

Special Issue

Advanced Chemical Innovations for Sustainable Water and Wastewater Treatment

Message from the Guest Editor

Wastewater treatment has evolved as a critical pillar of environmental sustainability, driven by escalating industrial pollution, population growth, and stringent regulatory demands. Traditional methods often fall short in addressing complex contaminants such as pharmaceuticals, microplastics, and heavy metals, necessitating breakthroughs in chemical engineering and material science. Recent advances in catalysis, nanotechnology, and green chemistry have unlocked novel pathways to enhance treatment efficiency, reduce energy consumption, and enable resource recovery. For this Special Issue, we welcome cutting-edge research and reviews on transformative chemical approaches. Topics include, but are not limited to, the following: (1) advanced oxidation processes (AOPs) for persistent pollutant degradation; (2) catalytic and photocatalytic systems for contaminant removal; (3) functionalized nanomaterials and smart adsorbents; (4) green solvents and ionic liquids for selective extraction; (5) hybrid chemical–biological treatment synergies; (6) computational modeling of reaction mechanisms; (7) scalability and lifecycle analysis of novel technologies.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

As the premier open access journal dedicated to molecular chemistry, now in its 29th year of publication, the papers published in *Molecules* span from classical synthetic methodology to natural product isolation and characterization, as well as physicochemical studies and the applications of these molecules as pharmaceuticals, catalysts, and novel materials. Pushing the boundaries of the discipline, we invite papers on all major fields of molecular chemistry and multidisciplinary topics bridging chemistry with biology, physics, and materials science, as well as timely reviews and topical issues on cutting-edge fields in all of these areas.

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