REPORT

by

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member of the Scientific Jury set to render a decision
on the competition for filling the academic position of an Associate Professor
in the Professional Field 4.2. Chemical Sciences (Organic Photochemistry) for the needs of the Faculty of Chemistry and Pharmacy (FCP) of the Sofia University (SU) „St. Kliment Ohridski”,
announced in the State Gazette, issue. 63 from 30.07.2021

This Report is prepared in response to Order № РД 38-448/15.09.2021, issued by the Rector of SU „St. Kliment Ohridski”, following the decision made by the Scientific Jury on a meeting held on 11.10.2021. The Report is in compliance with the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations on the Implementation of the Development of Academic Staff in the Republic of Bulgaria Act (RIDASRBA) and the Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions (RCPASDHAP) in Sofia University “St. Kliment Ohridski”.

1. Biographical information about the candidate.

The only candidate in the competition is Chief Assistant Prof. Dr. Stanislav Stefanov Stanimirov. Dr. Stanimirov graduated from the Sofia University "St. Kliment Ohridski” (Faculty of Chemistry) in 2002 with a bachelor's degree in chemistry. In the period 2002-2007 he was a PhD student at the Department of Organic Chemistry of the same university, defending a thesis on the “Synthesis and photophysical properties of ternary β-dicarbonyl europium complexes with nitrogen-containing or poly(oxyethylene phosphate) ligands” under the scientific supervision of Prof. Ivan Petkov, DSc. Since 2007 Dr. Stanimirov has been employed at the Sofia University “St. Kliment Ohridski”, initially as a chemist then as an “Assistant Professor” and currently as a “Chief Assistant Professor”. During the period 2007-2019 he specialized for various short terms in universities and research organizations in Germany, USA, Spain and Great Britain.

2. Assessment of the scientific and research accomplishments of the candidate.

Dr. Stanislav Stanimirov participates in the competition with 16 scientific publications, which are different from those presented for obtaining the educational and scientific degree "Doctor". In total, 15 of the presented publications are assigned to a corresponding quartile (Q1-Q4) according to the metrics of Web of Science or Scopus and 1 publication is in a referred and indexed edition with SJR.

The requirements for *indicator A* are fulfilled, as the candidate holds the educational and scientific degree "Doctor" since 2009.

Concerning the *group of indicators C* Dr. Stanimirov has presented 5 publications. The total score is 100 points, thus covering the minimum requirements. Four of the publications are in the journal *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy* (in one of the years of publication it is in Q1, and in the other three - in Q2) and one publication in the *Central European Journal of Chemistry* (Q3).

Dr. Stanimirov has presented 11 scientific publications for participation in the competition that are relevant to *the group of indicators D*. They are grouped by the journals' rank as follows: 7 publications in Q1, 3 publications ин Q3 and 1 in an edition with SJR only. Thus, the total score for the *group of indicators D* is 230 with a minimum required 220 points.

The *indicator E* of the minimum requirements for the candidate's research activities reflects the citations of his publications in scientific journals, referred and indexed in the world-renowned databases with scientific information Web of Science and Scopus. The citations list presented by Dr. Stanimirov for the period after the acquisition of "Doctor's" degree to the time of submission of the documents reveals a total number of 123 citations in scientific journals, referred and indexed in Web of Science and/or Scopus. However, in the presented list the self-citations from the rest of the co-authors in the candidate's publications are not excluded. According to RIDASRBA the citations in which the cited and the citing publication have at least one common author must be excluded from the list. Thus, the number of citations (without self-citations) is 97, and the score for *indicator E* is 194 - almost three times more than the minimum required 70 points.

Concerning the *group of indicators G* which includes additional requirements of the Faculty of Chemistry and Pharmacy for acquiring scientific degrees and holding academic positions at Sofia University "St. Kl. Ohridski" for the professional field 4.2 "Chemical Sciences" Dr. Stanimirov has presented a list of research projects in which in which he has participated or is still participating. The list includes 8 projects with a score of 40 points. The candidate's *h*-index is 6 (after excluding all self-citations). The total score for *group of indicators G* is 100 (minimum required 70 points).

From the data provided it is clear that the candidate meets and even exceeds the minimum national requirements, as well as the recommended criteria for holding the academic position of an "Associate Professor" at Sofia University "St. Kl. Ohridski" for professional field 4.2 "Chemical Sciences" as his total score by groups of indicators is 674 with a minimum required 510 points.

The candidate's scientific contributions include the preparation, physicochemical and photochemical characterization of various low molecular weight organic compounds and polymers, as well as their metal complexes. Dr. Stanimirov's interest in these compounds is also caused by their potential applications as emitters for electroluminescent devices, sensors or for optical recording of information.

- ***Contributions to the determination of the photophysical and structural properties of europium complexes with β-dicarbonyl compounds.*** The research activity of the candidate in this area includes the preparation and evaluation of Eu (III) complexes with poly(oxyethylene phosphate) ligands. An improved synthetic procedure has been applied for the preparation of phosphate oligomers, providing products with improved yield and purity. The effect of the length of the polyether ligands on the photophysical properties of the complexes was established using spectroscopic methods. The dependence of the emission quantum yield of the complexes and the effect of luminescence enhancement in solid state and in solution on pH in the presence of amines or ammonia was established. A similar sensor effect was also observed for the Eu (III) complex with dibenzoylmethane. Another complex studied is that of Eu (III) and tris(thenoyltrifluoroacetonate) with amino-coordinated compounds as a fourth ligand. The studied complexes have potential applications as biomarkers or sensors.

- ***Contributions to the spectral characterization of organoiridium complexes with application as emitters in electroluminescent devices.*** A series of heteroleptic Ir (III) complexes were obtained and used to determine the effect of the substituent into the cyclometalated benzothiazole residue on their photophysical properties. In addition, a dependence of the emission properties of the complexes on the temperature has been established and was explained with a change in the nature of the emitting state of the synthesized complexes.

- ***Contributions to the determination of thermodynamic and photochemical parameters by electron spectroscopy of systems that can be used as sensors or for optical recording of information.*** Dr. Stanimirov's research in this area is aimed at determining the effect of β-cyclodextrin on the system of chemical equilibria of 4',7-dihydroxyflavilium as a function of pH using UV absorption spectroscopy, flash photolysis, kinetic measurements and NMR spectroscopy. The formation of a "host-guest" complex in an acidic environment has been achieved, followed by its destruction through irradiation. The process is reversible. Furthermore, the possibility of using the metastable states of the system in models for optical recording of information was investigated. The possibility of using the "2'-hydroxyflavilium-flavanone" system as a timer at molecular level with reset capacity controlled by changes in pH, has also been demonstrated.

Dr. Stanimirov's habilitation thesis entitled "Study of the influence of Lewis ligand on the quantum yield of ternary β-dicarbonyl europium complexes using ultrafast transient absorption"

refers to the first group of contributions and is based on his latest article presented for participation in the competition. The thesis is written on 38 pages and is a good basis for further research in this area.

The results obtained so far from the research activity of Dr. Stanimirov are promising and provide great opportunities for further and in-depth research.

3. Teaching activity

The documents concerning the teaching activity of Dr. Stanimirov show that he is a lecturer in three compulsory courses – “Organic Chemistry” for the specialty "Agrobiotechnology" (Faculty of Biology of Sofia University), regular form of study and “Organic Photochemistry” for the specialty "Chemistry" (Faculty of Chemistry and Pharmacy of Sofia University), regular and correspondent form of study. Dr. Stanimirov supervises seminars and laboratory exercises in “Organic Chemistry I and II” for all chemical specialties of the Faculty of Chemistry and Pharmacy and the Faculty of Biology of Sofia University, regular and correspondent form of study.

4. Conclusion

The materials presented in the competition and the evaluation of Chief Assistant Professor Dr. Stanislav Stefanov Stanimirov’s contributions to the scientific publications show that his scientific indicators meet and exceed the requirements for filling the academic position of an "Associate Professor" as defined in the Act for the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as those, specified in the Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions in Sofia University “St. Kliment Ohridski” and the specific criteria of the Faculty of Chemistry and Pharmacy. Based on the candidate’s overall research and teaching activities, I give my ***positive assessment*** and strongly recommend the esteemed members of the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Chemistry and Pharmacy for the election of Chief Assistant Professor Dr. Stanislav Stefanov Stanimirov for the academic position of an "Associate Professor" in the professional field 4.2. Chemical Sciences, scientific specialty Organic Photochemistry at the Department of Organic Chemistry and Pharmacognosy at Faculty of Chemistry and Pharmacy of Sofia University "St. Kl. Ohridski”.

Report prepared by:

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