Special Issue

Innovative Approaches in Water Quality Monitoring and Ecosystem Health

Message from the Guest Editors

The health status of natural and anthropogenic aquatic ecosystems is vital to sustain biodiversity and provide livelihoods for citizens and human communities (drinking water, fisheries, aquaculture, hydropower, tourism, etc.). Continuous population increase and the intensification of industry generate hazardous and emerging contaminants, and cause water eutrophication. Furthermore, climate change can exacerbate water pollution, which traditional methods of water treatment cannot mitigate. To ensure ecosystem health, there is a continuous need for water quality monitoring. However, traditional methods for water quality monitoring are no longer competitive; thus, there is a definitive need for innovation in this field. Disruptive methods include the use of digital tools (virtual sensors, Internet of Things, artificial intelligence, digital twin, etc.) and biological tools (biosensors) to monitor water quality. At the same time, using different trophic niches (microorganisms, plants) to develop nature-based technologies for water treatment can sustainably ensure ecosystem health.

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