Review Form 3

Journal Name:	**Chemical Science International Journal**
Manuscript Number:	**Ms_CSIJ_123518**
Title of the Manuscript:	**Performance Assessment of Biomass-derived Urea-Furfuraldehyde Resins as Oilfield Scale Inhibitors**
Type of the Article	**Original Research Article**

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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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	**Reviewer comments** Based on the evaluation and feedback, the research requires **major revisions**, rather than minor adjustments, to address key areas. However, the paper shows considerable promise, particularly in terms of sustainability and its potential application in the oil industry. This strength could greatly enhance its chances of acceptance following the suggested improvements. With the necessary revisions, there is a strong likelihood that the paper will be accepted for publication. 1. The abstract lacks specific quantitative details, such as the exact inhibition efficiencies of the bio-resins compared to the commercial scale inhibitor (CSI). Including key performance percentages would provide more clarity. 2. The abstract could better emphasize the broader impact and significance of the results, particularly how these bio-inhibitors could contribute to long-term sustainability in the oil industry. 3. A brief mention of the inhibition mechanism of the bio-resins would add value, explaining how they function as effective alternatives to traditional inhibitors. 4. Could you provide more clarification on the chemical mechanism through which the resins (ROF and ROFU) inhibit scale formation? For instance, how do the functional groups identified in the FTIR analysis contribute to the inhibition of calcium carbonate and calcium sulfate scales? 5. Is there an explanation for the decline in the efficacy of the bio-based inhibitors at higher temperatures compared to the commercial inhibitors? How can these bio-inhibitors be optimized for better performance in high-temperature environments commonly encountered in oilfield operations? 6. Given that the bio-inhibitors showed lower efficiency in inhibiting calcium carbonate compared to calcium sulfate, can you elaborate on potential methods to improve the efficacy against calcium carbonate? Have you considered modifying the resin composition or enhancing the chemical reaction process to increase the efficiency? 7. Could you provide a deeper analysis of the SEM images regarding the shape and size of the crystals before and after treatment with the inhibitors? How does the change in crystal size influence the overall inhibition performance? 8. Have you studied how the bio-inhibitors adsorb onto the surface of the scale crystals? Additional information on the adsorption mechanism could enhance the understanding of the overall performance. 9. Although the bio-inhibitors demonstrated encouraging results, could you further discuss how the challenges faced by the bio-inhibitors can be addressed when compared to commercial inhibitors? It might be helpful to suggest future improvements to make these bio-inhibitors more competitive.	

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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:	**Rasha Hosny**
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