

### ReviewForm3

Manuscript No.: Ms\_CSIJ\_127621

JournalName:	<a href="#">ChemicalScience InternationalJournal</a>
ManuscriptNumber:	Ms_CSIJ_127621
Title oftheManuscript:	A mixture oftitaniferous sand and zincoxidefortheremovalofmethyleneblue byphotodegradation:Optimization using Box-Behnken Design (BBD)
Type ofthe Article	

#### PART1: ReviewComments

<b>Compulsory</b> REVISION comments	<b>Reviewer's comment</b>	<b>Author's Feedback</b> (Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<b>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.</b>	This manuscript is significant for the scientific community as it explores a novel approach to enhancing photocatalytic efficiency by utilizing an industrial residue, titaniferous sand, in combination with ZnO. It demonstrates a well-optimized process for methylene blue degradation, which is a critical step in wastewater treatment. The use of Response Surface Methodology and the Langmuir-Hinshelwood model provides a robust framework for understanding and improving photocatalytic processes. The study not only contributes to sustainable waste management but also addresses environmental challenges, making it highly relevant to researchers and practitioners in the field of environmental chemistry and materials science.	
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>	The suitability of the title depends on how well it reflects the core focus and findings of the manuscript. If the current title is not specific enough or of using titaniferous sand and its role in photocatalysis, a more precise alternative could be: "Optimized Photocatalytic Degradation of Methylene Blue Using Titaniferous Sand/ZnO Composite: A Sustainable Approach to Wastewater Treatment". This title emphasizes the key aspects of the study, including the use of a novel composite material, optimization, and environmental relevance.	
<b>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.</b>	The abstract provides a comprehensive overview of the study, including the objective, methodology, key findings, and conclusions. However, a few suggestions could enhance its clarity and impact: 1. Simplify technical details: The abstract includes highly specific values (e.g., "1.51057 ratio" and "479.765 minutes") that may not be necessary at this stage. Simplifying these values to approximate figures could improve readability. 2. Focus on practical implications: Briefly discuss the potential real-world applications of the findings, such as their relevance to industrial wastewater treatment. 3. Avoid redundancy: The repetition of statistical terms (e.g., p-values, R <sup>2</sup> ) could be reduced to streamline the content.	
<b>Are subsections and structure of the manuscript appropriate?</b>	If these structural elements are already in place, the manuscript's organization is likely appropriate. If not, incorporating these suggestions could improve readability and coherence.	
<b>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.</b>	This manuscript demonstrates scientific robustness through the rigorous application of Response Surface Methodology (RSM) and Box-Behnken Design to optimize key photocatalytic parameters, such as the titaniferous sand/ZnO ratio, pH, and irradiation time. The experimental methodology is well-designed, and the statistical analysis, including ANOVA, supports the validity of the results. Additionally, the use of the Langmuir-Hinshelwood model to describe the degradation kinetics is scientifically sound and widely recognized in photocatalysis studies. The thorough optimization process and the reproducibility of the results indicate that the manuscript is technically sound and contributes valuable insights into sustainable wastewater treatment.	

**ReviewForm3**

<p><b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b></p>	<p>Based on the provided information, it appears that the manuscript includes references that are relevant to the study, but the sufficiency and recency of these references would depend on the depth and breadth of the literature reviewed.</p>	
---	--	--

**ReviewForm3**

<p><u>Minor</u>REVISIONcomments</p> <p><b>Is the language/English quality of the article suitable for scholarly communications?</b></p>	<p>Overall, the manuscript seems to be written at a level suitable for publication in scientific journals, but polishing the language for clarity and coherence would further enhance its quality.</p>	
<p><u>Optional/General</u>comments</p>	<p>The authors have reported a research manuscript titled as “<b>A mixture of titaniferous sand and zinc dioxide for the removal of methylene blue by photodegradation: Optimization using Box-Behnken Design (BBD)</b>”. The present article is well organized, but it still needs significant editing before its acceptance. The author must respond to the following comments and make required corrections:</p> <ol style="list-style-type: none"> <li>1. Improve language and check grammatical errors in the whole manuscript.</li> <li>2. Authors should provide pertinent literature outlining the relevance of the present study. Authors may take help/cite recent research papers on nanoparticles published by various researchers to make the literature-rich: <a href="https://doi.org/10.1016/j.matpr.2023.01.257">https://doi.org/10.1016/j.matpr.2023.01.257</a> <a href="https://doi.org/10.1557/s43578-023-01274-5">https://doi.org/10.1557/s43578-023-01274-5</a> DOI 10.1088/2043-6262/ad50bb <a href="https://doi.org/10.1007/s42247-024-00742-w">https://doi.org/10.1007/s42247-024-00742-w</a> <a href="https://doi.org/10.1016/j.scenv.2024.100160">https://doi.org/10.1016/j.scenv.2024.100160</a> DOI 10.1088/1402-4896/ad7329</li> <li>3. Could you provide detailed information about the specific chemicals used in your study, as mentioned in section 2.1, and explain their roles in the experiments?</li> <li>4. The equations are appropriately presented according to the journal guidelines.</li> <li>5. Is Table 3-4 properly presented, and have recent references been appropriately added?</li> <li>7. What is the scientific rationale behind selecting methylene blue as the target pollutant for photocatalytic degradation?</li> <li>8. Could you explain the significance of optimizing the titaniferous sand/ZnO ratio for maximum photocatalytic performance?</li> <li>9. Why was the Box-Behnken Design (BBD) in Response Surface Methodology (RSM) chosen as the optimization approach in this study?</li> <li>10. How were the initial concentrations of methyl blue (25 mg/L) and the semiconductor mixture (10 g/L) determined?</li> <li>11. What is the practical implication of the ANOVA results, particularly the significant effects of the titaniferous sand/ZnO ratio and irradiation time on degradation efficiency?</li> <li>12. The quadratic polynomial model achieved an R<sup>2</sup> value of 0.9921. Could you discuss the reliability of this model and its applicability in real-world scenarios?</li> <li>13. How do the optimal conditions (66% titaniferous sand, pH 9.97487, and 479.765 minutes) compare to conditions used in previous studies?</li> <li>14. Can you elaborate on how the Langmuir-Hinshelwood model supports the kinetic analysis of the photocatalytic degradation of methylene blue?</li> <li>15. What are the limitations of this study, and how might they affect the scalability of this photocatalytic approach for industrial wastewater treatment? What future research directions or experiments do you propose based on your findings? How could these compounds be further developed or tested?</li> </ol>	

**PART 2:**

	<p><b>Reviewer’s comment</b></p>	<p><b>Author’s comment</b> (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)</p>
<p><b>Are there ethical issues in this manuscript?</b></p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

### ReviewForm3

**Reviewer Details:**

Name:	<b>Pankaj Kumar</b>
Department, University & Country	<b>Career Point University, India</b>