



MACEDONIAN UNION OF METALLURGISTS

VIII<sup>th</sup> International Metallurgical Congress,  
**METALLURGY, MATERIALS  
AND ENVIRONMENT**

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**BOOK OF ABSTRACTS**

Edited by:

Perica Paunović, Sveto Cvetkovski & Goran Načevski

**VIII<sup>th</sup> International Metallurgical Congress,**  
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*organized by*

**Macedonian union of metallurgists**

*under the auspices of the*

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**Faculty of Technology and Metallurgy**  
**Economic Chamber of Macedonia**  
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**SCIENTIFIC TOPICS**

- Physical and Mechanical Metallurgy, **PMM**
- Extractive Metallurgy, **EM**
- Plastic Deformation and Metal Processing, **PDMP**
- Welding, **W**
- Casting of Metals, **CM**
- Electrochemistry, **E**
- Process Engineering and Management, **PEM**
- Nanomaterials and Nanotechnologies, **NN**
- New and Advanced Materials, **NAM**
- Environmental Protection, **EP**
- Inorganic and Refractory Materials, **IRM**
- Miscellaneous, **M**

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**Dear participants of the VIII<sup>th</sup> Congress of Macedonian Union of Metallurgists**

The VIII<sup>th</sup> Congress of the Macedonian Union of Metallurgist's is organized by the Macedonian Union of Metallurgist's. The Congress is strongly supported by the Faculty of Technology and Metallurgy, University Ss. Cyril and Methodius, Economic Chamber of Macedonia and Government institutions. Furthermore, it is sponsored by the most important Macedonian Metallurgical Companies.

We are proud to announce that this will be the most significant event of current time in the Republic of Macedonia concerning Metallurgy. Moreover, this is an excellent opportunity to raise awareness to the Macedonian companies, metallurgical engineers and any others experts involved in the metallurgical theory and practice about the latest scientific and technical achievements in the field of metallurgy, materials engineering and environment developments.

Ohrid was selected as the destination for the congress because this old city is the cradle of the Macedonian culture and history. Hence, we are certain that our guests will enjoy Ohrid's natural beauty and its historical monuments. We do hope that you will cherish these memories along with many scientific highlights, cordial hospitality and great friendship.

This Congress will continue the tradition that started 20 years ago. Over a 60 abstracts and about 20 full papers (proceedings) that were submitted to the congress organizers. Additionally, about 120 authors from 15 different countries will take part in the congress. Finally, a total of 26 lecturers, 4 plenary and 22 Invited lectures will present their lectures.

Organizing an event of this size is not a simple task. We thank our sponsors for making this event possible. Similarly, we want to thank all institutions and individuals who gave their contribution in realisation of this scientific manifestation. Lastly your interest is an integral element for the success of this Congress.

Dear Colleagues!

It is my great honor and pleasure, on behalf of the Organizing Committee of Congress, scientific staff of the Faculty of Technology and Metallurgy, and of the members of the Macedonian union of Metallurgists to thank all of you and show our gratitude for your contribution and participation in our congress.

Thank you for attending the VIII<sup>th</sup> Congress,

President of Macedonian Union of Metallurgists and,  
President of the Organizing Committee  
**Prof.Sveto Cvetkovski**



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NAM – 4

**PREDICTING THE FLEXSURAL STRENGTH OF TEXTILE COMPOSITES BASED ON GLASS FABRICS**

Silvana Zhezhova<sup>1</sup>, Sanja Risteski<sup>1</sup>, Syetlana Risteska<sup>2</sup>,  
Vineta Srebrenkoska<sup>1</sup>

e-mail: [silvana.zezova@ugd.edu.mk](mailto:silvana.zezova@ugd.edu.mk)

1 - Faculty of Technology, "Goce Delcev" University - Stip Macedonia

2 - Institute of Advanced Composites and Robotics - Prilep, Macedonia

Properties of textile reinforced composites arise as a function of its constituent materials, their distribution, and the interaction among them. As result of it, unusual combination of material properties can be obtained. This paper examines the effect of the textile fabric type and applied pressure on the flexural properties of laminated composite materials. For this purpose, the prepregs were made from two types of E- glass fabric (with different weave structure) and epoxy resin, which were further processed into composite plates using compression molding technology. The flexural properties of the manufactured samples were determined by means of three-point-bending test according to the standard EN ISO 14125. In order to obtain the maximum number of data with a minimum number of experiments and to obtain the appropriate properties of the laminated composite samples, factorial design of experiment 2<sup>2</sup> was used. The obtained results have shown that the main contribution to the flexural strength is given by the type of the textile fabric used for manufacturing the samples. Laminated composite samples reinforcement with glass fabric with twill weave pattern shown maximal flexural strength of 546, 934 MPa. On the other hand, applied pressure has a negligible positive effect on the response.

**Key words:** E- glass fabric, plain, twill, epoxy resin, prepreg, flexural strength