



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

Dipartimento di Scienze Chimiche e Farmaceutiche

To the Dean of the Faculty of Science  
Palacký University Olomouc  
Prof. Dr. Martin Kubala

Subject: habilitation procedure of Ing. Dr. Štěpán Kment

Candidate Ing. Dr. Štěpán Kment's last few years in research have been very successful and productive, demonstrating his continuous growth as research leader following consolidation of technical skills, competences and managerial abilities. The research topic of his research is one of the most current themes, supported and economically sustained by most world countries, aware of the imminent problem posed by energy consumption and environmental issues. CO<sub>2</sub>, H<sub>2</sub>O and solar energy are a **key element** for the transition to a low-carbon and more sustainable model of economic development, and PEC devices able to use directly solar energy to produce chemicals and energy vectors from *small molecules* such as CO<sub>2</sub> and H<sub>2</sub>O are necessary. Ing. Dr. Kment embraced these themes and gave his important contribution in order for science to accelerate the advent of new energy schemes. His work focused on development of new nanostructured materials (in particular semiconducting metal oxides) to be used as catalysts in photo-electrochemical devices, for processes such as water splitting. The quality of the papers demonstrate the innovative thinking of the candidate, with a mastery on the synthetic aspects for nanomaterials with specific structural features and desirable photo- and electro-catalytic properties.

The list of papers presented by the candidate is a proof of his important contribution in each paper, where he features as corresponding and/or first authors. The papers have good level of citations due to the quality, relevance and timing of the publications. He published an excellent review on photo-anodes for water splitting that has been highly cited (more than 190 references) and is one key reference in this area of research, proving also the deep knowledge of the candidate, as also confirmed in the thesis organization and discussion. Other papers in top journals such as ACS Nano, Nanoscale and Applied Catalysis B further demonstrate the leading role of Dr. Kment in his area of research. His research has continued to develop in the last year producing more publications where innovative work on nanomaterial synthesis, PEC development and energy related catalysis in general has been reported. I am convinced that Ing. Dr. Kment deserves to be habilitate as a professor, and I am in full support of his application.

Trieste 15.01.2020

Prof. Dr. Paolo Fornasiero