

Dr. Srijoni Banerjee

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Present Position

Assistant Professor

Department of Biotechnology

School of Life Science and Biotechnology

Adamas University

Kolkata

Educational Qualifications

Ph. D in Bioprocess Engineering (2015– 2020)

Advanced Technology Development Centre
Indian Institute of Technology Kharagpur
West Bengal, India

M. Tech in Environmental Biotechnology (2011 – 2013)

Jadavpur University
Kolkata, West Bengal, India

CGPA/Percentage: 8.03

Post Graduate Diploma in Bioinformatics (2010 - 2011)

National Institute of Electronics and Information Technology (Kolkata)
Ministry of Information Technology, Govt. of India

CGPA/Percentage: 60.2

B.Tech in Biotechnology (2006 – 2010)

West Bengal University of Technology

BCET Durgapur

West Bengal, India

CGPA/Percentage: 8.32

Awards/ Fellowship/ Scholarship

- National Renewable Energy Scholarship by Ministry of New and Renewable Energy, Under MHRD, Govt. of India, 2014.
- Senior Research Fellowship by Department of Science and Technology, Govt. Of India, 2013.
- Foreign travel grant by Centre for Co-operation in Science & Technology among Developing Societies (CCSTDS), 2013
- Best paper Award (2nd Rank) in 8th World Renewable Energy Technology Congress & Exhibition, New Delhi, India, 2017.
- Received Young Achiever Award, for already published research paper, 2021.

- Best presentation award at 13th International Conference on Energy, Environment and Biotechnology, at University of Seoul, South Korea, 2024.

Journal Publications

- Pal, D., **Banerjee, S.**, Chandra, S., Das, D., & Pandit, S. (2024). Improvement of Gaseous Energy Recovery Using Microalgae. *International Journal of Hydrogen Energy* (Accepted).
- Roy, K., **Banerjee, S.**, Hazra, T., Das, D., Pandit, S., Lahiri, D., ... & Kavisri, M. (2023). Exopolysaccharide production by *Anabaena* sp. PCC 7120: physicochemical parameter optimization and two-stage cultivation strategy to maximize the product yield. *Biomass Conversion and Biorefinery*, 1-12.
- Chandra, S., Bhattacharya, S., Pandit, S., **Banerjee, S.**, Roy, A., & Rai, A. K. (2023). Cyanobacteria as an eco-friendly bioresource for EPS production with crack healing capacity in concrete. *Biocatalysis and Agricultural Biotechnology*, 54, 102909.
- Banerjee, S., Dasgupta, S., Atta, A., Das, D., Dayal, D., Malik, S., ... & Almutary, A. G. (2023). Flow Rate Optimization in a Flat-Panel Photobioreactor for the Cultivation of Microalgae for Mitigating Waste Gas. *Water*, 15(15), 2824.
- Banerjee, S., Pandit, C., Gundupalli, M. P., Pandit, S., Rai, N., Lahiri, D., ... & Joshi, S. J. (2023). Life cycle assessment of revalorization of lignocellulose for the development of biorefineries. *Environment, Development and Sustainability*, 1-32.
- Roy, R., Samanta, S., Pandit, S., Naaz, T., Banerjee, S., Rawat, J. M., ... & Saha, R. P. (2023). An Overview of Bacteria-Mediated Heavy Metal Bioremediation Strategies. *Applied Biochemistry and Biotechnology*, 1-40.
- Pandit, C., Banerjee, S., Pandit, S., Lahiri, D., Kumar, V., Chaubey, K. K., ... & Joshi, S. J. (2023). Recent advances and challenges in the utilization of nanomaterials in transesterification for biodiesel production. *Heliyon*.
- Banerjee, S., Ghosh, D., Pandit, C., Saha, S., Mohapatra, A., Pandit, S., ... & Prasad, R. (2023). Microalgal pandora for potent bioenergy production: A way forward?. *Fuel*, 333, 126253.
- Pandit, S., Sharma, M., Banerjee, S., Nayak, B. K., Das, D., Khilari, S., & Prasad, R. (2022). Pretreatment of cyanobacterial biomass for the production of biofuel in microbial fuel cells. *Bioresource Technology*, 128505.
- Patwardhan, S. B., Pandit, S., Ghosh, D., Dhar, D. W., Banerjee, S., Joshi, S., ... & Kumar Kesari, K. (2022). A concise review on the cultivation of microalgal biofilms for biofuel feedstock production. *Biomass Conversion and Biorefinery*, 1-18.
- Gupta, R., Banerjee, S., Pandit, S., Gupta, P. K., Mathriya, A. S., Kumar, S., ... & Joshi, S. (2021). A comprehensive review on enhanced production of microbial lipids for high-value applications. *Biomass Conversion and Biorefinery*, 1-24.
- Banerjee, S., Desai, S. T., Srivastava, S., & Das, D. (2021). ¹³C metabolic flux analysis (MFA) to find out the metabolic fluxes of biomass production and lipid accumulation in *Neochloris oleoabundans* UTEX 1185. *Journal of Applied Phycology*, 33, 1399-1407.
- Radhakrishnan, R., Banerjee, S., Banerjee, S., Singh, V., & Das, D. (2021). Sustainable approach for the treatment of poultry manure and starchy wastewater by integrating dark fermentation and microalgal cultivation. *Journal of Material Cycles and Waste Management*, 23(2), 790-803.
- Banerjee, S., Dasgupta, S., Das, D., & Atta, A. (2020). Influence of photobioreactor configuration on microalgal biomass production. *Bioprocess and biosystems*

engineering, 43(8), 1487-1497.

- Banerjee, S., Banerjee, S., Ghosh, A. K., & Das, D. (2020). Maneuvering the genetic and metabolic pathway for improving biofuel production in algae: Present status and future prospective. *Renewable and Sustainable Energy Reviews*, 133, 110155.
- Banerjee, S., Rout, S., Banerjee, S., Atta, A., & Das, D. (2019). Fe₂O₃ nanocatalyst aided transesterification for biodiesel production from lipid-intact wet microalgal biomass: A biorefinery approach. *Energy Conversion and Management*, 195, 844-853.
- Banerjee, S., Singh, H., Das, D., & Atta, A. (2019). Process optimization for enhanced biodiesel production by *Neochloris oleoabundans* UTEX 1185 with concomitant CO₂ sequestration. *Industrial & Engineering Chemistry Research*, 58 (35), 15760-15771.
- Singh, H., Varanasi, J. L., Banerjee, S., & Das, D. (2019). Production of carbohydrate enrich microalgal biomass as a bioenergy feedstock. *Energy*, 116039.
- Ghosh, S., Banerjee, S., & Das, D. (2017). Process intensification of biodiesel production from *Chlorella* sp. MJ 11/11 by single step transesterification. *Algal research*, 27, 12-20.
- Banerjee, S., & Deshpande, P. A. (2016). On origin and evolution of carbonic anhydrase isozymes: A phylogenetic analysis from whole-enzyme to active site. *Computational biology and chemistry*, 61, 121-129.
- Banerjee, S. (2014). Renewable Energy Resource (Biofuel) For Sustainable Future. *Journal of Alternate Energy Sources and Technologies*, 5, 1-4.
- Mitra, S., Pramanik, A., Banerjee, S., Haldar, S., Gachhui, R., & Mukherjee, J. (2013). Enhanced biotransformation of fluoranthene by intertidally derived *Cunninghamella elegans* under biofilm-based and niche-mimicking conditions. *Applied Environmental Microbiology*, 79(24), 7922-7930.

Book chapters

- Chandra, S., & Banerjee, S. (2024). Pre-treatment Methods for Effective Resource Recovery from Microalgal Biomass. In *Recent Trends and Developments in Algal Biofuels and Biorefinery* (pp. 263-278). Cham: Springer Nature Switzerland.
- Mukherjee, M., Chakraborty, T., Banerjee, S., & Pandit, S. (2024). Impact of Algal Biomass for Pharmaceutical Application. In *Recent Trends and Developments in Algal Biofuels and Biorefinery* (pp. 311-335). Cham: Springer Nature Switzerland.
- Mukherjee, R., Banerjee, S., & Das, P. (2024). The role of microbial bioremediation and biodegradation in wastewater treatment. In *Development in Wastewater Treatment Research and Processes* (pp. 337-352). Elsevier.
- Chowdhury, S., Saha, S., Saha, A., & Banerjee, S. (2023). Resource recovery from wastewater: Technical, economic, and environmental feasibility. In *Development in Wastewater Treatment Research and Processes* (pp. 359-375). Elsevier.
- Saha, S., Chowdhury, S., Das, A., Saha, A., & Banerjee, S. (2023). The effect of Membrane technology and nanotechnology in wastewater treatment. In *Development in Wastewater Treatment Research and Processes* (pp. 341-358). Elsevier.
- Mukherjee, R., Baral, M., Banerjee, S., & Das, P. (2023). 9 Metabolism and genomics of anammox bacteria. *Anaerobic Ammonium Oxidation: For Industrial Wastewater Treatment*, 3, 139.
- Gupta, K., Payra, M., Das, P., & Banerjee, S. (2023). 8 Diversity and environmental distribution of ammonia-oxidizing bacteria. *Anaerobic Ammonium Oxidation: For Industrial Wastewater Treatment*, 3, 121.
- Banerjee, S., Gupta, S., Dalal, A., Hazra, T., Shah, M. P., & Ghosh, S. (2023). Integration of Membrane Technology in Microalgal Photobioreactor for Biodiesel

Production Along with Industrial Wastewater Remediation: A Green Approach. In *Biorefinery for Water and Wastewater Treatment* (pp. 299-312). Cham: Springer International Publishing.

- Kumar, R., Sharma, K., Chauhan, S., Kumar, A., Gupta, P. K., Pandit, S., ... & Banerjee, S. (2022). Production of Biodiesel from the Bacterial Lipid of Sewage Sludge: Versatile Future of Bioenergy in Developing Countries. In *Bio-Clean Energy Technologies: Volume 1* (pp. 331-347). Springer, Singapore.
- Banerjee, S., Sharma, H., & Hazra, S. (2022). Green Energy Solution to Combat Global Warming. In *Bio-Clean Energy Technologies Volume 2* (pp. 1-11). Springer, Singapore.
- Banerjee, S., Das, D., Atta, A., & Shanmugam, P. (2022). Obtaining commodity chemicals by bio-refining of algal biomass. In *Algae and Aquatic Macrophytes in Cities* (pp. 261-270). Elsevier.
- Banerjee, S., & Atta, A. (2022). Lipid extraction and biodiesel production from microalgae: Recent advances. *An Integration of Phycoremediation Processes in Wastewater Treatment*, 1-16.
- Dange, P., Gawas, S., Pandit, S., Mekuto, L., Gupta, P. K., Shanmugam, P., ... & Banerjee, S. (2022). Trends in photobioreactor technology for microalgal biomass production along with wastewater treatment: Bottlenecks and breakthroughs. In *An Integration of Phycoremediation Processes in Wastewater Treatment* (pp. 135-154). Elsevier.
- Pramodbabu, R., Rai, S., Pandit, S., Patil, P., Banerjee, S., Mathuriya, A. S., & Prasad, R. (2021). Anaerobic membrane bioreactor for waste-water treatment: present state of the art. In *Membrane-Based Hybrid Processes for Wastewater Treatment* (pp. 161-180). Elsevier.
- Kumbhar, P., Savla, N., Banerjee, S., Mathuriya, A. S., Sarkar, A., Khilari, S., ... & Pandit, S. (2021). Microbial Electrochemical Heavy Metal Removal: Fundamental to the Recent Development. In *Wastewater Treatment* (pp. 521-542). Elsevier.
- Banerjee, S., & Pandit, S. (2021). Microalgal wastewater treatment technologies. In *The Future of Effluent Treatment Plants* (pp. 151-164). Elsevier.
- Banerjee, S., & Das, D. (2019). Biodiesel Production from Microalgal Biomass: Challenges and Perspectives. In *Handbook of Algal Technologies and Phytochemicals* (pp. 51-62). CRC Press.

Book

- Banerjee, S. Sustainable approach of biodiesel production from microalgae. LAP LAMBERT Academic Publishing (2020), ISBN: 978-620-2-92418-4.
- Bharadvaja, N., Kumar, L., Pandit, S., Banerjee, S., & Anand, R. Recent Trends and Developments in Algal Biofuels and Biorefinery. Springer Nature (2024), ISBN-13: 978-3-031-52318-2.

Teaching Experience: 3 Years of teaching Experience in Department of Biotechnology, School of Life Science and Biotechnology, Adamas University, Kolkata.

Membership in editorial boards and professional bodies

- **Life Member** of Indian Institute of Chemical Engineers
- **Member** of Microbiologists Society of India

- **Member of Biotech Research Society of India**
- **Reviewer of Journal of Material Cycle and Waste Management, Springer Nature**
- **Reviewer of Applied Biochemistry and biotechnology, Springer Nature**
- **Reviewer of Computers and Mathematics Applications, Elsevier**
- **Reviewer of Journal of Biomass Conversion and Biorefinery, Springer Nature**
- **Reviewer of Journal of Biocatalysis and Agriculture**
- **Reviewer of Microbial Cell Factories Journal**
- Reviewer of Clean Technologies and Environmental Policy
- Reviewer of Discover Applied Sciences
- Reviewer of Biotechnology for Biofuels and Bioproducts
- Reviewer of Biotechnology for Sustainable Materials

Projects Handling

- University Seed Grant: 2,00,000
- Industrial Consultancy: Synthetic Modulers Ltd. (1,00,000) (2023-24)
- Industrial Consultancy: Synthetic Modulers Ltd. (3,50,000) (2024-25)
- IIT Kgp Research Foundation Park Project grant as Student Mentor (3,60,000) (2024-25)

Subjects Taught:

- Bioprocess Engineering and Process Biotechnology
- Bioreactor Analysis and Design
- Energy Engineering and Biofuel
- Renewable Energy Resources
- Environmental Biotechnology
- Genetics
- Research Methodology and GLP
- Biostatistics
- Basic Biology
- Capstone Project

Research Guidance:

- 1 PhD Student (ongoing)
- 2 M. Tech Biotechnology Students (ongoing)
- 6 M. Tech Biotechnology Students (completed)
- 5 M. Sc Biotechnology Student (Completed)
- 5 B. Tech Biotechnology Students (completed)
- 8 B. Sc Biotechnology Students (completed)

Research Experience

- Worked as a Senior Research Fellow, Department of Chemical Engineering, IIT Kharagpur, India.
- Worked as a Project Assistant, Biological Anthropological Unit, Indian Statistical Institute, Kolkata, India.
- Worked as a Project Assistant, Department of Physics, Jadavpur University, Kolkata, India.

Areas of interest

- Bioprocess Engineering, Biochemical Engineering, Renewable Energy Generation, Environmental Biotechnology, Bioinformatics, Computational Fluid Dynamics, Bioremediation, Solid Waste Management, Wastewater treatment, Metabolic Flux Analysis.

Techniques known

- Bioenergy and other value added product generation from microalgae, Bioreactor Designing and Operation, Also engage in 10000 L pilot plant operation for Biohydrogen production, Gas Chromatography, HPLC, TLC, XRD, SEM, Basic microbiology techniques, PCR, Computational Fluid Dynamics (ANSYS Fluent), Waste water treatment, Confocal Laser Scanning Microscopy, Bioinformatics tools like: MEGA, BIOEDIT, Quantum Molecular Simulation, Avogadro, VMD.

Computer skills and exposure

- Programming Languages: C, JAVA (Course completed from IBM), Perl, Basic of Python, DBMS: SQL (Course completed from Globsyn Practice School).
- OS Environments: Windows XP/Vista/7, Linux- Fedora 20, Centos, Ubuntu.
- Bioinformatics tools: Rasmol, PyMol, Mega6, Predoter, Mitoprot, iSort, Modeller, Easymodeller (GUI), APBS, TAIR, Jpred, Psipred, Procheck, Bioedit.
- Modelling simulation tools: Ansys Fluent.

Conferences and workshops

- Presented paper at Biospectrum, 2023, organized by UEM Kolkata in collaboration with Universiti Sains Malaysia, 16th to 18th November, 2023.
- Presented paper at ICC Water & Wastewater Innovation Workshop at IIT Kharagpur on 29th & 30th September 2023.
- Attended MIT "A+B" Applied Energy Symposium (MITAB), (July 5th- 8th, 2022) jointly organized by MIT and Harvard University, USA, Oral Presentation.
- Invited Talk in the International Conference on "Current Trends In Waste Treatment, Reuse, And Valorization", 2022, Society for Green Environment, New Delhi, India in Association with Sandip University, Nashik, Maharashtra
- Indo-US SPARC workshop on Sustainable Biorefinery for waste valorization, 2020, IIT Kharagpur
- DBT National Workshop on Bioenergy, Kolkata, 2019, poster presentation
- Attended The 8th International Conference of Clean and Green Energy, Milan, Italy, 2019, oral presentation.
- Attended GIAN course by MHRD on Bioproduction in photosynthetic microbes, IIT Kharagpur, 2018
- Attended The 8th International Conference on Algal Biomass, Biofuels and Bioproducts, Seattle, USA, 2018, poster presentation
- Attended 8th World Renewable Energy Technology Congress & Exhibition, New Delhi, India, 2017, poster presentation

- Attended International Conference on Advances in Bioprocess Engineering and Technology, Sponsored by TEQIP, Heritage Institute of Technology, Kolkata, 2016, poster presentation
- Attended short term course on Advances in Computational Fluid Dynamics, IIT Bhubaneswar, 2015
- Attended International conference of Epidemiology and Evolutionary Genetics, Beijing China, 2014, oral presentation
- Attended A P C Ray National Young Scientist Conference, Jadavpur University, Kolkata, 2012, poster presentation.
- Attended National Seminar on Biotechnology for Sustainable Development, Heritage Institute of Technology, Kolkata, 2012, poster presentation. (Secured 3rd position).
- Attended workshop on computational biology and drug designing conducted by SCFBio group, IIT Delhi, 2012.

Extracurricular activities and hobbies

- Active participation in Science exhibition and annual cultural festival in school and University
- Senior Diploma in Bharat Natayam Dance from Prayag Sangeet Samiti, Allahabad, India.
- Listening to music.
- Painting.
- Trekking.

Srijoni Banerjee
11.12.2024