THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Flow properties of collagen matter**
Author's name:	**Hadeel Atallah**
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Process Engineering
Thesis reviewer:	Jan Štípek
Reviewer's department:	Department of Process Engineering, FME, CTU

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**
How demanding was the assigned project?	
The problematics of flow of viscoelastic materials is very challenging. Despite the fact, that similar studies of collagen were done in previous years, student had to learn about the problematics and come up with her own methodology of evaluation with her own Matlab program.	

Fulfilment of assignment	**fulfilled**
How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.	
Student got familiar with rheology, structure of measured material, non-newtonian behavior and methods used for evaluation of these materials. Literature search of given topic was provided. Knowledge from theoretical part was used during experimental part where flow properties of collagen matter were evaluated using own script. Student fulfilled all the assigned tasks.	

Methodology	**correct**
Comment on the correctness of the approach and/or the solution methods.	
Student created her own Matlab script for evaluation of flow properties. Three different approaches were presented. Additional corrections for piston position data should have been performed, the results are affected by this mistake. However, the methodology was chosen very well.	

Technical level	**A - excellent.**
Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?	
Student got familiar with the wide field of rheology and its applications. She expressed herself in clear and technical way.	

Formal and language level, scope of thesis	**C - good.**
Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?	
The extension of thesis is more than sufficient with 82 pages including 47 figures and 39 tables. Thesis is written with very good English with minimum of incorrect spellings or typos. However, there are some places where the composition of pages could be better (explanation of equations on other pages, self-standing pictures on empty pages) and text could be divided into more sub-chapters in some areas of the thesis. Chapter names written in bold font or at least bigger font size would help with orientation in text.	

Selection of sources, citation correctness	**B - very good.**
Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?	
The student used in total 41 sources in her thesis. All the sources are adequate and correctly cited in the text. However, there are some different citation forms used in the end of the study. Citation forms should be unified.	

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

This thesis deals with evaluating of rheological properties of collagen using capillary rheometer and power law model. Student got familiar with the topic of rheology and collagen. Theoretical part of work was very well processed even though the graphical execution and composition of pages could be better in some areas. During experimental part, student used 3 different approaches for evaluating power-law parameters and created her own MATLAB script for this. Results from all methods and all capillaries were combined for evaluation of general flow index and coefficient of consistency of tested material.

Question 1: Can you please double check the measuring of the piston position? It is mentioned, that raw data are written in [mm]. Upper position of the piston is only 55mm (see Figure 27) which is odd and in my opinion additional corrections should have been done for evaluation of piston position.

Question 2: It is mentioned, that collagen is viscoelastic material. Viscoelasticity causes various special effects. Were any of these effects observed during experiments and if yes, was there any dependence on velocity of experiment?

Question 3: There is not plotted dependence of shear stress to shear rate for third approach. What was the reason for that and is it possible to show this dependence and compare it to the results from other approaches?

The grade that I award for the thesis is **B - very good.**

Date: **17.8.2020**   Signature: