Review Form 2

Book Name:	**Scientific Research. New Technologies and Applications**
Manuscript Number:	**Ms_BPR_3475**
Title of the Manuscript:	**Buffer Standards for the Biochemical pH of the Zwitterionic Buffer N-Tris-(Hydroxymethyl) Methyl-2-Aminoethanesulfonic Acid (TES)from 5℃ to 55℃**
Type of the Article	**Book Chapter**

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 feedbackhere)*
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 of3-4 sentences may be required for this part.	**This manuscript is valuable for the scientific community as it addresses the establishment of pH buffer standards for TES, a zwitterionic buffer widely used in biochemical and physiological studies. Accurate pH buffering across a range of temperatures (5℃ to 55℃) is essential for experimental reproducibility, particularly in temperature-sensitive processes. By providing standardized pH values for TES, this studyenhances the reliability of results in fields such as enzymology, molecular biology, and cell culture. I appreciate this manuscript because it fills a critical gap in buffer standardization, aiding researchers in maintaining consistent experimental conditions, which is fundamental for scientific rigor and reprod ucibility.**	
Is the title of the article suitable? **(If not please suggest an alternative title)**	**The title looks clear and informative, providing key details about the study, including the buffer, its biochemical pH, and the temperature range. However, to make it even more concise and impactful,you might consider a slight modification:** **"Biochemical pH Buffer Standards of the Zwitterionic Buffer TES (N-Tris-(Hydroxymethyl) Methyl-2-Aminoethanesulfonic Acid) from 5℃ to 55℃"** **This version maintains the essential details while possibly making it easier to read. Otherwise, youroriginal title is also suitable.**	

Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in thissection? Please write your suggestions here.	**The abstract is generally comprehensive, but a few adjustments could make it even more informativeand reader-friendly. Here are my suggestions:** **1. Contextual Introduction: Start with a brief sentence on the importance of TES as a buffer in biochemical studies and why accurate pH measurements over a wide temperature range are needed.This will set the stage for the work's relevance.** **2. Clarify the Objective: Specify that the study's goal is to establish TES buffer solutions as secondarypH standards, which will support physiological and experimental applications.** **3. Methodology: The mention of the Debye-Hückel equation is helpful, but it might be beneficial toclarify briefly why it was used (e.g., "for more accurate pH adjustments across different ionic strengths and temperatures").** **4. Results Summary: Include a concise statement about the results, such as whether any significantvariations were observed in pH across the temperature range, and emphasize the physiological relevance of the pH range (7.2 to 7.5).** **5. Application: Ending with a note on how these findings could impact or improve practices inlaboratory and physiological pH measurements would highlight its scientific value.**	
Are subsections and structure of the manuscriptappropriate?	**The structure and subsections of the manuscript appear generally appropriate for a scientific publicationfocused on establishing buffer standards. However, to enhance readability and clarity, consider the following suggestions:**	

	1. Introduction: Ensure that it includes a brief background on the importance of TES buffer solutions andtheir applications across physiological temperature ranges. **2. Materials and Methods: Make sure this section is detailed, particularly the explanation of the Debye-Hückel equation application. Including subsections within methods for "Buffer Preparation," "pH Measurement Techniques," and "Temperature Variation Protocols" would improve organization.** **3. Results and Discussion: It might help to separate these into distinct sections if not already done, allowing readers to focus on findings and their implications independently.** **These adjustments would help reinforce the scientific rigor and improve the manuscript's usability forresearchers applying these pH standards in their own work.**	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think thatthis manuscript is scientifically robust and technicallysound? A minimum of 3-4 sentences may be required for this part.	**This manuscript appears scientifically robust and technically sound as it establishes precise pH values forTES buffer solutions across a range of physiological temperatures, which is crucial for experimental consistency in biochemical research. The methodology, using the extended Debye-Hückel equation, is appropriate for accurately accounting for ionic strength effects, ensuring that the buffer standards are reliable for physiological applications. The consideration of both NaCl-containing and NaCl-free solutionsreflects a comprehensive approach to understanding TES buffer behavior in various conditions. The findings provide a valuable reference for researchers, enhancing the reproducibility of experiments that require stable pH conditions at physiological temperatures.**	
Are the references sufficient and recent? If you havesuggestions of additional references, please mention them in the review form. **-**	**Yes**	

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Minor REVISION comments **Is the language/English quality of the article suitablefor scholarly communications?**	Yes	
Optional/General comments	The manuscript offers a valuable contribution by establishing TES buffer solutions as secondary pH standardsacross a physiologically relevant ionic strength and temperature range. This work is particularly useful for researchers in biochemistry, physiology, and related fields who require stable and reliable pH conditions to ensure experimental reproducibility. The study is well-designed, covering a broad temperature range and addressing liquid junction correction, which enhances the reliability of the pH measurements. However, a few areas could be improved. The abstract would benefit from a clearer statement of the study's objectives and broader significance. Additionally, providing more context in the introduction about the specificimportance of TES and the physiological relevance of the selected pH range would strengthen the manuscript. Including recent references on buffer standards and ionic strength adjustments would also be beneficial. Overall, the manuscript is technically sound and addresses an important gap in pH standardization, especially inphysiological conditions, but could be refined for clarity and completeness in its presentation and context.	

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:

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