

Profile Page



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Research Interests :

Bioreactor design, Nutrient removal, Resource recovery, Anaerobic digestion, Membrane Technology, Emerging contaminants removal.

Other Profile Links :

Google Scholar Link :

Google Scholar [Click Here](#)

Journal Publications :

Year	Journal	Publication
2023	Water 15 (3), 534	M. K. Shahid, B. Mainali, P. R. Rout, J. W. Lim, M. Aslam, A. E. Al-Rawajfeh, Y. Choi. A Review of Membrane-Based Desalination Systems Powered by Renewable Energy Sources.
2023	Environmental Pollution, 316	P.R. Rout, M. Goel, D.S. Pandey, C. Briggs, A. Mohanty, N. Halder, V. P., Sundramurthy, S. Mukherjee, S. Varjani. Advancements in Biotechnological and Thermochemical Processes for Treatment and Valorisation of Wastewater from Hydrothermal Liquefaction of Biomass and Waste: Strategic Innovations and Perspectives
2023	Waste and Biomass Valorization, 14(2), 553-542	P.R. Rout, D. S. Pandey, M. H. Parry, C Briggs, H.L.C, Manuel, U. Reddicherla, S. Mukherjee, M. Goel. Sustainable Valorisation of Animal Manures via Thermochemical Conversion Technologies: An Inclusive Review on Recent Trends.
2023	Groundwater for Sustainable Development, 20	B. Pradhan, S. Chand, S. Chand, P.R. Rout, S.K. Naik. Emerging groundwater contaminants: A comprehensive review on their health hazards and remediation technologies.

2022	Environmental Quality Management, 32 (2), 161-176	A. Priyadashinia, S. Mishra, M. M. Sahoo, P. R. Rout, N. K. Sahoo. Effect of nutrient and culture conditions on enhanced biodegradation of phenolic pollutants; A review on recent development and future prospective.
2022	Materials Today: Proceedings, 67, 1211-1217	A.A. Das, S. Mishra, P.Pradhan, L. Nayak, S. Raul, K. Das, M.Sahoo, P. K. Sahoo, B. Naik, P. R. Rout, N. K. Sahoo. Recent advancements in microplastics treatments: Characteristics, occurrence, and removal technologies.
2022	Journal of Hazardous Materials Advances, 6, 100070	P.R. Rout, A. Mohanty, A. Sharma, M. Miglani, D. Liu, S. Varjani. Micro-and Nanoplastics Removal Mechanisms in Wastewater Treatment Plants: A Review.
2022	Bioenergy Research , 15, 1-16	P.R. Rout, M. Goel, A. Mohanty, D.S. Pandey, N. Halder, S. Mukherjee, N. K Sahoo, S. K. Bhatia, S. Varjani. Recent Advancements in Microalgal Mediated Valorisation of Wastewater from Hydrothermal Liquefaction of Biomass.
2022	International Journal of Food Microbiology , 365, 109538	A. Mohanty, M. Mankoti, P.R. Rout, S. Dewan, B. Kalia, S.S. Meena, S. Varjani. Sustainable utilization of food waste for bioenergy production: A step towards circular bioeconomy.
2021	Sustainable Energy Technologies and Assessments, 48, 101620	P.R. Rout, R.R. Dash, P. Bhunia, E. Lee, J. Bae. Comparative analysis of the nutrient removal characteristics between an integrated bioreactor and single unit bioreactor.
2021	Bioresource Technology, 341, 125754	P. Sridhar, R.D. Tyagi, P. Bhunia, P. R. Rout, T. C. Zhang, R.Y .Surampalli. Greenhouse Gas Emissions in Sludge Ultrasonication Followed by Anaerobic Digestion Processes.
2021	Journal of Environmental Management, 296, 113246	P.R. Rout, M. K. Shahid, R.R. Dash, P. Bhunia, D. Liu, S. Varjani, T. C. Zhang, R. Y. Surampalli. A comprehensive review of nutrient removal and recovery approaches from domestic wastewater.
2021	Journal of Environmental Chemical Engineering, 9 (6): 106710	M.A. Tadda, R. Altaf, M. Gouda, P.R. Rout, A. Shitu, Z. Ye, S. Zhu, D. Liu. Impact of using Novel Saddle-Chips Biocarrier on Treating Mariculture Wastewater by Moving Bed Biofilm Reactor (MBBR): Microbial Starvation and Recovery Analysis.
2021	Journal of Water Process Engineering, 44, 102421	A. Priyadashinia, M.M. Sahoo, P.R. Rout, B. Mahanty, N.K. Sahoo. Kinetic modeling and process engineering of phenolics microbial and enzymatic biodegradation: a current outlook and challenges.
2021	Journal of Cleaner Production, 314, 128045	R. Atlaf, X. Lin, H. Lu, P.R. Rout, D. Liu. Nitrilotrismethylenephosphonate sorption from wastewater on zirconium-lanthanum modified magnetite: Reusability and mechanism study.
2021	Science of the Total Environment, 780, 146482	E. Lee, P.R. Rout, J. Bae. Reuse potential of anaerobically treated domestic wastewater as a nutrient medium for lettuce cultivation in closed hydroponic systems: Nitrogen toxicity and health risk assessment.
2021	Biomass Conversion and Biorefinery, 12(3), 949-966	A. Mohanty, P.R. Rout, B. Dubey, S.S. Meena, P. Pal, M. Goel. A critical review on biogas production from edible and non-edible oil cakes.
2021	Science of the Total Environment, 753, 141990	P.R. Rout, T.C. Zhang, P. Bhunia, Y.S. Rao. Treatment Technologies for Emerging Contaminants in Wastewater: A Review.
2020	Water Research, 182, 115965	E. Lee, P.R. Rout, Y. Kyun, J. Bae. Process optimization and energy analysis of vacuum degasifier systems for simultaneous removal of dissolved methane and hydrogen sulfide from anaerobic effluent.
2020	Journal of Environmental Management, 270, 110909	M.K. Shahid, A. Kashif, P.R. Rout, M. Aslam, Y. Choi, B.J. Rajesh, J.H. Park, G. Kumar. A brief review of anaerobic membrane bioreactors emphasizing on recent advancements, fouling issues and future perspectives.

2020	Chemical Engineering Journal, 386, 123992	W. Kwak, P.R. Rout, E. Lee, J. Bae. Influence of HRT and temperature on the performance of an Anammox fluidized membrane bioreactor for low-strength ammonia wastewater treatment.
2020	Journal of Hazardous, Toxic, and Radioactive Wastes, 24 (3), 04020015	M. Satapathy, P.R. Rout, R.R. Dash, A.K. Dash. Removal of textile dyes from aqueous solutions by dolochar: Equilibrium, kinetic and thermodynamic studies.
2019	Science of the Total Environment, 678, 85-93	E. Lee, P.R. Rout, C. Shin, J. Bae. Effects of Sodium hypochlorite Concentration on the Methanogenic Activity in an Anaerobic Fluidized Membrane Bioreactor.
2018	Bioresource Technolog, 262, 251-260	P.R. Rout, R.R. Dash, P. Bhunia, S. Rao. Role of Bacillus cereus GS-5 strain on simultaneous nitrogen and phosphorous removal from domestic wastewater in an inventive single unit multi-layer packed bed bioreactor.
2017	Bioresource Technology, 244, 484-495	P.R. Rout, R.R. Dash, P. Bhunia. Simultaneous removal of nitrogen and phosphorous from domestic wastewater using Bacillus cereus GS-5 strain exhibiting heterotrophic nitrification, aerobic denitrification and denitrifying phosphorous removal.
2017	Journal of Water Process Engineering, 17, 168-180	P.R. Rout, P. Bhunia, R.R. Dash. Evaluation of kinetics and statistical models for predicting breakthrough curves of phosphate removal using dolochar-packed columns.
2017	Journal of Hazardous, Toxic, and Radioactive Wastes, 21(3), 1-16	P.R. Rout, P. Bhunia, R.R. Dash. Assessing possible applications of waste organic solid substances as carbon sources and bio-film substrates for elimination of nitrate toxicity from wastewater.
2016	RSC Advances, 6 (54): 49236-49249	P.R. Rout, P. Bhunia, R.R. Dash. Development of an Integrated System for the Treatment of Rural Domestic Wastewater: Emphasis on Nutrient Removal.
2016	Process Safety and Environmental Protection, 100: 91-107	P.R. Rout, R.R. Dash, P. Bhunia. Nutrient removal from binary aqueous phase by dolochar: Highlighting optimization, single and binary adsorption isotherms and nutrient release.
2016	Advanced Science Letters, 22: 354-358	P.R. Rout, R.R. Dash, P. Bhunia. Effectiveness of Aegle Shell (AS) and Groundnut Shell (GS) as carbon sources for Bio-denitrification of nitrate rich aqueous solution.
2015	Journal of Taiwan Institute of Chemical Engineers, 46: 98-108	P.R. Rout, R.R. Dash, P. Bhunia. Effective utilisation of a sponge iron industry by-product for phosphate removal from aqueous solution: A statistical and kinetic modelling approach.
2015	Desalination Water Treatment, 54: 358-373	P.R. Rout, P. Bhunia, R.R. Dash. A mechanistic approach to evaluate the effectiveness of red soil as a natural adsorbent for phosphate removal from wastewater.
2014	Advances in Environmental Research, 3: 231-251	P.R. Rout, R.R. Dash, P. Bhunia. Modelling and Packed Bed Column Studies on Phosphate Adsorption by GBP-RS Mixture.
2014	Journal of Environmental Chemical Engineering, 2: 1331-1342	P.R. Rout, P. Bhunia, R.R. Dash. Modeling isotherms, kinetics and understanding the mechanism of phosphate adsorption onto a solid waste: Ground Burnt Patties.
2014	Jundishapur Journal of Microbiology, 7(12): e11800	S.K. Sen, S. Raut, S. Satpathy, P.R. Rout, B. Bandyopadhyay, P.K. Das Mohapatra. Characterizing Novel Thermophilic Amylase Producing Bacteria from Taptapani Hot Spring, Odisha, India.

Book/Chapter Publications :

Type	Title	Publisher	Authors	ISBN/ISS N No.	Year
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Book	Microconstituents in the environment: Occurrence, Fate, Removal and Management	John Wiley & Sons	2. R.Y. Surampalli, T.C. Zhang, J. (C.M.) Kao, M.M. Ghangrekar, P. Bhunia, M. Behera, P.R. Rout	In Press	2023
Book Chapter	Microbial synthesis of polyhydroxyalkanoates (PHAs) and their applications: Recent progresses and future perspectives	Springer Nature	L. Addagada, P. Pathak, P. R. Rout.	978-981-16-8918-5	2022
Book Chapter	Plant Microbes interactions and its effect on crop productivity	Springer Nature	S. S. Meena, M. Mankoti, P.R. Rout, A. Mohanty.	978-981-16-9682-4	2022
Book Chapter	An overview of soil bacteria for CO2 sequestration	Springer Nature	M. K. Shahid, A. Kashif, P. R. Rout, Y. Choi.	978-981-16-8918-5	2022
Book Chapter	Circular bioeconomy perspective of agro-waste-based biochar	Elsevier	M. K. Shahid, A. Kashif, P.R. Rout.	978-0-323-88511-9	2022
Book Chapter	The role of civil engineering in achieving UN sustainable development goals	Springer Nature	L. Addagada, S. T. Ramesh, D. N. Ratha, R. Gandhimathi, P. R. Rout.	978-981-16-9744-9	2022
Book Chapter	Water reclamation, recycle, and reuse	Elsevier	M. K. Shahid, A. Kashif, P. Pathak, Y. Choi, P. R. Rout.	9780323901789	2022
Book Chapter	Cellulose and Extracellular Polymer Recovery from Sludge	Elsevier	A. Mohanty, S. S. Meena, P. Pathak, P.R. Rout.	9780323901789	2022
Book	Urban Mining for Waste Management and Resource Recovery: Sustainable Approaches	CRC Press	P. Pathak, P. R. Rout	9781032061795	2021
Book Chapter	Basic concepts, Potentials and Challenges of Urban Mining	CRC Press	S. Chand, P.R. Rout, P. Pathak.	9781003201076	2021
Book Chapter	COVID-19: An updated insight of the pandemic	IntechOpen	R. Satpathy, P. R. Rout.	9781839682469	2021
Book Chapter	Photocatalytic Membrane Reactors (PMRs) for Wastewater Treatment Photodegradation Mechanism, Types, and Optimized Factors	CRC Press	A. Ehsan, R. Ahmad, I. U. Khan, M. Aslam, P. R. Rout.	9781003201076	2021
Book Chapter	Microbial Electrochemical Systems - promising alternatives for energy sustainability	Springer Nature	P.R. Rout, P. Bhunia, E. Lee, J. Bae.	1867-979X	2021
Book Chapter	Introduction to Sustainability and Sustainable Development	John Wiley & Sons	P.R. Rout, A.K. Verma., P. Bhunia, R.Y. Surampalli.	9781119434016	2020

Book Chapter	Threats to Biodiversity	John Wiley & Sons	A.K. Verma., P.R. Rout, P. Bhunia, R.Y. Surampalli.	9781119434016	2020
Book Chapter	Insight into a Waste Material-Based Bioreactor for Nutrient Removal from Domestic Wastewater	Springer Nature	P. R. Rout, R. R. Dash, P. Bhunia.	978-981-15-0990-2	2020
Book Chapter	Landfill Technologies and Recent Innovations	Mc Graw-Hill	P.R Rout, Bhunia, P., Surampalli, R.Y.	9781259860225	2017
Book Chapter	Response Surface Optimization of Phosphate Removal from Aqueous Solution Using a Natural Adsorbent	Springer Nature	P.R. Rout, R.R. Dash, P. Bhunia.	978-93-81891-28-5	2017
Book Chapter	Sustainable Hazardous Waste Management/Treatment: Framework and Adjustments to Meet Grand Challenges	American Society of Civil Engineers	P.R. Rout, P. Bhunia, A. Ramakrishnan, R.Y. Surampalli, T.C. Zhang, R.D. Tyagi.	978-0-7844-7930-8	2016
Book Chapter	Anaerobic Treatment of Wastewater. In Green Technologies for Sustainable Water Management	American Society of Civil Engineers	A.K. Verma, P.R. Rout, P. Bhunia, R.R. Dash.	978-0-7844-1442-2	2016
Book Chapter	Nutrient Removal from Domestic Wastewater: An Environmental Biotechnology Approach	Astral International	P.R. Rout, R.R. Dash, P. Bhunia.	978-93-5130-300-8	2015
Book Chapter	Heavy metal accumulating and Enzyme secreting novel Pseudomonas sp. From east Calcutta Wetland: implications for Environmental sustenance	Narosa Publication	M. Mishra, P.R. Rout, S. Mohapatra, M. Sudarshan, A.R. Thakur, S.R. Chaudhuri.	978-8487-131-9	2012

Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Co-PI	Sponsored Project	An Artificial Colon Model for Microbiome Research (AMMR)	DBT (BIRAC-BIG)	02/2023	08/2024	44.4 Lakh	Ongoing	Dr. Priyankar Dey
Co-PI	Sponsored Project	Enhanced Wastewater Treatment using a Synergy of Microalgae and Microorganisms without energy investment	TAU-TIET	09/2022	08/2024	96 Lakhs	Ongoing	Prof. Amit Dhir

Professional Affiliations :

Designation	Organization
Life Member	Biotech Research Society India (BRSI)
Affiliate Member	American Society of Civil Engineers (ASCE)
Associate Member	Environmental and Water Resource Institute (EWRI)
Life Member	Biotech Helpline Foundation India

PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
Bimalpreet Singh	Studies on the Indigenous Microalgal-Bacterial Consortia for the Treatment of Domestic Wastewater	Ongoing	2021	Prof. Amit Dhir
Swati Singh	Nutrient Removal and Recovery from Wastewater through Denitrifying Phosphate Accumulating Bacteria	Ongoing	2021	Prof. M. S. Reddy

PG Dissertation Guided :

Student Name	Dissertation Title	Status	Year	Co-Supervisor
Mansi Achhoda	Solid phase denitrification bio-filters for removing nitrate toxicity from water/ wastewater	Completed	2022	
Shahrukh Saleem	Bioleaching of heavy metals in sewage sludge and its use in mortars as a partial replacement	Completed	2022	Dr. Gurbir Kaur
Uzair Pirzada	Bio stabilization of sewage sludge for structural applications	Completed	2022	Dr. Gurbir Kaur
Gurleen Singh	Application of bacteriophage in eliminating antibiotic resistance bacteria	Completed	2022	Prof. M. Baranwal and Prof. D. Ratha

Patents :

Name	Reg./Ref. No.	Date of Award/Filing	Organization	Status
A single unit fixed bed reactor for simultaneous heterotrophic nitrification-aerobic denitrification-adsorptive coupled denitrifying phosphate removal from wastewater	Application No. 201731036014. Grant No. 394070	01/04/2022	Office of the Controller General of Patents, Designs, and Trademarks, Government of India	Granted