R E P O R T
by

Prof. DSc Vladimir Dimitrov
Member of the Academic Jury set to render a decision on a procedure for the acquisition of Academic Degree "Doctor of Philosophy" (PhD)

in the Professional Field 4.2. Chemical Sciences according to the Classifier of the Areas of Higher Education and the Professional Fields (Scientific Specialty "Polymers and Polymer Materials")

This Report is prepared in response to Order № РД-09-54 of 07.04.2026 issued by the Director of the Institute of Polymers, Bulgarian Academy of Sciences, following the decision made by the Academic Jury that was held on 22.04.2026.

The Report is in compliance with *Development of Academic Staff in the Republic of Bulgaria Act (DASRB), the Rules for the Application of the Development of Academic Staff in the Republic of Bulgaria Act,* the *Rules of BAS* and with the *Rules set at the Institute of Polymers, Bulgarian Academy of Sciences, for applying the Act aforementioned*.

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

1.1. Assessment to meet the minimal criteria in accordance with Specific the Rules for Granting Academic Degrees set at the Institute of Polymers, Bulgarian Academy of Sciences, Application 1.

Erik Vassilev Dimitrov has fulfilled the prescribed minimum requirements according to the submitted reference, as follows:

- Indicator A/1 – 50 points
- Indicator D – 125 points
- Indicator D – 30 points
- Indicator E – 120 points

These data show that the minimum requirements have been exceeded many times.

1.2. Assessment of the requirement for the doctoral thesis to contain valuable theoretical or applied science results that correspond to modern achievements and represent a significant and original contribution to polymer science.

Erik Dimitrov has set the goal of his dissertation work to develop and apply synthetic strategies for obtaining polymer-lipid conjugates, nucleolipids, polystyrene polymers with grafted oligonucleotide chains and linear and star-shaped copolymers of polyglycidol-poly(ε-caprolactone) with different compositions for the preparation of micellar and niosomal nanocarriers of biologically active substances and drugs. To achieve these goals, Erik Dimitrov has used the recent modern tools from the field of organic synthesis, polymer chemistry and physicochemical methods for studying the properties of materials. The achieved experimental results are analyzed and logically presented in the discussion part of the dissertation. The summarized conclusions and formulated contributions are fully consistent with the achieved experimental results and their corresponding theoretical interpretation.

1.3. Assessment of the scientific accomplishments of the candidates covering the merits to the fundamental and applied research, as well as to the relevance of the topic. The assessment also includes the personal contribution of the applicant/s.

Currently, significant efforts are being made in polymer science to create biocompatible and at the same time biodegradable polymer materials. These materials should be designed with a specific structure and properties aimed at the applications for which they are created. Erik Dimitrov's dissertation demonstrates the application of original synthetic approaches to create polymer materials with pre-planned application possibilities, which fully corresponds to the current development trends in this field. Erik Dimitrov's personal contribution to achieving the results in the dissertation is obviously fundamental, which is evident from his place as the first author in 4 of the 5 publications included in the current procedure. It should be emphasized that the dissertation is written logically, in an easily readable form, while simultaneously demonstrating the significant experimental and theoretical training of the dissertation candidate.

1.4. Assessments of the scientific production of the candidate as well as the reflection of the results in the works of other authors.

The dissertation candidate has summarized in the dissertation 5 papers, published in international journals with a rank of Q1, for which 16 citations by other authors have already been noted. Data on participation in 15 scientific forums, as well as in 10 scientific projects funded by national and international institutions, are presented.

2. Opinions, notes and recommendations

I would like to express a personal opinion, which is based on general principles and established mechanisms in organic chemistry. Erik Dimitrov uses the so-called *click* reaction in his experimental work. In the literature part of the dissertation, he has examined basic reactions that are designated as "*click*". I am left with the impression that the dissertation relies heavily on the term "*click*" and its applicability to basic reactions in organic chemistry. I would recommend that "*click chemistry*" be considered primarily as a concept and approach that corresponds to the so-called "bioorthogonal methods". Generally speaking, a reaction can be designated as a "*click*" if it is fast, with high yield, can be carried out in water (or a biological medium) and does not form toxic by-products. For example, the Diels-Alder cycloaddition reaction (as well as some others) should not be designated as a "*click*". Only in certain cases of using suitable substrates, such as electron-poor dienes (tetrazines and triazines) and electron-rich strained cyclic systems with double or triple bonds, the cycloaddition reaction proceeds according to the *click* concept. I do not believe that the dissertation author has made any mistakes, but I would advise that the limits of applicability be taken into account for any new terminology.

3. Conclusion

The dissertation work of Erik Vassilev Dimitrov contains sufficient scientific and applied results that are of original contribution and meet the requirements laid down in the Law on Development of Academic Staff in the Republic Bulgaria, the Regulations for Implementation of the Low and the respective Rules of Institute of polymers.

Therefore, I am confidently giving my positive assessment of the results achieved in the dissertation work and propose to the scientific jury to award the educational and scientific degree "Doctor" of Erik Vassilev Dimitrov in the field of higher education: "Natural Sciences, Mathematics and Informatics", professional direction 4.2. "Chemical Sciences", Scientific Specialty " Polymers and Polymer Materials ".

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20.06.2026 Report prepared by:

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