Special Issue

Supercritical Fluid Extraction of Natural Products

Message from the Guest Editors

In many conventional extraction processes, large amounts of organic solvents are required to recover bioactive compounds from plants, algae, and other natural sources. These solvents not only increase production costs but also raise environmental concerns and health risks due to their toxicity, flammability, and disposal issues. At the same time, growing demand for natural compounds in pharmaceuticals, nutraceuticals, cosmetics, and food products calls for more sustainable and efficient extraction technologies. Supercritical fluid extraction (SFE), particularly with carbon dioxide, has emerged as a clean and versatile alternative. Operating above the critical temperature and pressure, supercritical fluids combine gas-like diffusivity with liquid-like solvating power. This unique behavior allows selective, rapid, and high-yield recovery of target compounds without the need for harmful solvents. Moreover, the mild operating conditions of CO_2-based SFE help preserve the structural integrity and bioactivity of sensitive natural products, while offering easy solvent removal and potential for process scale-up.

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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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