

Editorial

Journal of OptoChem: Illuminating Innovations in Photochemistry

Zhong-Ning Chen

State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350100, China; czn@fjirsm.ac.cn

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It is with great enthusiasm that I introduce the *Journal of OptoChem* (*JO*), a premier peer-reviewed platform dedicated to advancing the frontiers of photochemistry. In an era where light-driven innovations are transforming fields ranging from renewable energy and environmental sustainability to biomedical engineering, *JO* emerges as a global forum for disseminating cutting-edge research, fostering interdisciplinary dialogue, and accelerating the translation of fundamental discoveries into real-world solutions.

Journal of OptoChem is committed to publishing high-impact, rigorously peer-reviewed research that explores the intricate interplay of light and matter. As a gold open-access journal, we prioritize the democratization of knowledge, ensuring that groundbreaking work is freely accessible to researchers, educators, and industry professionals worldwide. By removing barriers to access, *JO* aims to catalyze collaboration and inspire the next generation of photochemists. Our vision is to bridge fundamental discoveries with real-world applications, emphasizing innovation, sustainability, and mechanistic understanding.

Photochemistry is inherently an interdisciplinary field, bridging chemistry, physics, materials science, and biology. Reflecting this diversity, *JO* welcomes submissions spanning theoretical, experimental, and applied studies. The scope of *JO* encompasses topics related to:

- **Fundamental photochemical mechanisms**, including light-induced reactions, energy transfer processes, and excited-state dynamics.
- **Innovative materials**, such as photoresponsive compounds and polymers, MOFs/COFs, and stimuli-responsive luminescent systems for optoelectronics, sensing, and smart applications.
- **Sustainable technologies**, from photocatalytic systems for clean energy and environmental remediation to photodynamic therapies and bioimaging tools.
- **Computational breakthroughs** that unravel photochemical pathways or predict novel photoactive materials.

The emergence of ultrafast spectroscopy, advanced computational methods, AI-driven photochemical design, etc. has driven significant advancements in the field of photochemistry in recent years. These tools have enabled researchers to study light-induced processes at unprecedented temporal and spatial resolutions. Key areas of focus include energy conversion, photocatalysis, photodynamic therapy, light-responsive material, etc. There is a growing emphasis on understanding ultrafast photophysical and photochemical processes such as electron transfer and energy relaxation using femtosecond and attosecond spectroscopy. Researchers are increasingly studying photovoltaic materials and artificial photosynthesis to uncover strategies for improving the efficiency of solar energy harvesting and storage. The development of efficient photocatalysts for environmental remediation and sustainable chemical synthesis is a trending research topic. Smart materials that respond to light, such as photochromic and photoactive polymers, are increasingly applied in optoelectronics and biomedicine. Investigations into quantum coherence and entanglement in photochemical processes have opened new avenues in the field of quantum information science and technology.

The challenges of our time such as climate change, energy transitions, and precision medicine demand innovative solutions rooted in photochemical science. Whether you are elucidating the mechanisms of photophysical and photochemical processes, engineering sunlight-driven catalysts, or developing light-activated therapeutics, *JO* invites you to share your insights. We particularly encourage interdisciplinary contributions that



transcend traditional boundaries, including emerging topics like AI-driven photochemical design and green phototechnology.

As *JO* grows, we aim to curate special issues on frontier topics such as AI-guided photochemical design, photochemical application in energy, environment and medicine, and ultrafast spectroscopy advancements. Our editorial board is committed to upholding the highest ethical standards while fostering the development of early-career researchers and underrepresented voices in science. We encourage submissions in variety of formats, including full-length articles, concise communications, critical reviews, perspectives, and commentaries, to facilitate a dynamic and interdisciplinary exchange of ideas.

Whether you are unraveling the intricacies of light-matter interactions or engineering novel photoactive materials, *JO* invites you to share your breakthroughs. Together, let us illuminate the path toward scientific discovery and technological innovation.

Conflicts of Interest

The authors declare no conflict of interest.