**Review Form 3**

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| Journal Name: | Chemical Science International Journal |
| Manuscript Number: | Ms\_CSIJ\_142728 |
| Title of the Manuscript: | Influence of Calcination Temperature on the Physicochemical Properties of Limestone from the Aktau Deposit |
| Type of the Article | Original Research Article |

**PART 1: Comments**

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|  | **Reviewer’s comment**  **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer**  **review.** | **Author’s Feedback (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. A  minimum of 3-4 sentences may be required for this  part. | New material research from new resources | The manuscript shows how the calcination temperature changes the properties of limestone from the Aktau deposit. This is important because such studies help to better understand the processes of decomposition and hydration of carbonate materials, which are widely used in construction and chemical industries. The results also demonstrate the potential of a regional raw material that can be considered as an alternative source for industrial applications. Thus, the research gives both scientific value and practical relevance. |
| Is the title of the article suitable?  (If not please suggest an alternative title) | Yes | Yes, the title is suitable as it clearly reflects the content and the main focus of the study. If needed, it can also be shortened to “Effect of Calcination Temperature on Physicochemical Properties of Aktau Limestone,” but the current form is already accurate and appropriate. |
| 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. | Can proceed | The abstract is comprehensive and reflects the main objectives, methods, and results of the study. It can proceed as it is, with only minor wording improvements for clarity. No additions or deletions are required. |
| Is the manuscript scientifically, correct? Please write  here. | Yes | Yes, the manuscript is scientifically correct. The experiments were carried out using standard methods, and the results are consistent with established knowledge of limestone calcination. The data support the conclusions, and the methodology provides a reliable basis for reproducibility. |
| Are the references sufficient and recent? If you have  suggestions of additional references, please mention  them in the review form. | Yes | Yes, the references are sufficient and include both classical and recent works related to calcination and physicochemical characterization of limestone. Minor corrections were made to bibliographic details, and the list adequately supports the study. |
| Is the language/English quality of the article suitable  for scholarly communications? | Yes | Yes, the English quality of the article is suitable for scholarly communication. Minor wording adjustments were made to improve clarity and consistency, but the overall language is clear and appropriate for publication. |
| Optional/General comments | Strengths  **·** Comprehensive experimental design across multiple temperatures  **·** Effective use of SEM and IR to correlate structure with reactivity  **·** Valuable regional mineral characterization with industrial relevance  Areas for Improvement  1. Quantitative Modeling: Include kinetic modeling or activation energy analysis to enhance  scientific depth.  2. Comparative Benchmarking: Compare Aktau limestone with other global deposits to  contextualize performance.  3. Statistical Analysis: Provide error margins or replicate data to strengthen reliability.  4. Language &amp; Style: Minor improvements in technical phrasing and figure captions would aid  clarity.  A good finding on an alternative source for mineral resources can be accepted after minor review  Recommendation  Accept with minor revisions. | We sincerely thank the reviewer for the positive evaluation of our work and for highlighting the strengths of the study. We agree with the suggested areas for improvement. In the revised version, we will (i) add a brief kinetic interpretation to strengthen the scientific depth, (ii) include comparative remarks with other reported limestones for better context, (iii) provide replicate data with error margins where applicable, and (iv) improve the technical phrasing and figure captions for clarity. We appreciate the recommendation for acceptance with minor revisions. |

**PART 2:**

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|  | **Reviewer’s comment** | **Author’s Feedback (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) | There are no ethical issues in this manuscript. The study does not involve human or animal subjects, and all experiments were carried out according to standard laboratory procedures. The data are original and reported with due care. |