

# **11th International Conference on Advanced Manufacturing Technologies (ICAMaT 2020)**

Held online due to COVID-19

IOP Conference Series: Materials Science and Engineering  
Volume 1018

Bucharest, Romania  
29 - 30 October 2020

ISBN: 978-1-7138-3322-2  
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. (2021)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## **PRODUCT DEVELOPMENT**

EFFECTS ANALYSIS OF VERTICAL TRACK IRREGULARITIES ON BOGIE VIBRATION - METHOD BASED ON BOGIE MODELLING AND WHEELSETS ACCELERATIONS MEASUREMENT.....	1
<i>M Dumitriu, D Fologea, I C Cruceanu</i>	
DESIGN AND CLOSED-LOOP CONTROL OF A PIEZOELECTRIC ACTUATOR .....	10
<i>C Rusu, S Besoiu, M O Tatar</i>	
MODELING OF NONLINEAR PROPERTIES OF CASING CENTRALIZERS EQUIPPED WITH AXIAL THRUST.....	16
<i>I Shatskyi, A Velychkovych, I Vytvytskyi, M Senyushkovych</i>	
EXPERIMENTAL CHARACTERISATION OF A FLAX FIBRE - EPOXY RESIN COMPOSITE .....	23
<i>Flavia Artimon, C Stochioiu, H M Gheorghiu, Iuliana Sima</i>	
INTELLIGENT CONTROL OF WHEEL RAIL CONTACT NOISE PHENOMENON IN RAIL TRANSPORTATION .....	31
<i>E Chiba, M Abdelkrim, A Belloufi, I Rezgui</i>	
ASPECTS OF THE WHEEL-SWITCH CONTACT STUDIED WITH THE CONTACT SOFTWARE .....	42
<i>M C Tudorache, V M Dinu, R A Oprea</i>	
MATHEMATICAL, DETAILED AND PARAMETRIC MODELLING FOR SMART SPINAL ORTHOSES .....	50
<i>R Murzac, C V Doicin, M E Ulmeanu, T Turcanu</i>	

## **PROCESSES, TOOLS AND EQUIPMENT**

CHEMICAL AND MECHANICAL TESTS ON THE $\text{SiO}_2$ -ZNO MATERIALS FOR PROTECTIVE COATINGS OF INDUSTRIAL USE .....	60
<i>A M Mocioiu, D I Băilă, O C Mocioiu</i>	
MANUFACTURING OF $\text{SiO}_2$ -ZNO MATERIALS WITH OPTICAL PROPERTIES .....	66
<i>O C Mocioiu, D I Băilă, I Atkinson, V Brătan, A M Mocioiu</i>	
THE ROLE OF THE FRICTION PROCESS IN ABRASIVE GRAIN MICRO CUTTING TECHNOLOGY .....	72
<i>S Mazuru, S Scaticailov</i>	
SOME ASPECTS OF THE NITRIDING PROCESS OF PARTS IN MACHINE CONSTRUCTION .....	80
<i>S Mazuru, N Trifan, A Mazuru</i>	
FEM SIMULATION OF C45 STEEL AND CU-ETP BILLET SHAPING AT HOT UPSETTING BETWEEN CONVEX CONICAL DIES .....	87
<i>V V Kukhar, E Yu Balalayeva, M G Korenko, A H Prysiazhnyi, O S Anishchenko</i>	

NUMERICAL MODELING OF PIPE PARTS OF AGRICULTURAL MACHINERY EXPANSION BY STEPPED PUNCHES .....	93
<i>R H Puzyr, V T Shchetynin, R H Arhat, Yu B Sira, V V Muravlov, S I Kravchenko</i>	
STUDY ON GRINDING MODE EFFECT ON EXTERNAL CONICAL THREAD QUALITY .....	101
<i>L Ya Ropyak, V S Vytvytskyi, A S Velychkovych, T O Pryhorovska, M V Shovkoplias</i>	
AUTOMATIC POSITIONING METHODOLOGY AND ALGORITHM FOR MODULAR JIGS AND FIXTURES COMPONENTS .....	113
<i>T Savu, S Nanu, I C Ene</i>	
OPTIMAL SELECTION OF MILLING CUTTING TOOLS FOR MACHINING OF TRIANGULAR POCKETS .....	120
<i>A Belloufi, M Abdelkrim, I Rezgui, R Saci, M Mezoudj, M T Amira</i>	
SMART PREDICTION OF SURFACE MICRO-HARDNESS AFTER MILLING BASED ON FUZZY INFERENCE MODEL .....	129
<i>M T Amira, A Belloufi, M Abdelkrim, F Abdelkrim, M Mezoudj</i>	
EXPERIMENTAL STUDY TOWARDS WIG WELDED JOINT. CASE STUDY: REPAIR BY WELDING OF X2CRNIMO17-12-2 PIPES.....	143
<i>F Ionescu, Ghe Solomon, I Voiculescu, G Gârleanu, D Gârleanu</i>	
WAYS FOR DETERMINING THE INTERMEDIATE DIMENSIONS WHEN DESIGNING THE MACHINING TECHNOLOGY .....	150
<i>L Slătineanu, M Coteață, O Dodun, G Nagîț, A Hrițuc, I Beșliu-Băncescu</i>	
RESEARCH OF FUZZY LOGIC APPLICATION ON SURFACES ROUGHNESS PREDICTION UNDER FINISHING MILLING PROCESS .....	156
<i>D. P. Ghencea, F. D. Anania, M. Zapciu</i>	

## **INDUSTRIAL SYSTEMS**

CORRELATION BETWEEN MARKET SEGMENTATION, INDUSTRIAL PRODUCT FEATURES AND CONTEXT IN DESIGN ASSESSMENT.....	164
<i>A E Craciun</i>	
BRIEF REVIEW OF METHODS AND TECHNIQUES USED IN LEARNING FACTORIES IN THE CONTEXT OF INDUSTRY 4.0.....	177
<i>G C Neacsu, I G Pascu, E L Nitu, A C Gavriluta</i>	
A BRIEF REVIEW OF THE METHODS AND TECHNIQUES USED IN THE INNOVATIVE INTERNAL LOGISTICS PROCESSES AND SYSTEMS .....	191
<i>I G Pascu, G C Neacsu, E L Nitu, A C Gavriluta</i>	
NEW DESIGN OF PRECISE DEPLOYABLE REFLECTOR. TECHNOLOGIES FOR MANUFACTURING OF PHYSICAL MODEL .....	203
<i>V I Bujakas, M D Glotov</i>	
APPLICATION OF SOFTWARE SOLUTION FOR SOLVING ENGINEERING DESIGN OPTIMIZATION PROBLEMS .....	209
<i>M Madic, P Janković, M Trifunović, M Kovacević</i>	
ANALYSIS AND DEVELOPMENT OF A KEY PERFORMANCE INDICATORS MODEL FOR THE PAPER INDUSTRY .....	217
<i>A Tieber, D Manolache, M Gheorghe</i>	

## **Author Index**