Supervisor's Review of a Master's thesis

Student's name and surname:	Orsolya Bystricky-Berezvai
Degree programme:	N0722A130002 Polymer Engineering
Degree course:	Polymer Engineering
Specialization (if the degree course is divided into specializations):	
Department:	of Polymer Engineering
Supervisor of the Master's thesis:	Prof. Ing. Pavel Mokrejš, Ph.D.
Academic year:	2021/2022

Title of the Master's thesis:

The Influence of Processing Conditions on Extraction of Gelatines from Chicken Deboner Residues

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

	Assessment criteria	Assessment according to the ECTS
1.	Topicality of the literature sources consulted	**A – Excellent**
2.	Application of knowledge gained from literature	**A – Excellent**
3.	Theoretical aspect dealt with in the thesis	**A – Excellent**
4.	Description of experiments and implementation methods	**A – Excellent**
5.	Level of quality of processing of the results	**A – Excellent**
6.	Interpretation of the results achieved and discussion thereof	**A – Excellent**
7.	Formulation of the conclusion of the thesis	**A – Excellent**
8.	Student's approach to the Master's thesis	**A – Excellent**

I recommend the submitted thesis for defence and propose the following assessment:

A – Excellent

Comments on the Master's thesis:

Master thesis deals with multi-stage extraction process of gelatines from chicken deboner residue (a by-product containing collagen).

The contemporary state of the knowledge corresponds to the topic of the Master thesis. The main part focuses especially on food industry by-products and their processing into fats and proteins. Statistical data referring to animal by-products is provided. The layout of processing of collagen tissues into gelatines and testing physical and chemical properties of gelatines give a suitable background to the practical part of the thesis. At the end of this part, applications of gelatines in food- and other areas are provided. Orsolya Bystricky-Berezvai visited some factories to gain data regarding production of food by-products and food technologies. Student critically evaluated the key findings from literature study and set up the aims of the practical part of the thesis.

In the experimental part the influence of gelatine extraction time and extraction temperature in the 2nd extraction step (designed according to Taguchi design) on the degree of conversion and parameters of prepared gelatine fractions was studied. Prior to the extraction, the raw material was purified, demineralised and conditioned with the use of food enzyme. Gelatine yields were calculated. Gelatines were tested for gel strength, viscosity, ash content, melting and gelling points, water and fat binding capacity, foaming capacity and stability, emulsification capacity and stability; according to standard testing procedures for gelatines. Minitab software (Fujitsu, Japan) was used to evaluate the results. By suitable choice of processing conditions, chicken residue can be processed into high-Bloom (up to 300) gelatines, medium-Bloom (100–200) and low-Bloom (50–100) Bloom gelatines with high conversion degree. In the discussion part student compared and contrast her results with the results of similar studies of contemporary literature. The optimal conditions for gelatines preparations are proposed. Moreover, applications of different grades of gelatines prepared from chicken deboner residue are proposed, especially in food industry. The importance of her case study for further research and for the practice is pinpointed. Jellies containing prepared gelatins under pilot-plant design with the co-operation with Candy Plus Sweet Factory, Ltd. have been prepared and tested.

The goals of the thesis were fulfilled. I really appreciate high determination and diligence of Orsolya Bystricky-Berezvai during the whole period working on her Master thesis. She was very interested in the study and was very active in proposing further experimental steps, she proved to be very skilful in laboratory and in a factory.

The Master thesis is a genuine work and I recommend it for defence with an excellent grade.

Questions to be asked by the Master's thesis supervisor:

In Zlín on **17. 05. 2022**

Signature of the Master's thesis supervisor