

Oponentský posudek disertační práce

Název: Sequential injection analysis capability in automation of analytical processes

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The presented dissertation thesis of Mgr. Lucie Novosvětská deals with the use of sequential injection analysis (SIA) in the areas of pharmaceutical and environmental analysis. The work is composed as a commented collection of four scientific articles and one undergoing project. The author has major participation to the submitted works. The thesis consists of a commentary part (96 pages of text) and six attached documents.

On 62 pages of the commenting part, the author introduces the reader to the problems of sequential injection analysis and provides the theoretical background for the individual published articles prepared during her doctoral studies. The author refers to 112 references and the text includes 40 pictures and 5 tables. The thesis is written in English at a high level, without mistakes or misleading formulations. The introduction part of the thesis is supplemented by a list of other author activities (oral and poster presentations at domestic and international conferences, grant projects and scholarships and other foreign experience). The facts show author's high interest in her studied field, the ability to quickly orientate in new projects and to manage the new instrumentation without any problems.

In the supplementary part there are four articles focused on automatic flow-based devices for monitoring of drug permeation across a cell monolayer, application of HPLC-UV on tracking study of efavirenz and other drugs in biological system, and application of SIA for the determination of lovastatin in dietary supplements. This part of the thesis contains also the description of one ongoing project focused on the determination of herbicides metolachlor and chlorsulfuron in a flow-batch system.

From the presented thesis it is clear that the author's results have been approved by demanding review procedure in high-quality analytical journals and therefore it can be concluded that the results are properly processed and described. This evaluation is confirmed

by reading the dissertation itself, which is really very precisely processed and written. Mgr. Lucie Novosvětská is the first author of three enclosed works. Based on this fact it can be stated that authors contribution is really significant.

With regard to the indisputable quality of commented publications, I have only three suggestions for discussion:

- 1) What is the lifetime of used cell monolayers in Franz diffusion cell for automated monitoring of permeation tests? What are the most common processes that can damage this thin layer?
- 2) Could you highlight the main reasons that cause the different values of the accuracy listed in the Table 4 (Supplement 4)?
- 3) In the author's opinion, is there any potential for commercial utilization of these new approaches of flow methods described in presented articles?

In conclusion, it can be clearly stated that Mgr. Lucie Novosvětská has reasonable research concept and the chosen methodology is at the appropriate scientific level. The quality of the results is evidenced by publishing in appropriate journals as well as by the dissertation itself; the objectives of the work have been fulfilled.

Presented dissertation thesis of Mgr. Lucie Novosvětská suits the requirements for this type of thesis - and therefore I recommend it for further proceedings and I suggest to give to Mgr. Lucie Novosvětská , after successful defense, Ph.D. degree in the study program Pharmacy.

In Prague, June 10th, 2019

RNDr. Jakub Hraníček, Ph.D.