KEY SUSTAINABILITY
SUSTAINABLE DEVELOPMENT GOALS
01 No Poverty
02 Zero Hunger
03 Good Health & Well Being
04 Quality Education
05 Gender Equality
06 Clean Water & Sanitation
07 Clean Energy
08 Economic Growth
09 Industry, Innovation, Infrastructure
10 Reduced Inequalities
11 Sustainable Cities
12 Respon-sible Consum-ption
13 Climate Action
14 Life Below Water
15 Life on Land
16 Peace, Justice, & strong Institution
17 Partnership for the Goal

6
CLEAN WATER AND SANITATION

6.5.4 SPIHER responsibly manages all water extraction on and off campus using sustainable technologies to conserve and protect resources.

St. Peter's Institute of Higher Education and Research (SPIHER) follows sustainable water extraction practices both on campus and in any associated university grounds where water is drawn from natural sources such as borewells or aquifers. The institution is committed to ensuring that water extraction does not harm the environment or deplete local groundwater levels.

Recent research study titled "Multivariate Statistical and Hydrogeochemical Analysis of Seasonal Groundwater Quality Variations" was published by our faculty. The study focuses on understanding the variations in groundwater quality across different seasons using advanced multivariate statistical techniques and hydrogeochemical analyses. By examining multiple water quality parameters, the research identifies patterns, sources of contamination, and the impact of seasonal changes on groundwater suitability for domestic and agricultural use.

This work contributes significantly to the field of environmental science and water resource management, providing valuable insights for sustainable groundwater management, pollution control, and long-term water conservation strategies. The publication also highlights the faculty's commitment to research that addresses real-world environmental challenges and supports evidence-based decision-making in water resource planning.

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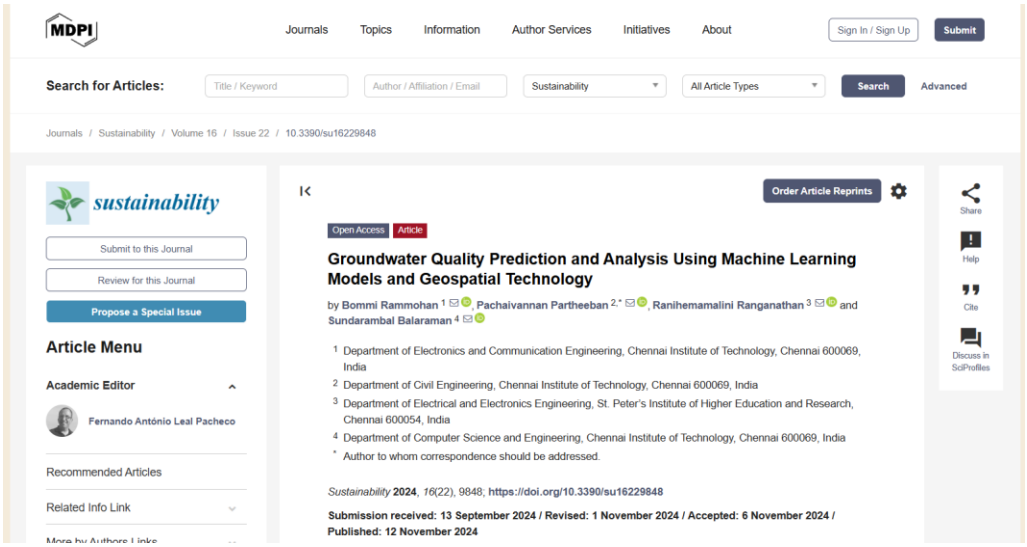
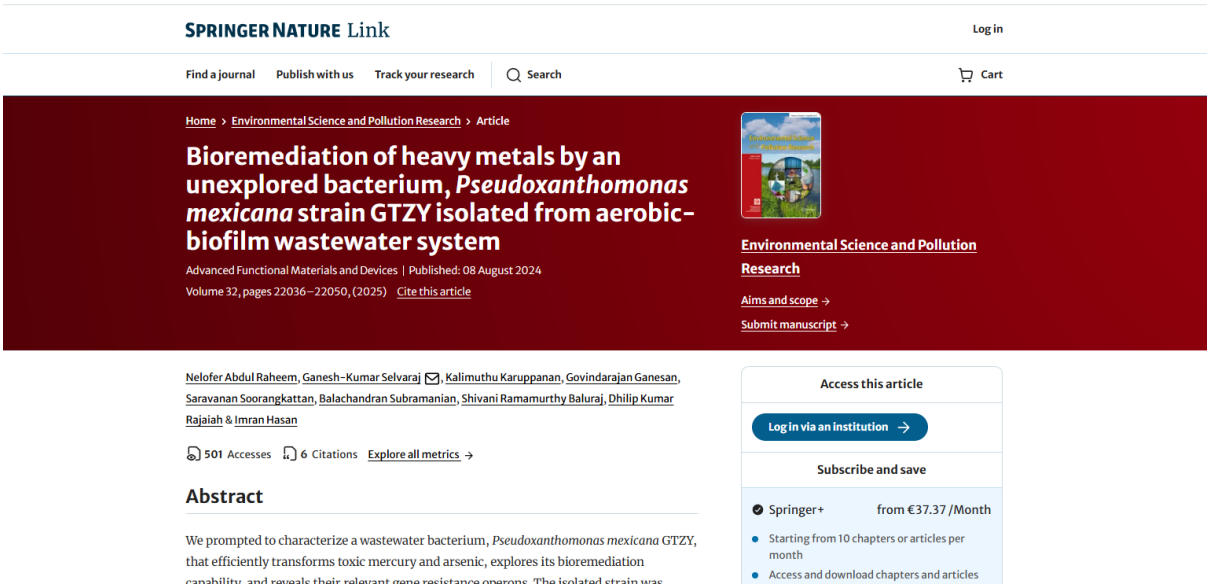


B Hemalatha, et al., 2024 recently published a research study titled "Groundwater Quality Prediction Using Machine Learning and Geospatial Technology." The study explores the use of advanced machine learning algorithms combined with geospatial mapping tools to predict groundwater quality across different regions. By analyzing multiple hydrogeochemical parameters and spatial data, the research identifies areas at risk of contamination and helps forecast seasonal variations in water quality.

This innovative approach provides valuable insights for sustainable groundwater management, pollution mitigation, and strategic planning of water resources. The study demonstrates how modern technologies can support evidence-based decision-making, ensuring safe and reliable groundwater for communities and agricultural use. It also reflects the faculty's commitment to applying cutting-edge research to solve real-world environmental and water-related challenges.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Bioremediation of heavy metals by an unexplored bacterium, *Pseudoxanthomonas mexicana* strain GTZY isolated from aerobic-biofilm wastewater system

Advanced Functional Materials and Devices | Published: 08 August 2024

Volume 32, pages 22036–22050, (2025) Cite this article

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Abstract

We prompted to characterize a wastewater bacterium, *Pseudoxanthomonas mexicana* GTZY, that efficiently transforms toxic mercury and arsenic, explores its bioremediation

Our faculty published a research study titled "Bioremediation of Heavy Metals by an Unexplored Bacterium, Pseudoxanthomonas mexicana Strain GTZY Isolated from Aerobic-Biofilm Wastewater System." The study investigates the potential of a previously unexplored bacterium to remove heavy metals from wastewater through bioremediation. Isolated from an aerobic biofilm system, Pseudoxanthomonas mexicana strain GTZY was found to effectively reduce toxic metal concentrations, highlighting its potential for sustainable wastewater treatment.

This research contributes significantly to environmental biotechnology and water pollution management, offering eco-friendly solutions for heavy metal contamination in industrial and municipal effluents. By demonstrating the capabilities of novel microbial strains in detoxifying wastewater, the study supports the development of cost-effective, green, and sustainable remediation strategies.

The publication reflects the faculty's commitment to innovative research addressing critical environmental challenges, combining microbiology, wastewater engineering, and sustainability to safeguard water quality and public health.

Conclusion

SPIHER's water extraction practices reflect a strong commitment to environmental responsibility and long-term sustainability. By using regulated borewells, digital monitoring systems, rainwater harvesting structures, and energy-efficient pumping technologies, the university ensures that groundwater is used carefully and replenished naturally. Continuous tracking of water levels and timely adjustments help prevent over-extraction and protect local water resources. Beyond campus, SPIHER also promotes awareness and encourages responsible water practices within the wider community. Through these combined efforts, the institution ensures that its water extraction remains sustainable, balanced, and aligned with its broader mission of environmental stewardship.