

# **International Conference on Recent Innovations in Engineering and Technology (ICRIET 2020)**

IOP Conference Series: Materials Science and Engineering  
Volume 1070

Online  
4-5 December 2020

Part 1 of 2

**Editor:**

**C. N. Marimuthu**

ISBN: 978-1-7138-4578-2  
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

### PART 1

Preface

Peer review declaration

Characteristics of magnetic parameters of granular samples with various relative length .....	1
<i>A A Sandulyak, A V Sandulyak, V A Ershova, D A Sandulyak, M N Polismakova, R Y Tkachenko</i>	
A method of sharing secrecy using star graphs .....	10
<i>G Prasad, R Anandan, G Uma Maheswari</i>	
Study of toxic gas adsorption on silicon substrate integrated with piezoelectric material for sensing application using COMSOL Multiphysics .....	20
<i>S Akshya, A Vimala Juliet</i>	
Performance and Shelf-Life of Electrospun Ag-doped WO <sub>3</sub> Nanofiber-Based SERS Substrates.....	30
<i>Komkrit Juntaracena, Tienthong Yuangkaew, Mati Horpratum, Napat Triroj, Papot Jaroenapibal</i>	
Synergistic Effect of H <sub>2</sub> O <sub>2</sub> Addition on Gamma Radiolytic Decoloration of Some commercial Dye Solutions.....	36
<i>Anoop P Fartode, S A Fartode, Tushar R Shelke, D V Parwate</i>	
Preparation & characterization of CuS thin films via spray pyrolysis technique for photovoltaic applications.....	43
<i>V Mary Pradeepa, K Kesavan</i>	
Investigation and correlation of radioactive hazards with magnetic parameters and heavy metals of dwelling sand from two major rivers in south India – A comparative study.....	50
<i>S Murugesan, S Ravichandran</i>	
Job Assignment Problem Using Union Group Graph Labelling .....	62
<i>S G Sarika, P.V Usha Kumari</i>	
Impact of SRFE process on electrical properties of P-N photodetector .....	66
<i>N Sangwaranatee, I Srithanachai, S Niemcharoen</i>	
A novel to control defects of P-N semiconductor device by SRFE process.....	71
<i>N Sangwaranatee, I Srithanachai, S Niemcharoen</i>	
Synthesis and characterisation of copper oxide thin films by double dip method.....	77
<i>Shifa Salam, Ben Jose, Rakhy Raphael, E I Anila</i>	
Active Fraction as Anti-obesity by in Vitro toward Pancreatic Lipase Activity .....	85
<i>D Iswantini, N Hanif, D RizkiPranoto, Trivadila</i>	
A study of substrate effect on dispersion characteristics of suspended microstrip line.....	94
<i>K Biswas</i>	

Synthesis and electrochemical performance of cobalt oxide deposited on nickel-foam for energy storage devices .....	105
<i>S Jangu, N K Debnath, V Acharya</i>	
Design, Synthesis of E-N-substituted-dichlorobenzylidene-2-(pyrrolidin-1-yl)ethanamine Schiff bases derivative and their DFT studies.....	111
<i>KR Jeyashri, E Dhineshkumar, G Logeshwari, E Enbaraj, VJ Ramyadevi, H Manikandana, M Seenivasan, V Rajathi, J Chakkavarthy, R Govindaraju</i>	
Design, development and performance evaluation of a large-scale hybrid solar dryer.....	120
<i>A P V Naigam, I M B Ridzuan, A S T Tan, A Abdullah, W A A Z Wan Ismail, J Janaun</i>	
2D Image-based higher-order meshing for 3D modelling in MATLAB .....	130
<i>T V Smitha, S Madhura, R Brundha</i>	
Effects of variable heat source on convective motion in an anisotropic porous layer .....	138
<i>H Nagarathnamma, K Ananda, Y H Gangadharaiyah</i>	
Bounds for $\alpha$ —Adjacency Energy of a Graph.....	146
<i>B. Shanmukha, H. N Shwetha, N Manjunath</i>	
Polymethacrylic acid functionalised with dihydroxy benzene as an adsorbent for the removal of Malachite Green dye.....	154
<i>J Devakumar, V Ramesh, P Amaladass, R Jaya Santhi</i>	
Thermovision study on Alumina's Ra v/s Ts for AIDHVACS to control COVID-19.....	170
<i>Ashutosh Arora, Prithvi Singh, CM Arora, Sanjay Kumar Bansal, Ambesh Dixit</i>	
Interpolatory projection technique for Riccati-based feedback stabilization of index-1 descriptor systems .....	184
<i>Mahtab Uddin, M Monir Uddin, M A Hakim Khan, Md Motlubar Rahman</i>	
Electrosynthesis of Cu/hydroxyapatite as the catalyst for hydrogen production via NaBH <sub>4</sub> hydrolysis .....	195
<i>A Nur, N Nazriati, F Fajaroh, A Arthaningrum, I Nurcahyani, D L R P Cipto, F Kurniawan</i>	
Radioactive decay of thorium and uranium in the liquid lead and molten salt.....	201
<i>Tran Minh Tien, Nguyen Kim Khanh, Nguyen Kim Ngan, Nguyen Thi Tuyet Nhi</i>	
Effect of reflector materials to the neutron flux and k effective in the accelerator driven subcritical reactor.....	207
<i>Tran Minh Tien, Nguyen Hong Thien Phung, Bui Thi Thanh Hien</i>	
Exponential piece wise regression for rainfall data .....	214
<i>K Anil Kumar, V N Sendil, S Venkatramana Reddy, B Sarojamma</i>	
Microwave Characterisation of PANI treated Jute Using Suitable Solvent Methanol and DMSO.....	222
<i>B Anandhi Meena, L Ammayappan, S Chakraborty, R Kannan</i>	
Retrial queueing model with two heterogeneous server using matrix geometric method .....	232
<i>M Seenivasan, G Rajarajan, M Indumathi</i>	
Similarity measure on bipolar intuitionistic fuzzy soft set .....	241
<i>S Anita Shanthi, Prathipa Jayapalan, L Darwin Christdhas Henry</i>	
Slope stability analyses at Agumbe Ghat section NH-169A with and without slope protection.....	245
<i>Vishikha Keshava, Nayana N Patil, B R Venkatesh</i>	

Vibration mitigation of high-rise buildings via tuned mass damper subjected to dynamic loads.....	254
<i>Mohammad Shamim Miah</i>	
Effect of fly ash and bottom ash on the ratio of splitting tensile strength to compressive strength of concrete .....	261
<i>Lomesh Mahajan, Sariputt Bhagat</i>	
Modeling compressive, split tensile strength and chloride ion penetration of concrete incorporating marble powder.....	271
<i>Tarun Gehlot, Suresh Singh Sankhla, Sangeeta Parihar</i>	
Bio-Mineralization process on concrete substituted with different types of waste materials .....	283
<i>I Rohini, R Padmapriya</i>	
Application of genetic algorithm in damage detection of reinforced concrete beams using piezo ceramic transducers .....	292
<i>R Mohanasundari, C Vijayaprabha</i>	
Seismic analysis of various combinations of irregularities in a structure.....	306
<i>Boddu Venkata Sai Prakash, Brungi Sri Vibhav, Jinka Lakshmi Narayana</i>	
Effect of multiwalled carbon nanotube incorporation in modulus elasticity of concrete with partial replacement of cement with flyash.....	315
<i>B Ashwini, B Vidivel</i>	
Spatial Analysis and Mapping of Groundwater Quality in Uppal Kalan, Hyderabad .....	320
<i>Durgasrilakshmi Hari, Y Rudraksh Goud, Dodla Meghana</i>	
Analysis of a long span cable-stayed suspension hybrid bridge considering variable intermediate side span supports.....	333
<i>G M Savaliya, A K Desai</i>	
Utilization of waste glass powder as a cementitious material in concrete.....	340
<i>Anand B Zanwar, Yogesh D Patil</i>	
Evaluating Self-sensing Property of Carbon Fibre Cement Composite by experimental study and Finite Element Modelling For Structural Health Monitoring Applications.....	346
<i>A.K Roopa, Anand M. Hunashyal</i>	
Analysis of Seismic data using Machine Learning Algorithms.....	355
<i>A A V L Sruthi, R Bhargavi, Vineesha Reddy Gospati</i>	
Response spectrum analysis of a G+4 building with mass irregularity on a sloped surface.....	361
<i>V Anirudh Raajan, G C Balaji, V Vasavi</i>	
Effect of destruction of trees on highway roads and its impact on climate change at Coimbatore – a case study .....	371
<i>G Thenmozhi, Mary Cherian, M Nirmala, R Lalitha</i>	
An intensive online survey of climate change due to development of roads and bridges on the highway road at Coimbatore – an evidence.....	379
<i>G Thenmozhi, Mary Cherian, M Nirmala, R Lalitha</i>	
Effect of elevated temperature on the mechanical strength of glass mortar .....	387
<i>S S Patil, Y D Patil</i>	

Development of seepage spring for rural water security .....	398
<i>Prem Ranjan, Pankaj Kumar Pandey, Vanita Pandey, Pema Tshering Lepcha</i>	
Feasibility studies on bio composites using PLA and Epoxy for structural applications .....	405
<i>N Vijaya Kumar, N R Banapurmath, Sharanabasava V Ganachari, Ashok M Sajan, Arun Y Patil</i>	
Detection of diabetic retinopathy using deep learning methodology .....	415
<i>Gazala Mushtaq, Farheen Siddiqui</i>	
An Efficient Fuzzy C-Least Median Clustering Algorithm.....	428
<i>Moksud Alam Mallik, Nurul Fariza Zulkurnain, Mohammed Khaja Nizamuddin, Aboosalih KC</i>	
Evaluation of time series methods for distribution system state forecasting.....	439
<i>C M Thasnimol, R Rajathy</i>	
Machine learning approach for categorical document mining.....	457
<i>P Sarma, H Deka</i>	
A comparative study on efficient cloud security, services, simulators, load balancing, resource scheduling and storage mechanisms.....	466
<i>R M Balajee, Hitesh Mohapatra, K Venkatesh</i>	
Virtual rehabilitation system for fine motor skills using artificial neural networks .....	475
<i>Jorge Buele, Fernando A Chicaiza, Manuel León, Andrea P Sánchez</i>	
Detection of Natural Calamities from Assamese Posts in Social Media .....	482
<i>S Kalita, R R Deka, M P Bhuyan, K Kashyap, S K Sarma</i>	
Performance Evaluation Of Application Specific Big Data Systems With Multi-domain Big Data Framework Using Machine Learning.....	491
<i>Dar Masroof Amin, Dr Munishwar Rai</i>	
Prediction of degree student achievement analysis .....	506
<i>K C Jaiswal, P D Pathak, V J Pawar, K D Kharat</i>	
Multi agent-based framework for interactive learning system with conversational user interface for visually and speech impaired.....	513
<i>V Ilango, M Anand Shankar Raja, VR Uma</i>	
Analysis and Prediction Of Pima Indian Diabetes Dataset Using SDKNN Classifier Technique.....	519
<i>Radhanath Patra, Bonomali Khuntia</i>	
Real Time Object Detection Using SSD For Bank Security .....	533
<i>Ruhin Mary Saji, N V Sobhana</i>	
Face mask detection for covid_19 pandemic using pytorch in deep learning .....	544
<i>Sneha Sen, Khushboo Sawant</i>	
Study and detection of PCOS related diseases using CNN .....	554
<i>M Sumathi, P Chitra, R Sakthi Prabha, K Srilatha</i>	
Numerical solution of fluid queueing models for communication networks.....	561
<i>Nandyala D Gangadhar, S Krithika, Govind R Kadambi</i>	

Hybrid data clustering approaches using bacterial colony optimization and k-means .....	568
<i>J Revathi, V P Eswaramurthy, P Padmavathi</i>	
Collaborative artificial bee colony k-mean clustering algorithm for mixed data set.....	577
<i>C Nalini, J Sudeeptha, B S Charulatha, P Valarmathi</i>	
Improving the performance of speech clustering methods using I-vectors .....	586
<i>R Suneetha Rani, G LV Prasad, A Prakash, A Ramesh</i>	
Opinion mining from student text review for choosing better online courses.....	594
<i>V J Chakravarthy, M Kameswari, Hakkim Devan Mydeen, M Seenivasan</i>	
Split and rule algorithm for documents clustering in big data of research articles on Google scholar.....	607
<i>S Thirumaran, R Nagarajan</i>	

## PART 2

Text document clustering using statistical integrated graph based sentence sensitivity ranking algorithm .....	618
<i>G Kannan, R Nagarajan</i>	
Emotion driven mood enhancing multimedia recommendation system using physiological signal .....	629
<i>N Sindhu, S Jerritta, R Anjali</i>	
Area optimized design of tetrad flip-flop using new tetrad value logic gate's .....	638
<i>Utsav Kumar Malviya, Vaikuntapu Ramakrishna</i>	
Electrothermal micro tweezer for biomedical applications .....	649
<i>C Joshitha, D Ragavyshnavi, D Sai Priyanka, P Nagarjuna, B S Sreeja</i>	
High Gain Patch Antenna using EBG Structures for WiMAX Application.....	655
<i>H B Bhuvaneswari, Anand C Konnur, Shambulingappa K Vadeyanpur</i>	
Feature concatenation for scene classification of VHR images based on canonical correlation analysis .....	664
<i>S Thirumaladevi, K Veera Swamy, M Sailaja</i>	
Reinforcement Learning For Walking Robot .....	675
<i>V Akila, J Anita Christaline, A Jothi Mani, K Meenakshi</i>	
A proposed combined Cornell-Sokolow modeling approach to determine the left ventricular hypertrophy accurately based on multi-domain information processing.....	684
<i>Muhtasheem Ajwad Mahin, Mohiuddin Ahmad</i>	
The dependence of the conductivity tensor on electromagnetic waves and laser fields in a quantum well with infinite potential in the case of electrons - optical phonon scattering.....	692
<i>Hoang Van Ngoc</i>	
Miniaturization of asymmetrical gaussian profiled corrugated horn .....	700
<i>Prashant D Sachaniya, Jagdishkumar M Rathod</i>	
Improved Transmission In 5G Wireless Network Communication With Tail Theft Concept .....	707
<i>A Rajanandini, T Jaya</i>	
Multimodal medical image fusion using laplacian redecomposition.....	717
<i>K KoteswaraRao, K Veera Swamy</i>	

Impact of interfacial layer thickness on gate stack-based DGTFET: an analog/RF prospective.....	730
<i>Vibhu Goyal, Shubham Tayal, Shweta Meena, Ravi Gupta</i>	
Recognition of valence using QRS complex in children with Autism Spectrum Disorder (ASD).....	736
<i>B Anandhi, S Jerritta</i>	
Time domain analysis of electroencephalogram (EEG) signals for word level comprehension in deaf graduates with congenital and acquired hearing loss.....	743
<i>G Shirly, S Jerritta</i>	
Design of a highly miniaturized novel electromagnetic bandgap (EBG) material for performance improvement in microwave components.....	757
<i>C Mohan, S Esther Florence, R Vimal Samsingh, Naveed Ahmed</i>	
Performance Analysis of Image Denoising using Deep Convolutional Neural Network.....	766
<i>S Thayammal, G Sankaramalliga, S Priyadarsini, K Ramalakshmi</i>	
Survey on metamaterial antennas .....	773
<i>J Suganthi, T Kavitha, V Ravindra</i>	
Design and simulation of microstrip fractal patch antenna .....	787
<i>P Nitish Kumar, R Pavan, J Suganthi, T Kavitha</i>	
Asymmetric complementary split ring resonator for identification of materials .....	792
<i>G Idayachandran, S Oudaya Coumar</i>	
Design of novel track vigilance system in railway sheds .....	797
<i>K Usha, M Bhuvaneshwari</i>	
Comprehensive studies on polyvinyl alcohol (PVA) doped with MWCNTs and CNFs Nano composite membranes for fuel cells applications .....	804
<i>Mallur Basavaraj, S V Gorabal, N R Banapurmath, A M Sajan, V S Yaliwal, M Kotresh</i>	
An Innovative Way Of Implementing Efficient Mobile Charger Powered By Solar Energy.....	813
<i>C Sanitha Michail</i>	
A Comprehensive View on Information Metering, Monitoring and Measurement of a Smartgrid.....	820
<i>P Brinda, P Usha Rani</i>	
Net Zero Energy Apartment .....	829
<i>Sangamesh, Mohammed Faraz, Gagan, Mallinath, Mohhamed Aqib, Nayana Patil</i>	
Modelling and performance analysis of hybrid electric vehicle.....	838
<i>K Sreeram, P K Preetha</i>	
Selection of Excitation Signals and Acoustic Pressure Measurement for In-Vivo Studies with Ultrasound Array Research Platform II.....	850
<i>Asraf Mohamed Moubarik, Luzhen Nie, Mohd Hairi Mohd Zaman, Mohd Asyraf Zulkifley, Sawal Hamid Md Ali, Steven Freear</i>	
Detecting driver mental fatigue based on Electroencephalogram (EEG) signals during simulated driving .....	859
<i>S Pradeep Kumar, Suganiya Murugan, Jerritta Selvaraj, Arun Sahayadhas</i>	
Active cell balancing for a 2s Lithium ion battery pack using flyback converter and push-pull converter.....	866
<i>Kuzhivila Pannickottu Niyya, K Deepa</i>	

DC Microgrids: Architecture and Challenges .....	879
<i>Priyanka Priyadarshini Padhi, K Deepa</i>	
Harris hawks optimization algorithm based power loss minimization in micro grid incorporated with distributed generation .....	892
<i>Santhosh Kasi, R Neela</i>	
Investigation of performance and emission characteristics of four stroke single cylinder diesel engine with cotton-seed biodiesel.....	904
<i>Bhavin Mehta, Dattatraya Subhedar, Gaurang Patel, Abhishek Swarnkar</i>	
Estimation of Tool Life by Industrial Method and Taylors Method Using Coated Carbide Insert in Turning of Work-Material Ss316l.....	913
<i>Prince Dabreo, Samhita Pashte, Larisa Dmonte, Lavin Dabre</i>	
Experimental investigation on CI engine with jatropha biodiesel-hydrogen peroxide blends.....	920
<i>Mallesh B Sanjeevannavar, N R Banapurmath, Sharanabasava V Ganachari, Manzoore Elahi M Soudagar</i>	
Effect of Al <sub>2</sub> O <sub>3</sub> and SiC nanoparticles on tribological properties of bi-directional glass fiber reinforced composites.....	931
<i>G A Patel, V P Chaudhary, B H Mehta, A D Swarnkar</i>	
Behavior investigation of powder actuated shear connectors in composite beams with profiled sheeting.....	938
<i>Gennadiy P Tonkikh, Denis Chesnokov</i>	
A platform to test and automation on gesture and motion controls of play station 4 using robotic arm.....	947
<i>D Sakthi, T P Vijay, Venkat Subramaniam</i>	
Effect of air-steam agent on co-gasification of biomass and coal .....	958
<i>Suyitno, M Muqoffa, A X Ilyas, W E Juwana</i>	
Laser surface hardening of SS316L.....	966
<i>Ganesh Dongre, Avadhoot Rajurkar, Ramesh Gondil, Nandan Jaju</i>	
Effect of retrogression and re-aging on mechanical & wear properties of LM-25 aluminium alloy .....	976
<i>Ranjith Gopi Mohan, J Jayasankaran, S Ilangoval, A Shanmugasundaram</i>	
Airflow noise reduction in digital stethoscope add-on device.....	985
<i>S G Dubey, D S S Sudhakar, S Saha</i>	
Design and analysis of a radial centrifugal pump for cryogenic helium based application.....	997
<i>J Das, V J Lakhera, B Sarkar</i>	
Analytical study on new types of shear connectors in composite slab .....	1004
<i>Aniket A Shirgaonkar, Yogesh D Patil, Hemant S Patil</i>	
Non-linear vibrations of a simply supported rectangular plate carrying a centric mass .....	1012
<i>M. Hamdani, M. El Kadiri, R. Benamar</i>	
Mechanics of Bio-tribology in Bionic Joints- Analytical Approach .....	1020
<i>Sachin Khot, Ravi Guttal</i>	
Modelling of leakages in rotary twin-screw compressor.....	1028
<i>H H Patel, V J Lakhera</i>	

The effect of duct shape on the heat dissipation performance of ventilated clutch pressure plate .....	1036
<i>T Cakmak, G Sevilgen, M Kilic, A K Pehlivan</i>	
An analytical study on fluid flow characteristics for flow within a microchannel of rectangular cross section .....	1045
<i>R Joshi, S Simlandi</i>	
Lightweight innovative composite dry clutch pressure plate .....	1057
<i>T Cakmak, Z Cagatay Oter, O Surmen</i>	
SHIP model: redesign the assistive walker for children cerebral palsy with the concept of usability, safety, and efficiency .....	1069
<i>S Susmartini, L Herdiman, I Priadythama</i>	
Experimental investigations on high pressure assisted waste mix cooking oil powered biodiesel fuelled CRDI engine and injection parameter studies .....	1082
<i>C H Kiran, D B Ganesh, N R Banapurmath, Sharana Basava V Ganachari</i>	
Estimation of tribological performance of Al- LSP composites using grey – fuzzy reasoning approach .....	1095
<i>D Lokanadham, K Venkata Subbaiah</i>	
Challenge in magnesium microforming .....	1106
<i>Gandjar Kiswanto, Sugeng Supriadi, Siska Titik Dwiyati</i>	
Investigations into performance of conventional and conformal cooling channels of a plastic injection mold.....	1116
<i>Advait C Purav, Deepika S Singraur, D S S Sudhakar</i>	
Thermal-hydraulic analysis of Cable-In-Conduit Superconductor: A CFD approach.....	1132
<i>Hitensinh Vaghela, Biswanath Sarkar, Vikas Lakhera, Upendra Prasad</i>	
A study on improvement of cold flow behaviour and thermal-oxidation stability of Camellia sinensis assamica (tea) oil lubricants as industrial lubricant .....	1138
<i>Nabajit D Choudhury, Niharendu Saha, Rupam Kataki</i>	
Experimental studies on the wear and mechanical properties of Al7075-B <sub>4</sub> C-Al <sub>2</sub> O <sub>3</sub> composite .....	1145
<i>T Balasubramanian, M Ganesh, M Subramanian, N Arunkumar, S Aswin</i>	
Experimental Investigation of Nickel Oxide Nanomaterials with n-Pentane Diesel Blends in Compression Ignition Engine .....	1152
<i>A T Navinprasad, R Prakash, J Yoganandh, B Meenakshipriya, K Ramakrishnan</i>	
Design and stress distribution analysis of composite spur gear.....	1161
<i>M Subramanian, J Mariyappan, ASM Udayakumar, T Balasubramanian, S Balakrishnan</i>	
Mass production of re-entrant cubic auxetic structure.....	1171
<i>B Balaji, Ramesh Gupta Burela, Ganeshthangaraj Ponniah</i>	
Finite Element simulation and Optimisation of blank holder force and rectangular drawbead geometry using Taguchi method for hemispherical cup.....	1176
<i>Shripad V Eklarkar, V M Nandedkar</i>	
Study of effects of radial load on vibration of bearing using time-Domain statistical parameters .....	1184
<i>Prashant H. Jain, Santosh P. Bhosle</i>	

A105 Work-Material Turning Experimentation using L <sub>9</sub> Orthogonal Array Runs with Dry, MQL and Nano-Al <sub>2</sub> O <sub>3</sub> Assisted MQL Machining Conditions.....	1197
<i>Shehzad Shaikh, Vasim A Shaikh, M VeeraBhadra Rao, Bhushan T Patil</i>	
Effects of piston and cylinder swirl generation on the performance of ceiba pentandra and nigella sativa B20 biodiesel blended diesel engine operation .....	1205
<i>S G Pradeep, N R Banapurmath, Y H Basavarajappa, Sharanabasava V Ganachari, Akshay M Vastrad</i>	
Prioritization of Lean Six Sigma Success Factors using Pareto Analysis .....	1214
<i>Anand S Patel, Kaushik M Patel</i>	
Fabrication and field evaluation of a wheel weeder .....	1221
<i>R B Choudary, V C Sekhar, B Ajayaram, G Nageswara Rao</i>	
Frictional behaviour of AA7050/7.5B <sub>4</sub> C <sub>p</sub> /Gr hybrid composites fabricated through stir casting.....	1230
<i>R Ranjith, S Venkatesan, N S Sivakumar, P Naresh Kumar</i>	
Microwave assisted green synthesis of ZnO nanotubes using Amorphophallus paeoniifolius tuber extract.....	1238
<i>P Naresh Kumar, B Vijayakumar, R Ranjith</i>	

#### **Author Index**