

Special Issue

Bioactive Compounds Encapsulation System: Design and Applications

Message from the Guest Editors

Despite the immense clinical potential of bioactive compounds such as hydrophobic polyphenols and flavonoids, these substances face critical challenges that hinder their clinical translation. Their intrinsic low water solubility, poor gastrointestinal absorption, chemical instability under physiological conditions (e.g., pH variations, enzymatic degradation), and rapid systemic clearance drastically reduce their bioavailability and efficacy. By leveraging advanced carrier systems—such as **micelles, polymeric nanoparticles, liposomes, hydrogels, biodegradable microspheres, and solid-lipid nanoparticles (SLNs)**—researchers can stabilize hydrophobic bioactive compounds, enhance their solubility, and protect them from premature degradation. This Special Issue seeks to highlight cutting-edge advancements in the design, characterization, and application of encapsulation systems for bioactive compounds. We invite contributions that bridge interdisciplinary research, from material science and nanotechnology to pharmacology and food engineering, to unlock the full potential of these bioactive agents.

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Deadline for manuscript submissions

30 November 2025



Molecules

an Open Access Journal
by MDPI

Impact Factor 4.6
CiteScore 8.6
Indexed in PubMed



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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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