

Table of Contents

Preface

Chapter 1: Steel and Alloys

Prediction of High-Entropy Alloy Phases Using Soft Computing Techniques A.D. Akinwekomi	3
A Review of Wire Arc Additive Manufacturing of High Strength 7xxx Series Aluminium Alloys A.I. Ekpemogu, T.E. Abioye, C.R. Cunningham, R. Obolo, A.S. Anasyida and T.I. Ogedengbe	13
Friction Extrusion Spot Welding of Aluminium Alloy: A Comparative Assessment of Top and Bottom Plate-Extrusion O.O. Ojo and A.O. Oluwale	33
Cold Forging and Annealing of Wire Arc Additively Manufactured AISI 308LSi Stainless Steel B.D. Bankong, O.J. Ogundipe, T.E. Abioye, T.I. Ogedengbe, H. Zuhailawati, T.M. Adamolekun, A.B. Osasona and M.H. Hassan	41
Experimental Evaluation of Unprocessed-Expired Paracetamol Drugs as Corrosion Inhibitor for Mild Steel in Hydrochloric Acid S.M. Omokafe, E.O. Aduloju and T. Arakaseun	49

Chapter 2: Green Building Materials

Performance Evaluation of Hot Mix Asphalt Modified with Fly Ash and Waste Foundry Sand in Road Development A.B. Alo and O. Oyedepo	59
Enhancement of Concrete Properties Using Sawdust Ash and Superplasticizer C.M. Ikumapayi, J.A. Ajayi and A. Fasuba	67
Eliminating Cracks Partially in Structures by Adopting Bacteria Based Fiber and Steel Reinforced Self-Healing Concrete S.L. Akingbonmire, C.O. Okonkwo, P.O. Kayode and K. Akinsanmi	73
Characterisation and Comparative Insulating Efficiencies of Wood Sawdust and Rice Husk in Glass Shavings Reinforced Termite Clay-Based Composite M.A. Olayiwola, D.O. Folorunso and M.O. Tanimola	85
Comparative Analysis of the Performance of ANFO and Ammonium Nitrate using Fragment Size Distribution during Blasting Operations B.K. Ayinde, G.O. Oniyide and A.J. Adeyemi	99

Chapter 3: Waste Treatment

Reinforcement of Aluminium Matrix Composites with Particulate Agricultural Waste Derivatives for Automotive Applications: A Review O.I. Kolapo, A.D. Olatise, E.O. Idowu, S.W. Omejalile, T.E. Abioye and B. Kareem	111
Rice Husk Ash Filled with Hydroxyapatite Based Composite for Biomedical Application M.A. Adamu, E.O. Ameh, S.A. Kazeem, M. Abdullahi and U. Hassan	121
Effective Waste Collection and Storage in Selected Major Urban Cities in Nigeria: A Panacea for Environmental Safety Sustainability O.G. Fadugba, F.O. Ajibade and B.D. Oluyemi-Ayibiowu	131
Efficiency of <i>Carica papaya</i> Seeds in the Coagulation of Moderately Turbid Wastewater O.M. Ojo	139

Chapter 4: Mechatronics

Design of a Ceiling Fan with Autonomous Capability M.K. Adeyeri, O.V. Ademeso and A.B. Nwoko	149
Investigating Characteristics of Solar Panels as Visible Light Communication (VLC) Receivers A.A. Ponnle, O.A. Ojediran, A. Akin-Ponnle and S.A. Oyetunji	161

Chapter 5: Power Engineering

Evaluation of Nigerian Transmission Grid Capacity and Technical Limitations under Different Load Conditions S.O. Aremu, A.O. Melodi and M.R. Adu	183
Stochastic Evaluation of Load Power System of Lines in Sub-Saharan Africa under Condition of Stability P.T. Ogunboyo and O. Ogunlade	191
Contingency Approach for Static Security Assessment on the Nigerian 330 Kv Electric Power Transmission Grid A.S. Sobayo, O.I. Adejumobi, I.A. Adebisi and D.O. Adams	203
An Analysis of Power Distribution Network in Nigeria for Power Quality-Based Reinforcements and Investment Planning O.R. Olakunle and A.O. Melodi	213