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BIOSKETCH

Dr. D. Johnravindar is an Associate Professor at PSG Institute of Advanced Studies in Coimbatore, Tamil Nadu, India. His research focuses on recycling organic waste into value-added products, with extensive expertise in developing biochar and hydrochar as sustainable, low-cost recycling methods for food waste digestate, sewage sludge, and biosolids. Over the past ten years, he has concentrated on anaerobic digestion of food waste and sludge co-digestion, designing innovative processes to enhance hydrogen and methane yields in response to global energy demands. He has served as the lead researcher responsible for delivering project objectives centered around biochar and rhamnolipid fermentation technology, as well as a food waste/ sewage sludge-based biorefinery strategy for hydrogen and methane production. His work spans microbial biodegradation of organic wastes, enzyme production, and their industrial applications. He has published more than 44 papers in top-tier journals (Q1 journals) and an equivalent number of full papers in conference proceedings to advancing sustainable waste–to–energy technologies.

Educational Profile

- **Doctor of Philosophy (Ph.D.) in Biotechnology**
  Year of Passing: 2014
  Thesis title: Isolation, Screening, and Characterization of Bacterial Diversity from Soil and Sago Industrial Waste for Enhanced Biobutanol Production
  Thesis Supervisor: Dr. N. Elangovan, Professor in the Department of Biotechnology Periyar University, Salem, Tamil Nadu, India.

- **Master of Science (M.Sc.) in Biotechnology**
  Department of Biotechnology
  Bharathidasan University, St. Joseph's College
  Tiruchirappalli, India.

Positions Held

Nov 2023 - Present	Associate Professor Department of Nanobiotechnology PSG Institute of Advanced Studies Peelamedu, Coimbatore- 641004, Tamil Nadu, India
March 2019 - Oct 2023	Postdoctoral Research Associate, Department of Biology, Hong Kong Baptist University, Kowloon Tong, Hong Kong. **Mentor**: Prof. Jonathan W.C. Wong, BBS, MH, JP Academician, European Academy of Sciences and Arts

	Professor Department of Biology, Hong Kong Baptist University Director, Hong Kong Organic Resource Centre Top Talent Professor, Director of Research Centre for Eco-Environmental Engineering, Dongguan University of Technology, PR, China.
Dec 2017 - Feb 2019	Postdoctoral Fellow, School of Chemical Engineering and Technology, Xi'an Jiaotong University, No. 28 Xianning West Road, Xi'an, Shaanxi- 710049, China.
March 2015- March 2017	Postdoctoral Fellow Sino-Forest Applied Research Centre for Pearl River Delta Environment (ARCPE), Department of Biology, Hong Kong Baptist University, Kowloon Tong, Hong Kong.
May 2010- March 2013	Worked as a Junior Research Fellow (JRF) & Senior Research Fellow (SRF)- UGC-major research project, Periyar University, Salem-636011, India.

Research Areas:

- Organic solid waste management
- Biomass conversion and biorefinery
- Microbial fermentation and resource recovery from biowaste
- Biological nutrient removal and wastewater treatment

Awards & Achievements

1. Invited to serve as Poster technical session Judge for the International Conference on Conference on Advanced Bioprocessing Technologies for Biomass Conversion - Sustainability and Bioresource Management (IBA-IFIBiop XI, 2024), Hong Kong Polytechnic University, December 1-6, 2024; Hong Kong

2. Chaired a technical session at the International Conference on Solid Waste-2023, Hong Kong Convention and Exhibition Centre.

3. Best Research Paper Award, International Conference on Solid Waste-2023. Hong Kong Convention and Exhibition Centre.

4. Best Research Poster Award, Asia-Pacific Conference on Biotechnology for Waste Conversion 2016, Hong Kong SAR, China, 6-8th Dec 2016.

5. Research Fellow in a Major Research Project Sponsored by the University Grants Commission, New Delhi, India.

Research Group

Sustainable Environment and Bioresource Technology

TEAM: Ms. S. Blessy, Dr. D. Johnravindar, Ms. S. Snehaa

Research Scholars (Ongoing)

Student Name: Ms. Blessy. S

Reg. No: B1NBT24PDEC0145/2024

Research Topic: Enhanced Biohydrogen production from Cassava Waste residue using conductive materials

E-mail: sby.rs@psgias.ac.in

Alumnis

Name: Mr. R. Subash Kannan
Thesis Title: Biochar-Enhanced Hydrogen Production from Cassava Industrial Waste Residue Using *Enterobacter Aerogenes* MTCC-2822
Year of M. Sc.: 2024
E-mail: 22mbt045@hicas.ac.in
Current: Junior chemist in Sri Gomuki Tex Chem Pvt Ltd

Name: Ms. Anupreethi. M
Thesis Title: Synthesis of Pd-rGO-Based Hybrid and its Application in Hydrogen Production from Formic Acid at Ambient Temperature
Year of M.Sc., Award: 2025

Name: Ms. Thanusshree. R
Thesis Title: Comparative Study of Chemical and Physical Pre-Treatments of Cassava Waste Biomass to Generate Fermentable Sugars for the Production of Bio-Hydrogen
Year of M.Sc., Award: 2025

Invited Talks

1. International Conference on Advanced Bioprocessing Technologies for Biomass Conversion-Sustainability and Bioresource Management, (IBA-IFIBiop XI, 2024), Hydrochar Enhanced Hydrogen Production from Cassava Industrial Waste Residue Using *Enterobacter Aerogenes* MTCC 2822. Hong Kong.1st -4th December 2024.
2. International Symposium on Advanced Bioprocessing Technologies for Biomass Waste Conversion (ISABC-2024), Dongguan Institute of Technology, Impact of total solids content on anaerobic co-digestion of biochar and food waste/sludge: microbial community dynamics assessment. China. 4- 6th December, 2024.
3. Recent Developments in Biofilms and Biofouling Control (BBC-2024), Adsorption Characteristics of Vancomycin from Aqueous Solution Using Cassava Industrial Waste Residue Biochar. Kalpakkam, Tamil Nadu. 12- 14th December 2024.
4. International Conference on Recent Trends in Biological and Chemical Sciences for Sustainable Future and Society. Effect of biochar addition on VFA degradation and methane production in food waste /sludge co-digestion. 4-5th February 2025.

Journal Publications

- Subash Kannan R, Blessy S, Selvakumar R, Wong J.W.C., Brindha G, Johnravindar D. (2025). Hydrochar-enhanced hydrogen production from cassava industrial waste residue using *Enterobacter Aerogenes* MTCC 2822. Journal of Environmental Technology. 46(19): 3887-3903. doi: 10.1080/09593330.2025.2480319.

- Johnravindar D, Jun Zhao, M.K Manu, Wong J.W. C 2025. Hydrothermal Pretreatment of Food Waste Enhances Performance of Anaerobic Co-digestion With Sludge. Environmental Science and Pollution Research. 32(9): 5259-5275. doi: 10.1007/s11356-025-35944-0.

- Y Geng, W Xue, J Ye, R Zhang, D Johnravindar, J Zhao 2024. Hydrogen production from biomass via a near-room temperature aqueous-phase tandem catalytic approach. Chemical Engineering Journal, 158846.

- Johnravindar D, R Selvakumar, Applications of Green Hydrogen with Commercial Feasibility: Identifying Gaps, Perspectives, and Bottlenecks, In Green Hydrogen Economy for Environmental Sustainability. Volume 2: Applications, Challenges, and Policies, ACS Symposium Series Vol. 1474 Chapter 1 pp 1-30.

- Geng Y, Johnravindar D, Xue W, Ye J, Zhao J 2023. Efficient Dehydrogenation of Formic Acid at Room Temperature using Pd/Chitosan-Derived Nitrogen-Doped Carbon Catalyst: Synthesis, Characterization and Kinetic Study. Industrial & Engineering Chemistry Research.
- Utami M, Wang S, Musawwa M.M, Mafruhah L, Fitri M, Wijaya K, Johnravindar D, Abd-Elkader O.H, Yadav K.K, Ravindran B, Chung W, Chang S.W, Munusamy R.G. 2023. Photocatalytic degradation of naphthol blue from Batik waste using functionalized TiO2-based composites. Chemosphere. 17: 139224.
- Manu M. K, Lou L, Kumar R, Johnravindar D, Zhao J, Wong JWC. 2023. A review on mechanistic understanding of microplastic pollution on the performance of anaerobic digestion. Environmental pollution. 121426.
- Johnravindar D, Liang J, Kaur G, Lou L, Selvam A, Zhao J, Manu M.K, Wong J.W.C. 2022. Impact of total solids content on anaerobic co-digestion of wheat straw biochar and food waste/sludge: methane production and digestate quality assessment. Bioresource Technol. 1-31.
- Kumar R, Johnravindar D, Wong J.W.C, Patria RD, Kaur G. 2022. Economical Di-Rhamnolipids Biosynthesis by Non-Pathogenic *Burkholderia thailandensis* E264 Using Post-Consumption Food Waste in a Biorefinery Approach. Sustainability. MDPI, 15, 59: 1-16.
- Johnravindar D, Kumar R, Luo L, Jun Z, Manu MK, Wang H, Wong J.W.C. 2022. Influence of inoculum-to-substrate ratio on biogas enhancement during biochar-assisted co-digestion of food waste and sludge. Environ Technol. 22:1-31.
- Li D, Kumar R, Johnravindar D, Luo L, Zhao J, Manu M.K. 2023. Effect of different-sized bulking agents on nitrification process during food waste digestate composting. Environ Technol. 22:1-28
- Zhou Y, Manu M.K, Li D, Johnravindar D, Selvam A, Varjani S, Wong J.W.C. 2023. Effect of Chinese medicinal herbal residues compost on tomato and Chinese cabbage plants: Assessment on phytopathogenic effect and nutrients uptake. Environ Res. 1; 216: 114747.
- Luo L, Chu P, Liang J, Johnravindar D, Zhao J, Wong J.W.C. 2022. Enhanced stability of food waste anaerobic digestion under low inoculum-to-substrate ratios by using biochar Environ Technol. 28: 1-10.
- Mishra P, Johnravindar D, Wong J.W.C, Zhao J. 2022. Metals and metallic composites as emerging nanocatalysts for fermentative hydrogen production. Sustainable Energy & Fuels doi.org/10.1039/D2SE01165D.
- Johnravindar D, Wong J.W.C, Patria R.D, Uisan K, Kumar R, Kaur G. 2022. Bioreactor-scale production of rhamnolipids from food waste digestate and its recirculation into anaerobic digestion for enhanced process performance: Creating closed-loop integrated biorefinery framework. Bioresour Technol. 360:127578.

- Luo L, Sriram S, Johnravindar D, Martin L.P.T, Wong J.W.C, Pradhan N. 2022. Effect of inoculum pretreatment on the microbial and metabolic dynamics of food waste dark fermentation. Bioresour Technol. 358: 127404
- Xu Q, Luo L, Li D, Johnravindar D, Varjani S, Wong J.W.C, Zhao J. 2022. Hydrochar prepared from digestate improves anaerobic co-digestion of food waste and sewage sludge: Performance, mechanisms, and implication. Bioresour Technol. 362:127765.
- Ovi D, Chang S.W, Wong J.W.C, Johnravindar D, Varjani S, Jeung J.H, Chung W.J, Thirupathi A, Balasubramani R. 2022. Effect of rice husk and palm tree-based biochar addition on the anaerobic digestion of food waste/sludge, Fuel, 315, 123188.
- Johnravindar D, Wong J.W.C, Chakraborty D, Kaur G. 2021. Food waste and sewage sludge co-digestion amended with different biochars: VFA kinetics, methane yield, and digestate quality assessment. J. Environ. Manage. 290, 112457.
- Patria R.D, Wong J.W.C, Johnravindar D, Uisan K, Rajat Kumar, Kaur G. 2021. Food waste digestate-based biorefinery approach for rhamnolipids production: A techno-economic analysis, Sustainable Chemistry, 2, 237-253.
- Johnravindar D, Patria R.D, Lee T.E, Zhang L, Tong Y.W, Wang C.H, Yong Sik Ok, Kaur G. 2021, Syntrophic interactions in anaerobic digestion: how biochar properties affect them. Sustainable Environment, 7:1, 1945282.
- Johnravindar D, Kaur G, Wong J.W.C. 2020. Enhanced volatile fatty acid degradation and methane production efficiency by biochar addition in food waste-sludge co-digestion: A step towards increased organic loading efficiency in co-digestion. Bioresour Technol. 308, 123250.
- Johnravindar D, Liang B, Fu R, Luo G, Meruvu H, Yang S, Yuan B, Qiang F. 2020. Supplementing granular activated carbon for enhanced methane production in anaerobic co-digestion of post-consumer substrates. Biomass and Bioenergy, 136, 105543.
- Kaur G, Wong J.W.C, Kumar R, Patria R.D, Bhardwaj A, Uisan K, Johnravindar D. 2020. Value-addition of anaerobic digestate from biowaste: Thinking beyond agriculture. Current Sustainable/Renewable Energy Reports.
- Johnravindar D, Elangovan N, Murugesan K, Gopal N.O, Qiang F. 2019. Biobutanol production from cassava waste residue using Clostridium sp. AS3 in batch culture fermentation. Journal of Biofuel.
- Johnravindar D, Parthiba Karthikeyan O, Selvam A, Murugesan K, Wong J.W.C. 2017. Lipid accumulation potential of oleaginous yeasts: A comparative evaluation using food waste leachate as a substrate. Bioresour Technol. 248, 221-228.
- John Ravindar D, Elangovan N, Murugesan K, Wong J.W.C. 2016. Waste-to-Biofuel: Production of Biobutanol from Sago Waste Residues. Environ. Technol, 38 (13-14): 1725-1734.
- John Ravindar D, Indra Arulselvi P, Elangovan N. 2014. Isolation and molecular characterization of butanol tolerant host for biobutanol production. J. Environ. Biol. 1131-6. 35, 1-6.
- Johnravindar D, Elangovan N, Indra Arulselvi P. 2015. Molecular characterization and enzyme analysis of butanol-tolerant bacterium Paenibacillus sp AS2 I. Journal of Life Sciences and Technologies, 3, 11-15.
- John Ravindar, D, and Elangovan N. 2013. Molecular identification of Amylase producing Bacillus subtilis and detection of optimal conditions. Journal of Pharmacy Research, 6, 426-430.

- Prasannaraj G, Jayaraj R.L, John Ravindar D, Elangovan N. 2013. Invivo antioxidant potential of Thespesia populnea bark extract against mercury-induced oxidative stress. International Journal of Pharmaceutical Research, 5 (4), 21-25.
- Jayaraj RL, Chandramohan V, Dammalli M, John Ravindar D, Manigandan K, Padarthi PK, Elangovan N. 2013. Computational strategy for identifying inhibitors of alpha-synuclein aggregation in Parkinson disease. Pharmanest, 4, 1029-1045.
- Jayaraj R.L, John Ravindar D, Manigandan K, Padarthi P.K, Elangovan N. 2012. An overview of Parkinson's disease and oxidative stress: Herbal scenario. Neuropathological Diseases. 1: 95-122. Doi: 10.1615/ Neuropathological Diseases. V1. i2.10.
- John Ravindar D, Elangovan N, Akijiji Kumar, M, Jayaraj R. 2012. Production of extracellular pectinase by Bacillus cereus isolated from market solid waste. Journal of Bioanalysis & Biomedicine, 3, 70-75. Doi: 10.4172/1948-593X.1000046.

Total Number of Conference Papers/Proceedings: 27

Products/Prototypes Developed

Fabrication of 10 L up flow sludge blanket (UASB) bioreactor and 1.0 L continuous starrier tank (CSTR) reactors for the anaerobic fermentation of cassava wastewater and to produce digestate liquid for biohydrogen production.

UASB reactor

CSTR reactors

Microbial GenBank deposition

1. KF938582/ *Clostridium* sp. AS3 / Butanol produced strain.
2. KF938583/*Clostridium bifermentans* strain PNAS1/ Butanol produced strain.
3. KF938584/*Clostridium bifermentans* strain SBI4 / Butanol produced strain.
4. KF957997/ *Bacillus coagulans* strain NSW/ Butanol produced strain.
5. KJ001837/ *Clostridium* sp. SB5. / Butanol-producing strain.
6. KC505641/ *Paenibacillus* strain AS2-I / Butanol tolerance strain.
7. JX893034/*Bacillus megaterium* strain SS3-18 / Butanol tolerance strain.
8. JX893033/*Bacillus circulans* strain SD-16 / Butanol tolerance strain.

9. JQ824382/*Bacillus tequilensis* strain SD-8/ Butanol tolerance strain.
10. JQ824381/*Bacillus aryabhattai* strain AS3-5 / Butanol tolerance strain.
11. JQ824383/*Bacillus aryabhattai* strain SS3-21/ Butanol tolerance strain.
12. JX573541/ *Bacillus tequilensis* strain AS3 7/ Amylase enzyme producing strain.
13. JX573542/*Bacillus subtilis* strain SSII2/ Amylase enzyme producing strain.