

Review of: "Flame Photometry: For the Determination of Alkali Metals in Commercially Sold Fireworks"

Shokhan M. Al-Barzinji¹

¹ University of Anbar, Iraq

Potential competing interests: No potential competing interests to declare.

Dear Editor...

The paper titled "Flame Photometry: For the Determination of Alkali Metals in Commercially Sold Fireworks" presents a method for analyzing alkali and alkaline earth metals in fireworks using flame photometry. Here are some strengths and weaknesses of the study:

1- Strengths: The study addresses a significant environmental concern regarding the use of alkali and alkaline earth metals in fireworks and their contribution to emissions, which is crucial for public health and safety.

The use of flame photometry for the precise determination of sodium and potassium provides a clear methodological framework. This technique is relatively straightforward and cost-effective, making it accessible for practical applications. The research includes key quantitative metrics such as the limit of detection (LOD) and the limit of quantification (LOQ), which are essential for evaluating the effectiveness of the analytical method.

The study considers the effects of different components in fireworks mixtures, providing insights into how these factors may influence the results, which adds depth to the analysis.

The paper indicates ongoing work to extend the analysis to additional metals (barium and lithium), suggesting a commitment to furthering the understanding of chemical components in fireworks.

2- Weaknesses: While the study mentions the higher emissions due to alkali metals in fireworks, it lacks a comprehensive analysis of the broader environmental and health impacts of these emissions. The reported average deviation of 7-8% for potassium and 3-4% for sodium might indicate variability in the method's precision, which could raise concerns about the reliability of results, especially at lower concentrations. Although the method claims to avoid homogeneity issues common in other techniques, there is limited discussion on how the samples were prepared and whether homogeneity was actually maintained in the fireworks samples analyzed.

While the study offers a valid method for determining alkali metals in fireworks, addressing these weaknesses could enhance its contributions to both scientific knowledge and practical applications in fireworks safety regulation.

