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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As the premier open access journal dedicated to experimental organic chemistry, and now in its 25th 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 multidisciplinary topics bridging biochemistry, biophysics and materials science, as well as timely reviews and topical issues on cutting edge fields in all these areas.

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