



Naturwissenschaftliche Fakultät II
Chemie, Physik und Mathematik
Institut für Chemie

Prof. Dr. Daniel Sebastiani
Physikalische Chemie/Theoretische Chemie

Hausanschrift:
von-Danckelmann-Platz 4
06120 Halle/Saale
Germany

Tel. +49 (0) 345 55-25836
daniel.sebastiani@chemie.uni-halle.de
<http://www.chemie.uni-halle.de>
<http://goo.gl/mie6Q>

Prof. D. Sebastiani, Inst.f.Chemie, MLU Halle, 06099 Halle, Germany

Universita Karlova v Praze
Studijní oddelení-doktorské studium
Vyrizuje: Mgr. D. Zádřapová
Ke Karlovu 3
CZ - 12116 Praha 2

Ihr Schreiben vom
20.6.2014

Ihr Zeichen
268/14

Unser Zeichen
Uhlig

Datum
21. Juli 2014

Evaluation of the doctoral thesis "Structure, dynamics and reactivity of the hydrated electron" by Mr. Frank Uhlig

Dear colleagues,

it is a pleasure to evaluate the doctoral thesis by Mr. Frank Uhlig in view of his defense at the department of mathematics and physics of the Univerzita Karlova v Praze.

The thesis reports the work of Mr. Frank Uhlig on a project in the area of computational physics and theoretical chemistry, in which the author presents a detailed study of the quantum mechanical nature of an excess electron that is solvated in liquid water. Mr. Uhlig applies ab-initio calculations to understand the equilibrium structure of such an electron, along with its reactivity, under realistic conditions. This topic is very timely and relevant for a number of scientific disciplines, ranging from biomolecular physics and chemical physics up to surface science and semiconductor research. The question of the nature of the solvated electron is thus of enormous importance, and any significant progress will most certainly be influential to numerous neighboring disciplines of science.

The results have been published in a series of scientific high impact publications with Mr. Uhlig as first author. The main work has resulted in four physical chemistry publications on the localization properties of the solvated electron in the bulk and on a water surface, culminating in a joint experimental-theoretical project dealing with terahertz spectroscopy of photoionized water.

The scientific results are very original and clearly show the outstanding scientific ability of Mr. Uhlig. His publications and the thesis elucidate tough long-standing problems regarding fundamental questions on the nature of unusual states of matter, and the findings will certainly be recognized worldwide. The overall work is highly original and very creative, placing the candidate among the leading few percent of his class of age. I know of only very few doctoral students with comparable ability and performance.

In conclusion, it is a pleasure to acknowledge the scientific excellence of Mr. Frank Uhlig, as proven by the doctoral thesis "Structure, dynamics and reactivity of the hydrated electron". I wholeheartedly recommend to promote him, if possible with the highest grade and distinction available.

With my best regards

A handwritten signature in blue ink that reads "David Sebastiani". The signature is written in a cursive style with a long horizontal stroke at the end of the name.