

**Editorial: Novel water treatment options for sustainable solutions to clean water scarcity****INTRODUCTION**

Water is a pressing issue in current times. The increasing urban population, limited natural resources, and improper water management have increased the need for effective and efficient water treatment strategies. This special issue '*Novel Water Treatment Options for Sustainable Solutions to Clean Water Scarcity*' is designed to bring together an interdisciplinary team of researchers to share their expertise and research experience on recent trends in wastewater treatment and management. The idea is to bring together like-minded agencies and stakeholders including research organizations, universities, non-governmental organizations and small and medium-sized enterprises from India and abroad to share their expertise in low-cost water treatment, wastewater treatment, recycling and reuse. The special issue aims to create an integrated learning environment and encourage academicians, researchers and students to develop various competencies and enhance their self-efficacy in different techniques for affordable and feasible water treatment options. The focus is to highlight and support a multidisciplinary approach for the sustainable supply of clean water to cater to the future needs. The transition includes exchanging old systems intelligently based on systematic asset management, preparing the new system for the effects of climate change and ensuring a human water supply without compromising ecosystems. Through this special issue, we approach an intelligent integration between society and nature to target a sustainable ecosystem in the area of water.

The scope of the special issue is aimed at the following:

- Novel water treatment options for sustainable solutions to clean water scarcity
- Membrane and thermal desalination technologies
- Renewable energy-based water treatment technologies
- Novel hybrid systems and module design
- Emerging desalination technologies
- Brine/concentrate management
- Resources recovery and circular economy
- Water recycling and reuse
- Sustainability and water management
- Energy and economic evaluation, case studies
- Water policies, governance and planning

**OVERVIEW OF THE SPECIAL ISSUE**

This special issue introduces a novel approach and materials to improve the efficiency and to tackle emerging contaminants for clean water management. Also included are recent trends and future scope from reviewing the literature. [Ankoliya \*et al.\* \(2023\)](#) have improved the recovery of brackish water desalination by hybridizing the electrodialysis and the batch reverse osmosis process. [Bashir \*et al.\* \(2023\)](#) have studied the regeneration of copper-loaded pine bark biochar using the simultaneous bio-sulfide precipitation of copper. [Danish \*et al.\* \(2022\)](#) simulated the pore volume and surface diffusion model to characterize batch adsorption of Cu(II) over chemically modified *Cucurbita moschata* biosorbent. [Taha \*et al.\* \(2023\)](#) have enhanced ammonium removal from aquatic systems by a novel copolymer. [Vithalkar \*et al.\* \(2022\)](#) have studied the kinetics and thermodynamics of brilliant green dye adsorption by used-tea-powder. [Kolothumthodi & Pulikkal \(2022\)](#) have carried out the water quality assessment of open wells in Malappuram district, Kerala. [Gawali \*et al.\* \(2023\)](#) have studied water and gas permeation characteristics with a metal-organic framework of Zeolite imidazolate (ZIF-8) mixed matrix membranes. [Jha & Chakraborty \(2023\)](#) demonstrated antibiotic residue degradation by biosynthesized Nano-zero-valent iron (nZVI) using sal (*Shorea robusta*) leaf extract. [Chandra \*et al.\* \(2023\)](#) have designed and modelled a vertical tube evaporator in a thermal-driven multiple effect distillation system. [Topare \*et al.\* \(2022\)](#) have studied the photocatalytic degradation of Rhodamine-B by niobium pentaoxide (Nb<sub>2</sub>O<sub>5</sub>) photocatalyst, and [Deshmukh \*et al.\* \(2022\)](#) studied the adsorption of Methyl Red using

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orange peel-activated carbon. Mishra *et al.* (2023) designed a hydrodynamic cavitation-based advanced oxidation process for the degradation of recalcitrant micropollutants. Nandy *et al.* (2022) designed an efficient floating bed for the treatment of eutrophic water. Shaikh *et al.* (2023) reviewed the mulching effect on water management in agro-ecological systems. Rajesh *et al.* (2023) studied the role of cationic surfactants in palladium adsorption of commercial ion exchange resins using electroless plating solutions. Saha *et al.* (2023) reviewed the hybrid membrane process for water treatment. Vala *et al.* (2023) studied the polysulfone-based ultrafiltration membrane modified with branched polyethyleneimine. Mohanty & Das (2023) reviewed heavy metals in crops irrigated with wastewater in various parts of India. Acharyya *et al.* (2023) reviewed remediation processes of hexavalent chromium from groundwater.

Our deepest gratitude to all the authors for their high-quality research and insightful reviews, propelling advancements in novel water treatment options. We express our sincere appreciation to the reviewers for their meticulous reviews and insightful feedback, to the Editor-in-Chief for their unwavering leadership and guidance, and to the IWA staff for their professionalism and support in creating this remarkable special issue. We also value the contribution of authors to this field and hope that even if your paper is not accepted for publication this time, you will continue your valuable research and consider submitting again in the future.

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