Kanishka Bhunia

Contact Information

Assistant Professor
Food Process Engineering
Department of Agricultural and Food Engineering
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Experience

Post-doctoral Research Associate — 2017 – 2018
Advisor: Prof. Ashim K. Datta
Cornell University, Ithaca, New York

Post-doctoral Research Associate — 2016 – 2017
Advisor: Prof. Shyam S. Sablani
Washington State University, Pullman, Washington

Education

Ph.D. in Food Engineering — GPA 3.86/4.0
Advisor: Prof. Shyam S. Sablani
Washington State University — 2011 – 2016
Pullman, WA, USA

M. Tech. in Dairy and Food Engineering — GPA 9.37/10.0
Advisor: Prof. Ashis K. Datta
Indian Institute of Technology, Kharagpur — July 2009 – May 2011
West Bengal, India

B. Tech. in Agricultural Engineering — GPA 8.02/10.0
Advisor: Prof. Subrata Karmakar
Bidhan Chandra Krishi Viswavidyalaya, Mohanpur — July 2005 – May 2009
West Bengal, India

Projects

As PI

1. **Development of Novel Indicator for Real-time Monitoring of Shelf-life of Perishable Foods**
   Funding agency: **ISIRD, SRIC, IIT Kharagpur**
2. **Battery-free Chemical-Sensor Interfaced Radiofrequency Identification (RFID) Tag for Improved Food Safety and Quality, and Waste Reduction in the Indian Food Supply Chain**
   Funding agency: **SERB, GOI**

As Co-PI

1. **Harvest and Post Harvest Engineering and Technology**
   AICRP on Post Harvest Technology
2. **Establishment of Innovation and Agri-Entrepreneurship Cell under RKVY-RAFTAAR**
   Funding agency: **RKVY Division, GOI**

Teaching Experience

IIT Kharagpur, India — August 2018 – Present

Fall/Autumn Semester

- AG60125 Grain Process Engineering
- AG60129 Grain Storage Principles and Structures
- AG60123 Cooling Technology in Food Processing
- AG39005, AG69043 Food Engineering Lab
- AG69011 Food Analysis Lab

Spring Semester

- AG31008 Post Harvest Engineering
- AG60148 Instrumentation and Control in Food Industries
- AG60100 Mass Transfer Operations in Food Processing
- AG69008 Food Engineering Lab
- AG69010 Food Analysis Lab

Cornell University, Ithaca, NY, USA — December 2017 – May 2018

Siimulation-based teaching modules for Food Engineering Courses

Washington State University, Pullman, WA, USA — May 2016 – Novemeber 2017

Courses (Graduate level):

- Advanced Food Packaging (BSYSE 583)
- Advanced Physical Properties of Foods (BSYSE 581)

Responsibilties

Current

Editorial Board Member, *Journal of Food Science*, Wiley, USA
Assistant Warden, 2018 onwards, Nehru Hall, IIT KGP

Past

President, TAPPI-PLACE Student Chapter of Washington State University
Chair, Social outreach committee, 2013-14 (Food Engineering Club, WSU)
Chair, Public Relation Committee, 2012-13, 2015-16 (Food Engineering Club, WSU)

Reviewer

Journal of Food Science, Wiley, USA
Journal of Food Engineering, Elsevier, USA
NPJ Science of Food, Springer Nature
Drying Technology, Taylor & Francis

Awards and Achievements

- Second place in Food Packaging Division competition at IFT Conference, 2016
- Puget Sound Institute of Food Technologist (PSIFT) Scholastic Achievement Award, 2015
- *Daniel-Siegel Memorial* Scholarship Award by TAPPI-PLACE, 2014
- Finalist in Food Packaging division competition at IFT Conference, 2014
- Puget Sound Institute of Food Technologist (PSIFT) Travel Award, 2013, 2014
- First position in Lewis-Clark IFT competition 2012
- Graduate and Professional Student Association (WSU) Travel Award, 2012
- First position, Biological Systems Engineering Graduate Poster Competitions, WSU
- All India Rank 11 in GATE in 2009, percentile 98.33
- Ministry of Human Resource Development (India) scholarship in PG study
- Institute Merit Scholarship in Undergraduate

Research Interest	Functional food packaging for advanced food processing technologies Smart packaging Food safety engineering Food process modeling and simulation Food stability and shelf life analysis Food material science engineering Refrigerated and Frozen Foods
Teaching Interest	Food Process Engineering Food Packaging Thermal Processing of Foods Food Process Modeling Food Material Science Engineering
Professional Membership	Institute of Food Technolgists (IFT) American Society of Agricultural and Biological Engineers (ASABE) TAPPI-PLACE
Professional Training	**Trainee Engineer**, Summer 2007. Farm Machinery and operations, Northern Region Farm Machinery Training and Testing Institute, Government of India, India **Trainee Engineer**, Summer 2008. Milk Processing and handling, Central Dairy Farm, Government of India
Conferences/ Presentations	**Invited presentation**: 'Food Safety Education in Engineering Curricula' Institute of Food Technologists Annual Meeting New Orleans, USA, 2019 **Invited presentation**: 'Advanced Polymer Packaging for Novel Food Processing Technologies' Bengal Science Lecture Series Department of Food Technology and Biochemical Engineering, Jadavpur University Kolkata, India, March, 2017 **Invited presentation**: Technical Association of Pulp and Paper Industry-Polymers Laminations Adhesives Coatings Extrusions (TAPPI-PLACE) Annual Meeting, Texas, USA 2016 **Poster**: Institute of Food Technologists (IFT) Annual Conference Chicago, USA 2016 **Poster**: IFT Annual Conference New Orleans, USA 2014 **Poster**: LC-IFT meeting, USA 2014 **Oral presentation**: ASABE Annual Conference Kansas city, Missouri, USA 2013 **Poster**: IFT Annual Conference Chicago, USA 2013 **Poster**: TAPPI-PLACE Annual Meeting Seattle, USA 2012 **Poster**: IFT Annual Conference Las Vegas, USA 2012 **Poster**: LC-IFT Meeting, USA 2011
Short courses/ Workshops/ Seminars	**HACCP-FSMA** Hazard Analysis at Critical Control Point and Food Safety Modernization Act, Washington State University, 2015 **Grant Writing**, Washington State University, January, 2015 **Industrial workshop**: Microwave assisted thermal Sterilization (MATS) boot camp, WSU 2015

ACTIVITIES

Member of a team that has been selected to present flexible packaging design idea in TAPPI-PLACE meeting, May 6^{th} – 9^{th}, 2012
Non-percussion instrument Tabla (Indian Drum) performer

PUBLICATIONS

Articles:

1. Rakshit, M., Srivastav, P. P., **Bhunia, K.** (2020). Kinetic modeling of ultrasonicassisted extraction of punicalagin from pomegranate peel. *Journal of Food Process Engineering,* e13533.
2. Parhi, A., **Bhunia, K.**, Rasco, B., Tang, J., Sablani, S. S. (2019). Development of an Oxygen Sensitive Model Gel System to Detect Defects in Metal Oxide Coated Multilayer Polymeric Films, *Journal of Food Science* 84: 2507-2519
3. Zhang, H.C., Patel, J., **Bhunia, K.**, Al-Ghamdi, S., Sonar, C. S., Ross, C. F., Tang, J., Sablani, S. S. (2019). Color, vitamin C, -carotene and sensory quality retention in microwave-assisted thermally sterilized sweet potato puree: Effects of polymeric package gas barrier during storage, *Food Packaging and Shelf Life* 21: 100324
4. Munoz, N., Sonar, C. S., **Bhunia, K.**, Tang, J., Barbosa-Cnovas, G.V., Sablani, S.S. (2019). Use of protective culture to control the growth of Listeria monocytogenes and Salmonella typhimurium in ready-to-eat cook-chill products *Food Control* 102: 81-86.
5. Kumar P.K., **Bhunia, K.**, Tang, J., Rasco, B., Takhar, P.S., Sablani, S. S. (2019). State/phase transitions induced by ice recrystallization and its influence on the mechanical properties of potatoes (Solanum tuberosum L.) var. Russet Brown *Journal of Food Engineering* 251: 45-56
6. Kak, A., Bajaj, P.R., **Bhunia, K.**, Nitin, N., Sablani, S.S. (2019). A Fluorescencebased Method for Estimation of Oxygen Barrier Properties of Microspheres, *Journal of Food Science* 84: 532-539.
7. Kumar P.K., **Bhunia, K.**, Tang, J., Rasco, B., Takhar, P.S., Sablani, S. S. (2018). Thermal transition and thermo-physical properties of potato (Solanum tuberosum L.) var. Russet brown, *Journal of Food Measurement and Characterization* 12: 1572-1580
8. Zhang, H.C., **Bhunia, K.**, Munoz, N., Li, L., Dolgovskij, M., Rasco, B., Tang, J., Sablani, S. S. (2017). Linking morphology changes to barrier properties of polymeric packaging for microwave-assisted thermal sterilized food, *Journal of Applied Polymer Science* 45481 (1-10)
9. Munoz, N., **Bhunia, K.**, Zhang, H., Barbosa-Cnovas, G.V., Tang, J., Sablani, S.S. (2017). Headspace oxygen as a hurdle to improve the safety of in-pack pasteurized chilled food during storage at different temperatures, *International Journal of Food Microbiology* 253: 29-35.
10. Bajaj, P.R., **Bhunia, K.**, Kleiner, L., Joyner, H.S., Smith, D., Ganjyal, G., Sablani S.S., (2017). Improving functional properties of pea protein isolate for microencapsulation of flaxseed oil. *Journal of Microencapsulation* 1-36.
11. **Bhunia, K.**, Zhang, H.C., Liu, F., Rasco, B., Tang, J., Sablani, S.S. (2016). Morphological changes in multilayer polymeric films induced after microwave-assisted pasteurization.*Innovative Food Science and Emerging Technologies* 38: 124-130.
12. **Bhunia, K.**, Sablani, S. S., Tang, J., Rasco, B. (2016). Non-invasive measurement of oxygen diffusion in model foods. *Food Research International* 89: 161-168.
13. **Bhunia, K.**, Ovissipour, M., Rasco, B., Tang, J., Sablani, S. S., (2016). Oxidation-reduction potential and lipid oxidation in ready-to-eat blue mussels in red sauce: Criteria for Package Design. *Journal of the Science Food and Agriculture* 97: 324-332.
14. **Bhunia, K.**, Sharma, RK., Datta, A.K., (2016). Computational fluid dynamics (CFD) modeling of grain-water suspensions in tube. *Agricultural Engineering International: CIGR Journal* 8: 269-283

15. Zhang, H.C., **Bhunia, K.**, Kuang, P., Tang, J., Rasco,B., Mattinson, D.S., Sablani, S.S. (2016). Effects of Oxygen and Water Vapor Transmission Rates of Polymeric Pouches on Oxidative Changes of Microwave-Sterilized Mashed Potato. *Food and Bioprocess Technology* 9(2), 341-351.
16. Syamaladevi, R.M., Adhikari, A., Lupien, S.L., Dugan, F., **Bhunia, K.**, Dhingra, A., Sablani, S.S. (2015). Ultraviolet-C light inactivation of Penicilliumexpansum on fruit surfaces. *Food Control* 50: 297-303.
17. Dhawan, S., Sablani, S.S., Tang, J., Barbosa-Canovas, G.V., Ullman, J., **Bhunia, K.** (2013). Silicon Migration from High Barrier Coated Multilayer Polymeric Films to Selected Food Simulants after Microwave Processing Treatments. *Packaging Technology and Science*
18. Syamaladevi, R.M., Lupien, S.L., **Bhunia, K.**, Sablani, S. S., Dugan, F., Rasco, B., Killinger, K., Dhingra, A., Ross, C. (2013). UV-C Light Inactivation of Penicilliumexpansum on Pear Surfaces: Influence on Physicochemical and Sensory Quality. *Post Harvest Biology and Technology* 87: 27-32.
19. **Bhunia, K.**, Sablani, S. S., Tang, J., Rasco, B. (2013). Migration of Chemical Compounds from Packaging Polymers during Microwave, Conventional Heat Treatment, and storage. *Comprehensive Reviews in Food Science and Food Safety* 12(5): 523-545.
20. **Bhunia, K.**, Dhawan, S., Sablani, S.S. (2012). Modeling the Oxygen Diffusion of Nanocomposite-based Food Packaging Films. *Journal of Food Science* 77(7): N29-N38.

Book Chapters:

1. Food-Packaging Interactions by Shyam S. Sablani, **Kanishka Bhunia**, Mohammad Shafiur Rahman In: *Handbook of Food Preservation* 3rd edition, 2020, (pp. 923–941) CRC Press, editor: Mohammad Shafiur Rahman
(link: https://www.taylorfrancis.com/books/e/9780429091483)
2. Packaging Technology for Microwave Sterilization by Hongchao Zhang, **Kanishka Bhunia**, Shyam S. Sablani In: *Packaging for Nonthermal Processing of Food* 1st Edition 2018, editors: Melvin Pascall, Jung H. Han (link: https://www.wiley.com/en-us/Packaging+for+Nonthermal+Processing+of+Food%2C+2nd+Edition-p-9781119126850)
3. Gas Barrier Packaging by **Kanishka Bhunia**, Hongchao Zhang, Shyam S. Sablani In: *Reference Module in Food Science* 1st Edition, 2016, (pp. 1–11), Elsevier
(link: http://dx.doi.org/10.1016/B978-0-08-100596-5.03219-4)

Conference Proceedings

1. **Bhunia, K.**, Datta, A. K. (2012). Computational heat transfer modeling of rice-water suspension in tube. Proceedings of CHT-12. ICHMT *International Symposium on Advances in Computational Heat Transfer*. ICHMT Digital library online