Skoltech
Skolkovo Institute of Science and Technology

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Zhanna Kozyreva

PhD Program: Materials Science and Engineering

Title of Thesis: Fluorescent photoconvertible polymer microcapsules for cell labeling and tracking

Supervisor: Professor Gleb Sukhorukov

Name of the Reviewer:

I confirm the absence of any conflict of interest (Alternatively, Reviewer can formulate a possible conflict)	**Associate Professor, Alexey Yashchenok, Skoltech** **Date: 14-10-2024**

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

The PhD thesis of Zhanna Kozyreva is dedicated to the development, investigation and application of photoconvertible polyelectrolyte-based microcapsules. The thesis is of high quality, well organized and structured. The topic of the thesis is very important for the following research field: material science, cell biology and *in vitro* and *in vivo* imaging. The results of the work are of high importance, new and demonstrate prospective practical applications. The applicant has very good publication activity, four papers published in high-ranked international journals. Moreover, the applicant presented the results of the thesis in several international scientific conferences. It is also important to mentioned that the thesis was implemented in the frame of RSF project, which highlight the importance of the research direction of the work. I recommend the work of Zhanna Kozyreva to the thesis defense.

The following concerns were raised when reading the thesis:

1) Page 5 – It would be more informative to add whether the conference presentation was oral or poster.
2) Page 13 - The abbreviation "MS- mass-spectrometry" is mentioned twice.
3) Page 27 - "3. Analyze cytotoxicity and uptake of capsules, prepared with a a hydrothermal approach.". Please correct.
4) Page 47 - "In could be achieved by…". Please correct.
5) Page 50 - "The absortion peak around 220-270 nm…". Please correct.
6) Page 51 - "As for luminescence emission, the photoluminescence (PL) of CNDs depends on the excitation wavelength (Figure 2.12b) [116]." There is no Figure 2.12b, please check.

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*