

DIPLOMA THESIS EVALUATION OPPONENT EVALUATION

Author name: Ondřej Havelka

Thesis title: Generování Fe nanoklastrů pomocí laserové syntézy

Opponent: inž. Stanislav Waclawek, Ph.D.

Opponent workplace: Technical University of Liberec

A. Abstract quality, keywords matching	Excellent (1)
B. Research scope and processing	Excellent (1)
C. Level of theoretical part	Excellent (1)
D. Appropriateness of the methods	Excellent (1)
E. Results elaboration and discussion	Excellent (1)
F. Students own contribution	Excellent (1)
G. The conclusion statement	Excellent (1)
H. Fulfillment of Thesis tasks (goals)	Fulfilled
I. Structure, correctness and fulness of references	Excellent (1)
J. Typographical and language level	Excellent (1)
K. Formal quality (text structure, chapters order, clarity of illustrations)	Excellent (1)

Comments, remarks

None.

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Overall assessment:

Ondřej Havelka in his thesis has examined the laser-mediated synthesis of iron nanoclusters. In order to reach the thesis goals, he has explored various experimental (synthesis in different solvents/energy value regimes) and theoretical (heating-melting-evaporation model) approaches. The thus created nanoparticles were carefully characterized and Ondřej has found that by varying synthesis conditions, iron nanoclusters could be created.

The thesis is written with a very good English, and almost every (sub)section is decorated with beautiful 3D images. Moreover, it has a large dose of originality and clear and transparent structure, containing all the elements required. It is also visible how much effort Ondřej has devoted to the experimental work and evaluation of the results. This hard work led to publication of a research article in a very good international journal (Q1) where Ondřej is one of the co-authors (DOI:10.1016/j.apsusc.2018.11.058). Concluding, this bachelor thesis meets very high scientific standards. The research is very promising and as such should be continued. The stated objectives were accomplished and I consider the thesis to be of exceptional quality. Moreover, I recommend that Ondřej is given the Rector's/Dean's award.

Questions for the defense:

1. What are the largest obstacles in in situ use of nano zero-valent iron (NZVI)?
2. In the thesis it is written that the surface of your nanoparticles can be made of Fe₂O₃. Is it normal for NZVI or some other iron oxides can be present there as well?
3. What do you think about the structure of your particles, e.g. is it a core-shell type of structure?

Overall classification:


Work meets the Master degree requirements and therefore I recommend it for defense

I suggest to classify this work by grade **Excellent (1)**

In Liberec

date 16.05.2019

By signing I certify that I am not in any personal relationship with the author of the thesis



Opponent signature