

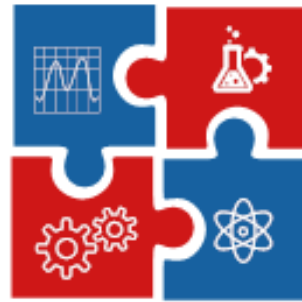
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CNN TECH

**„International Conference of Experimental and
Numerical Investigations and New Technologies“**

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Programme and The Book of Abstracts

04 – 07 July 2023

Zlatibor, Serbia

**„International Conference of Experimental and Numerical
Investigations and New Technologies“**

CNN TECH 2023

04 – 07 July 2023

Hotel Mona, Miladina Pecinara 26, Zlatibor, Serbia

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Programme and The Book of Abstracts

Organised by:

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“International Conference of Experimental and Numerical Investigations and New Technologies”

CNN TECH 2023

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We particularly wish to thank our sponsor, **The Ministry of Education, Government of the Republic of Serbia**.

We would like to thank the University of Belgrade - Faculty of Technology and Metallurgy for supporting the young researchers of this conference.

We are also grateful to companies, **3D Republic** and **Shimadzu**, who have significantly contributed to the organization and realization of the conference.

PREFACE

Dear Friends and Colleagues,

welcome to the CNN Tech 2023 Conference and the fabulous mountain of Zlatibor!

With 118 papers (19 by international authors) and contributions by authors from different countries, the International Conference of Experimental and Numerical Investigations and New Technologies CNN Tech 2023 successfully sets a high level for future conferences. Participation of a large number of domestic and international authors, as well as the diversity of topics, justifies our efforts to organise this conference and contribute to the exchange of knowledge, research results and experience of industry experts, research institutions and faculties which all share a common interest in the field in experimental and numerical investigations.

This year CNN Tech 2023 focuses on the following topics:

- Mechanical Engineering,
- Engineering Materials,
- Chemical and Process Engineering,
- Experimental Techniques,
- Numerical Methods,
- New Technologies,
- Clear sky,
- Dental Materials and Structures,
- Advanced Materials and Technology,
- Artificial intelligence
- Student session and
- Successful Project Stories.

For the first time, we have a new section “Successful Project Stories” dedicated to showcasing inspiring results from exceptional projects that have achieved remarkable success in their respective fields. Apart from plenty of interesting lectures, the participants will have a chance to lighten up and communicate in friendly and relaxed settings. The organising committee of CNN Tech 2023 would like to express gratitude to the Ministry of Education and the Ministry of Science, Technological Development and Innovation for the financial support of the

Conference. On behalf of the Innovation Center of the Faculty of Mechanical Engineering, Faculty of Mechanical Engineering and Center for Business Trainings, we wish this to be a splendid CNN Tech conference filled with many memorable moments.

PROGRAMME AND ORGANIZING COMMITTEE

STUDYING THE INFLUENCE OF ELASTANE CONTENT AND DIFFERENT WET PROCESSES ON THE PROPERTIES OF COTTON AND COTTON/ELASTANE SINGLE JERSEY KNITTED FABRICS AND THE REVALORIZATION OF FABRIC WASTE

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Abstract

*This paper represents a comprehensive review of the effect of elastane and common wet processes (bleaching, dyeing, and softening) on the properties of 100% cotton and half or full plated cotton/elastane single jersey knitted fabrics. The fabrics were characterized in terms of their structural (fabric weight, thickness, and stitch density), comfort (air permeability and water vapor resistance), mechanical (stiffness, bursting elongation, and bursting strength), and antistatic (volume electrical resistivity) properties. Fabrics' antistatic properties were further improved by in situ synthesis of Cu-based nanoparticles (CuNPs) on their surfaces. Such fabrics can be also considered as bioactive since they possessed excellent antioxidant (determined using the ABTS method) and antimicrobial (against *E. Coli*, *S. aureus*, and *C. albicans*) activities. The last section of this chapter is focused on proposing a novel circular economy solution for the disposal of softened cotton and cotton/elastane knitted fabric waste collected from the textile industry (i.e., after clothing cutting). For that purpose, selected fabrics were revalorized as adsorbents for the widely used textile dye Congo Red and the maximum dye adsorption was tested using isotherm models. Thereafter, the fabrics with adsorbed Congo Red dye were evaluated as antistatic and dissipative fabrics, i.e., as alternative non-metal-based conductive textiles.*

Keywords

Knitted Bioactive Fabrics, Softener, Properties.

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