

REVIEWER'S REPORT

Manuscript No.: IJAR-59479

Title: Influence of Filter Morphology on Pyrolysis Mass Spectral Response.

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 ID: JP085

Reviewer's Comment for Publication.

The article investigates how the structure of sample collection filters affects pyrolysis mass-spectral responses. The researchers compared Type A, Type B, and modified filters using sucrose as a nonpathogenic biological simulant. Ten filters from each group were tested. The results showed that Type B and modified filters produced higher peak-height ratios and correct sample classification, while Type A filters showed repeated misidentification. The study suggests that filter structure can affect the performance of the detection system.

Strength:

1. The study addresses an important technical problem related to sample detection.
2. The objectives of the study are clearly explained.
3. Three types of filters are compared.
4. The experimental procedure and testing conditions are described in detail.
5. Tables and figures help explain the results.
6. Appropriate statistical tests are used to compare the groups.
7. The discussion explains the possible relationship between filter structure and spectral response.
8. The conclusion is consistent with the main findings.

Weakness:

1. Only ten filters were tested in each group, which limits the strength of the conclusions.
2. The study uses sucrose as a simulant; the findings should not be directly generalized to actual biological agents.
3. The proposed effect of filter morphology on heat transfer and pyrolysis products is not directly confirmed through experiments.
4. The method used to measure and compare simulant penetration into the filters is mainly qualitative.
5. The study does not clearly explain whether differences between filter manufacturing batches could affect the results.

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Overall assessment:

The article presents useful findings about the influence of filter morphology on pyrolysis mass-spectral response. The experimental methods and statistical analysis are described in detail, and the results show clear differences among the filter groups. However, the limited sample size, qualitative assessment of simulant distribution, and lack of direct confirmation of the proposed mechanism reduce the strength of the conclusions. Further clarification and additional validation would improve the manuscript.

Recommendation: Manuscript accepted for publication after major revision.