

New methods in the process industry

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EDITORIAL

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We are happy to launch a new special topic with the aim of introducing new methods and procedures for optimizing industrial processes. These works highlight the industry's ongoing commitment to sustainability, efficiency, and environmental responsibility.

In this issue, the first paper [1] examines the thermodynamic properties of green solvents, such as terpenes, as potential substitutes for toxic organic solvents. By investigating mixtures of terpenes with 1-propanol, researchers have provided insights into their non-ideal behavior. This research could lead to advancements in biofuels and environmentally friendly industrial applications.

The second paper [2] explores the use of waste streams to obtain valuable raw materials, specifically addressing the global challenge of phosphorus scarcity. Ash derived from the incineration of municipal wastewater sludge, revealing its high P₂O₅ content, opens the door to its use as an alternative raw material in mineral fertilizer production. This study is highly relevant since it supports circular economy principles and sustainable development.

The third paper [3] tackles sanitary wastewater treatment from an energy facility, which exhibits atypically high total nitrogen and biochemical oxygen demand ratios. Process adjustments, including ferric chloride dosing and increased sludge recirculation, significantly reduced nitrogen and phosphorus concentrations in the effluent, demonstrating the potential for improved wastewater management.

These contributions underscore the transformative potential of innovative methodologies in the process industry. By leveraging waste materials, advancing green chemistry, and optimizing water treatment processes, the research presented on this special topic sets a benchmark for sustainable industrial practices. We look forward to practically implementing these findings, driving progress in environmental stewardship and industrial efficiency.

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