Special Issue

Innovative Strategies for Efficient Heavy Metal Removal in Water

Message from the Guest Editors

Heavy metal contamination in wastewater poses severe threats to ecosystems and human health, driving urgent demand for advanced remediation technologies. This Special Issue invites cutting-edge research on **novel materials, processes, and integrated systems** that enhance the efficiency, selectivity, and sustainability of heavy metal separations. We seek contributions addressing the following:

- **Next-generation adsorbents** (functionalized nanomaterials, biochar hybrids, MOFs);
- **High-efficiency membrane technologies** (tunable selectivity, antifouling designs);
- **Hybrid separation processes** (electro-adsorption, capacitive deionization technology);
- **Resource recovery approaches** (selective extraction of critical metals);
- **AI-driven process optimization** for real-time control and scalability.

Emphasis will **be placed on mechanistic studies, performance benchmarks, and techno-economic analyses.** Submissions should demonstrate industrial applicability while addressing challenges like low-concentration removal, complex matrix interference, and secondary waste minimization. This Special Issue aims to bridge fundamental innovation with practical implementation, fostering cross-disciplinary dialogue.

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About the Journal

Message from the Editor-in-Chief

Separations offers the scientific community a high-quality, open-access journal option with rapid time-to-publication without any sacrifice of a rigorous peer-review process. We invite contributions ranging from fundamental characterization and instrumentation development through application of techniques to shed light on a broad spectrum of separation science needs. Since inception, *Separations*, has become unique in its combination of rapid publication and thorough scientific content. We invite you to consider us for your next contribution.

Editor-in-Chief

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