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Supervisor report for evaluation of PhD thesis:

Jaroslav Kočíšek: “Implementation of ion imaging technique in experiments with free molecules, clusters and nanoparticles.”

It has been a pleasure for me to supervise the Ph.D. thesis of Jaroslav Kočíšek. His performance in our laboratory has been one of a very talented, motivated and diligent, and also experienced and knowledgeable student –or rather a colleague. He showed knowledge and great endurance while performing difficult experiments, and he often independently initiated and performed his own projects.

As the main project of the thesis he received uneasy tasks due to his high qualification: (1) to finish building of a new experimental setup in our laboratory (apparatus for imaging, AIM); (2) implementation of the imaging technique introduced in AIM on our main cluster beam apparatus CLUB. Since the introduced imaging technique was new to all of us in the laboratory he did not receive a lot of help from his supervisor and colleagues (except from the leaving postdoc Juraj Fedor) and yet he succeeded in making AIM a new productive machine, and successfully implementing imaging on CLUB. It ought to be mentioned, that his efforts have been hampered also by almost one-year long period without well operating laser in our laboratory –and lasers are the necessary tool for the imaging experiments. Despite of that he managed to finish his thesis in 3 years. In addition, he has used the period without the lasers to implement and master a new reflectron time-of-flight (RTOF) mass spectrometer on CLUB. And he also initiated, successfully measured essentially alone, and also interpreted a few experiments with the new RTOF –one of them is the article in attachment 5 in the thesis: “Ionization of large homogeneous and heterogeneous clusters generated in acetylene-Ar: expansions.”

The thesis itself is composed around 4 relatively high-impacted journal articles and 1 WDS contribution. His contribution to these papers was substantial. To my mind it is a respectable number for only 3 year thesis period. Yet, it ought to be stressed that he has contributed to several other articles from our laboratory in the 3 years which did not became part of his thesis.

To make the thesis count for the laboratory I have asked Jaroslav to write an overview of the various techniques and experimental setups which he has built and introduced. To my mind, he succeeded even in this task and in part of his thesis he generated a reference text which can serve as an introduction and manual for the future students in our laboratory.

There is essentially no part of his performance in our laboratory which can be criticized, yet I would like to provide some suggestions for his future endeavour: He might concentrate on improving his communication skills. It took some time even for me to realize that he definitely had the knowledge and often the right ideas, yet they were not always

understandable when he said or wrote them. He is great in quickly introducing and testing new ideas and trying new experiments, yet sometimes even a diligent and more systematic work can lead to good results –although it is boring and frustrating sometimes.

In summary: the thesis is good, the author is even better, and *the thesis demonstrates the student's capability of independent scientific work, and it fulfils all the requirements for a Ph.D. thesis in the present field.*

V předkládané práci student prokázal tvůrčí schopnosti a práce splňuje požadavky kladené na disertační práci v daném oboru a doporučuji ji k obhajobě.

Michal Fárník