

DHRUVA MUKHOPADHYAY

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Location: Roorkee, India

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EDUCATION

Ph.D.	National Institute of Technology, Raipur, India	February 2023
Integrated B. Tech. & M. Tech. Dual Degree	Kalinga Institute of Industrial Technology, Bhubaneswar, India	November 2017

RESEARCH EXPERIENCE

Institute Postdoctoral Fellow at Uppsala University, Sweden under Dr. Alina Sekretareva since September 2024.

Award of **Post-Doctoral Fellowship/Research Associate (PDF/RA)** at **Sardar Swaran Singh National Institute of Bioenergy (SSS-NIBE), Kapurthala**

DST-SERB National Postdoctoral Fellow: Application of microbial electrochemical system for sustainable degradation of pesticide in contaminated water and soil from agricultural systems, National Institute of Hydrology, Roorkee, India, PI: Dr. Vinay Kumar Tyagi. Duration: February 2024 - August 2024

Institutional Postdoctoral Fellowship: Depolymerization of Lignin with Photo-Fenton reaction coupled with hydrodynamics cavitation and separation of valuable chemicals, Indian Institute of Technology, Roorkee, India, PI: Prof. Prasenjit Mondal. Duration: December 2023 – February 2024.

Ph.D. Dissertation: Study of Microbial Electrochemical System for the Production of Hydrogen Peroxide and Subsequent Application in Valorization of Lignin, National Institute of Technology, Raipur, India, Advisor: Dr. Pratima Gupta. Duration: August 2017 – February 2023.

1. Used **domestic and industrial wastewater, agricultural waste like paddy and wheat straws, and waste from the paper industry**, all containing **Lignin** to develop **Hydrogen Peroxide, aromatic, and other valuable chemicals** in a **cheap and environmentally sustainable** way with **no electricity consumption**. Instead, electricity was generated during the process.
 2. Developed a technique to **degrade ampicillin residue found in wastewater** from pharmaceutical companies **quickly and efficiently** that can be used to treat such water before releasing it into nature. This will **prevent the development of superbugs** that become resistant to ampicillin.
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LABORATORY SKILLS

Experience in working on Microbial culturing, CFU counts technique, Autoclaving, GRAM staining, BOD-COD-and-TOC measurements of wastewater, Basic Electrochemistry, operating UV-visible Spectrometry, FTIR Spectrophotometry, UPLC-QTOF-MS, LCMS, GCMS, Analytical HPLC, Preparative HPLC, Centrifuge.

COMPUTER SKILLS

MATLAB, C++, Python, ChemSketch, ChemDraw, Origin, Adobe, MS Office

BOOK WRITING MEMORANDUM OF AGREEMENT WITH THE ROYAL SOCIETY OF CHEMISTRY

Signed a Memorandum of Agreement to write a book entitled “**Microbial Peroxide Producing Cells for Advanced Oxidation Processes**” authored by Dhruva Mukhopadhyay, Changsomba Chang, Rakesh Kumar Sharma, Piyush Parkhey, and Pratima Gupta.

HONOURS AND AWARDS

- Lifetime Membership of the **Biotech Research Society of India** since **February 2024**.
 - First Prize for paper presentation at the conference on “The International Congress on Separation & Purification Technologies (ICSPT)” – 2023 held at National Institute of Technology, Raipur: 19th to 20th January, 2023.
 - Consolation prize for paper presentation in the conference on “Green and Sustainable Environmental Technology” GESET – 2022 held at KIIT Bhubaneswar, Odisha: 15th to 16th September **2022**.
 - Awarded the prestigious MHRD Senior Research Fellowship for PhD research at NIT Raipur in **2019**.
 - Awarded the prestigious MHRD Junior Research Fellowship for PhD research at NIT Raipur in **2017**.
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PUBLICATIONS

Journal Publications

6. Microbial Electrochemical System Mediated In-situ Advanced Oxidation Processes: A Review (In Progress)

5. Mukhopadhyay, D., Chang, C., Kulsreshtha, M., Gupta, P., **2022**. Bio-separation of value-added products from Kraft lignin: A promising two-stage lignin biorefinery via microbial electrochemical technology, *Int. Jour. Biolog. Macromol.*, <https://doi.org/10.1016/j.ijbiomac.2022.12.055>. Elsevier Publication. **Impact factor 8.025**.

4. Mukhopadhyay, D., Sharma, R.K., Gupta, P., **2022**. Microbial peroxide-producing cell coupled in-situ enzymatic depolymerization for lignin biorefinery, *Fuel Cells*. <https://doi.org/10.1002/FUCE.202200101>. Wiley Publication. **Impact factor 2.948**.

3. Mukhopadhyay, D., Khan, N., Kamal, N., Varjani, S., Singh, S., Sindhu, R., Gupta, P., Bhargava, P.C., **2022**. Degradation of β -Lactam antibiotic ampicillin using sustainable Microbial peroxide producing cell system. *Bioresour. Technol.* 127605. <https://doi.org/10.1016/J.BIORTECH.2022.127605>. Elsevier Publication. **Impact factor 11.887**.

2. Mukhopadhyay, D., Gupta, P., Patidar, R., Srivastava, B. C., **2022.** Microbial peroxide producing cell mediated lignin valorization. *Int. Jour. Biolog. Macromol.*, 202: 431 – 437. <https://doi.org/10.1016/j.ijbiomac.2021.12.126>. Elsevier Publication. **Impact factor 8.025.**

1. Sharma, R. K., Mukhopadhyay, D., Gupta, P., **2019.** Microbial Fuel Cell-Mediated Lignin Depolymerization: a Sustainable Approach. *Journal of Chemical Technology and Biotechnology*, 94: 927-932, DOI 10.1002/jctb.5841. Wiley Publication. **Impact factor 3.174.**

Book Chapter

1. Diwan, B., Mukhopadhyay, D., Gupta, P., **2020.** Recent Trends in Biorefinery-Based Valorisation of Lignocellulosic Biomass. Chapter 11. Invited Book Chapter in “Biovalorisation of Wastes to Renewable Chemicals and Biofuels”. Editors N. K. Rathinam, R. K. Sani, Elsevier, 219-242.

Book

2. Mukhopadhyay, D., 2024. Digital Gaming Revolution: A History of the Development of Gaming Industry and its Future (https://www.amazon.com/dp/B0DF6XJHYK?ref=pe_93986420_774957520)

1. Mukhopadhyay, D., 2024. Operation Pandora: A Story of Courage, Valor and Honor in Times of Terror, Uncertainty and Terror (<https://www.amazon.in/dp/B0D42C8QB3?dplnkId=6f3fbfd1-3fc7-4690-9bb7-814338f02bc3>)

Conference Publication

1. Mukhopadhyay D. and Gupta, P., 2019. Establishment of Microbial Electrochemical Systems as Microbial Peroxide Producing Cells for Oxidative Depolymerization and Dye Decolorization. *Proceedings of the 3rd International Conference of Biotechnology and Biological Sciences (BIOSPECTRUM 2019)*, August 8-10, 2019, Kolkata, India. Pages: 287-291. Editors: Ramkrishna Sen, Susmita Mukherjee, Rajashree Paul, and Rajiv Narula. Publisher: Taylor & Francis Group. 452 pp. <https://doi.org/10.1201/9781003001614>. Book Edition: 1, ISBN 978-0-367-43161-7.

CONFERENCE AND WORKSHOP ATTENDED

- Poster Presentation at The International Chemical Engineering Conference on Energy, Environment and Sustainability (ICECEES-2024) is being organized by the Department of Chemical Engineering, Indian Institute of Technology, Roorkee
- **Mukhopadhyay D.,** Gupta, P., **2024.** Bio-separation of value-added products from Kraft lignin: A promising two-stage lignin biorefinery via microbial electrochemical technology. conference on “The International Congress on Separation & Purification Technologies (ICSPT)” – 2023 held at National Institute of Technology, Raipur: 19th to 20th January, **2023.**
- **Mukhopadhyay D.,** Gadicherla H. K., Gupta, P., **2022.** In-situ hydrogen peroxide mediated dye decolorization in a Microbial Peroxide Producing Cell. International conference on “Green and Sustainable Environmental Technology” GESET – 2022 held at KIIT Bhubaneswar, Odisha: 15th to 16th September **2022.**
- **Mukhopadhyay, D.,** Gadicherla, H. K., Gupta, P., **2020.** In-situ hydrogen peroxide mediated dye decolorization in a Microbial Peroxide Producing Cell. *IMRSE conference volume.*
- **Mukhopadhyay D. and Gupta, P., 2019.** Establishment of Microbial Electrochemical Systems as Microbial Peroxide Producing Cells for Oxidative Depolymerization and Dye Decolorization, *Biospectrum 2019, 3rd International Conference on Biotechnology and Biological Sciences, University of Engineering and Management, Kolkata, India, 8th to 10th August 2019.*

- **Mukhopadhyay D.**, Bhardwaj, T., Mandal, T., 2013. ‘Mechanical Cleaning of Brain Cells by Vocal Vibrations’, paper presented at National Conference on Brain and Consciousness, at Indian Statistical Institute, Kolkata September 20th to 21st **2013**.
 - The American Society of Microbiology’s Virtual Workshop on Scientific Writing and Publishing” at School of Biotechnology, KIIT, Bhubaneswar November 22nd, 2012.
 - 3rd Asian Food Safety and Security Association (AFSA) Conference on “Food Safety and Security” Organized by Food Safety and Security Association (AFSA) and KIIT University, Bhubaneswar from 15th to 17th September 2016.
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MASTER’S DISSERTATION

Dissertation: Biodegradation of Chlorpyrifos by Bacterial Strain Isolate: Impact of Mixed Microbial Consortia and Diversity Analysis in Chilika Lake. Submitted in the School of Biotechnology, KIIT, Bhubaneswar, India, Guide Dr. Visakha Raina, **2017**.

CO-CURRICULAR ACTIVITIES

- Worked on a project entitled “Preparation and Storage Constancy Assessment of Orange Drink”. I worked in a team of two to study the effect of chemical preservatives on the preservation quality of ready-to-serve orange juice and determine the physicochemical changes in the juice stored at 4 degrees. The findings can help the industries to have a juice with increased shelf life, Submitted in the School of Biotechnology, KIIT, Bhubaneswar, India, 2015.
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INTERNSHIPS/INDUSTRIAL TRAINING

- **Intern, Department of Biotechnology, Indian Institute of Technology, Kharagpur (May - June 2016).** Guide: Prof. Rama Krishna Sen. Topic: Bio emulsifier enhanced bioremediation of hydrocarbon pollutants of Assam oil field produced water.
 - **Intern, Department of Biotechnology, Indian Institute of Technology, Roorkee (May - July 2015).** Guide: Prof. Shailly Tomar: Topic: Expression, purification, crystallization, and characterization of alphavirus non-structural replication enzyme 4.
 - **Intern, Department of Biotechnology, Indian Institute of Technology, Roorkee (May - July 2014).** Guide: Prof. Partha Roy. Attended Biotechnology Training Program.
 - **Intern, Harihar Biotech Private Limited, Lucknow (June 2013).** Attended Industrial Biotechnology Training Program.
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CERTIFICATION

15. Coursera course “Applied Computational Fluid Dynamics” May 2024 offered by Siemens, taught by Milovan Peric.
14. Coursera Specialization “Microsoft 365 Fundamentals”, Mar 31, 2024, offered by Microsoft
15. Coursera course “Work Smarter with Microsoft PowerPoint”, Mar 31, 2024, offered by Microsoft
14. Coursera course “Work Smarter with Microsoft Excel”, Mar 9, 2024, offered by Microsoft
13. Coursera course “Work Smarter with Microsoft Word”, Feb 1, 2024, offered by Microsoft

12. Coursera course “Introduction to AI in the Data Center” June 2023 offered by Nvidia, taught by Nvidia Training Support Team
 11. Coursera course “Introduction to Molecular Spectroscopy” June 2023 offered by Manchester University, taught by Patrick J O'Malley, D.Sc
 10. Coursera course “Introduction to Programming with MATLAB” March 2023 offered by Vanderbilt University, taught by Michael Fitzpatrick.
 9. Coursera course “Algae Biotechnology” November 2022 offered by UC San Diego, taught by Stephen P. Mayfield.
 8. Coursera course “Programming Fundamentals” Oct. 2020 offered by Duke University, taught by Andrew D. Hilton, Genevieve M. Lipp, Anne Bracy, Assistant Professor of the Practice, Adjunct Professor, Senior Lecturer, Electrical and Computer Engineering, Electrical and Computer Engineering, Computer Science, Cornell University.
 7. Coursera course “Magic in the Middle Ages” July 2020 offered by Universitat De Barcelona, taught by Godefroid de Callataj, Dr Pau Castell Granados, Sébastien Moureau - University of Louvain, Dr Gemma Pellissa Prades, Delfi I. Nieto-Isabel, Blanca Villuendas Universitat de Barcelona.
 6. Coursera course “Industrial Biotechnology” offered by The University of Manchester, July 2020.
 5. Coursera course “AI for Everyone” May 2020 offered by deeplearning.ai, taught by Andrew Ng, Adjunct Professor, Computer Science Department, Stanford University.
 4. Coursera course “Nanotechnology and nanosensors, Part 2”, May 2018, taught by Prof. Hossam Haick, Head of the Laboratory for Nanomaterial-Based Devices (LNBD) and Volatile Biomarkers, Department of Chemical Engineering, and Russell Berrie Nanotechnology Institute, Technion - Israel Institute of Technology.
 3. Coursera course “Nanotechnology and nanosensors, Part 1”, August 2017, taught by Prof. Hossam Haick, Head of the Laboratory for Nanomaterial-Based Devices (LNBD) and Volatile Biomarkers, Department of Chemical Engineering, and Russell Berrie Nanotechnology Institute, Technion - Israel Institute of Technology.
 2. ASM Virtual Workshop on Scientific Writing and Publishing, offered by the American Society of Microbiology, at KIIT Bhubaneshwar, India, November 2012.
 1. Attended a course titled “Object-Oriented Programming Using C++” at Roorkee (August – September 2012).
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EXTRACURRICULAR ACTIVITIES

Squash, swimming, yoga, meditation, reading novels

COMMUNITY SERVICE/ SOCIAL WORK

- In college, I was a member of the National Social Service where I worked with rural people to make them aware of the positive impact of cleanliness and hygiene. I also participated in blood donation camps.
 - Regular volunteer at blood donation camps.
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