

STATEMENT

from

Assoc. Prof. Ilian Vangelov Hristov, DMD, PhD, Department of Prosthetic Dentistry, FDM - Plovdiv, external member of the Scientific Jury, elected by a decision of a meeting of the Faculty Council at FDM at MU - Varna under Protocol № 1 / 10.12.2021. and by order of № P - 109-559 / 06.12.2021 of the Rector of MU - Varna, regarding a dissertation on the topic:

APPLICATION OF THE TEMPORARY RESTORATIONS OBTAINED BY 3-D PRINTING OF A LASARY STEREOLITHOGRAPHIC PRINTER

for awarding the educational and scientific degree "PhD" in the doctoral program "Orthopedic Dentistry" in the professional field 7.2. Dental medicine in the field of higher education 7. Health and sports.

PhD-student in self-study **Dr. Delyan Krasimirov Georgiev**, assistant-professor in the Department of Propaedeutics of Prosthetic Dentistry, FDM, MU - Varna.

Scientific adviser: Assoc. Prof. Stoyan Georgiev Katsarov, DMD, Ph.D.

General presentation of the procedure and the doctoral student

The presented set of materials on paper and electronic media is in accordance with the procedure and regulations for the acquisition of "PhD" degree of MU - Varna.

Dr. Delyan Krasimirov Georgiev was born on April 21, 1989 in the city of Plovdiv. He completed his secondary education at the "Ivan Vazov" Language High School in Plovdiv with intensive study of English and Russian. In the period 2008-2014 he graduated with a master's degree in Dental Medicine. From 2015-2018 he specialized in the Faculty of Dental Medicine - Varna. After a concourse on January 4, 2018, he was elected an assistant-professor at the Department of Dental Materials Science and Propaedeutics of Prosthetic Dentistry to FDM - MU Varna. Dr. Georgiev has very good computer literacy. He has participated in numerous courses and seminars.

Structure of the dissertation

The dissertation presented to me for review is written on 140 pages, divided into several chapters, includes 3 tables and 85 figures. 270 literary sources were cited, 7 in Cyrillic and 263 in Latin.

Relevance of the topic, purpose and tasks

The dissertation deals with the application of temporary restorations obtained by the method of 3-D printing. The topic is relevant in view of the fact that in recent years we have witnessed the rapid development of new technologies and their application in dental practice. This is mainly due to the use of intra- and extraoral scanners, CAD-CAM, as well as 3D printing. The variety of problems accompanying conventional methods of making prosthetic structures requires the search for new techniques and materials, as is the purpose of the dissertation, namely: to explore the possibilities of temporary restorations made by 3-D printing of laser stereolithographic printer .

Analysis of the literature review

The literature review is presented on 40 pages and shows the excellent awareness of the doctoral student on the problem. It is written in good Bulgarian language and scientific style. The cited publications are current and contemporary and fully correspond to the topic of the dissertation. They are considered in details: the materials for making temporary non-removable structures. Attention is paid to conventional methods for making temporary structures, as well as to the complications, errors and problems associated with these methods.

Appropriate place is given to new technologies: CAD / CAM, additive and subtractive methods and ISO standards. The characteristics of the color, the systems for color formation, the dental color standards, the factors influencing the color determination, as well as the devices for recording the color of the tooth are considered as well.

Analysis of the set goal and related tasks

The aim of the dissertation is precisely and clearly stated. To achieve it, the PhD-student sets himself four tasks. Each of the set tasks ends with an analysis of the results obtained.

- On the first task: *Investigation of the influence of the color of printed pre-constructions of egg-shell type from transparent polymer.*

For the needs of the research under task 1, two types of test specimens with veneer design and vestibular side thickness of 0.5 mm and 0.8 mm were made by 3D printing, which fit on the color standards for determining the color of VITA color. It follows from the results that the use of egg-shell is not recommended when working in the aesthetic area and should be applied only in the distal areas.

- Second task: The limited choice of available colors for 3D printing of temporary restorations determines the goal of developing recipes for resins covering more color ranges. As a result of this task, the author's team receives seven color shades, enough to cover the needs of temporary restoration. It should be noted that most colors with high saturation, respectively darker, which would be contrary to the ever-increasing aesthetic requirements of patients. The effect of Dental LT Clear Resin® concentration on color density and translucency is reported.

- Task 3: A specially designed experimental setup and bending strength tests prove that the test bodies meet, even exceed, the requirements of the international standards ISO 10477 and ISO 4049. The conclusion to be drawn is that the high concentrations of White Resin® leads to a decrease in flexural strength, respectively those of Model Resin® and Dental LT Clear Resin® increase their strength.

- On the fourth task: a software modification of the digital files has been created, proving the formation of a significant space in the volume of the restorations, which allows for filling it with heterogeneous material with higher values of bending strength, which will increase the overall strength of the structures, especially when they are located in areas with increased masticatory load and need a longer stay in the oral cavity.

Publication activity of the doctoral student

The four articles presented in English-language journals fully correspond to the topic of the dissertation. They prove the author's ability to make in-depth scientific analyzes and correctly interpret the results obtained

Abstract

The presented abstract meets all the requirements and reflects the goals, objectives, conclusions and contributions related to the dissertation.

CONCLUSION

The dissertation on the topic "APPLICATION OF TEMPORARY RESTORATIONS OBTAINED THROUGH 3-D PRINTING OF LAZARY STEREOLITHOGRAPHIC PRINTER" contains scientific-applied and applied results. The Regulations for application of ZRASRB and the Regulations of MU - Varna.

The dissertation proves that **Dr. Delyan Krasimirov Georgiev** has in-depth theoretical knowledge and practical skills in the specialty "Prosthetic Dentistry" by demonstrating qualities and skills for independent research and interpretation of results.

As a result of the above, I will vote convincingly and categorically "**FOR**" the award of the educational and scientific degree "**Doctor**" to **Dr. Delyan Krasimirov Georgiev** in the doctoral program "Orthopedic Dentistry" in the professional field 7.2. Dental medicine in the field of higher education 7. Health and sports.

Prepared the statement:

20.01.2022



Assoc. Prof. Ilian Hristov, DMD, Ph.D.

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