Skoltech
Skolkovo Institute of Science and Technology

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Konstantin Makarenko

PhD Program: Mathematics and Mechanics

Title of Thesis: Microstructural, mechanical, and thermal properties evaluation of functionally graded Fe-Cu structures after direct energy deposition

Supervisor: Associate Professor Igor Shishkovsky

Name of the Reviewer:

I confirm the absence of any conflict of interest	**Date: 03-10-2023**

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

The submitted PhD thesis is very well written and structured. The detailed research work is very extensive and covers all important points of view of the proposed contributions. The topics covered are all relevant to the research topic. The methods used in the research work and presented in the document correspond to the state of the art and are carefully explained from multiple perspectives.

The scientific significance of the study of Functional Graded Materials composed of Fe-Cu manufactured by additive manufacturing are very important particularly for aerospace applications. The results of this research work could therefore be of great value in the near future.

The quality of publications is excellent.

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*