

OPINION

on a dissertation for the acquisition of an educational and scientific degree

"Philosophy Doctor (PhD)"

Author of the dissertation: Master of Eng. Gabriela Viktorova Kotseva

Topic of the dissertation: Mechanical and tribological studies of polymers and composites obtained by 3D printing

Member of the scientific jury: Prof. Lubomir Dimitrov

1. Relevance of the problem developed in the dissertation in scientific and applied scientific terms.

The relevance of the topic of the dissertation is determined by the rapid and widespread penetration of 3D technologies in almost all areas of modern life. This particularly affects new materials, namely polymer and composite materials. These are materials that are created for a specific purpose and their properties have not been fully studied. Moreover, when products from these materials are obtained using 3D printing methods, the production technology has a significant impact on the performance of the product. This necessitates additional research, as has been done in this dissertation.

2. Degree of knowledge of the state of the problem and creative interpretation of the literary material.

I believe that the author, Eng. Gabriela Kotseva, is very familiar with scientific publications in the field of dissertation work. She cites 226 references (which is rarely found in a dissertation in this professional field) and an in-depth analysis of the problem is made in the volume of 38 pages. On the basis of this in-depth analysis, the author has correctly formulated the goal and defined the tasks of his dissertation.

3. Compliance of the chosen research methodology and the set goals and objectives of the dissertation with the contributions achieved.

The purpose of the dissertation logically follows the analysis and literature review. The tasks by which the formulated goal is achieved are

specific and very well formulated. They follow the goal and are sufficient for its realization. I would like to draw your attention to the fact that this development is extremely experimental, which is rare these days. The contributions achieved are of great importance for practice, and the research methodologies developed would be a good basis for other similar studies in the future.

4. Scientific and applied contributions of the dissertation:

As a result of the work on the dissertation, the author has presented 7 scientific-applied contributions. They unite around the creation of an integrated experimental-simulation system for evaluation and optimization of the properties of 3D printed polymer and composite materials, which could find application in both scientific research and engineering practice. I accept the first 3 contributions as "scientific-applied" contributions. I accept contributions from the fourth to the seventh as "applied" contributions. However, this does not diminish the importance of contributions. The contributions correctly reflect what has been done in the dissertation and are important for science and practice.

5. Assessment of the publications on the dissertation:

7 publications on the topics of the dissertation are presented. The publications reflect the main ideas of the dissertation. The total number of points for indicator Γ is 66.64 with a minimum required 30. I noticed 5 citations in the Google Scholar database and one in Scopus.

6. Opinions, recommendations and comments.

I have no significant notes to the dissertation. I would pay attention to the correctness of quoting the figures used. Unfortunately, the entire text of the dissertation does not mention where the figures were taken from, of which Eng. Kotseva is not the author. Also, I would recommend that she pay more attention to disseminating her undeniably very valuable results through more publications in refereed journals.

7. Conclusion with a clear positive or negative assessment of the dissertation.

My detailed acquaintance with the presented dissertation on the topic "Mechanical and tribological studies of polymers and composites obtained by 3D printing", as well as with the other documents under the procedure, as

well as the overall activity of the candidate, give me grounds to recommend to the esteemed Scientific Jury to award to Mag. Eng. Gabriela Viktorova Kotseva the educational and scientific degree "Philosophy Doctor" in the professional field 5.2 "Electrical Engineering, Electronics and Automation", in the scientific specialty "Automated Systems for Information Processing and Control".

Sofia, 22.12.2025

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