

STATEMENT

regarding the quality of doctoral thesis of the doctoral student Irena Bocheva Zagranjarska in field of higher education 4. Natural Sciences, Mathematics and Informatics, professional classification 4.2. Chemical sciences, Scientific specialty Organic chemistry

from Prof. Dr. Rositca Dimitrova Nikolova, Sofia University "St. Kliment Ohridski ", Faculty of Chemistry and Pharmacy, member of the scientific jury

Brief biographical data

Irena Zagranjarska graduated with a bachelor's degree in Chemistry in 2005, and in 2007 with a master's degree in Organic Chemistry at the Faculty of Chemistry of Sofia University "St. Kliment Ohridski ". During her studies she worked as a chemist at the Institute of Organic Chemistry with the Center for Phytochemistry - BAS from October 2005 to April 2008. In April 2008 after a competition she was appointed an assistant at the Institute of Organic Chemistry with the Center for Phytochemistry - BAS in the Laboratory of Phytochemistry. Organic synthesis and stereochemistry. In June 2017, after successfully passing the exam, she was appointed as a doctoral student for independent training in a professional field 4.2. Chemical Sciences, Scientific specialty Organic Chemistry with scientific supervisors Assoc. Prof. Dr. Kalina Kostova and Prof. Dr. Vladimir Dimitrov.

Scientific contributions to the dissertation

The presented PhD thesis on the topic: "Stereoselective synthesis of functionalized chiral amino alcohols - configuration and application" is a continuation of the systematic research of the group of Organic synthesis and stereochemistry on the synthesis of chiral polyfunctional compounds for their application in asymmetric catalysis.

The work has a strong fundamental character, albeit with a practical focus. In my opinion, the following results are of the greatest interest:

- A methodology for the synthesis of steroid analogues of 2-naphthol - isoequilenine and deoxo-isoequilenine has been developed;
- New chiral, non-racemic aminoalcohols, sulfur analogues with a menthane skeleton and steroid analogues of aminonaphthol have been synthesized. Their structure was proved with the help of spectral and analytical methods. The configuration of the newly formed stereogenic centers was determined with the help of NMR techniques and proved with X-ray diffraction analysis;
- The behavior of the newly synthesized enantiomerically pure derivatives as chiral ligands for the implementation of enantioselective addition of diethylzinc to aldehydes was tested and high yields of the addition products and high enantioselectivity were achieved.

The work includes a large amount of experimental data and analytical interpretation of the obtained results. During its implementation the doctoral student was given the opportunity to get acquainted with and apply a number of methods for synthesis and characterization of polyfunctional organic compounds. The results obtained by Irena Zaganyarska are relevant and significant in a field that is the subject of serious interest from various teams in leading scientific institutions.

The PhD thesis of Irena Zaganyarska consists of 149 standard pages and includes 21 tables, 9 figures and 57 diagrams. 203 literature sources are cited. The presented abstract accurately reflects the main results and conclusions of the dissertation.

Publishing activity

Two scientific reports have been published on the results of the conducted researches, one of them in an international scientific journal with IF = 2.013 and rank Q3. A quote has been noticed until the documents were handed over. Irena Zaganyarska is a co-author of a total of four scientific publications (two outside the topic of the dissertation). The doctoral student participated and presented her results as an oral report and thirteen poster presentations at fourteen scientific forums, six of which were abroad. For the poster presentation presented at the XVIIth EuCheMs Conference on Organometallic Chemistry, 1-6 September 2007, Sofia, Bulgaria she received the award of the Organizing Committee.

The research done by the doctoral student requires precision, ingenuity, developed analytical thinking and the ability to independently systematically develop specific scientific tasks. During her dissertation work and as an assistant, Ms. Zaganyarska also participated in the working groups of sixteen research projects funded by the NSF and the Swiss Fund for Research Support, European research programs, as well as leading international and Bulgarian companies.

Conclusion

The dissertation of Irena Bocheva Zaganyarska contains sufficient scientific results, which are original contributions and meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for its implementation and the relevant Regulations of IOHCF-BAS.

The scientific results, their convincing presentation, as well as my personal impressions are grounds to give a positive assessment of the dissertation of PhD student Irena Bocheva Zaganyarska for the educational and scientific degree "Doctor" and I strongly recommend the esteemed members of the Scientific Jury to award Silvia Hristova Hristova scientific degree "doctor".

September 7, 2020

Prof. Dr. Rositca Nikolova