

## Special Issue

# Advanced Control, Removal, and Resource Recovery Processes in Wastewater Systems

### Message from the Guest Editors

Modern wastewater management faces dual challenges: mitigating environmental harm from pollutants and transitioning toward resource-efficient systems. The rise of recalcitrant contaminants (e.g., PFAS, antibiotics) and the urgency to align with circular economy principles demand integrated solutions that combine removal efficiency with energy and material recovery. Innovations in separation technologies, process automation, and bio-based systems are redefining wastewater treatment as a hub for sustainability, energy generation, and resource reuse. This Special Issue seeks interdisciplinary studies addressing process optimization and system integration. Topics of interest include, but are not limited to, the following:

- Advanced separation techniques (membranes, electrocoagulation);
- Detection and removal of emerging contaminants;
- AI-driven process control and real-time monitoring;
- Bioenergy production (e.g., microbial fuel cells, algal bioreactors);
- Nutrient recovery and valorization of wastewater streams;
- Energy–water nexus optimization;
- Decentralized and nature-based treatment systems.

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### Deadline for manuscript submissions

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