

SIBASHISH BAKSI, PhD

Assistant Professor | Biotechnology | Bioprocess Engineering | Microbial Fermentation

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PROFESSIONAL PROFILE

Biotechnology and bioprocess researcher with research experience spanning biomass pretreatment, enzymatic saccharification, microbial fermentation and waste valorization. Experienced in academic teaching, mentoring, scientific project execution, experimental design, statistical modelling and bioprocess development. Research training includes PhD-level chemical engineering and postdoctoral research in microbial bioprocessing and circular approaches to waste valorization.

ACADEMIC & PROFESSIONAL EXPERIENCE

Assistant Professor | Department of Biotechnology, Swami Vivekananda University, Barrackpore | 12/2021–Present

Postdoctoral Researcher | University of Milan-Bicocca, Milan, Italy | 01/07/2024–30/06/2025

EDUCATION

PhD, Chemical Engineering | Jadavpur University, Kolkata, India | 2016–2021

Master of Engineering, Bioprocess Engineering | Jadavpur University, Kolkata, India | 2012–2014

BTech, Biotechnology | West Bengal University of Technology, Kolkata, India | 2008–2012

TECHNICAL SKILLS

- **Statistical & Computational:** Origin, Design-Expert, Taguchi, MATLAB
- **Analytical & Molecular:** HPLC, PCR, GC-MS, FTIR, X-ray diffractometer, FESEM, flow cytometry, particle size analyser
- **Bioprocess & Microbiology:** Fermenter/bioreactor operation, anaerobic workstation

RESEARCH PUBLICATIONS

1. Pal, P., Dutta, R., Roy, S., Majumder, R., Baksi, S. (2023). Severity of Oral Carcinoma with Respect to Various Addictions- A Study in West Bengal. *Journal of Survey in Fisheries Sciences*, 10(1S), 6658–6662.
2. Baksi, Sibashish, et al. (2023). Pre-Treatment of Lignocellulosic Biomass: Review of Various Physico-Chemical and Biological Methods Influencing the Extent of Biomass Depolymerization. *International Journal of Environmental Science and Technology*, 1–28. DOI: <https://doi.org/10.1007/s13762-023-04838-4>
3. Baksi, Sibashish, et al. (2023). Conversion of Biomass to Biofuels Through Sugar Platform: A Review of Enzymatic Hydrolysis Highlighting the Trade-Off Between Product and Substrate Inhibitions. *Sustainable Energy Technologies and Assessments*, 55, 102963. DOI: <https://doi.org/10.1016/j.seta.2022.102963>
4. Mondal, S., & Sibashish Baksi. (2022). Signalling of Rhizosphere Microbiomes: Benign and Malign Borders. *Microbial Bio Technology for Sustainable Agriculture*, Volume 1, Springer, Singapore, 237–260.
5. Baksi, Sibashish, et al. (2020). High-Temperature Tolerant Enzyme-Based Extraction of Lignocellulose Derived C5 and C6 Sugars for the Integrated Production of a Promising Supplement for a Diesel/Jet-Engine Fuel. *Fuel*. DOI: <https://doi.org/10.1016/j.fuel.2020.117740>
6. Baksi, Sibashish, et al. (2019). Studies on Delignification and Inhibitory Enzyme Kinetics of Alkaline Peroxide Pre-Treated Pine and Deodar Saw Dust. *Chemical Engineering and Processing - Process Intensification*. DOI: <https://doi.org/10.1016/j.cep.2019.107607>
7. Baksi, Sibashish, et al. (2019). Efficacy of a Novel Sequential Enzymatic Hydrolysis of Lignocellulosic Biomass and Inhibition Characteristics of Monosugars. *International Journal of Biological Macromolecules*. DOI: <https://doi.org/10.1016/j.ijbiomac.2019.01.188>
8. Baksi, Sibashish, et al. (2018). Valorization of Lignocellulosic Waste (*Crotalaria juncea*) Using Alkaline Peroxide Pretreatment Under Different Process Conditions: An Optimization Study on Separation of Lignin, Cellulose, and Hemicellulose. *Journal of Natural Fibers*. DOI: <https://doi.org/10.1080/15440478.2018.1431998>
9. Sadhukhan, S., et al. (2018). Simultaneous Degumming and Production of a Natural Gum from *Crotalaria juncea* Seeds: Physicochemical and Rheological Characterization. *International Journal of Biological Macromolecules*. DOI: <https://doi.org/10.1016/j.ijbiomac.2017.12.146>

10. Mondal, S., & Sibashish Baksi. (2018). Strain-Specific Identification of *Beauveria bassiana* Isolated from a Novel Habitat, Using rDNA-Based Sequence Analogy. *Egyptian Journal of Biological Pest Control*. DOI: <https://doi.org/10.1186/s41938-018-0033-4>
11. Birgen, C., et al. (2016). Anaerobic Bio-Reactor Modeling. *Computer Aided Chemical Engineering*, 38, 577–582. DOI: <https://doi.org/10.1016/B978-0-444-63428-3.50101-6>
12. Mukherjee, M., & Baksi, S. (2024). Silver nanoparticles in biomedical contexts: Current insights and future directions. *International Journal of Pharmacology and Pharmaceutical Research*, 6(1), Part A, 10–12.
13. Routh, R., Guin, A., & Baksi, S. (2023). Phytoremediation of heavy metals: Mechanisms of decontamination and enhancements. *Journal of Survey in Fisheries Sciences*, 10(1S), Article 2174.
14. Ghazal, Uzma, Pritha Pal, & Sibashish Baksi. (2023). HPV vaccination: a comprehensive approach to control cervical cancer. *Journal of Survey in Fisheries Sciences*, 10(1S), 6480–6485.
15. Padhi, Madhusmita, et al. (2023). Study Of Extent of Global Uranium Contamination in Groundwater. *Journal of Survey in Fisheries Sciences*, 10(1S), 6470–6479.
16. Ganguly, Kritika, Lusi Dey, & Sibashish Baksi. (2023). Mycoremediation: Role of Mushroom in the bioremediation of heavy metals. *Journal of Survey in Fisheries Sciences*, 10(1S), 6498–6503.
17. Banik, Rupesh Dutta, et al. (2023). Impact of Chronic Arsenic Toxicity on Human Health: A Review. *Journal of Survey in Fisheries Sciences*, 10(1S), 6408–6413. DOI: <https://doi.org/10.53555/sfs.v10i1S.2157>
18. Saha, Shreya, & Sibashish Baksi. (2023). Illuminating The Shadows: Unveiling The Concealed Hazards And Intriguing Links Between Light Pollution And Cancer. *Journal of Advanced Zoology*, 44(S6), 2258–2261.
19. Guin, Ankita, & Sibashish Baksi. (2023). RNA Interference: A Potential Approach For Silencing Splice Isoforms Associated With Human Diseases. *Journal of Advanced Zoology*, 44(S6), 2359–2363.
20. Mondal, Subha, & Sibashish Baksi. (2023). Bioremediation Of Industrial Wastewater: A Synergistic Approach. *Journal of Advanced Zoology*, 44(S6), 2364–2367.
21. Ghorui, Ayan, & Sibashish Baksi. (2023). CRISPR/Cas9 Technology: Challenges and Drawbacks. *Journal of Advanced Zoology*, 44(S6), 1965–1971. DOI: <https://doi.org/10.17762/jaz.v44iS6.2680>
22. Banik, Rupesh Dutta, et al. (2023). Phytotoxicity Study of Biogenic Mono-metallic and Bimetallic (Au-Ag) Alloy NPs. *Journal of Mines, Metals and Fuels*, 71(11), 2084–2088. DOI: <https://doi.org/10.18311/jmmf/2023/36098>
23. Banik, Rupesh, et al. (2023). Green Strategy for Reclaiming Ecosystem: Microbial Remediation of Leather Industry Wastes. *Journal of Survey in Fisheries Sciences*, 10(1S), 6432–6441. DOI: <https://doi.org/10.53555/sfs.v10i1S.2161>
24. Chowdhury, Sriya, et al. (2023). Assessment of Phytochemicals, Antioxidant Activity and Enzyme Production of Endophytic Fungi Isolated from Medicinal Plant Sources. *Journal of Advanced Zoology*, 44(S6), 1611–1620. DOI: <https://doi.org/10.17762/jaz.v44iS6.2580>
25. Pal, P., & Baksi, S. (2025). Proteomics in Unravelling Secondary Metabolite Synthesis in Plants: Exploring the Microbial Connection. In: Arora, N.K., Pandey, P., Mishra, J. (eds), *Environmental Sustainability and Biotechnology: Opportunities and Challenges. Microorganisms for Sustainability*, Vol. 46. Springer, Singapore. DOI: https://doi.org/10.1007/978-981-96-9025-1_12
26. Baksi, S., Pal, P., & Baksi, S. (2025). Green Valorization Protocols for Marine Food Waste: Collagen and Chitin Recovery. In: Sarkar, T. (ed.), *Food Waste Valorization: Methods and Protocols in Food Science. Humana*, New York, NY. DOI: https://doi.org/10.1007/978-1-0716-4646-5_15
27. Lodh, B. K., & S. Baksi. (2025). Biobusiness and Entrepreneurship. In *Bioprocess Engineering and Technology*. CRC Press, pp. 261–280.
28. Baksi, S., et al. (2026). Biorefinery: An Integrated Approach of Organic Waste Recycling, Energy Production, and Sustainable Development. In *Energy Recovery from Organic Waste*, pp. 191–214. CRC Press.
29. Baksi, Sibashish. (2022). *Bio-Preservation: New Strategies Towards Healthier Foods*. Multidisciplinary Review Book, Taurean Publications.
30. Baksi, Sibashish. *MicroRNA-Mediated Gene Silencing as a Therapeutic Strategy Against Nipah Virus: Computational Predictions and Molecular Mechanisms*.
31. Verma, Megha, & Sibashish Baksi. *Quorum Sensing: Molecular Mechanisms and Therapeutic Implications in Bacterial Communication*.
32. Biswas, Anuska, Pritha Pal, & Sibashish Baksi. *Deep Brain Stimulation for Treatment-Resistant Depression*.
33. Pal, Pritha, & Sibashish Baksi. *Microbial Cell Factories for the Production of Vitamins: A Review*.
34. Paul, Manab, & Sibashish Baksi. *Light Stress-Induced Neuronal Regulation: Photoreceptor Signaling Cascades and Neuroprotective Mechanisms*.

35. Chowdhury, Tanujit Dutta, & Sibashish Baksi. Cement Deposition and Microbial Viability: Mechanisms of Encapsulation and Metabolic Adaptation in Biomineralization Processes.
36. Deb, Tania, Pritha Pal, & Sibashish Baksi. Bioremediation Technologies for Petrochemical Effluents: A Comprehensive Review, pp. 57–70.
37. Baksi, Sibashish. Environmental Stress and the Dynamics of Operon Switching in Bacteria: Mechanisms, Models, and Adaptive Significance.

AWARDS & RECOGNITION

- Best Presentation Award, 2nd International Conference on Bioscience and Biotechnology, Colombo, Sri Lanka.

COMMUNITY ENGAGEMENT & ACADEMIC ACTIVITIES

- Organizer, International Conference on Technological Innovations in Agriculture, Life Sciences and Food & Nutrition, Swami Vivekananda University, Barrackpore, India.
- Organizer, 7-days Faculty Development Programme on “Teaching-Techniques & Research in Higher Education System”, Swami Vivekananda University, Barrackpore, India.

PROFESSIONAL DEVELOPMENT & TRAINING

- Training on “Liquid Chromatography School”, Waters Global Services.
- Short term course on “Application of MATLAB in Bioengineering”, IIT Indore, India.

ORAL PRESENTATIONS

- Optimization of saccharification of alkaline peroxide pretreated *Crotalaria juncea* fibre for efficient production of second generation biofuels, APCAT-7, Mumbai.
- A Novel Protocol of Pretreatment affecting the Kinetic Pathway of Enzymatic Hydrolysis of Delignified *Morus serrata* (MR), Biotech-2017, Colombo, Sri Lanka.
- Capturing inhibition scenarios through sequential enzymatic hydrolysis (SH) of de-lignified wood dust: A novel approach, 68th Canadian Chemical Engineering Conference, Toronto, Ontario, Canada.