

14th International Conference on Development and Modernization of Manufacturing (RIM 2023)

IOP Conference Series: Materials Science and Engineering
Volume 1298

Sarajevo, Bosnia and Herzegovina
20 - 22 September 2023

Editors:

**Zijah Burzic
Budimir Mijovic**

**Fadil Islamovic
Atif Hodzic**

ISBN: 978-1-7138-8735-5
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Preface

Peer Review Statement

Comparative Analysis of the Mechanical Exploitation Properties of the Steel Sheet Welded Joint of New and Old Materials.....	1
<i>Fadil Islamović, Ermin Bajramović, Belma Islamović, Esad Bajramović</i>	
Numerical Analysis of the Construction Integrity on the Example of a Prosthetic Device	16
<i>Fuad Hadžikadunić, Ahmed Mujkanović, Nedeljko Vukojević, Amna Bajtarević-Jeleč</i>	
Testing the Impact Energy and Determination of the Brittleness Temperature of the Welded Joint of Steel A516 Gr.70	29
<i>Ermin Bajramović, Fadil Islamović</i>	
Modeling of Stainless Steel Bending Force on CNC Press Brake.....	39
<i>Hasan Cinac, Sanel Gredečić</i>	
Testing of Mechanical Properties of Polymer PA6 – 30% Glass Fibres	52
<i>Amir Čoralić, Anel Maslo, Mirza Manjgo, Vesna Raspudić, Mersida Manjgo, Tomaž Vuherer</i>	
The Use of Modern 3D Technologies for the Development of a Prototype Mountain Bike Brake Lever Within the Concept of Personalized Production.....	58
<i>Sebastijan Žibert, Maša Mamić, Elvis Hozdić</i>	
Calculation of Convection Coefficient During Steel Hardening of Axisymmetric Probes in Thermal Oils	76
<i>Šefik Behrem, Bahrudin Hrnjica</i>	
Instrumented Microindentation – A Versatile Technique in the Field of Wood Science and Technology	84
<i>Marko Petrić</i>	
Antifungal Protection of Beech Wood Using Plant Extracts	96
<i>Mimica Stefanović, Nebojša Todorović, Goran Milić, Aleksandar Lovrić</i>	
Mathematical Model of the Influence of Some Parameters of Solid Wood Machinability on the Roughness of the Processed Surface Ra During Planning.....	102
<i>Atif Hodžić, Aldin Bijelić, Damir Hodžić</i>	
Comparative Analysis of Bending Strength Properties Between Glued and Un-Glued Finger Joints in Beech and Fir Wood Species	123
<i>Umejr Šljivo, Redžo Hasanagić, Leila Fathi, Mohsen Bahmani</i>	
Optimization of Solid Wood Workability Parameters in the Planing Process	131
<i>Husein Rošić, Aldin Bjelić, Atif Hodžić, Miran Merhar</i>	
Eco-Friendly Adhesives for Wood-Based Composite Production	149
<i>Minka Čehić, Hasan Talić, Salah Eldien Omer</i>	
Performance of Coconut Wood in Timber Structures: A Review of Its Properties and Applications	161
<i>Leila Fathi, Redžo Hasanagić, Aldin Bjelić, Mohsen Bahmani</i>	

Numerical Analysis of Wood Beam Bending with Verification of Breaking Force.....	170
<i>Fatka Kulenović, Nedim Hurem, Amra Talić-Čikmiš</i>	
Use of the Lagrange Interpolation Polynomial to Estimate the Bending Strength Value of Plywood.....	177
<i>Hasan Talić, Melisa Haurdić, Fatka Kulenović</i>	
Design and FPGA Implementation of Compensator for Sharpening CIC Filter	185
<i>Gordana Jovanovic Dolecek, Gabriel Alejandro Martinez Novelo</i>	
Averaging Data on the Unit Hypersphere.....	194
<i>Aladin Crnkić, Zinaid Kapić, Šejla Jusić, Melisa Haurdić</i>	
Power Losses in the MOSFET Transistors of Switching-Mode Converters.....	201
<i>Georgi Kunov, Tihomir Brusev, Elissaveta Gadjeva</i>	
Software System for Automatic Reading, Storing, and Evaluating Scanned Paper Evaluation Sheets for Questions with the Choice of One Correct Answer from Several Offered	207
<i>Dulaga Hadžić, Enes Saletović, Zinaid Kapić</i>	
A Method for Maintaining a Stable ISM Band Point-To-Point Wireless Communication Link in the Presence of Interference	219
<i>Enes Saletović, Elmira Babović, Dulaga Hadžić, Nevzudin Buzadžija</i>	
Interpolation on the Unit Hypersphere Using the N-Dimensional Generalized Kuramoto Model.....	227
<i>Zinaid Kapić, Aladin Crnkić</i>	
Performance Comparison of Bilateral Teleoperation Control of Direct Control, PID Control, and Fuzzy Logic Control for Water Tank System	234
<i>Una Drakulić</i>	
Using a Fuzzy Logic Controller in Photovoltaic Power Systems for Maximizing PV Array Efficiency	247
<i>Una Drakulić, Branko Blanuša</i>	
Control of a Smart Security Object Using an Arduino Platform and a GSM Controller.....	257
<i>Azra Kapić, Amel Toroman</i>	
Adaptive Fuzzy PID Car Control Using a Bilateral Teleoperator.....	271
<i>Amel Toroman, Aljo Mujčić</i>	
Raspberry Pi Based Web Monitoring Smart Security System.....	283
<i>Amel Toroman, Una Drakulić, Amel Džanić, Azra Kapić</i>	
How Fragile Are Buildings in Bosnia and Herzegovina Once Exposed to Earthquake Motion?	294
<i>Naida Ademović</i>	
Evaluation of Reality and Standards for Fire Evacuation Routes in Buildings – Case Study	301
<i>Lamija Balić, Ahmed El Sayed, Sanin Džidić, Adnan Novalić</i>	
Spalling of Concrete Caused by ASR – a Review	314
<i>Sanin Džidić, Irfan Bidžević</i>	
Estimation of Channel and Flood Plain Roughness Using HEC-RAS Model: A Case Study of the Veseočica River, Bosnia and Herzegovina	328
<i>Hata Milišić, Emīna Hadžić</i>	

One Experimental Research with Cement Substitution by Fly Ash 341
Sanin Džidić, Arnel Poprženović

Experimental and Analytical Deformation Analysis of Truss Members 353
Damir Hodžić, Elma Veladžić

Analysis of Foundation Solution for the Noise Protection Walls on the Reinforced Earth 360
Asmin Veladžić, Dženana Gačo, Aida Veladžić

Author Index