

Supervisor report

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Václav Šebelík joined our group as a PhD. student in 2016 after completing his master studies in physics and math education. Since the beginning of his PhD. studies he has actively participated in experimental work and during his PhD. years he has become a skillful experimental physicist. Though without previous experience with ultrafast lasers, he quickly grasped the experimental techniques used in the femtosecond laboratory and already in the first year he was able to carry out complicated experiments with the help of other group members. He has been also very active in "lab programming", producing small software packages used for simulation and fitting the data. His knowledge of programming turned to be very important for modelling the data from three-pulse experiments.

The primary goal of the Ph.D. project of Václav Šebelík was to develop new methods to study excited states of carotenoids, namely the time-resolved two-photon excitation experiment and the z-scan experiments. These methods were only scarcely used around the world, mainly because the rather tricky experimental setup needed for obtaining reasonable datasets. Despite the initial (expected) complications, Vašek Šebelík has built a working two-photon excitation setup within a year and thanks to his effort, we now have a possibility to measure data with two-photon excitation nearly routinely in our lab. He has also devoted a lot of time to building and optimizing the z-scan setup, which, as it is also obvious from the thesis, has not been successfully finished yet. However, Vašek's effort has pinpointed the weak points of the setup and we are now in a good position to resolve the remaining problems in the near future.

Besides the core scientific projects, I also want to stress his work for students, as he has been involved in organizing various experimental sessions for kids and students from all levels of educational system and his playful and educational approach to science has marked essentially every day of his work. It is hard to forget nearly hundred colorful vials on his table, because he has decided to extract carotenoids from nearly anything one can think of. Thank to him, we now have a nice database of absorption spectra of carotenoid extracts from vegetables, fruits, and many other products. Along the same lines, he wrote a nice popular account about carotenoids that is now nearly ready to be published on our web page. Finally, I have also been impressed by his skills to build various mechanical or electronic devices.

Both scientifically and socially, Vašek has been an integral member of the group. It was a pleasure to work with him and it is a pleasure to recommend the thesis for defense as it fulfills all necessary requirements for awarding a Ph.D.



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