

INTELLECTUAL PROPERTY RIGHTS (IPR) – 26 PATENTS

National:

1. Design of Clamping Pulley [Patent No. 350143-001, **Granted-** 25/01/2023]: **INDIA**
2. Electrochemical Membrane Bioreactor [Patent No. 350145-001, **Granted-** 27/06/2023]: **INDIA**
3. Municipal Wastewater Treatment Device [Patent No. 350144-001, **Granted-** 17/02/2023]: **INDIA**
4. A Method of Treatment of Domestic Wastewater by Electrochemical Membrane Bioreactor and Generation of Bioelectricity [Patent No. 202311010019, **Granted-** 22/05/2024]: **INDIA**
5. Removal of Chromium from Industrial Wastewater Using Magnetic Nanoparticles [Patent No. 202311027431, **Granted-**21/02/2025]: **INDIA**
6. Thermal Catalytic Cracking Unit [Patent No. 388557-001, **Granted-** 02/02/2024]: **INDIA**
7. Microbial Fuel cell Set-up for Continuous Process [Patent No. 404283-001, **Granted-** 4/05/2024]: **INDIA**
8. An Electrospinning Set-up for Wound Patches [Patent No. 407680-001, **Granted-** 09/04/2024]: **INDIA**
9. An electrochemical device for measuring current and voltage in electrochemical membrane bioreactor [Patent No. 425141-001, **Granted -** 24/10/2024]: **INDIA**
10. Biofilm reactor for multiple substratum [Patent No. 432264-001, **Granted-** 09/12/2024]: **INDIA**
11. Adsorption Column for Dye Removal from Textile Wastewater [Patent No. 383691-001 **Granted-** 12/06/2025]: **INDIA**
12. Hybrid Reactive Distillation with Side Draw for the Selective Production of Dehydrated Adol [Patent No. 461397-001, **Granted -** 11/09/2025]: **INDIA**
13. Biochemical reactor for production of biofuel [Patent No. 439728-001, **Granted on 01/07/2024**]: **INDIA**
14. Magnetic Chemical Pump for Waste Water Treatment Using Nano Technology [Patent No. 463915-001, **Filed -** 28/06/2025]: **INDIA**
15. Hybrid Axial Centrifugal Compressor for Interdisciplinary Industrial Applications [Patent No. 463915-001, **Filed -** 24/07/2025]: **INDIA**
16. Herbal Formulation Infused Catheter Design for Inhibiting CAUTIs [Patent No. 472589-001, **Filed -** 06/09/2025]: **INDIA**

International:

1. Electrochemical Biosensor Device for Measuring Water Quality Parameter [Patent No.- 6275686, **Granted-** 26/04/2023]: **UNITED KINGDOM**
2. Integrated Anaerobic Sludge Reactor having Microbial Fuel Cell for Wastewater Treatment [Patent No.- 6310988, **Granted-** 25/09/2023]: **UNITED KINGDOM**
3. Semi-Continuous Biochemical Reactor for Biodiesel [Patent No.- 6310987, **Granted-** 25/09/2023]: **UNITED KINGDOM**
4. Artificial Intelligence Based Membrane Bioreactor for Treatment of Wastewater [Patent No.- AMCZ-2312907656, **Granted-** 31/01/2024]: **AUSTRALIA**

5. Thermal Catalytic Cracking Unit for Biofuel Production [Patent No.- 6338387, **Granted**-19/01/2024]: **UNITED KINGDOM**
6. A Process for Treatment of Municipal Wastewater and Generation of Bioelectricity by Electrochemical Membrane Bioreactor [Patent No.- 2023/10692, **Granted**- 26/06/2024]: **SOUTH AFRICA**
7. An electrochemical device for measurement of current and voltage [Patent No.- 6387517, **Granted**-06/09/2024]: **UNITED KINGDOM**
8. A Superparamagnetic Fe₃O₄ Nanoparticles from *Hibiscus rosa-sinensis* Leaf Extract and Application Thereof [Patent No.- 202411040955, **Granted**-15/11/2024]: **GERMAN**
9. A hybrid membrane biochemical reactor for wastewater treatment [Patent No.- 6472288, **Granted**-25/09/2025]: **UNITED KINGDOM**
10. Electrochemical Process for Monitoring Membrane Fouling in Bioreactors for Wastewater Treatment [Patent No.- 202511004650, **Filed**- 05/02/2025]: **SOUTH AFRICA**

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10. Shashi Bala Gautam, Siraj M. Alam and **Suantak Kamsonlian** (2015). Adsorption of As (III) on Iron Coated Quartz Sand: Influence of Temperature on the Equilibrium Isotherm, Thermodynamics and Isosteric Heat of Adsorption Analysis. *International Journal of Chemical Reactor Engineering*, Vol. 14 (1), pp. 289-298.
11. Kajal Gautam, Kanhaiya Kumar Singh, Sushil Kumar, **Suantak Kamsonlian** (2016). Bio-Degradation and De-Colorization of Reactive Orange ME2RL Dye by Mixed Bacterial Culture Isolated from Municipal Wastewater, *International Journal for Technological Research in Engineering*, Vol. 3 (8), pp. 2347-4718.

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14. Shitanshu Pandey, Neha Chomal, **Suantak Kamsonlian**, and Sushil Kumar (2018). Theoretical and Experimental Studies on Extraction of Carboxylic Acids from Aqueous Solution Using Ionic Liquids, *International Journal of Chemical Engineering and Applications*, Vol. 9, pp. 1.
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22. Harish Kumar, Avneesh Kumar Gehlaut, Himanshu Gupta, Ankur Gaur, **Suantak Kamsonlian**, Devender Kumar (24 April 2021). Facile synthesis and application of aluminum oxide nanoparticle based biodegradable film, *Polymer Composites*, Wiley, DOI: 10.1002/pc.26102

23. Shabnam Dana, Jishnu Naskar, **Suantak Kamsonlian**, Amit Chattree (2021). Comparative study of ferromagnetic behaviour in bare and PMMA modified Manganese Ferrite (MnFe_2O_4) nanoparticles, *International Nano Letters*, Vol.12, pp. 79–89. <https://doi.org/10.1007/s40089-021-00353-x>
24. Saurabh Yadav, **Suantak Kamsonlian**, Shubham Pal (2022). Treatment of domestic wastewater by the application of electrochemical membrane bioreactor and generation of bioelectricity, *Applied Chemistry for Engineering*, Vol. 33(5), pp.1-6. <https://doi.org/10.14478/ace.2022.1088>
25. Saurabh Yadav, Suantak Kamsonlian (2022). A review of electrochemical methods for treatment of wastewater, *Materials Today: Proceedings*, Vol. 78, pp. 36–39. <https://doi.org/10.1016/j.matpr.2022.11.036>
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35. Shabnam Dan, Amit Chattree, Jishnu Naskar, **Suantak Kamsonlian** (2025). Polymer Blend Functionalization of MnFe_2O_4 Nanoparticles: Magnetic, Structural and Photocatalytic Impact, *Chinese Journal of Analytical Chemistry*. DOI: <https://doi.org/10.1016/j.cjac.2025.100636> (**ACCEPTED**)

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14. Praveen Dubey, **Suantak Kamsonlian** and Ankur Gaur, *Ecotoxicological Impacts of Green Synthesized Iron Nanoparticles*, a two days TEQIP-III sponsored National Conference on "Industrial Application Of Nanoscience & Nanotechnology (IANN - 2019)" during November 15-16, 2019 organised by the Department of Chemical Engineering and Department of Physics, MNNIT Allahabad.
15. Shashi Bala Gautam, Siraj Alam and **Suantak Kamsonlian**, *Sorption of As (III) ion onto the surface of raw and modified coconut husk in fixed bed column* for oral presentation at CHEM-CONFLUX20, an International Conference on Energy and Environmental Technologies For Sustainable Development organized by Department of Chemical Engineering, MNNIT, Allahabad during February 14-16, 2020
16. Kajal Gautam, Sushil Kumar, **Suantak Kamsonlian**, *Optimization of Reactive Black B Decolourization by Electrocoagulation using RSM and ANN* for oral presentation at 'CHEM-CONFLUX20, an International Conference on Energy and Environmental Technologies For Sustainable Development organized by Department of Chemical Engineering, MNNIT, Allahabad during February 14-16, 2020.
17. Shashi Bala Gautam, Siraj Alam and **Suantak Kamsonlian**, *Sorption of As(III) ion onto surface of raw and modified coconut husk in fixed bed column* for oral presentation at CHEM-CONFLUX20, an International Conference on Energy and Environmental Technologies For Sustainable Development organized by Department of Chemical Engineering, MNNIT, Allahabad during February 14-16, 2020.
18. Kirti, **Suantak Kamsonlian** and Vishnu Agarwal. *Superparamagnetic Fe₃O₄ nanoparticles: green production by Hibiscus rosa-sinensis leaf aqueous extract and its characterization* for poster presentation at BioSangam-2022, an International Conference on Emerging Trends in Biotechnology organized by Department of Biotechnology, MNNIT Allahabad during March 10-12, 2022.
19. Saurabh Yadav and **Suantak Kamsonlian**. *A Review of Electrochemical Methods for Treatment of Wastewater*, for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National

Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.

20. Saurabh Yadav, **Suantak Kamsonlian** and Shubham Pal. *Treatment of Municipal Wastewater Using Electrochemical Membrane Bioreactor*, for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.
21. Kirti, **Suantak Kamsonlian** and Vishnu Agarwal. *Review on Synthesis of Plant-Mediated Green Iron Nanoparticles and their Application for Decolourisation of Dyes*, for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.
22. Kirti, **Suantak Kamsonlian** and Vishnu Agarwal. *Synthesis of Fe_3O_4 Nanoparticles from Hibiscus Rosa-Sinensis Leaf Aqueous Extract and Its Application in Dye Removal*, for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.
23. Shabnam Dan, Amit Chattree, Jishnu Naskar, **Suantak Kamsonlian**. *Comparative study of ferromagnetic behaviour in bare and DDMAB-PMMA-PEG modified Manganese Ferrite ($MnFe_2O_4$) nanoparticles* for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.
24. Kajal Gautam, **Suantak Kamsonlian**, Yatindra Kumar, Sushil Kumar. *Electrochemical Treatment of Wastewater containing Reactive Blue-4 (RB4) Dye by using Airlift Electrocoagulation and Optimization of Multivariate Parameters* for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.
25. Sajal Agarwal, Himanshu Gupta, Ankur Gaur, **Suantak Kamsonlian**. *Synthesis and Characterization of Carboxy-Methyl Cellulose Obtained from Different Bio Waste Material* for oral presentation at CHEM-CONFLUX22, an International Conference on Technological Interventions for Sustainability, jointly organised by Chemical Engineering Department, Motilal Nehru National Institute of Technology and School of Chemical

Engineering, Universiti Sains Malaysia which was held at Motilal Nehru National Institute of Technology Allahabad, Prayagraj during April 14-16, 2022.

26. Kirti, **Suantak Kamsonlian** and Vishnu Agarwal. *Removal of MB and CV dyes from aqueous solutions by adsorption on iron oxide nanoparticles synthesized by Hibiscus Rosa-Sinensis leaf aqueous extract: Kinetics, equilibrium and thermodynamics*, CHEMCON 2022 and 75th Annual Session of Indian Institute of Chemical Engineers with a conference theme: Sustainability in Chemical Processes through Digitalization, Artificial Intelligence and Green Chemistry held at HBTU Kanpur during 27th to 30th December 2022.
27. Saurabh Yadav and **Suantak Kamsonlian**. *Removal of BOD, COD and TDS from municipal wastewater by application of electrochemical methods and generation of bioelectricity simultaneously*, CHEMCON 2022 and 75th Annual Session of Indian Institute of Chemical Engineers with a conference theme: Sustainability in Chemical Processes through Digitalization, Artificial Intelligence and Green Chemistry held at HBTU Kanpur during 27th to 30th December 2022.
28. Pankaj Kumar, **Suantak Kamsonlian** and Saurabh Yadav. *Application of an electrochemical membrane bioreactor to treat pharmaceuticals and personal care products from municipal wastewater for poster presentation at International Conference on Advancements in Diagnostic Technologies (ADT-2024)*, organised by Department of Biotechnology, MNNIT Allahabad during November 15-17, 2024.
29. Saurav Kandpal, Mod. Anas, **Suantak Kamsonlian** and Ashish N. Sawarkar. *Hydrogen-rich syngas production through co-gasification of biomass and petcoke in a horizontal tubular furnace and modelling the intricate process through machine learning*, International Conference on Health and Agriculture Biotechnology: Interdisciplinary Trends (HABIT-2025) organised by Department of Biotechnology, MNNIT Allahabad during February 28 – March 02, 2025.

BOOK PUBLICATIONS

S. No.	Title	Editor's/ Author's Name	Publisher	Year of Publication
1.	Environmental Management in Hostel	Saurabh Yadav, Rohit Kumar Singh, Suantak Kamsonlian , Manoj Kumar Yadav, MS Karuna	1 st Edition, P.K Publishers and Distributors, New Delhi <i>ISBN 978-93-92239-30-4</i>	2022
2.	Thermal Catalytic Cracking of Jatropha Oil	Saurabh Yadav, Suantak Kamsonlian , Neeru Anand, Dinesh Kumar	1 st Edition, P.K Publishers and Distributors, New Delhi <i>ISBN 978-93-92239-48-9</i>	2022
3.	Treatment of Domestic Wastewater by Electrochemical Membrane Reactor	Shubham Pal, Anant Prakash Agarwal, Suantak Kamsonlian , Saurabh Yadav	1 st Edition, P.K Publishers and Distributors, New Delhi <i>ISBN 978-93-92239-81-6</i>	2023
4.	Emerging Trends in Chemical and Biochemical Engineering - Volume - 1	Mr. Saurabh Yadav Dr. Suantak Kamsonlian Dr. Karthick S Ms. Niharika Dutt	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. <i>ISBN 978-1-68576-456-2</i>	2023
5.	Emerging Trends in Chemical and Biochemical Engineering - Volume - 2	Dr. Suantak Kamsonlian Dr. Vishnu Agarwal Dr. Saurabh Yadav	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. <i>ISBN 978-1-68576-457-9</i>	2023
6.	Application of Plant Based Nano-particles for Dye Removal from Contaminated Wastewater	Dr. Kirti Dr. Suantak Kamsonlian Dr. Vishnu Agarwal	1 st Edition, P.K Publishers and Distributors, New Delhi <i>ISBN 978-81-19428-78-6</i>	2024
7.	Emerging Trends in Chemical and Biochemical Engineering-Volume - 3	Dr. Suantak Kamsonlian Dr. Arvind Kumar Gautam Dr. Sanjay Singh Mr. Ankit Kumar Dr. Saurabh Yadav	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. <i>ISBN 978-1-68576-503-3</i>	2024
8.	Current Trends in Engineering and Technology - Volume - 1	Dr. Suantak Kamsonlian Dr. Arvind Kumar Gautam Ms. Niharika Dutt Dr. Saurabh Yadav	P.K Publishers and Distributors, New Delhi <i>ISBN 978-81-19428-37-3</i>	2024
9.	Current Trends in Engineering and Technology - Volume - 2	Dr. Saurabh Yadav Dr. M.S. Karuna Er. Thejus Jacob Dr. Suantak Kamsonlian	P.K Publishers and Distributors, New Delhi <i>ISBN 978-93-49060-14-2</i>	2025

BOOK CHAPTER PUBLICATIONS

S. No.	Title	Author's Name	Chapter Contribute/ Book Name	Page No.	Publisher	Year of Publication
1.	Biosorption of Cd (II) and As (III) Ions from Aqueous Solution by Tea Waste Biomass	Suantak Kamsonlian , Chandrajit Balomajumder, Shri Chand and S. Suresh	Chapter 7, Vol. 3 Book: Current Perspectives of Environment and Climate Change	83-91	Book Publisher (BP) International, UK ISBN 978-93-89816-72-3	2020
2.	Green synthesis of E1-Fe nanoparticle from eucalyptus globulus leaf extract and their usage for methylene blue removal	Praveen Dubey, Satish Kumar Singh, Kirti, Saurabh Yadav, Suantak Kamsonlian , Ankur Gaur	Chapter 4, Vol. 1 Book: Industrial Application of Nanoscience and Nanotechnology	19-30	Excel India Publishers, New Delhi ISBN 9789389947267	2020
3.	Recent trends in the application of nanoparticles in biopolymer films: A review	Himanshu Gupta, Sadhana Sachan, Suantak Kamsonlian , Devender Singh, Ankur Gaur	Chapter 7, Vol. 1 Book: Industrial Application of Nanoscience and Nanotechnology	63-74	Excel India Publishers, New Delhi ISBN 9789389947267	2020
4.	Nanoparticle: Synthesis, Characterization and Applications	Shabnam Dan, Amit Chattree, Ankur Gaur, Suantak Kamsonlian	Chapter 12, Vol. 1 Book: Industrial Application of Nanoscience and Nanotechnology	136-146	Excel India Publishers, New Delhi ISBN 9789389947267	2020
5.	In-situ polymerization for preparation of graphene-based polymer nanocomposites	Saurabh Yadav, Basudha Maurya, Kirti, Vishnu Agarwal, Suantak Kamsonlian	Chapter 14, Vol. 1 Book: Industrial Application of Nanoscience and Nanotechnology	147-162	Excel India Publishers, New Delhi ISBN 9789389947267	2020
6.	Treatment Of Contaminated Water: Membrane Separation and Biological Processes	Suantak Kamsonlian , Saurabh Yadav, Kailas S Wasewar, Ankur Gaur and Sushil Kumar	Chapter 22, Vol. 1 Book: Contamination of Water Health Risk Assessment and Treatment Strategies	339-350	Academic Press, Elsevier Publications, Netherlands ISBN 9780128240588	2021
7.	Catalytic Cracking of Jatropha Curcusa Non-Edible Oil to Hydrocarbons of Gasoline Fraction: Optimization Studies	Saurabh Yadav, Neeru Anand, Dinesh Kumar, Suantak Kamsonlian	Chapter 7 Book: Utilization of Waste Biomass in Energy,	143-160	Taylor & Francis (CRC) Publications, Florida, USA ISBN 9781003196358	2022

	through Box-Behenken Method		Environment and Catalysis			
8.	Microbial Fuel Cell Modeling: A Comprehensive Approach for Sustainable Energy	Vivek Maurya, Saurabh Yadav, Karthick Senthilkumar, Suantak Kamsonlian	Chapter 1, Vol. 1 Book: Emerging Trends in Chemical and Biochemical Engineering	1-10	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. ISBN 978-1-68576-456-2	2023
9.	Production of Bio fuels: an Overview on Biodiesel Production from Waste Cooking Oil	Arvind K. Gautam, Nandlal Pingua, Avinash Chandra, Suantak Kamsonlian	Chapter 6, Vol. 1 Book: Emerging Trends in Chemical and Biochemical Engineering	62-75	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. ISBN 978-1-68576-456-2	2023
10.	Environmental Protection by Nanomaterial Based Electrochemical Biosensor for Detecting Chemical and Biochemical Agents	Shailendra Kumar Pandey, Sadhana Sachan, Suantak Kamsonlian	Chapter 5, Vol. 2 Book: Emerging Trends in Chemical and Biochemical Engineering	54-74	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. ISBN 978-1-68576-457-9	2023
11.	Electrochemical Approaches in Treatment of Waste Water	Pankaj Kumar, Saurabh Yadav, Hansnath Tiwari, Arvind Kumar Gautam, Suantak Kamsonlian	Chapter 1, Vol. 3 Book: Emerging Trends in Chemical and Biochemical Engineering	1-20	IIP (Iterative International Publishers) Selfypage Developers Pvt. Ltd., Paisley Circle, Novi, Michigan, USA. ISBN 978-1-68576-503-3	2024
12.	Innovative Water Splitting Methods for Sustainable Green Hydrogen	Pankaj Kumar, Saurabh Yadav, Girish Singh, Suantak Kamsonlian Arvind Kumar Gautam	Chapter 4, Vol. 1 Book: Current Trends in Engineering and Technology	50-66	P.K Publishers and Distributors, New Delhi ISBN 978-81-19428-37-3	2024