Review Form 3

Journal Name:	**Advances in Research**
Manuscript Number:	**Ms_AIR_126248**
Title of the Manuscript:	**PERFORMANCE EVALUATION OF DELONIX REGIA SAWDUST AS CEMENT RETARDER IN OIL AND GAS WELL**
Type of the Article	**Original Research 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.		
Is the title of the article suitable? **(If not please suggest an alternative title)**		
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.		
Are subsections and structure of the manuscript appropriate?		
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.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**		

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	**Abstract** **Review:** The abstract effectively presents the problem of sawdust waste and its environmental implications, alongside the innovative approach of repurposing it as a chemical additive in cement slurry for the oil and gas industry. It succinctly outlines the study's objectives, methodology, and key findings, making it clear and informative. **Comments:** 1. **Clarity and Structure**: The abstract is well-structured, but it might benefit from clearer separation of the problem statement, method, results, and conclusion. Consider using subheadings or bullet points for clarity. 2. **Technical Specificity**: When mentioning "sodium lignin," it may be helpful to briefly define it, especially for readers unfamiliar with the material. 3. **Quantitative Results**: While you provide some specific results (e.g., thickening time), consider adding one or two quantitative outcomes related to compressive strength to give a fuller picture of the study's significance. 4. **Environmental Impact**: The abstract could emphasize the environmental benefits of using sawdust in cement slurry more strongly, perhaps by quantifying potential reductions in pollution or waste. **Introduction** **Review:** The introduction effectively sets the stage for the study by discussing the significance of cementing in the oil and gas industry and the environmental issues associated with sawdust. It provides a comprehensive background on sawdust's properties, the potential for its use as a retarder, and relevant previous studies. **Comments:** 1. **Flow and Coherence**: The introduction covers many points but could benefit from better transitions between sections. For instance, after discussing the environmental issues, smoothly transition into the potential applications of sawdust before delving into previous research. 2. **Focus on Local Context**: The statistics about Nigeria's sawdust production are compelling. You might want to link these statistics directly to the significance of your study earlier on, emphasizing the urgency and relevance of finding local solutions. 3. **Literature Review Integration**: The references to previous studies are useful; however, consider organizing them thematically or chronologically to enhance coherence. You could also include more recent studies to show the evolving research landscape. 4. **Research Gap**: Although the introduction mentions existing studies, it would be beneficial to more explicitly identify the gap your research addresses. This will clarify your study's novelty and significance. 5. **Definition of Terms**: Some technical terms (e.g., "zonal isolation") could be briefly defined for clarity, especially for readers who may not have a background in oil and gas operations. **2.0: Materials and Method**	

Overview:
The section provides a comprehensive account of the materials, methods, and testing procedures used in your study on the lignin extracted from Delonix regia sawdust and its application as a cement retarder. The methodology is generally well-structured and detailed, though some areas can be clarified or improved for better readability and comprehension.

Comments:

1. **Materials List**:
   - The list of materials and equipment is thorough. However, it would benefit from bullet points or a table format to enhance readability.
   - The mention of "Water" twice can be streamlined into one entry to avoid redundancy.
2. **Sample Sourcing and Preparation (2.1)**:
   - The section effectively details the preparation of sawdust but could specify the reason for selecting Delonix regia (e.g., availability, properties). This adds context to your study.
   - You mention boiling the sawdust but could clarify why this process is crucial for separating lignin from cellulose.
3. **Preparation of Lignin Liquor (2.2)**:
   - The procedure is generally clear, but it would help to explicitly state the purpose of each step, especially the pH adjustments. Why is a pH of 2 specifically targeted?
   - You might want to elaborate on how the drying process is determined to be complete, as this is vital for achieving the desired lignosulphate properties.
4. **Characterization of Lignin Liquor Sample (2.3)**:
   - Good detailing of characterization methods. However, consider briefly describing the significance of each method (e.g., what information XRD or FTIR provides about the lignosulphate).
   - The phrase "Ligno sulphate" should consistently be written as "Lignosulphate" to maintain uniformity.
5. **Preparation of Cement Slurry Sample (2.4)**:
   - This section is well-structured. However, explaining why the specific concentrations of sodium lignin (0.3% and 0.5% BWOC) were chosen would strengthen the rationale.
   - Clarifying the storage conditions of Class G cement further enhances understanding of how to maintain its properties.
6. **Evaluation of the Synthesized Cement Retarder (2.5)**:
   - The evaluation section is thorough and well-organized. It might be useful to briefly explain what "BWOC" stands for when it first appears, for clarity.
   - Each test description is informative, but consider adding a brief explanation of why each property (e.g., thickening time, rheology) is important for cement applications in the oil and gas industry.
7. **Testing Conditions (Tables 2.0 and 3.0)**:
   - Ensure that the tables are clearly referenced and visible in the text. Consider providing a brief overview of what information is contained within each table.
8. **Results and Discussion (Section 3)**:

	• The results section effectively communicates findings. However, linking results back to the initial hypotheses or objectives could enhance the flow and purpose of the discussion. • The conclusion effectively summarizes the implications of your findings. It might be helpful to emphasize how your results compare to existing studies or literature. 9. **Figures and Tables**: • Ensure all figures and tables are labeled clearly and referenced in the text. For example, when mentioning SEM images, make sure to guide the reader to specific figures for clarity. • Consider providing captions that describe what each figure/table conveys rather than just identifying it. 10. **General Comments**: • Overall, the writing is clear and well-structured, but minor grammatical errors and typos need addressing. Proofreading will enhance the professionalism of the document. • Consider revising for clarity and conciseness throughout, especially in longer sentences. **Conclusion:** The "Materials and Method" section provides a robust foundation for understanding your study. By implementing these suggested improvements, you can enhance clarity, context, and reader engagement, ultimately strengthening the presentation of your research.	

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)*	

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