Table of Contents

Preface, Committees, Sponsors

Chapter 1: Structural Materials and Processing Technologies

Microtexture Study: Effect of Different Irradiation Sources on Zirconium and its Alloys A.K. Revelly	3
Biosorption of Basic Textile Dye from Aqueous Solution Using <i>Pongamia pinnata</i> as Adsorbent	
B. Gunturu, G. Ramakrishnan and R. Sahadevan	13
Effect of FSP on Strength and Fracture Toughness of Aluminium Alloy 7000 P.K. Mandal	20
Equilibrium and Isotherm Studies on the Removal of Basic Textile Dye from Aqueous Solutions Using Kigelia africana Biosorbent B. Gunturu, G. Ramakrishnan and R. Sahadevan	26
Mesoporous Iron-Manganese Magnetic Bimetal Oxide for Efficient Removal of Cr(VI) from Synthetic Aqueous Solution K.L. Bhowmik, M. Kanmani, A. Deb, A. Debnath, R.K. Nath and B. Saha	33
Studies on Notch Tensile Properties of Ti-5Al-2.5Sn ELI at Cryogenic Temperature for Hydrogen Embrittlement Effect	39
T. Antony Prabhu, N. Murugesan, S. Ingersol, D.P. Sudhakar and P.V. Venkitakrishnan Application of Composites in Orthotic Calipers and its Experimental Validations N. Kumari and K. Kumar	39 44
Study on Mechanical Property of Aluminium 6061 with E Glass Fiber Reinforced Composite Vinayashree and R. Shobha	50
Development of Mathematical Modeling and its Exploration Based on Genetic Algorithm for Blanking Die Design Parameters Optimization R.C. Mohan Kumar and C. Velmurugan	54
Effect of Cast Geometries on Particle Dispersion in Metal Matrix Composites V. Mehta, R. Patel and M. Sutaria	60
Predicting the Deposition Efficiency of Plasma Sprayed Alumina Coatings on AZ31B Magnesium Alloy by Response Surface Methodology D. Thirumalaikumarasamy, V. Balasubramanian, S.S. Sabari, R. Rajesh and M.R. Elayidom	66
Characterisation of Micro Channels Machined with ECDM for Fluidic Applications L. Paul, B.P. George and A. Varghese	82
FEM of ECDM Process on Semi Conducting Materials L. Paul, P.V. Pradeep and D. Antony	87
An Analysis on Bilayer Tube Flaring C.P. Nikhare Effect of Welding Speed on Mechanical Properties of Friction Stir Welded AA 6082-T6 Al	92
Alloy D. AVULA and D.K. Dwivedi	98
Development & Characterization of Alumina Coating by Atmospheric Plasma Spraying J. Sebastian, A. Scaria and D.G. Kurian	104
Optimization of MRR and Surface Roughness of AlMg3 (AA5754) Alloy in CNC Lathe Machine by Using Taguchi Method P.K. Chaturvedi, H.K. Narang and A.K. Sahu	110
Dry Sliding Wear Behavior of Titanium Metal Powder Filled Aluminum Alloy Composites for Gear Application a. kumar, A. Patnaik and I.K. Bhat	118
Effect of Pre-Ageing on the Age Hardening Response of Cryorolled Al-Mg-Si Alloy M. Hussain, P.N. Rao, D. Singh and R. Jayaganthan	137
Experimental Investigation of EDM Parameters on Al-LM6/SiC/B4C Hybrid Composites M. Shukla, P. Agarwal, M.K. Pradhan and S.K. Dhakad	149

Improving Mechanical Properties of Dissimilar Material Friction Welds M. Cheepu, V. Muthupandi and W.S. Che	157
Influence of Water Cooling and Post-Weld Ageing on Mechanical and Microstructural Properties of the Friction-Stir Welded 6061 Aluminium Alloy Joints D. Venkateswarulu, M. Cheepu, D. Krishnaja and S. Muthukumaran	163
Investigations of Milling Parameters on Hemp Fiber Reinforced Composite Using ANOVA	103
and Regression K. Patel, K. Patel, P. Gohil and V. Chaudhary	177
Fabrication and Analysis of Accumulative Roll Bonding Process between Magnesium and	
Aluminum Multi-Layers M. Cheepu, S. Haribabu, T. Ramachandraiah, B. Srinivas, D. Venkateswarulu, S. Karna, S. Alapati and W.S. Che	183
Chapter 2: Building Materials and Construction Technologies	
Effects of Alkaline Solution on the Properties of Slag Based Geopolymer S. Saha and C. Rajasekaran	193
Evaluation of Deformation Modulus for the Jointed Rock Masses Using Equivalent Continuum Approach	200
R. Khanna, I. Sayeed and R.K. Dubey Havizantal Pullout Canadity of a Crown of Two Vertical Sayona Anghors Embedded in	200
Horizontal Pullout Capacity of a Group of Two Vertical Square Anchors Embedded in Medium Dense Sand K.V.S.B. RAJU and B.S. Pankaja	214
The Behaviour and Performance of Geo-Textiles with Reference to CBR Value on Clay Soil R. Sandhya Rani, A. Hyma, K. Ravi Shekar and P. Pradeep Kumar	224
Geotechnical Evaluation of Traditional 'Bunds' - Earthen Levees - From Goa L.R. do Carmo Souza and S.S. Kandolkar	230
Effect of Increasing Sasobit on Permanent Deformation and Moisture Damage of Asphalt Mixes F. Haq, A. Hussain and K. Mushtaq	241
Suitability of Quarry Dust as a Partial Replacement of Fine Aggregate in Self Compacting	211
Concrete T.S. Tanajirao, D. Arpitha, S. Saha and C. Rajasekaran	248
Structural Behavior of Hybrid Reinforced Concrete Exterior Beam Column Joint S. Kamakshi and S.K. Vinu	254
Influence of Geotextile and Geogrid Reinforcement on Strength Behaviour of Soft Silty Soil A. Mittal and S. Shukla	264
Incorporation of Axial Aging Effects of Pile Foundations into Pushover Analysis of Offshore	
J.M. George, V.J. Kurian and M.M.A. Wahab	270
Seismic Response of Multistoried Building with Different Foundations Considering Interaction Effects	
S. Shetgaonkar and D.P. Savoikar	276
Application of Principles of Linear Elastic Fracture Mechanics for Concrete Structures: A Numerical Study D.R. Chauhan, H.R. Tewani and J.S. Kalyana Rama	282
Geotechnical Characterization of Dredged Material and Effect of Lime Stabilisation on its	_0_
Strength Characteristics S. Mohammad, W. Akram and S.A. Mirza	289
Effect of Nano Clay on Mechanical Behavior of Bamboo Fiber Reinforced Polyester Composites K. Patel, J. Patel, P. Gohil and V. Chaudhary	294
Evaluation of Performance Point of Structure Using Capacity Spectrum Method S. Swathi, K. Venkataramana and C. Rajasekaran	299
Dynamic Analysis of Sandwich Plate Structure by Finite Element Method	277
A. Paul, S. Das Nee Pal and A.G. Niyogi	305

Chapter 3: Applied Mechanics and Design Practice in Mechanical Engineering

Positions	
A. Nouri-Borujerdi and F. Sepahi	313
Thermo Structural Analysis of Carbon-Carbon Nozzle Exit Cone for Rocket Cryo Engines G. Vinod, S. Renjith and V. Thaddeus Basker	320
Optimisation of Header of a Compact Radiator S. ROY, C.S. Vamsi Krishna, N. Ganesh and A. Kumarasamy	327
Integrated Thermal Structural Analysis of Advanced Composite Plates and Shells K. Thangaratnam, Divya and E. Kumar	335
Nonlinear Analysis of Composite Plates and Shells Subjected to In-Plane Loading K. Thangaratnam and R. Sanjana	341
Mixed Culture Microalgae-Based Coconut Biodiesel as Fuel to Improve DI CI Engine Performance, Emission Characteristics G.B. Katam, A. Veeresh Babu, K. Madhu Murthy and M.K. Kumar	347
Margin of Safety Estimation of Tongue and Groove Joint of Rocket Motors with Discontinuous End Ring G. Vinod, M. Bhadra, K.S. Narayanan and V. Thaddeus Basker	354
Levelized Cost of Electricity and Plant Load Factor of 7.5 MW Grid Connected Biomass Power Plant	331
R. Sharma, B.K. Saxena and K.V.S. Rao	360
Lattice Boltzmann Simulation of Transient Natural Convection in a Staggered Cavity with Four Vertically Heated Walls B.B. Gogoi	366
Investigation on Application of Semiloof Shell Element for Isotropic, Composite and Functionally Graded Material K. Thangaratnam and E. Kumar	372
Effect of Skin Friction Coefficient on Power Developed by Flettner Rotor System for Ship	
Propulsion A. Lele and K.V.S. Rao	378
Design and Analysis of Powered Ankle-Foot Mechanism Using Hydraulic System S. Debta and K. Kumar	384
Design Optimization of Squeeze Mode Magnetorheological Damper J.D. Patel and D. Patel	391
Experimental Investigation of Performance and Emissions Characteristics of a Diesel Engine with <i>Pongamia</i> Biodiesel and Diesel Blends	
R. Thirunavukkarasu, R. Tamilselvan, T. Karthickmunisamy, M. Veeramanikandan and D. Sathish	397
Design Optimization of Flow Mode Magnetorheological Damper N.D. Chauhan and D. Patel	403
Experimental Investigation on Shallow Solar Pond Using CuO Nano Particles D. Sathish, R. Thirunavukkarasu, S. Jegadeeswaran and S. Periyasamy	409
A Review on Methods of Productivity Improvement in Solar Desalination R. Dhivagar and S. Sundararaj	414
Thermal Performance on Portable Mini Solar Pond Using NaCl and Coal Cinder D. Sathish, M. Veeramanikandan, R. Thirunavukkarasu, R. Tamilselvan and T. Karthickmunisamy	430
Characterization of Exponential Cohesive Zone Model for Fracture Assessment of De- Bonded Composite Panels J. Muthupandian and K.R. Pradeep	436
Study on the Stress Concentration in GFRP Composite Plates with Multiple Cut-Outs Subjected to Shear Loading	730
R.S. Aleena and R.S. Priyadarsini	446

Influence of Crack on the Instability of GFRP Composite Cylindrical Shells under	
Combined Loading	
B. Angelina Catherine and R.S. Priyadarsini	453
CFD Analysis of the Effect of Surface Contour of Nose Cone of a Space Vehicle on the Thermal Field during Re-Entry	
K.V. Sreenivas Rao, P. Sujan and H.S. Sachin	460