

OPPINION

Assoc. Prof. Hristo Smolenov

Naval Academy "N. J. Vapcarov", Varna

member of the Scientific Jury appointed by order № 301/09.12.2019 of the Scientific Secretary
of the Institute of Oceanology - BAS
and in accordance with the decision of the Scientific Jury meeting as per
Protocol № 1 from 20. 12. 2019

on the PhD thesis of Eng. Konstantin Iliev Shterev

„Remotely Operated Vehicle for a Continental Shelf Research”,

submitted for obtaining a PhD degree
in the field of higher education: code 4 "Natural sciences, mathematics and informatics",
professional field: 4.4 "Earth sciences",
doctoral program in Oceanology

The dissertation subject is “Remotely Operate Vehicle for a continental shelf research” and it is closely linked to the apparatus the author has built in the last few years. This explains the different aspects the work and the contributions should be evaluated. The dissertation is organized in 8 chapters – 212 pages including the Appendices. The interdisciplinary approach of the work requires special attention - this is the creative synthesis of theoretically and practically implementable innovations.

Important geological and archaeological research could benefit of such apparatus and this adds more interest to the work of Eng. Chterev. Creating and maintaining underwater vehicles is a challenge, which the author has approached with responsibility and confidence. Many government and military organizations showed genuine interest to the created apparatus.

The approach to the problems and the results of the research are authentic and completely adequate to the academic criteria of originality. The author managed to link the applied scientific aspects with the practical knowledge gained during various expedition on board R/V

Akademik.

The technical solution implemented by Konstantin Chterev are presented in separate chapters. The second chapter reveals the problem arising from a long power cable and a solution, optimizing the available power. The next chapter is dedicated to the communication between the apparatus and the surface. The fourth chapter is about the tether – the cable connecting the surface vessel and the ROV – a combined power-communication cable is proposed. The propulsion is based on BLDC motors and propellers, which can be individually controlled, thus providing high maneuverability. The LED light analyzed in the next chapter allows the apparatus to work at any depth where no natural light is available. HD video stream, captured by the onboard camera, is transmitted via the tether to the surface.

This dissertation confirms the impression I had about Konstantin Chterev since the first expedition we were together in 2011. He is a researcher with a brave scientific view on the problems and a competency to solve them in practice. His work with no doubts meets the criteria, required for awarding a Doctor of Philosophy (PhD) title. Without any hesitation, my recommendation to the scientific jury is to award the educational and scientific degree **Doctor of Philosophy to Konstantin Iliev Chterev**, in Higher Education field "Natural Sciences, Mathematics and Informatics", professional direction: "Earth Sciences", for his impressive work "Remotely Operate Vehicle for a continental shelf research".

Reviewer:

Sofia, February, 2020

/Assoc. Prof. Hristo Smolenov/