



FiRST in Research Science & Technology

अनुसंधान विज्ञान और प्रौद्योगिकी में प्रथम

Department of Environmental Science and Engineering
FiRST – First in Research, Science and Technology, Ranchi, India

About the Section

The Department of Environmental Science and Engineering at FiRST is dedicated to generating original, field-tested solutions for some of the most pressing environmental challenges of our time — degraded and contaminated land, declining soil health, plastic pollution, and the loss of ecological function in human-impacted landscapes. Our work is built on the belief that environmental research should not stop at publication; it must translate into technologies, tools, and practices that communities and industries can actually use.

Work and Research Focus

Our work centres on environmental monitoring as the foundation for developing novel, technology-transfer-ready solutions — with an emphasis on work that has not been previously attempted, and on outcomes that can move toward patenting and real-world deployment rather than remaining purely academic. Priority areas include:

- Environmental monitoring and assessment
- Soil microbial ecology and restoration
- Heavy metals and toxic element contamination
- Landfill-associated microplastics
- Plant–soil interaction technologies
- Sustainable remediation and reclamation systems
- Sensing and analytical technology development

We welcome collaborations with academic institutions, industry, government bodies, and community organizations working on environmental restoration, mining land management, and pollution mitigation. Students and early-career researchers interested in soil science, microbial ecology, or environmental technology are encouraged to reach out.

Head of Section



Dr. Pankaj Maurya, PhD
Scientist and HoD

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Dr. Pankaj Maurya is an environmental scientist, and he holds Joint Cotutelle PhD in Environmental Science and Engineering, awarded by RMIT University, Melbourne, Australia, Academy of Scientific and Innovative Research (AcSIR), India, and CSIR–Central Institute of Mining and Fuel Research (CIMFR), Dhanbad, Jharkhand, India. Over the course of his research career, Dr. Maurya has studied how tree species, topography, and reclamation age shape the recovery of soil quality after mining, combining classical soil physicochemical analysis with modern molecular tools such as 16S rRNA gene sequencing to characterize microbial community recovery. His work has been published in journals including *Restoration Ecology*, *CATENA*, and *Physics and Chemistry of the Earth*, and presented at international forums such as the EGU General Assembly, Vienna, Austria. He has also contributed to an Indo-Czech CSIR–CAS collaborative project on ecosystem development across post-mining sites.

Dr. Maurya's academic journey began with a B.Sc. in Chemistry, Botany, and Zoology and an M.Sc. in Environmental Science, both from Chhatrapati Shahu Ji Maharaj (CSJM) University, Kanpur — where he graduated top of his class. He was subsequently awarded India's DST INSPIRE Junior and Senior Research Fellowships and the RMIT International Tuition Fee Scholarship in support of his doctoral work. He has mentored postgraduate students in India and Australia, serves as a reviewer for journals such as *Scientific Reports* and the *Journal of Environmental Management*, and holds elected roles on RMIT's Academic Board and Graduate Research Committee.

At FiRST, Dr. Maurya leads the Environmental Science and Engineering section, directing its work on environmental monitoring, soil microbial ecology, contamination assessment, and the development of technologies aimed at sustainable remediation and ecological restoration.