



REVIEWER'S REPORT

Manuscript No.: IJAR- 56613

Title: Analysis of The Combined Adsorption-Microfiltration (AMFIL) Process for WWTP Effluent to Process Water.

Recommendation:

- Accept as it is
- Accept after minor revision**.....
- Accept after major revision
- Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: **ANAPANA GOPAL**

Reviewer's Comment for Publication.

1. General Comments

The manuscript investigates the reuse of wastewater treatment plant (WWTP) effluent from the seaweed processing industry as process water through a combined adsorption–microfiltration (AMFIL) treatment process. The study employs granular activated carbon (GAC) adsorption followed by microfiltration membranes to reduce turbidity, total dissolved solids (TDS), hardness, iron, and manganese concentrations. The topic is relevant to industrial wastewater reuse and sustainable water management, particularly for industries that consume large volumes of water such as seaweed processing plants. The concept of integrating adsorption and membrane filtration is well established in water treatment research and has practical relevance for reducing groundwater consumption.

However, the manuscript requires minor improvements in clarity, experimental design description, data presentation, and language quality. The results section lacks detailed analysis, several figures are not adequately explained, and the discussion of results is limited. Additionally, the manuscript contains numerous grammatical and formatting errors that reduce readability.

Overall, the study addresses an important environmental problem but requires significant revision before it can meet the standards of a scientific publication.

2. Content and Originality

The research focuses on combining granular activated carbon adsorption with microfiltration membranes to treat WWTP effluent for reuse as process water in the seaweed industry.

Strengths:

- The study addresses a relevant environmental challenge related to industrial water reuse.
- The concept of water recycling in industrial processes aligns with sustainability goals.

REVIEWER'S REPORT

- Using real WWTP effluent rather than synthetic wastewater increases the practical relevance of the research.

Limitations:

- The combination of adsorption and membrane filtration is not a novel concept, as similar hybrid systems have been widely studied.
- The manuscript does not clearly highlight what specific innovation or optimization the AMFIL process introduces.
- The novelty is limited mainly to its application in seaweed processing wastewater, which should be emphasized more clearly.

Therefore, the originality of the work is moderate, and the authors should better articulate the scientific contribution and novelty.

3. Technical Quality

The study presents a pilot-scale experimental setup involving an adsorption column and a microfiltration membrane system. However, several technical issues are observed.

Minor concerns:

1. **Experimental design is insufficiently detailed**
 - Operating conditions such as flow rate, hydraulic retention time, pressure, and membrane flux are not clearly described.
 - The influence of operational parameters is not systematically analyzed.
2. **Results presentation is weak**
 - Figures (2–5) are referenced but not clearly interpreted.
 - Data trends and statistical analysis are missing.
 - No error analysis or repeated trials are reported.
3. **Limited discussion of adsorption and filtration mechanisms**
 - The interaction between GAC adsorption and membrane filtration is not deeply analyzed.
 - Membrane fouling behavior is not discussed.
4. **Adsorption capacity calculation is poorly justified**
 - Only a single adsorption capacity value (0.352 mg g^{-1}) is reported without showing adsorption isotherms or breakthrough curves.
5. **Performance evaluation is incomplete**
 - Important parameters such as flux decline, pressure drop, or energy consumption are not discussed.

To improve technical quality, the authors should include more detailed experimental analysis, clearer data presentation, and deeper discussion of the treatment mechanisms.

4. Language and Presentation

The manuscript contains numerous grammatical errors, inconsistent formatting, and typographical mistakes.

Examples include:

- Missing spaces between words (e.g., “Theaims”, “removalefficiencies”).
- Incorrect grammar and sentence structure.
- Inconsistent capitalization and punctuation.
- Some sentences are overly long and difficult to understand.

Additional issues:

REVIEWER'S REPORT

- Some figures and tables are poorly labeled.
- Units and scientific notation are inconsistent.

The manuscript requires extensive language editing and proofreading to improve readability and professionalism.

5. Structure and Organization

The paper generally follows a standard research structure:

- Abstract
- Introduction
- Materials and Methods
- Results and Discussion
- Conclusion

However, several structural weaknesses exist:

1. **Results and discussion are not sufficiently integrated**
 - Data interpretation is minimal.
2. **Figures are not well explained**
 - Several figures appear without detailed descriptions in the text.
3. **Section formatting is inconsistent**
 - Some headings and numbering are unclear.
4. **Flow of the manuscript could be improved**
 - Some paragraphs in the introduction are overly long and repetitive.
5. **Conclusion section is too brief**
 - It mainly restates results without broader implications.

Improving the logical flow and expanding the discussion of results would strengthen the manuscript.

6. References and Citations

The manuscript includes references related to:

- adsorption processes
- membrane filtration technologies
- wastewater treatment

Positive aspects:

- Several relevant studies on adsorption and membrane technology are cited.
- Some references are recent and from reputable journals.

However, the references section has several problems:

- Citation style is inconsistent.
- Some references are incomplete or improperly formatted.
- The references do not sufficiently cover recent research on hybrid adsorption–membrane systems.
- In-text citation formatting is inconsistent.

The reference list should be revised and standardized according to journal guidelines.

7. Overall Recommendation

The manuscript addresses an important topic related to industrial wastewater reuse and sustainable water resource management. The proposed AMFIL process demonstrates potential for treating WWTP effluent for reuse in seaweed processing industries.

However, the current manuscript has several significant limitations:

REVIEWER'S REPORT

- limited novelty
- insufficient experimental detail
- weak data analysis
- poor language quality
- inadequate discussion of results

To improve the manuscript, the authors should:

1. Provide more detailed experimental procedures and operating conditions.
2. Include clearer data analysis and discussion of results.
3. Improve figure explanations and presentation of experimental data.
4. Revise the manuscript for grammar, formatting, and clarity.
5. Emphasize the novelty and contribution of the AMFIL process.

Final Decision

Minor Revision

The manuscript requires substantial revisions in technical depth, clarity, and presentation before it can be considered suitable for publication.