Dr. Ankanksha Kumari

Assistant Professor

Department of Food Processing Technology,
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Education

Ph.D. Food Engineering and Technology 2020-2025
Birla Institute of Technology, Mesra, India SGPA-8.20/10

M. Tech Food Process Engineering 2017-2019
Sam Higginbottom University of Agriculture, Technology and Sciences, CGPA-7.95/10
Naini Prayagraj Uttar Pradesh

B. Tech Food Technology and Management 2012-2016
National Institute of Food Technology, Entrepreneurship and Management, CGPA-7.66/10
Kundli Sonipat Haryana

XIIth (Physics, Chemistry, and Mathematics) 2012
Kendriya Vidyalaya No. 1 Gaya, Bihar, India 80.20 %

Xth Science 2010
Kendriya Vidyalaya No. 1 Gaya, Bihar, India CGPA-8.80/10

Teaching Experience

Guest Faculty September 2023-June 2025
Department of Food Technology, College of Agricultural Engineering and Technology
Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar- 848125

- Process Technology of Beverages, FTPT-311 (Undergraduate)
- Process Technology of Legumes and Oil seeds, FTPT-212 (Undergraduate)
- Process Technology of Dairy Products, FTPT-211 (Undergraduate)
- ICT Applications in Food Industry, FTBM-301 (Undergraduate)
- Processing of Meat and Poultry Products, FTPT-302 (Undergraduate)
- Bakery, Confectionery and Snack Products, FTPT-303 (Undergraduate)

Research Experience

Doctoral Researcher Jan 2020 – May 2025
Birla Institute of Technology, Mesra, Ranchi | Dr. Anupam Roy (Supervisor)
Fortification, micronutrient retention, and quality preservation of whole rice grain by soaking and microwave-steam (SMS) assisted gelatinization

- Developed a lab-scale process technology of gelatinization-induced fortification of whole-grain rice.
- Conducted research on various soaking, gelatinization, and drying techniques, including their modeling and analysis.

- Expertise on machine designing for efficient and effective soaking, mixing, and drying of cereals, pseudo-cereals and pulses using AutoCAD
- Developed microwave-assisted fluidized bed spraying and drying setup (MAFBSD) and microwave-assisted screw conveying, spraying, and drying setup (MASCSD) and patented.
- Developed gelatinization-induced whole-grain fortification technology for rice and patented.
- Performed comprehensive characterization of gelatinization-induced fortified rice using techniques such as UV-Vis spectroscopy, ICP-OES, HPLC, LCMS, FTIR, SEM, XRD, rheometer, viscometer, and TGA
- Investigated the efficacy and bioavailability of micronutrients delivered through gelatinization-induced fortified rice and extrusion-based fortified rice.
- Supervised postgraduate (7) students with the supervisor.
- Assisted in teaching laboratory courses in Food Process Engineering Lab.
- Established a laboratory of applied food chemistry, technology and process engineering with the supervisor.

ICMR-Senior Research Fellow Dec 2019- May 2022
Birla Institute of Technology, Mesra, Ranchi | Dr. Anupam Roy
Biopolymer based nano-layer fortification of self-assembled micronutrients over pre-conditioned rice: Retention of fortified nutrients and scale-up studies

- Developing a low-cost rice fortification technology without disrupting the native structure of rice
- Scaling up the developed technology

M. Tech project 2018 – 2019
Sam Higginbottom University of Agriculture, Technology and Sciences,
Nani Prayagraj Uttar Pradesh | Dr. Dorcus Masih
Modelling the kinetics of ascorbic acid degradation, texture, and colour change of gooseberry (Emblica Officinalis) during thermal treatment

- Modelling the kinetics of ascorbic acid degradation, texture, and colour change of gooseberry (Emblica Officinalis) by individual quick blanching technique.
- Developed microwave-assisted quick blanching technique

Technical Competencies

Modeling and Simulation Tools handling- AutoCAD, and MATLAB

Biophysical techniques- UV-Vis spectroscopy, ICP-OES, HPLC, LCMS, FTIR, SEM, XRD, rheometer, viscometer, DSC, and TGA

Microscopy- Compound

Software- Microsoft, ImageJ/Fiji, Origin, GraphPad Prism, Maestro (Schrodinger), Blender, CorelDRAW, Adobe Photoshop, Adobe Illustrator, Paint3D

Technology Transfer

1. "Microwave, superheated steam, hot and cold air assisted fluidized bed chamber" transferred to Twin Engineers Vadodara in 2023
2. "Microwave, superheated steam, hot and cold air assisted turn table tray drier" transferred to Twin Engineers Vadodara in 2023

Publications

Total Impact: 58.50 **Citations**: 68 **h-index**: 5

Journal

1. **Kumari, A.,** Sahoo, B., Sarkhel, S., Hait, S., Chatterjee, R., Mohan, A., & Roy, A. (2025). Microwave Assisted Fluidized Bed Spray Soaking and Gelatinization for Whole Grain Rice Fortification. Food Frontiers. https://doi.org/10.1002/FFT2.70074 **(IF-7.4)**
2. Saha, S., Sarkhel, S., **Kumari, A.,** Saha, R., Chatterjee, K., Chatterjee, A., Mazumder, P. M., Mohan, A., Sarkar, B., & Roy, A. (2025). Physicochemical properties, micronutrient uptake and bioavailability of zinc-fortified whole grain puffed rice. Journal of the Science of Food and Agriculture. https://doi.org/10.1002/JSFA.70028 **(IF-4.3)**
3. **Kumari, A.**, Ahuja, U., Pandey, M. K., & Roy, A. (2024). Optimizing whole grain rice fortification using microwave-assisted screw conveying spraying and drying setup: Exploring solution absorption, gelatinization, and micronutrient retention. *Food Chemistry*, 468, 142455. https://doi.org/10.1016/J.FOODCHEM.2024.142455 **(IF-9.8)**
4. **Kumari, A.,** & Roy, A. (2024). Impact of the degree of starch gelatinization on the texture, soaking, and cooking characteristics of high amylose rice: an experimental and numerical study. *Journal of Food Measurement and Characterization 2024*, *18,* 8200–8217. https://doi.org/10.1007/S11694-024-02794-2 **(IF-2.9)**
5. **Kumari, A.,** & Roy, A. (2025). Gelatinization induced whole grain rice fortification technology. *Journal of Cereal Science*, *123*, 104148. https://doi.org/10.1016/J.JCS.2025.104148 **(IF-3.9)**
6. Jha, S., Sarkhel, S., Saha, S., Sahoo, B., **Kumari, A.**, Chatterjee, K., Mitra Mazumder, P., Sarkhel, G., Mohan, A., & Roy, A. (2023). Expanded porous-starch matrix as an alternative to porous starch granule: Present status, challenges, and future prospects. *Food Research International*, 175, 113771. https://doi.org/10.1016/J.FOODRES.2023.113771 **(IF-7.0)**
7. Saha, S., Saha, R., Sarkhel, S., **Kumari, A.,** Chatterjee, K., Chatterjee, A., Sahoo, B., Deb, P. K., Jha, S., Mazumder, P. M., Sarkar, B., & Roy, A. (2025). Physicochemical properties, micronutrient uptake and bioavailability of iron-fortified intact grain puffed rice. Journal of Cereal Science, 123, 104158. https://doi.org/10.1016/J.JCS.2025.10415 **(IF-3.9)**
8. Saha, S., Sarkhel, S., Sahoo, B., **Kumari, A.,** Jha, S., Mukherjee, A., Biswas, D., Saha, R., Chatterjee, A., Sarkar, B., Jana, S. K., Mohan, A., & Roy, A. (2023). Impact of fortificants on the powder properties of a gluten-free porous starch matrix of puffed rice flour. *LWT*, *175*, 114432. https://doi.org/10.1016/J.LWT.2023.114432 **(IF-6.0)**
9. Sahoo, B., **Kumari, A.,** Sarkhel, S., Jha, S., Mukherjee, A., Jain, M., Mohan, A., & Roy, A. (2023). Rice Starch Phase Transition and Detection During Resistant Starch Formation. *Food Review Internationa, 40l* , 1–27. https://doi.org/10.1080/87559129.2022.2163498 **(IF-6.0)**
10. Sarkhel, S., Mondal, M., Datta, D., Sahoo, B., **Kumari, A.,** Saha, S., Bera, S., Jana, M., Tiwari, A., & Roy, A. (2024). Ultrasonic high-yield extraction of non-toxic fucose-containing Abroma augusta polysaccharide bearing emulsifying properties. *Journal of the Science of Food and Agriculture*, *104*(14), 8858–8868. https://doi.org/10.1002/JSFA.13712 **(IF-4.2)**
11. **Kumari, A.**, Kumar, V., Chaudhary, G., Amitabh, A., & Rajak, D. (2024). Exploring the therapeutic and industrial applications of a novel fruit: Water chestnut (Trapa natans L.). *Annals of Phytomedicine An International Journal*, *13*(1). https://doi.org/10.54085/AP.2024.13.1.35 **(IF-1.7)**
12. **Kumari, A.,** & Roy, A. (2022). Enhancing micronutrient absorption through simultaneous fortification and phytic acid degradation. *Food Science and Biotechnology, 32(9)*, 1235–1256. https://doi.org/10.1007/s10068-023-01255-8 **(IF-2.9)**
13. Purohit, A., **Kumari, A.,** Roy, A., & Mohan, A. (2022). Determination of dielectric properties and predictive modeling for designing radio-frequency heating of ground beef. Frontiers in Food Science and Technology, 2. https://doi.org/10.3389/FRFST.2022.960471

Patents

1. Anupam Roy, **Ankanksha Kumari** & Sreyajit Saha "An apparatus for grains fortification"; Application no. 202231057966. (Published online)
2. Anupam Roy & **Ankanksha Kumari** "A method for fortification of grains"; Application no. 202311010189.(Published online)
3. Anupam Roy, Bijendra Sahoo, **Ankanksha Kumari** and Shubhajit Sarkhel "Microwave, superheated steam, hot and cold air assisted fluidized bedchamber and application thereof"; Application No 202331056554 .(Published online)
4. Anupam Roy, Sreyajit Saha, **Ankanksha Kumari**, Bijendra Sahoo & Shubhajit Sarkhel "A method for fortification of whole grain puffed rice"; Patent application no. 202331036336 (Published online)

Scientific Conferences and Workshops

Scientific Conferences

1. **Kumari, A** (2024) Powder flow behaviour of Foxtail nut flour, Makhana and allied aquatic crops (NRCM-NASMAC 2024) (Poster Presentation)
2. **Kumari, A.,** & Roy, A. (2024) Study of physicochemical and powder flow behaviour of Water chestnut flour. (Poster Presentation)
3. **Kumari, A.,** & Roy, A. (2023) Microwave-assisted fluidized bed spray coating of starch solution over whole rice: Effect of Microwave power on hydration, drying, textural and physiochemical properties of rice, 11th Asia-Pacific Drying Conference (ADC) 2023, NIT Rourkela, Kolkata, India. (Oral Presentation)
4. **Kumari, A.,** & Roy, A. (2022) Study and comparison of powder flow behavior of parboiled and raw rice at different particle size, ISPB international conference, BIT Mesra, Ranchi, India. (Oral Presentation)

Workshops

1. Seven-Day Workshop on Advanced analytical and simulation techniques in chemical engineering applications. By the Department of Chemical Engineering, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India. Nov 21-27, 2022.

Awards and Scholarships

1. **Research Associate (RA):** Council of Scientific & Industrial Research (CSIR), New Delhi, India, 2024.
2. **Best oral presentations award:** International Conference on Food Chemistry, Microbiology and process engineering for wellness & health (FCMPE WellH 25) (Cash Prize- Rs 4,000)
3. **Senior Research Fellowship (SRF)**: Indian Council of Medical Research (ICMR), New Delhi, India, 2019-2022.
4. **Best poster award**: National Seminar cum Exhibition on Makhana and Allied Aquatic Crops, held at ICAR-National Research Center on Makhana and Aquatic Crops, 2024.
5. **Second prize:** INAE-Innovation in Manufacturing Practices-2023, by Indian National Academy of Engineering (Cash Prize- Rs 20,000)
6. **UGC-NET 2019**: Qualified for Assistant Professor
7. **GATE 2018**: All India Rank 535

References

1. **Dr. Anupam Roy**,
   Assistant Professor,
   Centre for Food Engineering and Technology,

Department of Chemical Engineering,
Birla Institute of Technology, Mesra.
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Mobile No.: +91 9734461153

2. **Dr. Anand Mohan,**
Associate Professor,
Department of Food Science & Technology
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3. **Dr. Ashutosh Upadhyay,**
Professor,
Department of Food Science and Technology
National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Kundli, Sonipat,
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