

Peer Review

Review of: "A Brief Review of the Optoelectronic Properties of Delafossite Materials for Solar Cell Applications"

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The work "A Brief Review of the Optoelectronic Properties of Delafossite Materials for Solar Cell Applications" sounds not great at this stage. However, major changes are required before further consideration, which are

1. More information should be included in the abstract, which should also properly balance the idea of the entire paper.
2. The introduction does not highlight the work's novelty. Why did the authors select Delafossite materials? Authors are suggested to include a separate paragraph discussing the novelty and importance of the present work.
3. Authors should define the stability of Delafossite materials. The stability justification requires a phonon dispersion curve. Authors can reference the following sources (10.1016/j.heliyon.2023.e19271, 10.1016/j.jallcom.2024.174097) for further clarification.
4. A table is needed to compare this work with previous literature references on Delafossite along with perovskite materials. In addition, the corresponding references are not provided. This makes the article lack scientific rigor. Explain in brief how the present work differs from the published ones. Suggested literatures (10.1039/D3RA06137J, 10.1021/acsomega.3c08285).
5. Justification and related references are needed for selecting cut-off energy and convergence threshold values.
6. There is no discussion on the charge density of Delafossite materials. Calculate and add charge density curves in electronic properties. The authors should read and cite the following papers for this (10.1364/OPTCON.495816, 10.12688/f1000research.137044.1).

7. How will this material behave after applying the spin-orbital coupling (SOC) effect? It is very important for electronic properties. Address the SOC effect for electronic and optical properties. Suggested literatures (10.1088/1402-4896/acfce9, 10.1016/j.jssc.2023.124341).
8. There are no experimental justifications. What is the difference between the calculated results and the experimental values?
9. The quantitative discussion of the quantities raises the scientific value of this work, and it can be influential on the presented results. Please give more discussion and explanations on optical properties.
10. The literature review section should begin with a few recent, pertinent, high-impact papers that summarize the main conclusions of the research. The current version only discussed general aspects, while the review of each from several papers is necessary. I suggest adding more references and more explanation to support the justification.

DOI: 10.1016/j.jpccs.2023.111791; 10.1007/s12648-023-03043-w;

10.1016/j.cjph.2024.01.011; 10.1021/acs.energyfuels.4c00525;

10.1016/j.jpccs.2024.112029; 10.1016/j.jpccs.2024.112053;

10.1016/j.mssp.2024.108580; 10.1016/j.mseb.2024.117559;

1. The complete input data table for calculating solar cell applications is missing.
2. Make the conclusion part better by addressing all of the computed results and the work's limitations.

The English writing language should be carefully studied and grammatically taken into account.

Declarations

Potential competing interests: No potential competing interests to declare.