

Review of dissertation thesis: Hydrogel-based food packaging material for agro products

Student: M.Sc. Smarak Bandyopadhyay

Reviewer: Prof. Ing. Petr Slobodian, Ph.D.

The dissertation thesis takes the form of synopsis, finally, in the end as a set of four published articles. All papers has been published in peer reviewed journals indexed in database Web of Science. The candidate is listed as the first author with a mental participation of fifty percent in all four publications. The applicant started studying on September 2nd 2019 during the validity of the Dean's Directive SD/01/2016. This guideline defines four published works in impacted journals when the candidate must be the first author at least for two publications. Furthermore, the sum of the ratios of impact factors and median impact factor, IF/MIF, must be equal or higher than two. The student achieved cumulative ratio with value 4.6. Based on this analysis, the student met the required criteria for successful defence of the dissertation work.

Dissertation work deals with use of biodegradable polymeric and bio-polymeric materials for food packaging. It study their routs of synthesis and finally their utility properties from active protection of packaged food, to mechanical and structural properties. Great emphasis is also focused on the ecological side of things, when these packages should have a lower carbon footprint and because there are naturally biodegrade so they do not remain in the environment as conventional synthetic packaging materials.

The dissertation work as an appropriate introduction to aimed problematics, followed by motivation, experimental section, results and discussion of own research activities in area of basic research, conclusion and references. There is also applicant curriculum vitae.

The dissertation thesis is written in English. It has a good structure, graphic standard and language. The work has a high scientific standard and promising application potential in the future. There only some minor shortcomings that should be mentioned such as non-readable figures (4, 9), further in page 31 is described Carboxy methyl cellulose but molecular formula presented is its sodium salt, and then there are used abbreviations in text and although on page 6 list of symbols and abbreviations are presented, it would be better to always use the full title in the text when the abbreviation first appears, it would make the text much easier to read.

Finally, I would like to state that the student M.Sc. Smarak Bandyopadhyay proved that he is capable of an independent and creative scientific work; he fulfilled the planned study schedule and wrote a satisfactory dissertation thesis for the defence. He also met the criteria for

the minimum required amount of published scientific work. That is why I recommend dissertation thesis to defend and obtain Ph.D. degree.

Questions:

1. Explain the concept of claiming, “Petroleum based materials increase carbon footprint due their non-biodegradability”?
2. On page 15th there are PET, PE, PA, etc. ranked into bio-based/non-biodegradable polymers. Does it mean to produce them from renewable sources? How it works economically and from carbon footprint point of view?

In Zlin, August 6th, 2020

Prof. Ing. Petr Slobodian, Ph.D.