

LAKHAN KUMAR

BTech, MTech, PhD



RESEARCH INTEREST:

Microbiology, Microalgal Biorefinery, Bioremediation, Biofuels, Environmental Biotechnology, Nutraceuticals, Antimicrobial agents, Bioeconomy

Contact: +91-9968753648

Email: adarsh.lakhan@gmail.com ; lakhan@manit.ac.in

[LinkedIn](#) [Scopus ORCID](#)

[Google Scholar](#)

h-index-12, i10-index-13

EXPERTISE

1. Bioprospecting microorganisms, Microbial cell culture techniques,
2. Hands-on Animal Cell Culture Techniques and Animal Handling (Mice, Rats and Rabbits)
3. Biomass-based Biorefinery
4. Anti-microbial resistance of nanoparticles- synthesis, application and validation
5. Biochemical extraction- Quantitative and Qualitative analysis
6. Bioremediation of wastewater, Solid and Liquid Waste management
7. Nanoparticles synthesis, characterisation, and application, Bioderived nanomaterials as antimicrobial agents
8. Technical writing – (Journals and Books), and Project management (Planning, Execution, and Report submission)
9. Knowledge of GLPs, and GMPs, and ISO, FDA, and other Quality management standards pertaining to Biotechnology/ Biomedical engineering/Food/Water

ACADEMIC PROJECTS:

1. Isolation, identification and characterization of potential microalgae from DTU lake and its evaluation for biofuel production.
2. Bio-diesel production from microalga *Chlorella minutissima* & fame analysis by GC-MS.
3. Green synthesis of iron nanoparticle from *Nephrolepis auriculata* for photocatalytic degradation of methylene blue.

4. *Chlorella minutissima* as a functional food and bio-nano factories for silver nanoparticle synthesis, characterization and applications.
5. Bioprospecting microalgae for β -carotene and synthesis of nanoparticles for environmental applications-a zero waste approach.
6. Impact of different media on biomass yield and lipid yield of *Chlorella* sp. and assessment of decolorization of azo dye.
7. Bioplastic production from *Chlorella* sp., and synthesis of biochar from residual biomass, characterization and its application.
8. Analysing the antioxidant and antibacterial effect of silver nanoparticles synthesised from *Chlorella sorokiniana*.
9. Effect of photo-sensitizer on microalgal growth rate under light and dark conditions.
10. Isolation, Detection and characterization of Bacteriocin produced by *Lactobacillus acidophilus*

BOOK EDITOR (06):

1. Biogenic nanomaterials for environmental sustainability: Principles, practices, and opportunities. Springer Nature, Switzerland AG. (Jan 2024)
2. Recent Trends and Developments in Algal Biofuels and Biorefinery. Springer Nature Switzerland AG. (July 2024)
3. Advancements in Biosystems & Technologies for Wastewater Treatment. Springer Nature, Switzerland AG. (July 2024)
4. Medicinal & Aromatic Plants: Current Research Status, Value-Addition to Their Waste, & Agro-Industrial Potential. Springer Nature Switzerland AG. (July 2024)
5. Phyconanotechnology: Current Research, Challenges, and Prospects. Springer Nature Switzerland AG. (August 2024)
6. Algae-derived Biochemicals of Industrial Importance. Springer Nature Switzerland AG. (August 2024)

LIST OF SCIENTIFIC PUBLICATIONS: (Best Journal publications)

1. Ahuja, Mishika, **Lakhan Kumar**, Krishan Kumar, Vyas Madhavrao Shingatgeri, and Saroj Kumar. "Glyphosate: A review on its widespread prevalence and occurrence across various systems." *Environmental Science: Advances* (2024).
2. **Kumar, L.**, Mohan, L., Anand, R., & Bharadvaja, N. *Chlorella minutissima*-assisted silver nanoparticles synthesis and evaluation of its antibacterial activity. *Systems Microbiology and Biomanufacturing*, (2023): 1-10. **(Scopus)**
3. Pal, Roopal, **Lakhan Kumar**, Shaubhik Anand, and Navneeta Bharadvaja. "Role of Natural Flavonoid Products in Managing Osteoarthritis." *Revista Brasileira de Farmacognosia* (2023): 1-13. **(IF- 2.9; SCI-Indexed)**
4. **Kumar, L.**, and Navneeta Bharadvaja. "A review on microalgae biofuel and biorefinery: challenges and way forward." *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* (2020): 1-24. **(IF- 2.9; SCI-Indexed)**
5. **Kumar, L.**, and Navneeta Bharadvaja. "Biosynthesis, characterization, and evaluation of antibacterial and photocatalytic dye degradation activities of silver nanoparticles biosynthesized by *Chlorella sorokiniana*." *Biomass Conversion and Biorefinery* (2022) (Accepted). **(IF- 4.05; SCI-Indexed)**
6. **Kumar, L.**, Anand R, Nanda, N, and Navneeta Bharadvaja. "Microbial Carbon-capture Cells for wastewater treatment: A step towards Environmental." *Biomass Conversion and Biorefinery* (2022). **(IF- 4.05; SCI-Indexed)**
7. Anand R, **Kumar, L.**, Mohan, L, and Navneeta Bharadvaja. Nano-inspired smart medicines targeting brain cancer: diagnosis and treatment. *Journal of Biological Inorganic Chemistry*. **(IF- 3.85; SCI-Indexed)**
8. **Kumar, L.**, Ragunathan, V., Chugh, M., & Bharadvaja, N. (2021). Nanomaterials for remediation of contaminants: a review. *Environmental Chemistry Letters*, 19(4), 3139-3163. **(SCI, IF 13.6)**
9. **Kumar, L.**, Chugh, M., Kumar, S., Kumar, K., Sharma, J., & Bharadvaja, N. (2022). Remediation of petrorefinery wastewater contaminants: A review on physicochemical and bioremediation strategies. *Process Safety and Environmental Protection*. **(SCI, IF 7.92)**
10. **Kumar, L.**, Mohan, L., Anand, S., Bhardwaj, D., & Bharadvaja, N. (2022). Phyconanoremediation: a sustainable approach to deal with environmental pollutants heavy metals and dyes. *Vegetos*, 1-16. **(Scopus)**
11. Bharadvaja, N., **Kumar, L.** (2021). Algal Biorefinery for the Extraction of Bioactive Compounds. *Current Bioactive Compounds*, 17(4), 280-288. **(Scopus)**
12. Ahuja, S., Roy, A., **Kumar, L.**, & Bharadvaja, N. (2020). Media optimization using Box Behnken design for enhanced production of biomass, beta-carotene and lipid from *Dunaliella salina*. *Vegetos*, 33(1), 31-39. **(Scopus)**

13. Chugh, M., **Kumar, L.**, Shah, M. P., & Bharadvaja, N. (2022). Algal Bioremediation of heavy metals: an insight into removal mechanisms, recovery of by-products, challenges, and future opportunities. *Energy Nexus*, 100129.

Book Chapters:

1. Kumar N, **Kumar L.**, Bharadvaja N. (2023) Plant Mediated Nanomaterials: An Overview on Preparation Strategies, Characterisation, and Their Potential Application in Remediation of Wastewater. (Book Chapter)
2. **Kumar L.**, Kamal, P., Soni, K., & Bharadvaja, N. (2022). Phytotechnology for Remediation of Heavy Metals and Dyes. *Nanotechnology for Environmental Remediation*, 139-162. Wiley-VCH GmbH.
3. Chugh, M., **Kumar, L.**, Bhardwaj, D., & Bharadvaja, N. (2022). Bioaccumulation and detoxification of heavy metals: an insight into the mechanism. In *Development in Wastewater Treatment Research and Processes* (pp. 243-264). Elsevier.
4. **Kumar, L.**, Saha, A., Khushbu, & Warkar SG. (2022). Biodegradability of automotive plastics and composites. In *Biodegradability of Conventional Plastics Opportunities, Challenges, and Misconceptions* (pp. 231-242). Elsevier.
5. Chugh, M., **Kumar, L.**, & Bharadvaja, N. (2022). Fungal diversity in the bioremediation of toxic effluents. In *Development in Wastewater Treatment Research and Processes* (pp. 61-88). Elsevier.
6. **Kumar, L.**, Chugh, M., & Bharadvaja, N. (2022). Microbial remediation of tannery wastewater. In *Development in Wastewater Treatment Research and Processes* (pp. 303-328). Elsevier.
7. **Kumar, L.**, Satyam, R., & Bharadvaja, N. (2021). Metagenomics: a powerful lens viewing the microbial world. In *Wastewater Treatment Reactors* (pp. 185-218). Elsevier.
8. **Kumar, L.**, & Bharadvaja, N. (2021). Algal-Based Wastewater Treatment and Biorefinery. In *Wastewater Treatment* (pp. 413-432). Elsevier.
9. Tomar, M., Dewal, H., **Kumar, L.**, Kumar, N., & Bharadvaja, N. (2021). Biodiesel Additives: Status and Perspectives. In *Biodiesel Fuels* (pp. 283-298). CRC Press.
10. **Kumar, L.**, & Bharadvaja, N. (2020). Microorganisms: A remedial source for dye pollution. In *Removal of Toxic Pollutants Through Microbiological and Tertiary Treatment* (pp. 309-333). Elsevier.
11. **Kumar, L.**, & Bharadvaja, N. (2020). Microbial remediation of heavy metals. In *Microbial bioremediation & biodegradation* (pp. 49-72). Springer, Singapore.
12. Bhardwaj, D., **Kumar, L.**, & Bharadvaja, N. (2020). A review on sources of dyes, sustainable aspects, environmental issues and degradation methods. *India 2020: Environmental Challenges, Policies and Green Technology*, 137.
13. Chugh, M., **Kumar, L.**, & Bharadvaja, N. Bioremediation of heavy metals: a step towards environmental sustainability. *India 2020: Environmental Challenges, Policies and Green Technology*, 77.
14. **Kumar, L.**, & Bharadvaja, N. (2019). Enzymatic bioremediation: a smart tool to fight environmental pollutants. In *Smart Bioremediation Technologies* (pp. 99-118). Academic Press.

CERTIFICATION AND AWARDS

1. Commendable Research Award in 5th **Research Excellence Awards** at Delhi Technological University, Delhi
2. Validation of **Algicide formulations** under new product development program at Research & Development and Quality control division. Catalyst Biotechnologies Pvt. Ltd. (C.No. 20211228001)
3. Awarded two years (2014-2016) PG GATE-fellowship by AICTE under MHRD, Govt of India.