Review Form 3

Journal Name:	**Asian Journal of Chemical Sciences**
Manuscript Number:	**Ms_AJOCS_125471**
Title of the Manuscript:	**Modified titanium dioxide nanoparticles for photocatalytic splitting of water and alternative application in environmental remediation**
Type of the Article	**Review Article**

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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	The manuscript on modified titanium dioxide nanoparticles for photocatalytic splitting of water and environmental remediation is significant for the scientific community as it addresses pressing global challenges related to sustainable energy and environmental pollution. By reviewing the mechanisms and applications of titanium dioxide (TiO2) as a photocatalyst, the manuscript provides valuable insights into enhancing hydrogen production and pollutant degradation, which are crucial for advancing renewable energy technologies and environmental cleanup efforts.I appreciate this manuscript for its comprehensive exploration of TiO2's structural properties, bandgap engineering, and surface modifications, which are essential for improving photocatalytic efficiency. The detailed discussion on doping strategies to optimize TiO2's performance not only highlights innovative approaches but also encourages further research in this field. **The manuscript could be strengthened by including more examples of real-world applications of TiO2 in photocatalytic processes. This would provide context and demonstrate the practical implications of the research findings.**	
Is the title of the article suitable? (If not please suggest an alternative title)	The title of the article, "Modified titanium dioxide nanoparticles for photocatalytic splitting of water and alternative application in environmental remediation," is suitable as it accurately reflects the core themes of the manuscript.	----------
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract of the article provides a solid overview of the key themes, but it could benefit from some adjustments to enhance clarity and comprehensiveness. Here are my suggestions: 1. **Introduction of Context**: While the abstract mentions TiO2's applications, it could start with a brief statement about the significance of hydrogen production and environmental remediation in the context of global energy challenges. This would provide a clearer rationale for the review. 2. **Clarification of Key Concepts**: The mention of "water or sacrificial agents" is somewhat vague. It would be helpful to briefly define what sacrificial agents are and their role in enhancing hydrogen production. **Abstract Clarity: The abstract should provide a clearer introduction to the significance of TiO2 in addressing global energy challenges. Consider revising the first sentence to include context about the importance of hydrogen production and environmental remediation. Suggested Revision: "This review discusses the significance of Titanium dioxide (TiO2) nanoparticles in addressing global energy challenges through photocatalytic splitting of water for hydrogen generation and removal of pollutants**	
Are subsections and structure of the manuscript appropriate?	**yes**	----------
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	The manuscript on modified titanium dioxide nanoparticles demonstrates scientific robustness and technical soundness through its comprehensive review of photocatalytic processes and the mechanisms involved in hydrogen production. The authors provide a thorough analysis of titanium dioxide's properties, including its stability, affordability, and non-toxicity, which are essential for sustainable energy applications. Additionally, the manuscript effectively discusses various methods for enhancing TiO2's photocatalytic efficiency, such as doping with metals and non-metals, which are well-supported by relevant literature and experimental findings.Furthermore, the manuscript includes detailed equations and mechanisms that illustrate the fundamental principles of photocatalysis, reinforcing its scientific accuracy. The extensive references to recent studies and the inclusion of	----------

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	figures and tables enhance the credibility of the findings presented. Overall, the manuscript is scientifically sound, as it integrates theoretical knowledge with practical applications, making it a valuable contribution to the field of photocatalytic research.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	The references in the manuscript on modified titanium dioxide nanoparticles appear to be a mix of foundational studies and recent advancements in the field. However, to assess their sufficiency and recency accurately, a thorough review of the reference list is necessary, which isn't provided in the search results.	----------
Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The language and English quality of the manuscript on modified titanium dioxide nanoparticles require some improvements to meet scholarly communication standards. For example, phrases like "the efficiency of the photocatalyst can be improved by water or sacrificial agents that act as electron donors thus hydrogen production" should be restructured for clarity. **Suggested Revision**: "The efficiency of the photocatalyst can be improved by using water or sacrificial agents as electron donors, thereby enhancing hydrogen production." Breaking long sentences into shorter ones can improve readability.	
Optional/General comments	Suggested Addition: "This review highlights innovative doping strategies and structural modifications that significantly enhance TiO2's photocatalytic efficiency."	----------

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**B. B. V. Sailaja**
Department, University & Country	**Andhra University, India**