Sushil K. Singh, Ph.D.

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Employment History

05/2018 – ····· **Assistant Professor.** Department of Food Process Engineering, NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA, Odisha, India.

04/2018 – 05/2018 **Research Assistant.** Department of Dairy & Food Science, SOUTH DAKOTA STATE UNIVERSITY, Brookings, South Dakota, USA.

01/2017 – 03/2018 **Food Engineering Technologist.** Department of Dairy & Food Science, SOUTH DAKOTA STATE UNIVERSITY, Brookings, South Dakota, USA.

08/2015 – 01/2017 **Process & Product Development Associate.** VETS PLUS, INC., Menomonie, Wisconsin, USA.

09/2011 – 12/2011 **Senior Research Fellow.** Department of Post Harvest Process & Food Engineering, G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY, Pantnagar, Uttarakhand, India.

Education

01/2012 – 05/2016 **Ph.D., South Dakota State University, Brookings, USA** in Agricultural, Biosystems & Mechanical Engineering.
Specialization: *Food Process Engineering.*

07/2009 – 06/2011 **M.Tech., Indian Institute of Technology Kharagpur, India** in Agricultural & Food Engineering.
Specialization: *Post Harvest Engineering.*

07/2005 – 06/2009 **B.Tech., G.B. Pant University of Agriculture & Technology, Pantnagar, India** in Agricultural Engineering.

Grants

- "Encapsulation of Bioactive Compound through Extrusion Process to Develop Ready-to-Eat Functional Snacks" (2019). **Science and Engineering Research Board (SERB)**, Department of Science and Technology, Government of India – Ongoing
  Principal Investigator: Dr. Sushil K. Singh

- "Development of Low Cost All-in-One Millet Processing Machine" (2020). **Department of Science & Technology (DST)**, Government of India – Ongoing
  Co-Principal Investigator: Dr. Sushil K. Singh

Courses Taught

Theory
- Transfer Processes in Food Engineering
- Food Process Modeling and Simulation
- Dairy Process Engineering
- Experimental Design and Statistical Methods
- Horticultural Product Processing

Labs
- Advanced Food Engineering Laboratory
- Experimental Design and Statistical Methods Laboratory

Mentoring & Supervision Experience

As a Supervisor:

Status	Ph.D. Students	M.Tech. Students	B.Tech. Students
Ongoing	02	01	01
Completed	–	02	06

As a Co-Supervisor:

Status	Ph.D. Students	M.Tech. Students	B.Tech. Students
Ongoing	01	–	–
Completed	–	–	–

Technical Skills

Equipment handled – Membrane Filtration Units (MF, UF, NF & RO), Evaporator, Heat Exchangers, Spray Dryer, Homogenizer, Centrifugal Separator, Hydrodynamic Cavitator, Single & Twin-Screw Extruder.

Instrument handled – Texture Analyzer, Rheometer.

Computer skills – MS Office, Design-Expert® v11, ANSYS® Workbench 15.0, SolidWorks and SPSS.

Awards and Achievements

2011 **ICAR International Fellowship 2011-12** – Indian Council of Agricultural Research, New Delhi, India.

2010 **Deutscher Akademischer Austausch Dienst (DAAD) Fellowship** – Bonn, Germany.

2009 **GATE Fellowship** – IIT Kharagpur, India.

2005 **National Talent Scholarship** – Indian Council of Agricultural Research, New Delhi, India

Professional Involvement

Judge
- 2017 Clean Tech Competition, USA
- 2018 Research Scholar's Week, NIT Rourkela, India

Professional Involvement (continued)

Reviewer

- Journal of Food Process Engineering
- Journal of the Science of Food and Agriculture
- Journal of Food Processing and Preservation
- Journal of Food Science & Technology
- Animal Feed Science and Technology
- Journal of Food Processing and Technology
- Ultrasonics Sonochemistry
- Food Science & Nutrition
- Process Biochemistry
- Journal of Food Research
- IFT'16, IFT'17 & IFT'20 Technical Research Presentations and Scientific & Applied Sessions.

Professional Memberships

- Institute of Food Technologists (IFT)
- American Society of Agricultural & Biological Engineers (ASABE)
- Association of Food Scientists & Technologists, India (AFSTI) - Life Member
- Indian Society of Agricultural Engineers (ISAE) - Life Member
- Institution of Engineers (India) - Life Member

Research Publications

Journal Articles

1. Asaithambi, N., Singha, P. & **Singh**, **S. K.** (2022a). Comparison of the effect of different desugarization techniques on the functionality of egg white protein hydrolysates. *Applied Food Research*, *2*(2), 100152. doi:10.1016/j.afres.2022.100152
2. Asaithambi, N., Singha, P. & **Singh**, **S. K.** (2022b). Comparison of the effect of hydrodynamic and acoustic cavitations on functional, rheological and structural properties of egg white proteins. *Innovative Food Science & Emerging Technologies*, 103166. doi:10.1016/j.ifset.2022.103166
3. Asaithambi, N., Singha, P. & **Singh**, **S. K.** (2022d). Recent application of protein hydrolysates in food texture modification. *Critical Reviews in Food Science and Nutrition*. doi:10.1080/10408398.2022.2081665
4. Barbhuiya, R. I., Singha, P., Asaithambi, N. & **Singh**, **S. K.** (2022). Ultrasound-assisted rapid biological synthesis and characterization of silver nanoparticles using pomelo peel waste. *Food Chemistry*. *385*, 132602. doi:10.1016/j.foodchem.2022.132602
5. Dash, D. R., **Singh**, **S. K.** & Singha, P. (2022). Recent advances on the impact of novel non-thermal technologies on structure and functionality of plant proteins: A comprehensive review. *Critical Reviews in Food Science and Nutrition*. doi:10.1080/10408398.2022.2130161
6. Pavani, M., Singha, P., Dash, D. R., Asaithambi, N. & **Singh**, **S. K.** (2022). Novel encapsulation approaches for phytosterols and their importance in food products: A review. *Journal of Food Process Engineering*, *45*(8), e14041. doi:10.1111/jfpe.14041

7. Pavani, M., Singha, P. & **Singh**, **S. K.** (2022). Development of phytosterol enriched functional edible oils: Study of physical, chemical, thermal and structural properties. *Journal of Scientific & Industrial Research. 81*(5), 549–560. doi:10.56042/jsir.v81i05.59585

8. Asaithambi, N., Pandiselvam, R., Prasath, V. A., **Singh**, **S. K.**, Gul, K. & Kothakota, A. (2021). Application of cold plasma and ozone technology for decontamination of *Escherichia coli* in foods-a review. *Food Control. 130*, 108338. doi:10.1016/j.foodcont.2021.108338

9. Asaithambi, N., **Singh**, **S. K.** & Singha, P. (2021). Current status of non-thermal processing of probiotic foods: A review. *Journal of Food Engineering. 303*, 110567. doi:10.1016/j.jfoodeng.2021.110567

10. Barbhuiya, R. I., Singha, P. & **Singh**, **S. K.** (2021). A comprehensive review on impact of non-thermal processing on the structural changes of food components. *Food Research International. 149*, 110647. doi:10.1016/j.foodres.2021.110647

11. Nath, D., Barbhuiya, R. I., **Singh**, **S. K.** & Dwivedi, M. (2021). Rheological properties of Indian coffee plum (*Flacourtia Jangomas*) pulp in steady and dynamic shear at different temperatures. *International Journal of Fruit Science. 21*(1), 95–105. doi:10.1080/15538362.2020.1859042

12. Pradhan, D., Hoque, M., **Singh**, **S. K.** & Dwivedi, M. (2021). Application of D-Optimal Mixture Design and Artificial Neural Network in Optimizing the Composition of Flours for Preparation of Gluten-Free Bread: Optimization of ingredient for preparation of gluten free bread. *Journal of Microbiology, Biotechnology and Food Sciences.* e3294. doi:10.15414/jmbfs.3294

13. Barbhuiya, R. I., Nath, D., **Singh**, **S. K.** & Dwivedi, M. (2020). Mass Modeling of Indian Coffee Plum (*Flacourtia Jangomas*) Fruit with its Physicochemical Properties. *International Journal of Fruit Science. 20*(sup3), S1110–S1133. doi:10.1080/15538362.2020.1775161

14. Asaithambi, N., Singha, P., Dwivedi, M. & **Singh**, **S. K.** (2019). Hydrodynamic cavitation and its application in food and beverage industry: A review. *Journal of Food Process Engineering. 42*(5), e13144. doi:10.1111/jfpe.13144

15. Jerome, R. E., **Singh**, **S. K.** & Dwivedi, M. (2019). Process analytical technology for bakery industry: A review. *Journal of Food Process Engineering. 42*(5), e13143. doi:10.1111/jfpe.13143

16. Rifna, E. J., **Singh**, **S. K.**, Chakraborty, S. & Dwivedi, M. (2019). Effect of thermal and non-thermal techniques for microbial safety in food powder: Recent advances. *Food Research International. 126*. doi:10.1016/j.foodres.2019.108654

17. **Singh**, **S. K.**, Singha, P. & Muthukumarappan, K. (2019a). Modeling and optimizing the effect of extrusion processing parameters on nutritional properties of soy white flakes- based extrudates using response surface methodology. *Animal Feed Science and Technology. 254*. doi:10.1016/j.anifeedsci.2019.06.001

18. Singha, P., **Singh**, **S. K.** & Muthukumarappan, K. (2019). Textural and structural characterization of extrudates from apple pomace, defatted soy flour and corn grits. *Journal of Food Process Engineering. 42*(4), e13046. doi:10.1111/jfpe.13046

19. Singha, P., **Singh**, **S. K.**, Muthukumarappan, K. & Krishnan, P. (2018a). Physicochemical and nutritional properties of extrudates from food grade distiller's dried grains, garbanzo flour and corn grits. *Food Science & Nutrition*, *6*(7), 1914–1926. doi:10.1002/fsn3.769

20. **Singh**, **S. K.** & Muthukumarappan, K. (2017a). A viscosity model for soy white flakes- based aquafeed dough in a single screw extruder. *Journal of Food Process Engineering*, *40*(2), e12357. doi:10.1111/jfpe.12357

21. **Singh**, **S. K.** & Muthukumarappan, K. (2017b). Rheological characterization and CFD simulation of soy white flakes based dough in a single screw extruder. *Journal of Food Process Engineering*, *40*(2), e12368. doi:10.1111/jfpe.12368

22. **Singh**, **S. K.** & Muthukumarappan, K. (2016). Effect of feed moisture, extrusion temperature and screw speed on properties of soy white flakes based aquafeed: A response surface analysis. *Journal of the Science of Food and Agriculture*, *96*(6), 2220–2229. doi:10.1002/jsfa.7339

23. **Singh**, **S. K.** & Muthukumarappan, K. (2014b). Effect of different extrusion processing parameters on physical properties of soy white flakes and high protein distillers dried grains-based extruded aquafeeds. *Journal of Food Research*, *3*(6), 107–123. doi:10.5539/jfr.v3n6p107

24. **Singh**, **S. K.** & Muthukumarappan, K. (2014d). Single screw extrusion processing of soy white flakes based catla feed. *Journal of Food Research*, *4*(1), 1–9. doi:10.5539/jfr.v4n1p1

Books and Chapters

1. Barbhuiya, R. I., **Singh**, **S. K.** & Singha, P. (2022). Mangosteen Wastes: Chemistry, Processing, and Utilization. In K. Muzaffar, S. A. Sofi & S. A. Mir (Eds.), *Handbook of Fruit Wastes and By-Products* (pp. 113–124). doi:10.1201/9781003164463-8

2. Barbhuiya, R. I., Singha, P. & **Singh**, **S. K.** (2022). Pomelo Wastes: Chemistry, Processing, and Utilization. In K. Muzaffar, S. A. Sofi & S. A. Mir (Eds.), *Handbook of Fruit Wastes and By-Products* (pp. 19–38). doi:10.1201/9781003164463-2

3. **Singh**, **S. K.**, Rajpurohit, B. & Singha, P. (2021). Camelina (*Camelina sativa*) seed. In B. Tanwar & A. Goyal (Eds.), *Oilseeds: Health Attributes and Food Applications* (pp. 455–471). doi:10.1007/978-981-15-4194-0_18

Conference Presentations

1. Asaithambi, N., Singha, P. & **Singh**, **S. K.** (2022c). Effect of desugarization on functional, antioxidant properties and in-vitro digestion of egg-white protein hydrolysates. In *3rd International Conference on Bioprocess for Sustainable Environment & Energy (ICBSEE-2022)*, NIT Rourkela, India, June 20-24.

2. **Singh**, **S. K.** & Dwivedi, M. (2019). Development of online quality control of fermentation process during leaving of dough using FT-NIR and E-Nose. In *ASABE Annual International Meeting*, Boston, MA, USA, July 7-10.

3. **Singh**, **S. K.**, Singha, P. & Dwivedi, M. (2019). Evaluation of extrudates from sorghum -grape pomace blends by extrusion processing. In *IFT Annual Meeting & Food Expo*, New Orleans, LA, USA, June 2-5.

4. **Singh**, **S. K.**, Singha, P. & Muthukumarappan, K. (2019b). Viscosity modeling of aquafeed dough in a single screw extruder. In *ASABE Annual International Meeting*, Boston, MA, USA, July 7-10.

5. Singha, P., **Singh**, **S. K.**, Muthukumarappan, K. & Krishnan, P. (2019). Textural properties and sensory study of garbanzo and corn-based extrudates containing food grade distiller's dried grains. In *IFT Annual Meeting & Food Expo*, New Orleans, LA, USA, June 2-5.

6. **Singh**, **S. K.** & Singha, P. (2018). Role of extrusion processing conditions on the properties of soy and corn-based extruded products. In *4th NDSU Annual Conference on Food for Health*, Fargo, ND, USA, July 8-11.

7. Singha, P., **Singh**, **S. K.**, Muthukumarappan, K. & Krishnan, P. (2018b). Study on the properties of corn grits-based extruded snacks fortified with garbanzo and distiller's dried grains. In *4th NDSU Annual Conference on Food for Health*, Fargo, ND, USA, July 8-11.

8. **Singh**, **S. K.** & Muthukumarappan, K. (2015a). Computational fluid dynamic simulation of soy white flakes based extrudates. In *IFT Annual Meeting & Food Expo*, Chicago, IL, USA, July 11-14.

9. **Singh**, **S. K.** & Muthukumarappan, K. (2015b). Computational fluid dynamics simulation of the soy white flakes based aquafeed dough in a single screw extruder. In *ASABE North Central Intersectional Meeting*, Fargo, ND, USA, April 10-11.

10. **Singh**, **S. K.**, Emin, M. A., Srivastav, P. P. & Muthukumarappan, K. (2014). Dispersion of triglycerides into plasticized starch matrices via extrusion process. In *IFT Annual Meeting & Food Expo*, New Orleans, LA, USA, June 21-24.

11. **Singh**, **S. K.** & Muthukumarappan, K. (2014a). Effect of die nozzle dimensions on physical properties of high protein distillers dried grains and soy white flakes-based extruded aquafeeds. In *Conference of Food Engineering (CoFE)*, Omaha, NE, USA, April 7-9.

12. **Singh**, **S. K.** & Muthukumarappan, K. (2014c). Influence of soy white flakes content and extrusion process parameters on physical properties of aquafeed. In *ASABE/CSBE North Central Intersectional Meeting*, Brookings, SD, USA, March 28-29.

13. **Singh**, **S. K.** & Muthukumarappan, K. (2013). Single-screw extrusion processing of soy white flakes (SWF) and high protein distiller dried grains (HP-DDG). In *ASABE Annual International Meeting*, Kansas City, MO, USA, July 21-24.

14. **Singh**, **S. K.** & Muthukumarappan, K. (2012a). Extrusion Processing: Challenges and Opportunities. In *ASABE-CSBE Intersectional Meeting*, Fargo, ND, USA, March 30-31.

15. **Singh**, **S. K.** & Muthukumarappan, K. (2012b). Extrusion technology and its applications. In *Annual Meeting of Centre for Bioprocessing Research and Development*, Rapid City, SD, USA, March 8-9.