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Editorial

Preface

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I am very happy to present the first issue of *Photocatalysis*, a new journal on this highly active research area that has the ambition to contribute to the development of the field and to serve the scientific community. "Why a new journal?" is always a question that deserves to be addressed when launching a new project. The answer is simple and is to contribute to disseminating the results in our specific domain. It is true that there are general, high-impact journals that publish regularly research in photocatalysis. But it is also a common experience that very good research and rigorous studies in the field are frequently not accepted in these journals, in which the editors are not well versed in the field and do not immediately grasp the novelty and interest of some contributions in the area of photocatalysis. Being a researcher in the field for over 30 years, I can ensure that this will not be the case of *Photocatalysis* that will always value innovative concepts and original approaches in the area. I also want to ensure that *Photocatalysis* will not be a *predatory* journal and the only criterion to publish will be the scientific aspects of the submission and quality and high scientific standards will be the only aspects that will matter for publication in our journal. No pressure on researchers will be made.

The first issue has contributions of well-renowned and reputed practitioners in photocatalysis. The breadth of photocatalysis and the variety of topics that are covered by the journal (please, refer to the *Aims & Scope* of the journal in the guidelines) can be already seen in the first issue. Thus, preparative photocatalysis targeting the synthesis of organic compounds is the subject of the contribution of Prof. Li. There, a tandem reaction comprising the photocatalytic oxidation of aromatic alcohols to carbonyl compounds that condense with diamines is developed for the synthesis of benzimidazoles, reaching a yield over 90% for the synthesis of 2-phenyl benzimidazole. One novelty is the use of visible light and the optimization of the photocatalyst for the process.

Prof. Shalom also uses visible light from an LED and an easy-to-scale metal-free carbon nitride to promote the biphasic (cyclohexane-acidified aqueous phase) oxidation of cyclohexane into mixtures of cyclohexanol and cyclohexanone, the proportion of which can be controlled by the nature of the acid present in the aqueous phase. The biphasic nature of the system and the use of immobilized CN films, allows an easy product separation while the presence of acid increases photocatalytic performance.

Prof. Niu describes an elegant synthesis of TiO_2-based photocatalyst resulting in single crystal Fe-doped TiO_2 anatase. The authors were using FeF_3 in the synthesis of TiO_2, FeF_3 providing simultaneously F^- anions responsible for the preferential 001 facet growth and a Fe^{3+} cations leading to TiO_2 doping. A notable influence of the level of Fe doping on the structure of the TiO_2 phase and on its ability to generate hydroxyl radicals, monitored by terephthalic acid fluorescence, was observed.

In their contribution, Dr. Mateo and Prof. Gascon report that a K-promoted Ru/CeO_2 photocatalyst is able to promote through a photothermal reaction N_2 hydrogenation to NH_3 and NH_3 decomposition. Photothermal reactions or light-assisted thermal reactions have attracted much interest due to their favorable, milder conditions and better productivity compared to purely thermal or ambient temperature photocatalytic reactions. In addition, the topic of NH_3 as hydrogen carrier is highly timely in the context of the storage and use of hydrogen in transportation.

The solar light energy conversion is also the subject of the last contribution by Garcia-Baldovi that proposes alternative photocatalytic reactions based on a single electron transfer process to store solar light. Due to the reaction simplicity, very high apparent quantum yield efficiencies higher than 10% can be easily reached using metal-organic frameworks as photocatalysts.

I hope that a wide range of researchers will find these contributions of interest and will find inspiring directions for new studies in preparation of organic compounds, in the control of the properties and performance of photocatalysts or in the development of new reactions of interest in solar light harvesting and energy storage. While it is time to celebrate the first issue and the successful launch of Photocatalysis, we invite researchers and scholars to contribute with their creative studies to the next issues so the field can benefit from this forum to publish and disseminate their results.

Conflicts of Interest

The author declares no conflict of interest.

Use of AI and AI-Assisted Technologies

No AI tools were utilized for this paper.