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I, Dr. Winny Routray joined as **Assistant Professor in the Department of Food Process Engineering at NIT Rourkela in February 2020**. I have also been working as the **Associated Graduate Faculty at University of Guelph, Canada**. I received my **Ph.D. in Bioresource Engineering from McGill University, Canada** under the supervision of Prof. Valerie Orsat, where I was a Graduate Excellence Fellow and also worked as teaching assistant for Bioresource Engineering Material program. I received **2015 Best Graduate Thesis Award for best Ph.D. thesis awarded by the Canadian Society for Bioengineering**. Afterwards, I moved to **Memorial University of Newfoundland for my post-doctoral work**, where I carried out vibrant research activities in nutraceuticals and biofuels. I was also involved in start-up activities including new lab set-up and planning and setting up of pilot plant, transfer of scientific research to local industrial enterprise, and entrepreneurs, writing of successful independent research grant proposals in thrust areas of **downstream processing and valorisation of marine industry by-products and waste**. Subsequently, I worked as Research consultant for Memorial university for planning and development of several on-going and future projects. I also **worked as Senior Research Associate on projects focussed on bioplastic production employing leather industry and agricultural waste at CSIR-CLRI, Chennai and CSIR-IMMT, Bhubaneswar**. I obtained my **M.Tech. in Food Engineering from IIT Kharagpur and B.Tech. degree in Agricultural Engineering from Orissa University of Agriculture and Technology**. I have **also completed Post Graduate Program in Data Science from Purdue University, USA in 2020**. My main research interests encompass **many aspects of food and post-harvest engineering, by-product utilisation and waste valorisation through bio-processing, downstream processing and microbial applications, with the general themes of exotic frontiers of bio-engineering including, biofuels, nanocellulose, sustainable biomaterials production and value-added product development from agricultural and industrial waste and by-products**. I am also **working on the application of Data Science and Machine Learning in the field of food and agriculture**. Apart from research activities, I have **keen interest in transfer of knowledge between academia and industry, mentoring of students and fresh entrepreneurs, and outreach activities**. Other aspects of my career can be found on the site <https://website.nitrkl.ac.in/FProfile.aspx?e=routrayw>. A brief summary of my major professional, teaching and research accomplishments is presented here.

ACADEMIC QUALIFICATION

- ✓ **2019-2020: PG Diploma Data Science**

Purdue University, USA

The program included courses on Data Science with R Programming, Data Science with Python, Tableau Desktop, Machine Learning, and Natural Language Processing

- ✓ **2009-2014: Ph.D. Bioresource Engineering with CGPA: 4/4**

McGill University, Quebec, Canada

Thesis title: Effect of different extraction methods, environmental and post-harvest factors on yield of phenolic compounds from blueberry leaves. *No. of times cited: 1* (http://digitool.library.mcgill.ca/webclient/StreamGate?folder_id=0&dvs=1508465898285~0&usePid1=true&usePid2=true)

Supervisor: **Prof. Valerie Orsat**

- ✓ **2007-2009: M.Tech. (Post-Harvest Engineering) with CGPA: 9.06/10**

Indian Institute of Technology Kharagpur, India

Thesis title: Processing technology for Dahi (Indian yoghurt) powder

Supervisor: **Prof. H. N. Mishra**

- ✓ **2003-2007: B.Tech. (Agricultural Engineering) with CGPA: 8.17/10**

Electives: Food Process Engineering courses

College of Agricultural Engineering and Technology, Bhubaneswar, Odisha, India

Thesis title: Post harvest technology for Annapurna (*Pandanus amaryllifolius*) leaves

Supervisor: **Prof. Kalpana Rayaguru**

RESEARCH INTERESTS

- ✓ **Novel, advanced and eco-friendly food processing and post-harvest techniques**
- ✓ **Statistical techniques, Data Science, Machine learning, Artificial intelligence (Fuzzy logic) in product development, optimization of processes and assessment of food quality.**
- ✓ **Food industry and farm waste and by-products valorization with sustainable product development/ bio-refinery and downstream processing applications**
- ✓ **Biofuels and biomaterials production (*Nanocellulose and nanobiochar* production and application)**

PREVIOUS WORK EXPERIENCES

- ✓ **Sept 2019 -Feb 2020: CSIR-Senior Research Associate**

Department of Environment and Sustainability, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, Odisha, India

- ✓ **May 2018-Sept 2019: CSIR-Senior Research Associate**

Department of Biochemistry and Biotechnology, CSIR-Central Leather Research Institute, Chennai, Tamil Nadu, India

- Project focused on **valorization of leather waste and agricultural byproduct**
- ✓ **Oct 2015- April 2018: Research Consultant (non-academic)**

Centre of Aquaculture and Seafood Development, Marine Institute, Memorial University of Newfoundland, Canada

- ✓ **Sept. 2014- Sept 2015: Post-doctoral fellow**

Centre of Aquaculture and Seafood Development, Marine Institute, Memorial University of Newfoundland, Canada

- Major work done for the project “**Bioprocessing strategy for the production of biodiesel and other value-added products from salmon waste**” funded by Research & Development Corporation of Newfoundland and Labrador, Ignite Research and Development.
- Participation in ***development of new projects in Newfoundland, Canada***, focussed on
 - **utilization of fish blood/ fish industry wastewater for value-added product development**
 - lab. scale and pilot scale studies for **extraction of omega-3 fatty acids from fish industry waste**
 - preparation of **value –added products from invasive and underutilised crab species *Carcinus maenas***
- Participation in **pilot plant planning and establishment.**
- Active involvement in **development of independent projects with industry partners and transfer of knowledge from lab to pilot plant and subsequently to industries.**

TEACHING EXPERIENCE/ COURSES TAUGHT AT NIT ROURKELA

FP428: Food Industry By-Product and Waste Management

FP3301: Processing of Spices, Condiments and Plantation crops

FP4207: Food Industry By-Product and Waste Management

FP4208: Experimental Design and Statistical Methods

FP4212: IT Applications in Food industry

FP3272: Experimental Design and Statistical Methods Laboratory

Teaching assistant in Bioresource Engineering Department for the subject **Bioresource Engineering Material**, during Fall semesters of 2012 and 2013.

GRADUATE/ UNDERGRADUATE SUPERVISION

- ✓ ***Ph.D.:4 (Continuing)***
- ✓ ***Graduate Projects: 3 M.Tech. and 1 MSc. (Completed), 2 MTech. (Continuing)***
- ✓ ***Undergraduate: 7 (Completed)***
(Projects are focused on food industry byproducts characterization and corresponding product development)

GRANTS AND CONSULTANCY PROJECTS

- ✓ **Seed money grant:** 2020, served as **Principal Investigator**, funded by NIT Rourkela.
- ✓ **BIRAC's BIG scheme:** 2021-2023, serving as **Scientific Advisor** for GreenPod Labs Private Limited, supported by Department of Biotechnology (DBT), Government of India
- ✓ **DST (ASEAN India STI Cooperation):** 2023- served as **Co-PI** on project Agri-food Waste Valorization into Animal Feed Subjected to Anaerobic Digestion.
- ✓ **FIST 2022:** 2022-2027- served as one of the PIs
- ✓ **SPARC 2024 (Third Call):** 2024-2026-serving as CoPI on project Extraction and encapsulation of phenolics and carotenoids from millet processing waste through Biorefinery approach
- ✓ **OVDF 2024:** Ph.D. candidate Shristi Shefali Saraugi will be completing a part of her study focused on biochar production and application in Purdue University, USA during the academic year of 2024-25.

ADDITIONAL PROFESSIONAL ACCOMPLISHMENTS

- ✓ **Invited speaker at several events:**
 - Presented a webinar on Valorisation of Fish Industry byproducts during 17th webinar of the "FCTL Webinar Series" on 5 June 2021 (<https://www.youtube.com/watch?v=I2xpdPovlhc>)
 - Presented an invited talk on ACE: Solutions in the Aftermath of COVID, November 18, 2021 in virtual mode (<https://www.aiche.org/conferences/pace-solutions-aftermath-of-covid/2021/technical-program>)
Link for the talk: <https://www.youtube.com/watch?v=ZzrW4Is77XY&t=4s>
 - Webinar on "Fish Processing and Business Opportunities " in the Hindi Language under the PM Formalisation of Micro food processing Enterprises Scheme (PMFME SCHEME) organizing by PMFME Cell, NIFTEM on 27th August 2021 (<https://www.youtube.com/watch?v=Ug9Jf25A8HE>)
 - Webinar on Strategies and skill-sets for multidisciplinary work and higher studies on 29 March 2022 organised by College of Agricultural Engineering and Technology, OUAT under National Agricultural Higher Education Project (https://nahep.icar.gov.in/EventsDetail.aspx?eventid=Tb34KCHm9W6lt4sbVwwf_oRPOG5M+z3VaqZbCEbHu+n0QtdMdbuw3L6ik/cWn47u+yTCIQYDCvF//nJDYMXOKPQ+zAviYxPJsE6wL8YMHV84=)
 - Presented an Invited Talk on Business valorising; agricultural and food industry by-products during workshop "Advanced Innovation and Opportunities in Agri-Tech Entrepreneurship held at FTBI, NIT Rourkela during 5-7 May 2022.
 - Presented a talk on Silage systems : A sustainable system for fish waste utilization and preservation during a Karyashala: SERB-Sponsored Five-day High-End

Workshop on Sustainable Disruptive Technology in Agri-Food Sector for Processing and Preservation Mode: Online + Offline, held during July 11-15, 2022, which was organized by Department of Food Process Engineering, National Institute of Technology Rourkela, Odisha, India.

- ✓ Hosted Ts. Dr. Muhammad Heikal Bin Ismail, Senior Lecturer, Universiti Putra Malaysia for **ASEAN-India Research and Training Fellowship Scheme** from the Department of Science and Technology (DST), Government of India in 2023.
- ✓ I have been selected as one of the **Super Mentors for the BIRAC SPARSH Social Innovators at KIIT-Technology Business Incubator, KIIT University, Bhubaneswar, Odisha** for the period starting from June 2022 to December 2023
- ✓ **Evaluator of theses** for M.Tech. program in Dept. of Agricultural Processing and Food Engineering, College of Agricultural Engineering and Technology, OUAT Bhubaneswar, Odisha, India and ICT-IOCB
- ✓ **Advisory committee member** of Ph.D. candidate working on advanced statistical methods
- ✓ **Evaluator of PRISM proposal** in year 2020 for TePP Outreach cum Cluster Innovation Centre (TOCIC), University of Madras, Chennai, Tamil Nadu, India
- ✓ **Evaluator of candidacy for** AABFEIO Early Career Engineer and Women in Engineering of the Year Award, under ASABE
- ✓ **Convenor and Co-convenor of 4 different Workshops.** (Refer <https://website.nitrkl.ac.in/FProfile.aspx?e=routrayw>)
- ✓ **Co-convenor of webinar** conducted on “Recent trends in Food Processing and Preservation”, sponsored by TEQIP-II, India.
- ✓ Part of the **Editorial board of IJBFS of Science Web Publishing** for Food Engineering and Post-Harvest Engineering.
- ✓ **Reviewer for 115 peer-reviewed international journals** in areas of food, feed, nutrition and energy including *Food and bioprocessing technology, Journal of Food Processing and Preservation, Industrial crops and products, International Journal of Dairy Technology, Food Chemistry, Food and Bioproducts Processing, Biosystems Engineering, Phytochemical Analysis*, and several other peer-reviewed journals in the field of biotechnology, food engineering, environmental engineering and post-harvest technology. **The publons reviewer profile** is available at <https://publons.com/author/1185441/winy-routray#profile>.
- ✓ **Invited reviewer** for the papers submitted in **FUZZ-IEEE 2019 and FUZZ-IEEE 2020, 2023 conferences**, which are international conference on Fuzzy systems.
- ✓ **Guest Editor** for 1. Discover Applied Sciences- Nanomaterials: Applications in Agro-food industry (Springer) (<https://link.springer.com/collections/bjceabefbh>); 2. Processes-Mathematical Modeling of Drying Kinetics in Food and Biomass Processing (MDPI)
- ✓ **Author of Popular Articles on food technology** including:

- Krill Oil. Ingredients South Asia, A Saffron Media Publication, 10(4): 814-185.
- Cranberry: A superfood. Ingredients South Asia, A Saffron Media Publication, 10(13): 72-74.
- Functional beverages of various types. FnBnews.com

OUTREACH ACTIVITIES/ CONTINUING EDUCATION

- ✓ **GIAN Workshop: Coordinator** for GIAN course “Next-Generation Sustainable Alternative Proteins for Food: Fundamentals and Technological Innovation” being held between 1-10 Dec 2025 sponsored by MoE
- ✓ **GIAN Workshop: Coordinator** for GIAN course “Precision Fermentation for Sustainable Manufacturing of Bio-actives and Industrial Biochemicals” being held between 2 - 6 Dec 2024 sponsored by MoE.
- ✓ **Karyashala Workshop: Convenor** involved in organizing an International Workshop on “Industry Relevant Advanced Analytical Technologies for Nutraceutical Development and Designer Food” held during 17-21 July 2023 sponsored By SERB India
- ✓ **Workshop: Coordinator** of Skill Development Workshop on Bakery Products from Millets under Unnat Bharat Abhiyan – held between 07 Mar 2023 - 11 Mar 2023
- ✓ **Webinar: Convenor** along with Prof. RC Pradhan, for Lecture Series-1 presented by Prof. S.K. Goyal (IIT BHU) on the topic of "Creating awareness about millets (importance, climate resilience, and economic security), conducted for the inauguration and celebration of " International Year of Millets (IYoM)- 2023 at NIT Rourkela.
- ✓ **Workshop:** One of the convenors involved in organizing an International Webinar on “Food Security & Sustainability in the Post-COVID Food Processing Industry Targeting Zero Carbon Emission” from 5th - 9th March, 2022, sponsored by DST- GATI (WISE KIRAN) under the program NIT-RKL-Nari Shakthi.
- ✓ **Short term course:** Co-convenor for TEQIP-III Sponsored National Webinar held in between 26-27 Sep 2020 on the topic “Recent Trends in Food Processing and Preservation”.
- ✓ **Volunteer and part of organising committee for JIGYASA program** (a students’ outreach program for Kendriya Vidyalaya students), hosted by CSIR-Central Leather Research Institute, Chennai during year 2018.
- ✓ Conducted outreach activities for the **students and industrial personnel at Memorial University of Newfoundland**, Canada, during 2014-2015 academic session.

MEMBERSHIPS

- ✓ **Institute of Food Technologists (IFT)** - Premier Membership - 2023
- ✓ **American Society of Agricultural and Biological Engineers**- Yearly membership, 2022
- ✓ **Institution of Engineers (India)** - Life Membership, 2021
- ✓ **Indian Society of Agricultural Engineers** - Life Membership, 2021

- ✓ *American Chemical Society* - Community Membership, 2020
- ✓ *Association of Food Scientists & Technologists (India)* - Life Membership, 2020

AWARDS AND FELLOWSHIPS

- ✓ **2023: Faculty Advisor Appreciation Award**, Institute Counselling Services (ICS), NIT Rourkela
- ✓ **2023:** Felicitated and served as one of the Guest Speakers at **Argus Narishakti Unlimited-Season 2, Argus News Channel**
- ✓ **2018-2021: CSIR-Senior Research Associate Award**, Council of Scientific & Industrial Research, India
- ✓ **2014-2015: Graduate Thesis Award for best Ph.D. thesis** awarded by the Canadian Society for Bioengineering during 2015 CSBE/SCGAB annual meeting, held at Edmonton, Alberta, Canada (July 5-8, 2015)
- ✓ **2012-2014: Graduate Excellence Award**, McGill University, Canada
- ✓ **2011-2012: Graduate Excellence Fellowship**, McGill University, Canada
- ✓ **2009-2010: Schulich Graduate Fellowship**, McGill University, Canada
- ✓ **2007-2009: Graduate scholarship** for M.Tech. students at IIT Kharagpur, India

RESEARCH PROJECTS COMPLETED DURING GRADUATE STUDIES AND POST-DOC

- ✓ Development of **bioplastic** from agricultural and leather industry wastes
- ✓ Bioprocessing strategy for the production of **biodiesel** and other value-added products (omega-3 fatty acids and protein hydrolysates) from **salmon waste**.
- ✓ **Microwave** assisted extraction of **phytochemicals** from blueberry biomaterial
- ✓ Processing technology for **Dahi (Indian yoghurt) powder**
- ✓ Post-harvest technology for **Annapurna (Pandanus amaryllifolius) leaves**

HIGHLIGHTS OF PUBLICATIONS

Google Scholar: <https://scholar.google.co.in/citations?user=ZWxbKn0AAAAJ&hl=en&oi=ao>

- ✓ **Total No. of Publications** (Scientific articles and chapters):84; No. of **papers Published/Accepted: 59**; Total no. of **citations= 3331**; **h-index = 27**; **i10-index = 38**
- ✓ **No. of accepted/ published Book Chapters = 25**
- ✓ **No. of invited papers=3**
- ✓ **A figure from one paper was selected for the cover page of June 2013 issue of the Journal of Chemical & Engineering Data**

JOURNAL PUBLICATIONS

1. Subhanki Padhi, Ashutosh Singh, Valerie Orsat, **W Routray**. Isolation and characterization of nanocellulose from jackfruit peel: A comparative analysis of

- organic and inorganic acid hydrolysis on structural, thermal, and rheological properties. *Biomass and Bioenergy*. 2025 May; 196: 107716.
2. M Karmakar, A Kheto, R Sehrawat, Y Kumar, K Gul, **W Routray**, L Kumar. Exposure of Proso millet starch to superheated steam: Effect on physicochemical, techno-functional, rheological behavior, digestibility, and related mechanism. *Food Chemistry*. 2025 Mar 15;468:142383.
 3. KK Gupta, **W Routray**. Cold plasma: A nonthermal pretreatment, extraction, and solvent activation technique for obtaining bioactive compounds from agro-food industrial biomass. *Food Chemistry*. 2025 Jan 18:142960.
 4. RI Barbhuiya, C Wroblewski, SP Ravikumar, G Kaur, **W Routray**, J Subramanian, A Elsayed, A Singh. Upcycling of industrial pea starch by rapid spray nanoprecipitation to develop plant-derived oil-encapsulated starch nanoparticles for potential agricultural applications. *Carbohydrate Polymers*. 2024 Dec 15;346:122618.
 5. A Sahoo, K Rayaguru, R Chetry, **W. Routray**, RN Nayak , SK Dash. Effect of foaming agents and dilution ratio on physicochemical and bioactive compounds profile of dried palmyra pulp. *Food and Humanity*. 2024 Dec 1;3:100321.
 6. S.S. Saraugi, **W. Routray**. Advances in sustainable production and applications of nano-biochar. *Science of The Total Environment*. 2024 Oct 16:176883.
 7. Abhinav Dubey, Indra Mani, S. M. Nebapure, Roaf Ahmad Parray, Shalini Gaur Rudra, **W. Routray**. "Evaluating the effectiveness of insecticides on storage bag surfaces for managing *Callosobruchus maculatus* (fabricius)(Coleoptera: Bruchidae)." *Journal of Stored Products Research* 109 (2024): 102446.
 8. S. Padhi, K. K. Gupta, S. S. Saraugi, R. Sehrawat, and **W. Routray**. Comparative analysis of non-thermal technologies and solvent systems for the extraction and characterization of phytochemicals and antioxidants in *Pandanus amaryllifolius*. *Chemical Engineering Research and Design*, August 2024, 10.1016/j.cherd.2024.08.036
 9. N. Chandrakar, S. Padhi, S. S. Saraugi, R. Sehrawat, A. Singh, and **W. Routray**. Whey protein and maltodextrin conjugated foam-mat dried honey powder: Functional, physicochemical, structural, rheological and thermal characterization. *Chemical Engineering Research and Design*, 367-369, September 2024, 10.1016/j.cherd.2024.08.015
 10. Anujna Sahoo, Kalpana Rayaguru, Rahul Chetry, **Winnny Routray**, RN Nayak, Sanjaya K. Dash. Effect of foaming agents and dilution ratio on physicochemical and bioactive compounds profile of dried palmyra pulp (2024). *Food and Humanity*, 3, 100321
 11. A Dubey, I Mani, **W Routray**, SM Nebapure, RA Parray (2024). Evaluating bag storage technologies for physical characteristics, loss reduction and economic viability in pulses. *Journal of Stored Products Research*, 107.
 12. Rahul Islam Barbhuiya, Charles Wroblewski, Abdallah Elsayed, Jayasankar Subramanian, Guneet Kaur, **Winnny Routray**, Ashutosh Singh (2024). Development and

- physicochemical characterization of Azadirachta indica seed oil loaded niosomes nanoparticles: A potential natural pesticide. Chemical Engineering Research and Design 203,197-206.
13. Sakshi Manikpuri, Ankan Kheto, Rachna Sehwat, Khalid Gul, **Winy Routray**, Lokesh Kumar (2024). Microwave irradiation of guar seed flour: Effect on anti-nutritional factors, phytochemicals, in vitro protein digestibility, thermo-pasting, structural, and functional attributes. Journal of Food Science.
 14. Athiyappan, Kerthika Devi; **Routray, Winy**; Paramasivan, Balasubramanian (2024). Phycocyanin from Spirulina: A comprehensive review on cultivation, extraction, purification, and its application in food and allied industries. Food and Humanity 100235.
 15. Sahoo, Sibasish; Padhi, Subhanki; Sehwat, Rachna; **Routray, Winy** (2023). Microwave and atmospheric cold plasma treatment for the extraction and debittering of bioactive components rich fraction from *Tinospora cordifolia*. Journal of Applied Research on Medicinal and Aromatic Plants.
 16. Priyadarshini, A; Rayaguru, K; **Routray, W**; Biswal, AK; Misra, PK (2023). Ascertaining optimal ohmic-heating characteristics for preserving mango (*Mangifera indica* L.) pulp through analysis of physicochemical properties and hurdles effect. Food Chemistry Advances, <https://doi.org/10.1016/j.focha.2023.100458>
 17. Padhi, S., Singh, A., **Routray, W.** (2023). Oscillatory and rotational rheological characterization of jackfruit peel cellulose suspension: Effect of concentration, pH and ionic strength. Food Hydrocolloids, 109179.
 18. Alzaydi, A., Barbhuiya, R. I., **Routray, W.**, Elsayed, A., & Singh, A. (2023). Bioactive peptides: Synthesis, applications, and associated challenges. Food Bioengineering.
 19. Ramalingam, S., **Routray, W.**, Rahimi, J., Kroetsch, B., Singh, A. (2023). An in silico analysis of the effect of stressors on Mung bean protein. Food Bioengineering, 2(2), 127-138.
 20. Kheto, A., Mallik, A., Sehwat, R., Gul, K., **Routray, W.** (2023). Atmospheric cold plasma induced nutritional & anti-nutritional, molecular modifications and in-vitro protein digestibility of guar seed (*Cyamopsis tetragonoloba* L.) flour. Food Research International, 168, 112790.
 21. Priyadarshini S, Rayaguru K, **Routray W**, Dash SK. Study of functional, biochemical, and sensory qualities of jackfruit pulp powder produced through optimized foam-mat drying parameters.
 22. Padhi S, Singh A, **Routray W**. Nanocellulose from agro-waste: a comprehensive review of extraction methods and applications
 23. R. I. Barbhuiya, N. N. Tinoco, S. Ramalingam, A. Elsayed, J. Subramanian, **W. Routray**, A. Singh. (2022). A review of nanoparticle synthesis and application in the suppression of diseases in fruits and vegetables. Critical Reviews in Food Science and Nutrition, 1-23.

24. **W. Routray**, R. Chetry, B.S. Jena. 2022. Drying of food industry and agricultural waste: Current scenario and future perspectives. *Drying Technology*, pp.1-27.
25. Rahul Islam Barbhuiya, Saipriya Ramalingam, Harsimran Kaur Kalra, Abdallah Elsayed, **Winnie Routray**, Manickavasagan Annamalai, Ashutosh Singh. Application of Non-Destructive Testing Techniques (NDTT) to Characterize Nanocarriers Used for Drug Delivery: A Mini Review. *Biophysica*. 2022.
26. Veknesh Arumugam, Muhammad Heikal Ismail, Tharsini Amma Puspadaran, **Winnie Routray**, Ngadisih Ngadisih, Joko Nugroho Wahyu Karyadi, Bambang Suwignyo, Hatma Suryatmojo. Food Waste Treatment Methods and its Effects on the Growth Quality of Plants: A Review. *Pertanika Journal of Tropical Agricultural Science*. 2022
27. Prabhjot Kaur, Gagan Jyot Kaur, **Winnie Routray**, Jamshid Rahimi, Gopu Raveendran Nair, Ashutosh Singh. Recent advances in utilization of municipal solid waste for production of bioproducts: A bibliometric analysis. *Case Studies in Chemical and Environmental Engineering*. 2022.
28. M Deb, **W Routray**, Kshirod Kumar Dash. Assessment of quality change with frying temperature and sensory analysis using Fuzzy logic of hydrocolloids fortified flour-based multilayered snack. *Journal of Food Processing and Preservation*. 2022.
29. P Nayak, K Rayaguru, S Brahma, **W Routray**, SK Dash. Standardization of process protocol for isolation of starch from mango kernel and its characterization. *Journal of the Science of Food and Agriculture*. 2022.
30. Muhammad Heikal Ismail, Hii Ching Lik, **Winnie Routray**, Wai Woo. Determining the Effect of Pre-Treatment in Rice Noodle Quality Subjected to Dehydration through Hierarchical Scoring. *Food Safety Management & Quality Control, Processes*. 2021.
31. VV Ramakrishnan, D Dave, Yi Liu, **W Routray**, Wade Murphy. Statistical optimization of biodiesel production from salmon oil via enzymatic transesterification: Investigation of the effects of various operational parameters. *Processes* 9(4). 2021.
32. N. Afzal Ali, W Routray, KK Dash. Physicochemical characterization of modified lotus seed starch obtained through acid and heat moisture treatment. *Food Chemistry* 319. 2020.
33. K Vivek, KV Subbarao, **W Routray**, NR Kamini, KK Dash. Application of fuzzy logic in sensory evaluation of food products: A comprehensive study. *Food and Bioprocess Technology* 1-29.
34. **W Routray**, D Dave, VV Ramakrishnan, J Pohling, SK Cheema. Biorefinery approach and environment-friendly extraction for sustainable production of astaxanthin from marine wastes. *Critical reviews in Biotechnology* 39: 469-488, 2019.
35. M Ilamaran, S Sriram Raghavan, S Karthik, K Sanjay Nalawade, S Samvedna, **W Routray**, NR Kamini, P Saravanan, N Ayyadurai. A facile method for high level dual expression of recombinant and congener protein in a single expression system. *Protein Expression and Purification* 156: 1-7, 2019.

36. **W Routray**, V Orsat. Recent advances in dielectric properties - Measurements and importance. *Current Opinion in Food Science* 23: 120-126, 2018.
37. **W Routray**, V Orsat, M Lefsrud. Effect of postharvest LED application on phenolic and antioxidant components of blueberry leaves. *Chem Engineering* 2 (4): 56-64, 2018.
38. D Dave, **W Routray**. Current scenario of Canadian fishery and corresponding underutilized species and fishery byproducts: A potential source of omega-3 fatty acids. *Journal of Cleaner Production* 180: 617-641, 2018.
39. D Dave, **W Routray**. Effect of moisture reduction and harvest times on quality characteristics of salmon processing byproducts. *Advances in Food Processing and Technology*. DOI: 10.29011/AFPT-119. 100019, 2018.
40. **W Routray**, K Rayaguru. 2-Acetyl-1-Pyrroline: A Key Aroma Component of Food Products. *Food Reviews International* 34(6): 539-565, 2018.
41. **W Routray**, D Dave, VV Ramakrishnan, W Murphy. Production of High Quality Fish Oil by Enzymatic Protein Hydrolysis from Cultured Atlantic Salmon By-Products: Investigation on Effect of Various Extraction Parameters Using Central Composite Rotatable Design. *Waste and Biomass Valorization* 9: 2003–2014, 2018.
42. **W Routray**, D Dave, VV Ramakrishnan, W Murphy. Study of drying kinetics of salmon processing by-products at different temperatures and the quality of extracted fish oil. *Drying Technology* 35(16):1981-1993, 2017.
43. **W Routray**, V Orsat. Variation of dielectric properties of aqueous solutions of ethanol and acids at various temperatures with low acid concentration levels. *Physics and Chemistry of Liquids* 52(2): 209-232, 2014.
44. **W Routray**, V Orsat. MAE of phenolic compounds from blueberry leaves and comparison with other extraction methods. *Industrial Crops and Products* 58: 36-45, 2014.
45. **W Routray**, V Orsat, Y Garipey. Effect of different drying methods on the microwave extraction of phenolic components and antioxidant activity from highbush blueberry leaves. *Drying Technology* 32(16): 1888-1904, 2014.
46. **W Routray**, V Orsat. Variation of phenolic profile and antioxidant activity of North American highbush blueberry leaves with variation of time of harvest and cultivar. *Industrial Crops and Products* 62: 147-155, 2014.
47. **W Routray**, V Orsat. Dielectric properties of concentration-dependent ethanol + acids solutions at different temperatures. *Journal of Chemical & Engineering Data* 58(6): 1650-1661, 2013. 2021 **Impact factor = 3.119**. *[A figure from this paper was part of the cover page of June 2013 issue of the Journal of Chemical & Engineering Data]*.
48. **W Routray**, HN Mishra. Sensory evaluation of different drinks formulated from dahi (Indian yogurt) powder using fuzzy logic. *Journal of Food Processing and Preservation* 36(1): 1-10, 2012.

49. **W Routray**, V Orsat. Microwave-assisted extraction of flavonoids: A Review. Food and Bioprocess Technology 5(2): 409-424, 2012.
50. K Rayaguru, **W Routray**. Mathematical modeling of thin layer drying kinetics of stone apple slices. International Food Research Journal 19(4): 1503-1510, 2012.
51. K Rayaguru, JP Pandey, **W Routray**. Optimization of process variables for accelerated aging of basmati rice. Journal of Food Quality 34(1): 56-63, 2011.
52. K Rayaguru, **W Routray**. Microwave drying kinetics and quality characteristics of aromatic *Pandanus amaryllifolius* leaves. International Food Research Journal 18(3): 992-999, 2011.
53. K Rayaguru, **W Routray**, SN Mohanty. Mathematical modeling and quality parameters of air-dried betel leaf (*Piper betle* L.). Journal of Food Processing and Preservation 35(4): 394-401, 2011.
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PAPER PRESENTATIONS AT CONFERENCES

1. **Winy Routray**, Subhanki Padhi, Shristi Shefali Saraugi, Abhirup Mitra. Pretreatment, Separation and Purification Techniques for Food Industry Waste Utilization. International Conference on Separation and Purification Technologies 2023, IIT Patna

2. Subhanki Padhi, **Winy Routray**. Extraction of Cellulose from Lignocellulosic Biomass: Dependence of Rheological Properties on the Concentration, Ionic Strength and pH of Cellulose. International Conference on Separation and Purification Technologies 2023, IIT Patna
3. Shristi Shefali Saraugi, **Winy Routray**. Biochar as a Potential Filtration and Separation Media. International Conference on Separation and Purification Technologies 2023, IIT Patna
4. Kishan Kishor Gupta, **Winy Routray**. Cold Plasma-Assisted Extraction of Bioactive Compounds from *Pandanus amaryllifolius* Leaves. 9th International Food Convention (IFCoN), 2023
5. S Padhi, **W Routray**. Cellulose from lignocellulosic biomass: Extraction and characterization. 29th ICFoST, 2023
6. **Winy Routray**, B.S. Jena. Drying of food and agricultural industry waste for further valorization and product development: Challenges and future perspectives. (Oral paper presentation at 10th Asia Pacific Drying Conference 2019, December 14-17, Vadodara, India)
7. **Winy Routray**, Deepika Dave. Effect of storage conditions on salmon processing waste used for biodiesel production. (Oral presentation at NABEC 2015, July 12-15, Newark, Delaware, USA)
8. **Winy Routray**, Deepika Dave. Newfoundland's Fisheries and Aquaculture towards Blue Economy. (Oral presentation at NABEC 2015, July 12-15, Newark, Delaware, USA)
9. **Winy Routray**, Valerie Orsat. Study of the phytochemicals present in Blueberry leaves. (Oral presentation at ASABE 2014 conference, Montreal, Canada)
10. **Winy Routray**, Valerie Orsat. Blueberry leaves: A rich source of useful phytochemicals. (Poster presentation at the 2013 BIO World Congress on Industrial Biotechnology, Montreal, Canada)
11. **Winy Routray**, Valerie Orsat. A potential source of extra income for farmers: Blueberry leaves. (Poster presentation at the 2013 6th McGill Conference on Global Food Security, Montreal, Canada)
12. **Winy Routray**, Valerie Orsat. Microwave-assisted extraction of phenolic compounds from blueberry leaves. (Oral presentation at NABEC 2012, Orillia, Ontario, Canada)
13. **Winy Routray**, Valerie Orsat. Microwave assisted extraction of anthocyanins from blueberry biomaterial. (Oral presentation at NABEC 2011, Burlington, VT, USA)
14. **Winy Routray**, Valerie Orsat. Microwave extraction of myrtillin from blueberry. (Oral presentation at 17th World Congress of CIGR, 2010, Quebec City, Canada)

15. Kalpana Rayaguru, **Winny Routray**. Post-harvest processing of *Pandanus amaryllifolius* leaves: a potential substitute of basmati aroma. (Oral presentation at FSES 2009, IIT Kharagpur, India)

CONFERENCES ATTENDED

1. 24th Annual Green Chemistry & Engineering Conference: Systems-Inspired Design. ACS Green Chemistry Institute- Pharmaceutical Roundtable, June 15-19 2020.