

5th International Conference on Materials and Manufacturing Engineering (ICMME-2020)

IOP Conference Series: Materials Science and Engineering
Volume 954

Kanchipuram, India
7 – 8 September 2020

Editors:

T. Rajmohan
A. Nandakumar
K. Palani

ISBN: 978-1-7138-4782-3
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. (2022)

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 declaration	
Predictive Maintenance using Machine Learning Based Classification Models	1
<i>Anisha Chazhoor, Y Mounika, M Vergin Raja Sarobin, M V Sanjana, R Yasashvini</i>	
Passive flow control strategies for low Reynolds number airfoils.....	10
<i>T Rajesh Senthil Kumar, Mohini Priya Kolluri, V R Gopal Subramaniyan, A D Sripathi</i>	
Applications of marketing flexibility in manufacturing and service sectors	16
<i>Kavya Gopakumar, M. Suresh</i>	
Investigations of Flexural and Hardness Behaviour of Graphene Composites.....	26
<i>B. Vijaya Ramnath, S. Gowtham, J. Melvin Antony, D. Kumaran, G. Lokeshwaran</i>	
Optimising the Parameters and Increasing the Hardness of Duplex Stainless Steel by Annealing Process in Valve Manufacturing Industries	34
<i>T. Varun Kumar, K. Karthick, K. Dhanushkaran, D. Jagadeesh</i>	
SMEs Perception towards Adoption of Measurement System Analysis Strategy: A Case Study in Pump Manufacturing Industry.....	43
<i>T. Varun Kumar, G. Ramya, P. Kowsalya, B. Shanmuga Priya, P. Tharani</i>	
A review on Friction Stir Welding in Aluminium Alloys	54
<i>J Stephen Leon, G Bharathiraja, V Jayakumar</i>	
Influence of Boron Carbide Addition on Particle Size of Copper Zinc Alloys Synthesized by Powder Metallurgy	68
<i>L. Rajeshkumar, R. Suriyanarayanan, K. Shree Hari, S. Venkatesh Babu, V. Bhuvaneswari, M.P. Jithin Karunan</i>	
Design and Optimization of Static Characteristics for a Steering System in an ATV	77
<i>L. Rajeshkumar, V. Bhuvaneswari, B. Pradeepraj, M. Praveen pauldurai, C. Palanivel, S. Sandeep kumar</i>	
Assessment of Service Agility in Power Distribution Company	89
<i>M Anil, M. Suresh</i>	
Friction Stir Processing – A Review	97
<i>A. Arun Premnath, A. Tamilarasan, R. Prasanth Kumar</i>	
Optimal design and experimental investigation of the material-nanostability and deformation behaviour of Al-5.78Zn-1.45Cu-2.49 Mg, Al-5.6Zn-2.5Mg-1.6Cu and Al-Mg-0.6Si alloys under cyclic-loading for ultra-precision structural applications	103
<i>Shubham Sharma, Jujhar Singh, Vivek Aggarwal, Shalab Sharma, Abhinav Sharma, Ram Narayan</i>	
An experimental study of wire breakage frequency on different electrodes during WEDM of Inconel-722.....	114
<i>Vivek Aggarwal, Jujhar Singh, Shubham Sharma, Harish K. Garg, Abhinav Sharma, Gursharan Singh, Jwala Parshad</i>	

A Review on Submerged Friction Stir Welding of Light Weight Alloys.....	127
<i>M. Sucharitha, B. Ravi Sankar, P. Umamaheswarao</i>	
Synthesis and characterization of natural fiber reinforced laminated thermoplastic composite	135
<i>S Vijayabhaskar, T Rajmohan, E Isaac Kennedy, T Jayanth Krishna</i>	
Review on road marking paint machine and material	141
<i>Vyankatesh Naidu, Vinod Bhaiswar</i>	
Preparation and analysis of the thermal properties of non-toxic eco-friendly vegetable based oils	148
<i>S D Sathishkumar, T Rajmohan</i>	
Employees stress level assessment: a case of apparel industry	155
<i>M. Suresh, R. Yuvarasanth, R.B. Arun Ram Nathan, K. Amarnath</i>	
Applications of Leagility in Manufacturing and Service Industries	165
<i>V. Vaishnavi, M. Suresh</i>	
CuO-nano based Biodegradable Refrigeration Oil in R134a Refrigeration Systems for Energy Conservation and Green Environment.....	176
<i>P. Vithya, G. Sriram, S. Arumugam, M.D.V. Aditya Chaitanya, G. Surya Deepak, K. Sriram Kumar, P. Jayaram Chandra</i>	
Polyester Based Lubricant from Waste Feedstock for Sustainable Environment: A Tribological Investigation	184
<i>S Arumugam, S Baskar, V Sankara Subramanian, G Shivasankaran</i>	
Investigation to Enhance the Performance of Computer Processor Cooling System	189
<i>P. Gayathri Prasad, L.V.R.S.V. Prasad Chilamkurti, K Santarao</i>	
Investigation of mechanical properties on nano cuprous oxide coated/uncoated spur gear	200
<i>K. Kumar, S. Arul</i>	
An Effect of EDM on AL6061-5% SiC as stir cast MMC	207
<i>S. Bharani Kumar, S. Arul</i>	
Analysis of Thermal Barrier Coating's Behaviors on Alloys – A Review	214
<i>K. Muthukumaran, J. Francis Xavier, R. Ramadoss, P. Balu, C. Ezilarasan</i>	
Influence of nanoparticles on the characters of polymeric composites	223
<i>R. Vinayagamoorthy, K. S. Subrahmanyam, K. Murali Krishna Murthy, K. Arun Prajwar, P. Gopinath, M. Sai Lahari, K. Pruthvi Rangan</i>	
Effect of change of cross section and Frequency Analysis of Anti-Roll Bar Using FEA	231
<i>T. Srinivasan, CH.V.L.N. Ram Gopal, P. Sasidhar, P. Vineeth Kumar, Shaik Sohail</i>	
Impact of mechanical properties on sheet metal forming processes by using single-point incremental shaping method.....	238
<i>T. Srinivasan, P. Ramu, G. Suresh, Y.S. Govardhan, S. Srinivasan</i>	
Performance and Emission Characteristics of C.I Engine using Jatropha and Pongamia Mixed Biodiesel.....	246
<i>S Arunprasad, Hari Jagadeesh Iyer, K Omkaar, M Jayaganth, K Palani</i>	
Development of Portable Sugarcane Harvester.....	255
<i>C Elanchezhian, B Vijayaramnath, TP Nethaji, S Purusothaman, K Singaaram, M Yogeswaran</i>	

Experimental investigation of radiator heat transfer efficiency using Water + Ethylene Glycol based Al ₂ O ₃ , SiC nanofluids	262
<i>S. SatyaPrasad, V. Rambabu, S. Ravibabu</i>	
Performance and Emission Characteristics of Four Stroke Diesel Engine Using Sesame Biodiesel Blends with Addition of TiO ₂ Nano-Particles	271
<i>R Satya Santosh Uday, K Simhadri</i>	
Optimization of Al-SiC-MW CNT metal composite by W-EDM using Taguchi method	285
<i>C. Parswajinan, B. Vijaya Ramnath, V Aiswarya, M Aswini Subhatra, S. Rajesh, J. Sriram</i>	
Multi response Optimization of Welding Parameters in Dissimilar Plasma Arc Welded Joints Using RSM Based GRA Coupled with PCA	291
<i>K Palani, S Arunprasad</i>	
Study of the G-ratio of aluminium silicon carbide nano particles reinforced metal matrix composites.....	303
<i>A. Nandakumar, T. Rajmohan, R. Sundararajan, K. Venkatesh, N. Muni Deepak, K. Venkateshwaran</i>	
Application of Evolutionary Algorithms to Predict Mechanical Properties on Natural Fibers – A Review.....	309
<i>R Prasanth Kumar, T Rajmohan, D Vijayan</i>	
Review on Thermal analysis of Polymer Matrix Composites	315
<i>G. Venkatakoteswararao, R. Vinayagamoorthy</i>	
Analysis of Power Consumption in the drilling of Nano SiC reinforced Aluminium matrix composites	320
<i>V. V. Kalyan Chakravarthy, T. Rajmohan</i>	
Effect of Nano Particles on Tribological Behavior of Reciprocating Air Compressor Oil Using Fourball Tribometer: An Experimental Investigation	330
<i>P. Chenga Reddy, S. Arumugam</i>	
Electro-chemical corrosion Behavior of Vegetable oil-Based Engine oil	338
<i>R. Ellappan, S. Arumugam, V. Santhanam</i>	
Hybrid WCMFO algorithm for the optimization of AWJ process parameters	343
<i>A Tamilarasan, T Rajmohan, KG Ashwinkumar, B Dinesh, M Praveen Kumar, R. Dinesh Reddy, K V V Surya Kiran, R Elangumaran, S Krishnamoorthy</i>	
Effect of engine oil dilution by waste ayurvedic oil biodiesel on tribological behavior of liner-ring tribo pair material	352
<i>R. Balakumar, G. Sriram, S. Arumugam</i>	
Heavy metals Assessment of Temple Ponds in Kanchipuram, Tamil Nadu, India	358
<i>P Meenakshi, G Sriram</i>	
Eco Friendly Machining Processes for Sustainability - Review.....	365
<i>T. Rajmohan, V.V. Kalyan Chakravarthy, A. Nandakumar, S.D. Satish Kumar</i>	
Synthesis and Tribological characteristics of a nano CuO particle-filled water-based lubricants.....	376
<i>T. Rajmohan, D. Hemanth Kumar, R. Nivithetha, Elamburthi, V.V. Kalyan Chakravarthy</i>	
Friction Stir Welding and Friction Stir Processing of Dissimilar Alloys: A Review	384
<i>K Palani, C Elanchezhian</i>	

Tribological and Mechanical behaviour of reinforced polymer composite material for clutch facing in automobile application	397
<i>JGK Kumar, R. Venkatesh Babu</i>	
Tribological characteristics of natural fiber composite - Review	405
<i>K. Mohan, T. Rajmohan</i>	
Analysis of Inertance Pulse Tube Refrigerator using CFD	414
<i>M. Sai Baba, Pankaj Kumar</i>	
Corrigendum: Tribological characteristics of natural fiber composite - Review (IOP Conf. Ser.: Mater. Sci. Eng. 954 (2020) 012048)	421
<i>K. Mohan, T. Rajmohan</i>	

Author Index