Special Issue

Digital Twin Technologies for Advanced Wastewater Treatment Operation and Control

Message from the Guest Editors

This Special Issue seeks to explore cutting-edge applications, innovations, and interdisciplinary approaches to digital twins in the context of wastewater treatment, with a focus on unique challenges, opportunities, and pathways for transformative impacts. Research areas may include (but are not limited to) the following:

- Exploring novel frameworks and methodologies for developing interoperable DT platforms for water/wastewater treatment processes.
- Investigating the synergies between DTs and enabling machine learning, edge computing, the Internet of Things (IoT), and blockchain technologies for real-time operation and control.
- Applications of DTs in multi-objective optimization for enhancing energy efficiency, nutrient recovery, and water reuse.
- The development and application of predictive models integrated into DTs for forecasting.
- Advancing localized and context-aware DT solutions that incorporate regional variability in climate, regulations, and community needs.
- Combining data-driven and physics-based models within DT frameworks.

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Message from the Editor-in-Chief

In the context of global changes, the sustainable management of water cycles, going from global and regional water cycles to urban, industrial and agricultural water cycles, plays a very important role on the water resources and on their relationships with food, energy, biodiversity, ecosystem functioning and human health. *Water* invites authors to provide innovative original full articles, critical reviews and timely short communications and to propose special issues devoted to new technological and scientific domains and to interdisciplinary approaches of the water cycles. We ensure a critical review process and a quick turnaround between submission and final decision.

Editor-in-Chief

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