

AND

UNION OF ENGINEERS AND TECHNICIANS OF SERBIA
FACULTY OF TECHNOLOGY AND METALLURGY IN BELGRADE
FACULTY OF TECHNOLOGY, SHTIP, NORT OF MACEDONIA
SOCIETY FOR ROBOTICS OF BOSNIA I HERZEGOVINA
BASTE - BALKAN SOCIETY OF TEXTILE ENGINEERING, GREECE

III INTERNATIONAL SCIENTIFIC CONFERENCE CONTEMPORARY TRENDS AND INNOVATIONS IN THE TEXTILE INDUSTRY

III MEĐUNARODNA NAUČNA KONFERENCIJA
SAVREMENI TRENDOVI I INOVACIJE U
TEKSTILNOJ INDUSTRIJI



PROCEEDINGS

ZBORNIK RADOVA

EDITOR: Prof. dr SNEŽANA UROŠEVIĆ

Belgrade, 17-18 th September, 2020 Union of Engineering and Technicians of Serbia Dom inženjera "Nikola Tesla"



"CONTEMPORARY TRENDS AND INNOVATIONS IN THE TEXTILE INDUSTRY" CT&ITI 2020

PROCEEDINGS

Editor: Prof. dr Snežana Urošević,

University of Belgrade, Technical Faculty in Bor

Technical Editor: Predrag Dašić, Andrea Dobrosavljević

Publiher: Union of Engineers and Textile Technicians of Serbia, Belgrade, Serbia,

September, 2020.

For the publisher: Prof. dr Snežana Urošević

Printed: SatCip, Vrnjačka banja, Serbia

Printing: 100 copies

ISBN 978-86-900426-2-3

CIP - Каталогизација у публикацији Народна библиотека Србије, Београд

677(082) 687.1(082)

МЕЂУНАРОДНА научна конференција Савремени трендови и иновације у текстилној индустрији (3; 2020; Београд)

Zbornik radova = Proceedings / III Međunarodna naučna konferencija Savremeni trendovi i inovacije u tekstilnoj industriji = III International Scientific Conference Contemporary Trends and Innovations in the Textile Industry, CT&ITI 2020, Belgrade, 17-18 th September, 2020 ; [organized by] Union of Engineers and Textile Tehnicians of Serbia ... [et al.] ; editor Snežana Urošević. - Belgrade : Union of Engineers and Textile Technicians of Serbia, 2020 (Vrnjačka Banja : SatCip). - [10], 470 str. : ilustr. ; 25 cm

Radovi na srp. i engl. jeziku. - Tiraž 100. - Str. [4]: Preface / Snežana Urošević. - Napomene i bibliografske reference uz radove. - Bibliografija uz svaki rad.

ISBN 978-86-900426-2-3

- 1. Савез инжењера и текстилних техничара Србије (Београд)
- а) Текстилна индустрија Зборници b) Индустрија одеће Зборници

COBISS.SR-ID 19917065





SCIENTIFIC COMMITTEE

Conference Contemporary Trends and Innovations in the Textile Industry

Prof. dr Snežana UROŠEVIĆ (Serbia) - president

Prof. dr Časlav LAČNJEVAC (Serbia) - vice president

Prof. dr Mirjana KOSTIĆ (Serbia) - vice president

Prof. dr Dušan TRAJKOVIĆ (Serbia) - vice president

Prof. dr Koviljka ASANOVIĆ (Serbia)

Prof. dr Gordana KOKEZA (Serbia)

Prof. dr Božidar STAVRIĆ (Serbia)

Prof. dr Jovan STEPANOVIĆ (Serbia)

Prof. dr Nemanja KAŠIKOVIĆ (Serbia) Prof. dr Snežana STANKOVIĆ (Serbia)

Doc. dr Nenad ĆIRKOVIĆ (Serbia)

Dr Ana JELIĆ AKSENTIJEVIĆ (Serbia)

Dr Gordana ČOLOVIĆ (Serbia) Dr Danijela PAUNOVIĆ (Serbia)

Dr Mirjana RELJIĆ (Serbia)

Dr Ineta NEMEŠA (Serbia)

Prof. dr Vineta SREBRENKOSKA (North of Macedonia)

Prof. dr Isak KARABEGOVIĆ (Bosnia and Herzegovina)

Prof. dr Liliana INDRIE (Romania)

Prof. dr Goran DEMBOSKI (North of Macedonia)

Prof. dr Liliana INDRIE (Romania)

Prof. dr Magdalena PAVLOVA (Bulgaria)

Prof. dr Sabina GHERGHEL (Romania)

Prof. dr Dragana GRUJIĆ (Bosnia i Hercegovina)

Prof. dr Miloš SORAK (Bosnia and Herzegovina)

Prof. dr Bruno ZAVRŠNIK (Slovenia)

Prof. dr Savvas VASSILIADIS (Greece)

Prof. dr Diana KRASTEVA (Bulgaria)

Prof. dr Petra FORTE TAVČER (Slovenia)

Prof. dr Özlenen ERDEM İŞMAL, (Turkey)

Prof. dr Galina ASTRATOVA (Russia)

Prof. dr Zlatina KAZLAČEVA (Bulgaria)

Prof. dr Zoran STJEPANOVIĆ (Slovenia)

Prof. dr Svjetlana JANJIĆ (Bosnia and Herzegovina)

Prof. dr Damjana CELCAR (Slovenia)

Prof. dr Nuno BELINO (Portugal)

Prof. dr Victoria VLASENKO (Ukraine)

Prof. dr Muhammet UZUN (Turkey)

Doc. dr Sanja RISTESKI (North of Macedonia)

Dr Biljana LAZIĆ (Bosnia and Herzegovina)

Dr Emillia VASILEANU (Romania)

Dr Roshan PAUL (India)

Mr Almina DURAKOVIĆ (Slovenia)

ORGANIZING COMMITTEE

Conference Contemporary Trends and Innovations in the Textile Industry

Prof. dr Snežana UROŠEVIĆ - president

Dr Godana ČOLOVIĆ - vice president

Dr Danijela PAUNOVIĆ - vice president Dr Ana AKSENTIJEVIĆ JELIĆ

Dr Violeta STEFANOVIĆ

Dr Olga STOJANOVIĆ

MSc.Stanko KIŠ dip. ing M.Sc Bojana PEJČIĆ

M.Sc Mina PAUNOVIĆ

M.Sc Andrea DOBROSAVLJEVIĆ

M.Sc.Nikola MAKSIMOVIĆ



PREFACE

The 3 rd International conference "Contemporary Trends and Innovations in the Textile Industry" CT&ITI 2020, is co-organized by the Union of Engineers and Textile Technicians of Serbia, the Union of Engineers and Technicians of Serbia, the Faculty of Technology and Metallurgy in Belgrade, the University of Faculty of Technology, Shtip, North of Macedonia, Society for Robotics of Bosnia i Herzegovina and Balkan Society Of Textile Engineering-BASTE of Greece.

The Ministry of Education, Science and Technological Development of the Republic of Serbia recognized the importance of this Conference, and thus, supported it. The aim of this Conference is to consider current technical, technological, economic, ecological, R&D, legal and other issues related to the textile industry, then the application of contemporary achievements and the introduction of technical and technological innovations in the production process of fiber, textile, clothing and technical textile by applying scientific solutions in order to improve the business and increase the competitive advantages of the textile industry on the domestic and global market.

Leading scientists and experts from the Balkans and other countries, working at faculties, textile colleges and institutes, but also individuals who professionally deal with the issues at hand are taking part in this Conference.

The Conference program involves papers dedicated to the scientific and practical aspects of the following topics: Textile and Textile Technology, Textile Design, Management and Marketing in the Textile Industry and Ecology and Sustainable Development in the Textile Industry. The Conference program includes 47 papers, and a total of 103 participants from 12 countries: Bosnia and Herzegovina, Bulgaria, Finland, Latvia, North of Macedonia, Montenegro, Romania, Russia, Serbia, Slovenia, Turkey and Ukraine.

Therefore, this Conference is an opportunity for establishing scientific, educational and economic cooperation of our country with other countries. Certain number of papers by domestic authors present the project results dealing with fundamental research and technological development, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

I would like to thank all those who have made it possible to organize the conference Contemporary Trends and Innovations in the Textile Industry and make it a success. First, I would like to thank the Scientific and Organizing Committee for working hard, spending countless hours and finding the best solutions for numerous organizational aspects of our Conference. Also, I would like to express my gratitude to all sponsors who believed in the importance of this Conference and co-financed it. I also thank all the other institutions that supported the Conference in various ways, because without their support, the Conference could not have been organized. Last but not least, I would like to thank plenary lecturers, all authors and co-authors and guests for their participation in the Conference.

On behalf of the Organizing Committee Prof. dr Snežana Urošević, president





COORGANIZERS





FASHION EDUCATION







DONORS



FRIENDS



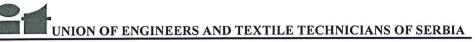




TABLE OF CONTENTS

| PLENARY LECTURES | 1 |
|--|----|
| Ana Kramar, Bratislav Obradović, Mirjana Kostić, Biljana Pejić, Katarina Dimić Mišić, Milorad Kuraica ATMOSPHERIC PRESURE NON-THERMAL PLASMA MODIFICATION OF CELLULOSE AND LIGNOCELLULOSIC MATERIALS | 3 |
| Nemanja Kašiković, Gojko Vladić SMART TEXTILES IN SPORT | 13 |
| Hüseyin Aksel Eren, Erhan Kenan Çeven, Gizem Karakan Günaydin, Merhmet Serdar Güler, Emre Akdemir ABSORBENCY AND WICKING PROPERTIES OF TERRY TOWER WEAVING FABRICS | 24 |
| Danijela Paunović DEVELOPMENT STRATEGY OF SELLING IN FASHION INDUSTRY THROUGH VIRTUAL VR AND AUGMENTED REALITY AR | 32 |
| CONFERENCE PAPERS | 39 |
| SESSION I | 39 |
| Matea Korica, Zdenka Peršin, Lidija Fras Zemljič, Katarina Mihajlovski, Snežana Trifunović, Biljana Dojčinović, Mirjana Kostić TEMPO OXIDATION AS A TOOL FOR IMPROVING ANTIBACTERIAL PROPERTIES OF VISCOSE FABRIC FUNCTIONALIZED WITH CHITOSAN BASED NANOPARTICLES | 51 |
| Isak Karabegović INNOVATIVE SENSORS AND THEIR ROLE IN PRODUCT AUTOMATION TEXTILE INDUSTRY PROCESSES | 60 |
| Senem PAK ANALYSIS OF THE COMPARATIVE ADVANTAGE AND COMPETITIVENESS OF THE TURKISH TEXTILE AND CLOTHING SECTOR IN THE INTERNATIONAL MARKET | 69 |
| Svitlana Arabuli, Viktoriia Vlasenko, Arsenii Arabuli, Vladyslav Truba, Maryna Kolosnichenko, Nataliia Levytska GARMENTS AS UV-RADIATION SHIELDING | 78 |
| Sanja Risteski, Vineta Srebrenkoska | |
| OPTIMIZING THE TIME OF WORK EXECUTION IN THE PROCESS OF SEWING WOMAN SHIRT | 83 |
| Miroslav Petrov, Mariel Penev, Daniel Angelov | |
| FORMULATION OF MULTIVARIATE, OPTIMAL COMPROMISE ACCEPTABLE SOLUTIONS FOR TECHNOLOGICAL PARAMETERS OF SEWING PRODUCTS | 91 |





| Gojko Vladić, Nemanja Kašiković, Gordana Bošnjaković, Bojan Banjanin, Željko Zeljković | 102 |
|--|------|
| COMPUTER GENERATED GRAPHICS FOR TEXTILE PATTERN | |
| Maja Jankoska DIFFERENT PATTERN DESIGN OF SLEEVES FOR WOMEN'S CLOTHING | 110 |
| Andreja Rudolf, Zoran Stjepanovič | |
| STEM EDUCATION INTENDED FOR UNDERSTANDING THE DEVELOPMENT OF SMART TEXTILE PRODUCTS | 120 |
| Branislava B. Lazić SMART TEXTILES – APPLICATIONS OF SHAPE MEMORY MATERIALS IN TEXTILES | 129 |
| Gherghel Sabina | |
| THE DEVELOPMENT AND INTEGRATION OF THE INTELLIGENT SYSTEMS IN TEXTILE ENTERPRISES | 139 |
| Milada Novaković, Snežana Stanković WATER TRANSFER ABILITY OF PLAIN JERSEY KNITTED FABRICS | 143 |
| Mokina Anna Y, Ulme Andra | |
| AUTHOR'S NON-WOVEN AND ECOTEXTILE IN THE WORKS OF STUDENTS OF THE SOUTHERN FEDERAL AND RIGA TECHNICAL UNIVERSITIES | 152 |
| CONFERENCE PAPERS | 1.00 |
| SESSION II | 163 |
| Svjetlana Janjic, Tatjana Botic | |
| EFFECT OF WOOL WASHING METHOD TO SORPTION OF WASTE MOTOR OILS FROM WATER | 165 |
| Emilija Slavkova, Sanja Risteski, Vineta Srebrenkoska THE DESIGNING OF COMPOSITE LAMINATES FOR APLICATION IN AUTOMPOTIVE INDUSTIES | 171 |
| Vojislav Gligorijević, Jovan Stepanović, Nenad Ćirković, Radica Nicić PARAMETRIC MODELS AND POROSITY OF TRANSVERSELY KNITTED SMOOTH KNITTING AND CREATION OF 3D MODELS WITH MORE FIBERS | 179 |
| Dragana Frfulanović Šomođi, Milena Savić | 187 |
| KTETORS'S COSTUMES IN THE CHURCH OF DONJA KAMENICA | |
| Liliana Indrie, Julieta Ilieva, Danijela Paunović, Zlatin Zlatev VISUAL ELEMENTS OF FOLK COSTUME IN DESIGN OF CONTEMPORARY TEXTILE | 201 |
| Bruno Završnik NEW WAYS OF CHANGING CLOTHES-VIRTUAL DRESSING ROOM | 209 |





| Galina V. Astratova, Ekaterina V. Danilova DIGITAL MARKETING TECHNOLOGIES APPLICATION IN TEXTILE GOODS PROMOTION IN THE RUSSIAN FEDERATION | 215 |
|---|-----|
| Bruno Završnik | 226 |
| END - OF - SEASON SALE | 226 |
| Violeta Stefanović, Snežana Urošević, Ivana Mladenović-Ranisavljević FACTORS OF THE WORKING ENVIRONMENT AND IMPLEMENTATION OF THE STANDARD AS IMPACT INDICATORS ON THE SAFETY OF EMPLOYEES IN TEXTILE ORGANIZATIONS | 234 |
| Gordana Čolović, Nikola Maksimović, Danijela Paunović ERGONOMICS WORKPLACE DESIGN OF THE SEWING OPERATOR | 247 |
| Dragan Igić, Milovan Vuković THE INFLUENCE OF ETHICAL BEHAVIOR OF LEADERS AT A JOB ON THE ORGANIZATIONAL COMMITMENT OF EMPLOYEES IN PRODUCTION COMPANIES | 257 |
| Branislava B. Lazić ECOLOGICAL WASTE MANAGEMENT – TEXTILE WASTES RECYCLING | 274 |
| Sonja Jordeva, Elena Tomovska, Silvana Zhehzova, Sashka Golomeova Longurova, Vangja Dimitrijeva-Kuzmanoska TEXTILE WASTE MANAGEMENT PRACTICES | 292 |
| Ivona Lenchova Rasiyska RESEARCH OF BULGARIAN SEWING INDUSTRY'S INFORMATION CHAIN | 302 |
| CONFERENCE PAPERS | |
| SESSION III | 309 |
| Andrea Dobrosavljević, Snežana Urošević, Gordana Kokeza, Nada Štrbac PROCESS ROLES AND RESPONSIBILITIES OF EMPLOYEES IN MICRO ENTERPRISES OF CLOTHING INDUSTRY | 311 |
| Damjana Celcar STEPS TOWARDS A MORE SUSTAINABLE FASHION | 321 |
| Maja Jankoska DESIGN AND MODELING OF LADY'S DRESS | 330 |
| Sara Srebrenkoska, Vladimir Dukovski, Svetlana Risteska THE DESIGNING OF LASER ASSISTED AUTOMATED TAPE LAYING PROCESS FOR OBTAINING OF THE THERMOPLASTIC COMPOSITE PARTS | 339 |
| Dragan Dimitrijević, Snežana Urošević, Živoslav Adamović, Maja Nikolić, Nevena Mihajlović SUSTAINABLE DEVELOPMENT OF THE SME CLOTHING INDUSTRY THROUGH THE ASPECT OF MATERIAL AND ENVIRONMENTAL FACTOR CORRELATION | 347 |





| Kosana Vićentijević, Ivan Pantelić, Nikola Stojanović | |
|--|--------------------------|
| IMPLEMENTATION OF CORPORATE SOCIAL RESPONSIBILITY IN THE | 358 |
| TEXTILE INDUSTRY - THE CASE STUDY: HÖÖKS HÄSTSPORT | |
| Ana Aksentijević-Jelić | |
| THE INFLUENCE OF CREATIVE IMPULSES OF EDUCATORS IN | 368 |
| HIGHER EDUCATION ON THE EFFECTIVENESS OF THE DESIGN | 200 |
| PROCESS IN PRACTICE | |
| Mina Paunović, Nataša Đalić | |
| THE IMPACT OF HUMAN CAPITAL ON ORGANIZATIONAL AND | 376 |
| BUSINESS PERFORMANCE IN THE TEXTILE INDUSTRY | |
| Ernad Kahrović, Enes Ćorović | |
| EMPLOYEE MOTIVATION IN TEXTILE INDUSTRY: CASE STUDY OF | 383 |
| THE CITY OF NOVI PAZAR | |
| Marina Jovanović | |
| THE IMPACT OF ECO-LABELING STANDARDS FOR TEXTILE | 391 |
| PRODUCTS ON THE PURCHASING DECISION PROCESS | |
| Gorkem Gedik, Arzu Yavas, Ozan Avinc, Gizem Karakan Günaydın | hand all hand conditions |
| A COLORIMETRIC GLANCE ON JUTE FIBER WOVEN FABRIC DYEING | 398 |
| WITH RUBIA TINCTORUM L. | |
| Anita Sadiković, Čedomir Dimić, Ivana Petrović, Nenad Ćirković, Tatjana Šarac | 40.5 |
| INFLUENCE OF NON-WOVEN TEXTILE SURFACE MASS ON AIR | 405 |
| PERMEABILITY | |
| Olga Stojanović | 410 |
| RECOGNIZING TALENTED EMPLOYEES IN GARMENT INDUSTRY | 419 |
| Ivona Lenchova Rasiyska | |
| PROBLEMS IN THE MANUFACTURE OF CLOTHES DUE TO THE USE | 425 |
| OF CONTEMPORARY MATERIALS | |
| Ineta Nemeša | 422 |
| HAND STITCH MACHINES FOR MEN SUIT MANUFACTURING | 433 |
| Ana Vasiljević Čelar | |
| EVALUATION OF CULTURAL HERITAGE AND ITS PRESERVATION | 440 |
| THROUGH THE PRINCIPLE OF SELF-SUSTAINABILITY IN FASHION | |
| Author index | 457 |
| SPONSORS, DONORS AND FRIENDS OF THE CONFERENCE | 461 |
| | |









III Međunarodna konferencija "Savremeni trendovi i inovacije u tekstilnoj industriji" 17-18. septembar 2020. Beograd, Srbija

PLENARY LECTURES