

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Patrick Aggrey

PhD Program: Materials Science and Engineering

Title of Thesis: Nanoscale phase separation and transformations in the silicon-oxygen and related systems

Supervisor: Professor Alexander Korsunsky

Co-supervisor: Alexey Salimon, Senior Research Engineer

Name of the Reviewer:

I confirm the absence of any conflict of interest (Alternatively, Reviewer can formulate a possible conflict)	26-05-2023 Date: DD-MM-YYYY
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The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

1. This doctoral thesis focuses on the preparation of silicon-based nanomaterials for functional applications. The content of this thesis is well-organized and well-written.
2. The topic and content of the dissertation work are relevant.
3. The methodology presented in the dissertation is very relevant.
4. The research results of this thesis have certain scientific significance, especially for the design and synthesis of silicon-based nanomaterials. I think the results presented in the thesis are domestic advanced, and close to the current international state of the art.
5. The obtained results can meet the requirements of the applications.
6. The author has published four first-author scientific papers related to this thesis. The quality of published papers is relatively good.
7. The author should check and revise the manuscript carefully. Page 38, Line 1: "Fig 4" should be "Figure 4". Page 56, Figure 8: b and c do not have ")". The figures in the thesis should be presented properly, not be stretched, such as Figures 5, 7, 14, 32.
8. The nano/microstructures of silicon affect their light absorption. Do these nano/microstructures of silicon influence their band structures?

Provisional Recommendation

I recommend that the candidate should defend the thesis by means of a formal thesis defense

I recommend that the candidate should defend the thesis by means of a formal thesis defense only after appropriate changes would be introduced in candidate's thesis according to the recommendations of the present report

The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense