

Table of Contents

Preface

Chapter 1: Steel and Alloys

Optimization of Process Parameters for End Milling Operation on EN-31 Using Taguchi-Grey Relation G. Pranavkumar, Y. Sruthikkumar, K. Ramakrishna, K.R. Naik, R. Karthikeyan and A. Punitha	3
Experimental Study on Effect of Process Characteristics during Electronic Discharge Machining of Titanium Alloy Using Multi Hole Tool Electrode T. Niranjan, B. Singaravel, S.S. Raju, J.A. Ram and K.S. Reddy	15
Optimization of Laser Beam Machining Process Parameters of HSLA Steel Using MOORA D.V. Praveen, P. Umamaheswarrao, A. Suresh, S. Musharaf, S. Praveen, S.P. Abdulla and T.S. Kumar	23
The Finite Element Analysis on the Effects of Overlapping Rate in Low-Energy Laser Shock Peening E.W. Qin, W.L. Li, F.F. Shi, Y.J. Que, Y. Wang, Z.S. Wang and G.L. Shi	33
Mechanical Characteristics of Structural Thick Plates Depending on Vacuum Time of RH Process K.H. Shin, B.C. Choi and K.W. Nam	45

Chapter 2: Coatings and Surface Treatment

Modeling Temperature of Contact Generated in Coatings of Pure Alumina Ceramic onto Low Carbon Steel Type 1.0060 Obtained by the Thermal Spraying Process R. Younes, Y. Mouadji, H. Touati and M.A. Bradai	59
Fabrication of Microcolumn Arrays Using Through-Mask Electrochemical Micromachining on the 42CrMo Alloy Steel J.N. Zhou, Z.Q. Liu, D.L. Chen, N.M. Lin and H.H. Wang	73
Study and Investigation of Microbial Influenced Corrosion Effect for Performance Analysis of Vortex Tube on Stainless Steel with and without Coating G. Suresh, T. Vinod Kumar and E. Ananda Kumar	87

Chapter 3: Functional Nanomaterials

Structural and Dielectric Properties of 'Mg' Doped M-Type Strontium Hexa-Ferrites (SrFe₁₂O₁₉) Synthesized via Sol-Gel Method A. Safdar, R. Ali, A. Shahzad and J. Mishal	97
Influence of the Lateral Electrostatic Field on the Statistical Distribution of Charge Carriers in a Cylindrical Nanolayer of β-HgS V.A. Harutyunyan	113

Chapter 4: Materials and Structural Elements in Construction

Durability of Raw Earth Blocks Reinforced with Wheat Straw Fibers M. Messis, N.E. Bouhamou and A. Benaisa	131
Ductile Behaviour of Fiber Reinforced Self Compacting Concrete Beam with Alternative Detailing P. Kaliraj, S.H. Masthan Ali, D. Ayyanar, K. Rajendrakani and V.S. Paulraj	149
Mechanical Behaviour of Geopolymer Concrete Using Steel Fibers D. Ayyanar, S.H. Masthan Ali, P. Kaliraj, V.S. Paulraj and K. Rajendrakani	159

Chapter 5: Bio-Waste Processing

Molecular Modelling and Characterization of Metal Incorporated Biochar from Industrial Wastes

N.P. Ansab, R. Ranjana and R. Anjana

171