Review Form 3

Journal Name:	**Physical Science International Journal**
Manuscript Number:	**Ms_PSIJ_123498**
Title of the Manuscript:	**Solid-State Battery Technology For Grid Stability and Energy Storage Applications**
Type of the Article	**Review Article**

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. authors must 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.	**This review has appreciated reading this manuscript as it provides useful information that addresses different issues faced in lithium batteries. The authors emphasize the contribution of electrode materials, their chemistry, and electrode/electrode contact in the battery design. At the same time, the review discusses the advantages of using SSBs as efficient and more reliable energy storage systems for higher sustainability compared with established technologies.**	
Is the title of the article suitable? (If not please suggest an alternative title)	**Yes, it is.** **However, I suggest the author use the lowercase letter for the word "for" instead of <For> in the 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.	**Yes. The authors' abstract is appropriate as all the points mentioned are discussed in the paper. However, the authors should correct typo errors in writing 'solid-state' instead of 'solid state'. In addition, the word towards should be 'toward'.**	
Are subsections and structure of the manuscript appropriate?	**Yes. However, the introduction section is concise and poor. The authors should provide more details. The reviewer recommends authors enrich their work and provide recent updates on electrode materials and electrolytes using more references. The reviewer recommends authors use and cite these recent research articles in the introduction to improve the quality of their manuscript.** **[1] Theodore Azemtsop Manfo, Abdullahi Abbas Adam, Pawan Singh Dhapola. Effect of Layered, Spinel, and Olivine-Based Positive Electrode Materials on Rechargeable Lithium-Ion Batteries: A Review. Journal of Computational Mechanics Power System and Control, 6(4):38-57, 2023. DOI: 10.46253/jcmps.v6i4.a4.** **[2] Theodore Azemtsop Manfo, Mustafa Ergin Şahin. Intercalation reaction in lithium-ion battery: effect on cell characteristics. International Journal of Materials Engineering and Technology, 6(2):70-78, 2023.** **[3] Theodore Azemtsop Manfo. Progress into lithium-ion battery research. Journal of Chemical Research 47(3):1-9,2023. DOI: 10.1177/17475198231183349** **[4] T. Azemtsop Manfo, A Comprehensive Analysis of Material Revolution to Evolution in Lithium-ion Battery Technology. Turk. J. Mater. 8(1) (2023) 1-13. 2. The authors are also requested to correct grammatical and vocabulary mistakes in this section.**	
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.	**The paper deals with the progress of battery energy storage technology from the primary to the latest batteries including SSBs and their electrode materials. The manuscript compares the different technologies to elucidate the impact of their electrode materials and electrolytes on the battery performance. The authors have also discussed the importance of designing suitable solid electrolytes with outstanding anode materials for SSBs.**	
Are the references sufficient and recent? If you have suggestions for additional references, please mention them in the review form. -	**The references are not sufficient. The reviewer has recommended authors as indicated above use and cite these additional recent articles in their revised manuscript:** **1. Theodore, A. M., Abbas, A. A., & Dhapola, P. S. (2023). Effect of Layered, Spinel, and Olivine-Based Positive Electrode Materials on Rechargeable Lithium-Ion Batteries: A Review. *JCMPS*, *6*, 38-57.** **2. Manfo, T. A., & Şahin, M. E. (2023). Intercalation reaction in lithium-ion battery: effect on cell**	

characteristics. The International Journal of Materials and Engineering Technology, 6(2), 70-78.

3. Theodore, A. M. (2023). Progress into lithium-ion battery research. *Journal of Chemical Research*, *47*(3), 17475198231183349.

4. Manfo, T. A. (2023). A Comprehensive Analysis of Material Revolution to Evolution in Lithium-ion Battery Technology. Turk. J. Mater. Vol, 8(1), 1-13.

5. Badi, N., Theodore, A. M., Alghamdi, S. A., Al-Aoh, H. A., Lakhouit, A., Singh, P. K., & Nath, G. (2022). The impact of polymer electrolyte properties on lithium-ion batteries. Polymers, 14(15), 3101.

6. Theodore, A. M. (2023). Promising Cathode Materials for Rechargeable Lithium-Ion Batteries: A Review. *J. Sustain. Energy*, *14*, 51-58.

7. Badi, N., Theodore, A. M., Roy, A., Alghamdi, S. A., Alzahrani, A. O. M., & Ignatiev, A. (2022). Preparation and Characterization of 3D Porous Silicon Anode Material for Lithium-Ion Battery Application. *International Journal of Electrochemical Science*, *17*(6), 22064.

8. Theodore, A. M. (2023). Structural, electrical, and electrochemical studies of the olivine LiMPO 4 (M= Fe, Co, Cr, Mn, V) as cathode materials for lithium-ion rechargeable batteries based on the intercalation principle. Materials Open Research, 2(11), 11.

9. Theodore, A. M., & Sahin, M. E. (2024). Modeling and Simulation of a Series and Parallel Battery Pack Model in MATLAB/Simulink. Turkish Journal of Electrical Power and Energy Systems, 4(1), 2-13.

10. Manfo, T. A., & Şahin, M. E. (2024). Development of an Automatic Photovoltaic Cell-Battery Powered Water Irrigation System Incorporated with Arduino Software for Agricultural Activities. Gazi Mühendislik Bilimleri Dergisi, (Erken Görünüm), 1-1.

11. Azemtsop Manfo, T. (2023). Development and Characterization of a New Solid Polymer Electrolyte for Supercapacitor Device. *International Journal of Electrochemistry*, *2023*(1), 4825624.

12. Azemtsop, T. M. (2023). Optical, vibrational, electrical, and electrochemical studies of new plasticized methylcellulose□based solid polymer electrolytes for supercapacitor application. Electrochemical Science Advances, e2300018.

13. Manfo, A. T., Singh, P. K., Mehra, R. M., Singh, R. C., & Gupta, M. (2021). Structural, vibrational, electrical, electrochemical, and capacitive investigations on ionic liquid doped P (VDF-HFP) + NaSCN-based polymer electrolytes. Recent Innovations in Chemical Engineering (Formerly Recent Patents on Chemical Engineering), 14(1), 21-34.

14. Azemtsop, M. T., Mehra, R. M., Kumar, Y., & Gupta, M. (2023). Physical Characterization of Ionic Liquid-Modified Polyvinyl Alcohol and Sodium Thiocyanate Polymer Electrolytes for Electrochemical Double-Layer Capacitor Application. Journal of Shanghai Jiaotong University (Science), 28(2), 161-171.

15. Badi, N., Theodore, A. M., Alghamdi, S. A., Al-Aoh, H. A., Lakhouit, A., Roy, A. S., & Ignatiev, A. (2022). Fabrication and characterization of flexible solid polymer electrolytes for supercapacitor application. Polymers, 14(18), 3837.

16. Manfo, T. A. (2024). Materials and components used for supercapacitors. In Advanced Ceramic Coatings for Energy Applications (pp. 39-56). Elsevier.

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	**Yes, the English quality used is good for scholarly communication, but the reviewer found many grammatical and vocabulary mistakes and corrected them as shown (in red) in the new manuscript)**	
Optional/General comments	**The manuscript contains a significant contribution to the field of battery energy storage as REVIEW but needs more references and thorough checking in.**	

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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