analysis*". 2<sup>nd</sup> ed., Edited by Jun, S. and Irudayaraj, J. Marcel Dekker, Inc. pp. 13-52.