

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Yuliya Kan

PhD Program: Materials Science and Engineering

Title of Thesis: Development of core-shell fiber composite based on polyvinyl alcohol modified with graphene oxide and silica for biomedical applications

Supervisor: Professor Alexander Korsunsky

Name of the Reviewer:

I confirm the absence of any conflict of interest	
Signature	Date: 19-12-2022

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

1. Brief evaluation of the thesis quality and overall structure of the dissertation
Thesis work of Mrs. Yuliya Kan focused on the study of electrospun core-shell composites that ranges from the fabrication finding optimal parameters to fiber production and the further study of the physical and chemical properties with some particular attention to the effect of compound on the drug loading functionality. The structure of thesis was generally concise and followed the logic, some minor revisions are required to improve the delivery of study and flowing in its reading. The introduction could indicate more clearly the importance of hydrophilic polymers underpinning main aim of treatment the wounds.
2. The relevance of the topic of dissertation work to its actual content
The thesis is thoroughly tied with actual directions of electrospun composites including those envisaged to drug delivery fields. This thesis referenced 184 recent publications that claimed the actuality of the research topic. Title of this work clearly indicates the key points of study.

3. The relevance of the methods used in the dissertation

The methodology of research was well presented in accordance to the aim of study. I recommend to assess the encapsulation efficiency of fibers with given compositions that will enlighten the effect of multicomponent compound of fibers on the drug loading function. Additionally, the toxicology of fibers should be presented to claim the biocompatibility of composite.

4. The scientific significance of the results obtained and their compliance with the international level and current state of the art

*The candidate produced the publications with her main contribution to the high ranked journals *Materials Today Communications* (2020), *MDPI Nanomaterials* (2022) with impact factor of 3.66 and 4.66, relatively. The results of study were also presented on conferences via giving a public talk in 2 international conferences (*SNAIA 2019, II International Scientific and Practical Conference Fundamental Science for Practical Medicine 2021*). The list of publications and conferences meets the general requirements to the defense approval.*

5. The relevance of the obtained results to applications

The results chapter was relevant and logically connected to the aim of study. Some suggestions from my side included to revise a bit the drug delivery chapter. The outcomes of study could be expanded in terms of the effect of silica and antibacterial activity of chlorhexidine loaded fiber composite.

Yuliya Kan presented her thesis with a good structure, some suggestions were given to improve: Introduction should indicate the application of core-shell fibers with the hydrogel transition in a medical case; why the hydrophilic compound is advantageous for wound dressings? Commas in decimal numbers should be fixed (Table 11, p 99)

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