

# **8th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2021)**

IOP Conference Series: Materials Science and Engineering  
Volume 1222

Taipei, Taiwan  
17 September 2021

ISBN: 978-1-7138-4680-2  
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. (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](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

Preface	
Peer Review Statement	
Combined Subset Simulation and Comprehensive Learning Particle Swarm Optimization in Reliability-Based Structural Optimization .....	1
<i>Arnut Sutha, Thu Huynh Van, Sawekchai Tangaramvong</i>	
Determining the Optimum Geometric Shape for Web Opening of Wide Flange Beams using Response Surface Methodology .....	7
<i>K R R Padunan, G B Estores</i>	
Finite Element Study on Forming Helical Springs by Wire Bending with a Plate .....	15
<i>K J Fann</i>	
Influence of the construction stages analysis on the distribution of displacement and forces in columns of reinforced columns tall buildings .....	20
<i>Raina Boiadjieva</i>	
Synergistic effect of essential oil distillates on the corrosion protection of GX4CrNiMo16-5-1 stainless in acid-chloride electrolyte.....	25
<i>R T Loto</i>	
Finite Element Study on Forming Metal Sheets with an English Wheel.....	35
<i>K J Fann</i>	
Vibration Fatigue Analysis of Interface Enclosure with Cantilever Structure for Charging Commercial Electric Vehicles .....	40
<i>Chan Hee Park, Shin Ho Ryu, Jung Dam Cha, Gwang Ho Kim</i>	
Effects of directional solidification on hardness and microstructure in Al-3wt.%Cu-1wt.%Li alloy .....	45
<i>G A dos Santos, T L Alves, R Teram, R A Cruz, M S Nascimento, V T dos Santos, M R da Silva, A A Couto, I F Machado</i>	
An Insight into High Entropy Alloys with a Focus on Friction Stir Processing.....	50
<i>K Moiduddin, MH Abidi, AN Siddiquee, SH Mian, MK Mohammed</i>	
Effect of norcholine fluid derivative on the resilience of mild steel to electrochemical degradation in weak HCl media .....	64
<i>R T Loto</i>	
Assessment and Enhancementofthe Manufacturing Productivity through Discrete Event Simulation .....	70
<i>Naif Alsaadi</i>	
Influence of design parameters on the fresh and durable properties of self-compacting concrete with recycled aggregate .....	86
<i>R Martínez-García, P Jagades, F J Fraile-Fernández, J de Prado-Gil</i>	
Performance Comparison of Variants Based on Swarm Intelligence Algorithm of Mathematical and Structural Optimization .....	94
<i>Phuc Tran Van, Thu Huynh Van, Sawekchai Tangaramvong</i>	

Modified Scheil equation for the Cu-Sn system and comparison of hardness and electrical conductivity of Cu-8.5wt% Sn alloy directionally solidified ..... 100  
*R A Cruz, G A Santos, M S Nascimento, R Teram, R de Luca, V T dos Santos, M R da Silva, A A Couto*

**Author Index**