Tomas Bata University in Zlín
Faculty of Technology

Vavrečkova 5669
760 01 Zlín

External examiner's review of a Master's thesis

Student's name and surname:	**Abdulkadir Bozarslan**
Degree programme:	N0722A130002 Polymer Engineering
Degree course:	
Specialization (if the degree course is divided into specializations):	
Department:	Department of Polymer Engineering
Supervisor of the Master's thesis:	Ing. Michal Machovský, Ph.D.
External examiner of the Master's thesis:	prof. Ing. Petr Svoboda, Ph.D.
Academic year:	2023/2024

Title of the Master's thesis:

Polymer Impregnated Adsobents for Direct Air Capture

Assessment of the Master's thesis using the ECTS grading scale:

	Assessment criteria	Assessment according to the ECTS
1.	Fulfilment of the assignment criteria	**A – Excellent**
2.	Level of quality of the formal aspects of the thesis, including the level of linguistic quality	**B – Very good**
3.	Amount, topicality and relevance of the literature sources consulted	**B – Very good**
4.	Description of experiments and implementation methods	**A – Excellent**
5.	Level of quality of processing of the results	**B – Very good**
6.	Interpretation of the results achieved and discussion thereof	**B – Very good**
7.	Formulation of the conclusion of the thesis	**A – Excellent**

Select the option the submitted thesis for defence and propose the following assessment:

B – Very good

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Comments on the Master's thesis:

The thesis is written on 94 pages out of which theoretical part is captured on 36 pages while experimental part is described on 58 pages. The student has used 62 references out of which the majority comes from papers with doi number, however there is also a small number of references from web pages which are doubtful (on internet anybody can write anything when it does not go through a review process - I would recommend avoiding such sources in Master's thesis).
In the theoretical part the student writes about carbon dioxide (CO2), emissions, global warming, about possibilities to capture CO2, about various adsorbents - physical and chemical ones.
The goals of the experimental part include chemical modification of ZEOFREE, testing of CO2 adsortion capabilities, also the thermal and cyclic stability.
p. 38: molecular weight has a unit g/mol.
p. 40: pressure 10 millibar - it is better to use SI units (Pa)
p. 54 and many other TGA graphs show time dependence of weight. It is certainly interesting but common practice is also to show weight loss as a function of temperature where characteristic temperatures can be determined.
p. 64 the amount of adsorbed CO2 is higher than 100%, e.g. 100.5%. It seems strange to me. The maximum weight or volume fraction is 1, e.g. 100%.
p. 70 the amount of CO2 reaches even higher number, e.g. 108%. Most likely it can be explained, but it seems very strange to me. In my mind the maximum is always 100%.
The goals of the thesis were succesfully reached.
I recommend this thesis for the defense.
It is written on relatively high level, therefore I give it a grade B-very good.

Questions to be asked by the external examiner of the Master's thesis:

I have no questions.

In Zlin on **14. 05. 2024**

Signature of the external examiner of the Master's thesis