



## SUPERVISOR'S OPINION OF THE DISSERTATION THESIS

with the title

EFFECT OF ELASTIC KNITTED FABRIC CONSTRUCTION PARAMETERS ON  
THERMO-PHYSIOLOGICAL PROPERTIES

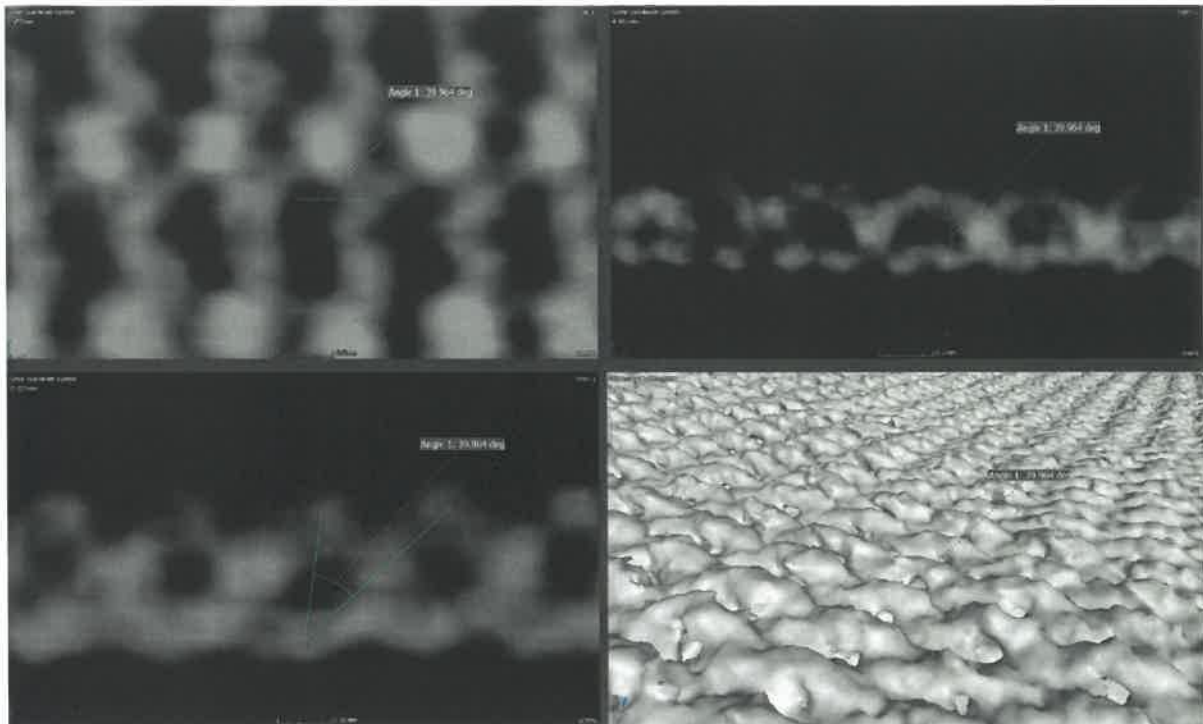
Student: Amany Ahmed Salama KHALIL

Study program: Doctoral, P3106 TTMEA

This is the recommendation and comments on the dissertation thesis and work habits of the student with whom I am the supervisor. I worked with Amany Khalil from the start of her study in 2016. Ms. Khalil successfully passed all exams, including her Comprehensive Doctoral Exam at 08. 06. 2022. The length of her study was affected by her family situation during that time, not by the lack of her effort at all. Her effort is exemplary.

The topic was chosen with the concern of her previous background and the fact, that she comes from the region where production of knitted cotton fabrics run in a number of factories. The relation between cotton and elastane interaction is still not fully theoretically described for the knitted materials and because the thesis gives the prediction outputs, the results of the student have got potential for optimization of the production in real. A set of tested fabrics was produced specially for her thesis in Egypt, where she fulfilled her compulsory training. Ms. Khalil looked after the process and defined fabrics throughout the whole production, including finishing. Fabrics are in the range of how it is effective for real production but still offer some variety to obtain significant trends where they are.

The thesis content was adapted through the process of research work as usual. Ms. Khalil listens to the recommendations of professors at FT and thinks critically about how to implement them in the process of her work. We both heard from more sides about the necessity of micro CT for the description of the porosity of tested fabrics. With concern that the faculty instrument is broken for a long time and other precise instruments can be hired for unaffordable prices only, Ms. Khalil constructed a structure at AutoCad to simulate it and offer a porosity overview. It was also used standard optical microscopy in soft sections (yarns, fabrics), hard sections and tested CT to obtain a real idea of the structure. Figure 1 shows how unsatisfactory it is possible to take a picture by available CT at the Faculty of Mechanical Engineering, so AutoCad simulation gives relevant information. It is just one example of how she works with details. When a student faces a problem, she finds another way to solve it and offers an alternative. She can think outside the box, which is one of the essential properties of an excellent researcher.



*Figure 1. CT images were done at the Faculty of Mechanical Engineering TUL facility. Although we are thankful to the skilled operator, images cannot be in better resolution to show yarn contours or single fibers because of the instrument's limits.*

The formal site of the work is good. Sources are cited in the relevant places. Literature research is up to date and related well to the content in the proper amount. Images and tables are readable, as close to the related text as possible.

It is necessary to comment on the plagiarism checking in theses.cz, which shows 22 similar documents and 10% similarity with one document. That document is related to another thesis with the topic concerned with the fabric's structure, the same as part of Khalil's thesis. Both works used some same sources, of course, which brings citing the same definitions. Part of the similarity is also because the formal first pages with the text need to be mentioned in the exact wording according to the TUL rules. Both effects give that high number of similarities. There is no similarity found in the parts belonging to her own findings or inventions, only in formal parts or theoretic definitions where no change is desired because of the change of the meaning. The similar reasons are related to the other similar findings.

The second document, similarity 9%, is partly of the formal first pages and topic related to the comfort of knitted socks so it is necessary to use the same definitions for the loop length, water vapor resistance, extension, etc. There is no match in the same sentence but study of the same properties on different materials and with different methods of extension. The third



document is a journal paper properly cited in the thesis, with similarity defined at 8%. The effect of similarity is reasonable because it studies the plaited knitted fabrics too. The study is smaller than the thesis sample set and it is prepared in another way for testing. It did not obtain so deep results in the same properties and finished in discussion with the experimental description only.


The other similarity match is not higher than 5%. It is because of a similar topic or used testing device. Some works are cited where it is the same topic, and all text is paraphrased or uses the same definitions and names of the properties. If the similarity is found by the system in the results part of the thesis, it is not because of taken from the source but because results are leading to similar trends which is not unpredictable. Some match is also because of same sources are used but not mentioned in the same way but adapted for the thesis topic. The literature summary for the thesis was made individually. **I did not find plagiarism in the thesis of Ms. Khalil.**

Ms. Khalil works systematically and with concern for details. She is enthusiastic about textiles with deep knowledge already and has the potential to move further in the research area she will work in the future. Ms. Khalil is already very well accepted at her home university and, after graduation, will strengthen her position as one of the key researchers who can also give an excellent background to her students. I wish her all the best in her life.

The overall structure, theoretical background, and scientific content are at the proper dissertation level. All aims were fulfilled, and the results were discussed. The outputs are relevant and can be beneficial for the producers of knitted fabrics or apparel designers.

The submitted dissertation fulfilled the requirements of the dissertation thesis. **I recommend a dissertation thesis for the defense** and, based on a successful defense, to give a Ph.D. degree to a student Amany Ahmed Salama KHALIL.

In Liberec 10. 05. 2023

  
Ing. Pavla Těšínová, Ph.D.