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(57) Abstract :
The present invention relates to provide a micro - biological thin film adsorbent for metals separation. The proposed invention revolutionizes metals separation through the fusion of microbiology and thin film technology. Unlike traditional methods, MBTFAs utilize a thin film matrix to provide a supportive habitat for a specialized microbial community, introducing a living dimension to the adsorption process. This dynamic and responsive approach enhances adaptability, allowing for the selective targeting of various metal pollutants. The versatility of MBTFAs is highlighted by their ability to effectively adsorb a wide range of metals. The eco-friendly design minimizes environmental impact, and the microbial component ensures natural regeneration, contributing to resilience and longevity. Additionally, MBTFAs address disposal concerns, offering a biodegradable solution that aligns with sustainable environmental practices and holds potential for bioremediation in metal-contaminated sites.

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