

Supervisor's opinion on the Ph.D. thesis
“Preparation of gold nanoparticles using oxidized polysaccharides”

written by

Alžběta Důbravová

submitted to the

Tomas Bata University in Zlín

Ing. Alžběta Důbravová studied Ph.D. programme 'Nanotechnology and Advanced Materials' at Tomas Bata University in Zlín, Czech Republic. Within her studies, she has fulfilled all duties connected with the study programme and successfully passed the state doctoral exam in 2023. Her dissertation work is focused on the preparation and characterization of gold nanoparticles using oxidized polysaccharides. The prepared nanoparticles were successfully used to decorate chitosan non-woven nano-fabric to obtain an efficient catalytic material. The dissertation was submitted in the form of a monograph equipped with two appendices. The first part of the dissertation was focused on the elucidation of the role of chosen oxidised polysaccharides in the mechanism of gold nanoparticle synthesis. By use of properly modified polysaccharide, it is possible to obtain either nanoparticles suitable for catalysis, or particles with amplified SERS effect for prospective analytical applications. The second part of the dissertation focused on the development of an original method of anchoring the nanoparticles on the chitosan nanofibers and the characterisation of this material as a catalytic system within a continuous flow reactor of original construction. The core of the dissertation was embodied in two publications in impacted journals, first in the International Journal of Biological Macromolecules and the second in Carbohydrate Polymers, where Alžběta contributed as the first and main author. Beside, Alžběta is a co-author of another paper already visible in WoS.

Alžběta Důbravová presented her results at an international conference with a full-text contribution to proceedings. Alžběta also spent one month at University College Dublin, Ireland, under the supervision of Assoc. Prof. Susan Quinn, at the Institute O'Brien Centre for Science in 2022, then one month at the University of La Laguna under the supervision of Prof. Eleny Pastor Tejery in 2023, and her last stay is at Hanyang University under the supervision of Prof. Jeong Gil Seo from December 2023 up to the beginning of February 2024.

To provide a complete picture, I also confirm that no plagiarism was indicated by similarity analysis in anti-plagiarism text-checking systems.

To summarize, during her study at the TBU in Zlín, Alžběta Důbravová has demonstrated sufficient diligence, knowledge and effort necessary for the successful fulfilment of the studied Ph.D. programme. With regard to these facts and according to my opinion, the submitted dissertation work is well conceived, and I recommend it to be defended and, upon successful defence, Alžběta Důbravová will be awarded the Doctor of Philosophy (Ph.D.) degree.

Zlín 10. 12. 2023

Assoc. Prof. Ing. et Ing. Ivo Kuřitka, Ph.D. et Ph.D.

Supervisor