

Table of Contents

Preface

Chapter 1: Properties and Processing of Steel and Alloys

Experimental Investigations for Assessment of Carbon Emissions and Tool Temperature in Dry Turning Operation Using Al1070 Alloy T.U. Siddiqui, Z.A. Khan, A.N. Siddiquee and V. Kumar	3
Mechanical Tests of EN AW 5754 Aluminium Alloy Clinch Joints A. Shukurea, P.Z. Kovács and J. Lukács	13
Investigation of Microstructure and Mechanical Properties of Al Alloys Lap Joints by Friction Stir Welding A. Trivedi and S.N. Pandya	25
Exploring the Effects of Open-Air Cooling on the Formation of Microstructure in Cast A356 Aluminum Alloy M. Pati, A. Dahiya and S. Chakraborty	33

Chapter 2: Additive Manufacturing

Novel Process Approach for Extrusion-Based Metal Wire Additive Manufacturing Using Induction Heating as a Heat Source R.K. Choubey and P.K. Jain	45
Effect of Build Height on Microstructure and Mechanical Properties of Hollow Tubes Fabricated Using Arc-DED Process S. Amritbir and S. Shiva	53
Enhancing Surface Finish in FDM 3D Printing: The Impact of a Spherical Ironing Tool A. Montalti, G. Galiè and A. Liverani	61
Influence of Selected Printing Parameters on the Mechanical Behavior of FDM-Printed ABS Specimens Using Taguchi Method E. Biglete and R.R. Aquino	67

Chapter 3: Unconventional Technological Processes

Advancements in Abrasive Waterjet Cutting Technologies: A Comprehensive Overview and Future Prospects in the Manufacturing Industry I.A. Perianu, A. Murariu, L. Botila, M. Marin-Corciu, I. Duma and C. Baeră	77
Determination of Crack Limits in Sinter Components by Compaction Process Performance Analysis S. Mustafa, E. Ganthaler, T. Villgratner, F. Concli and A. Peer	87
Bibliographic Study Regarding Renewable Energy: Infrared Reflective Layer Made of Al₂O₃ Using HVOF Process V. Constantin, A. Murariu, I.A. Perianu and I. Duma	97
Study of Penetration Depth According to Working Parameters in Steel Engraving Using Optical Laser F. Corb, T. Buidos, C. Stănăel, I. Stănăel and G. Mnerie	105

Chapter 4: Wire and Wire Products

Stress-Strain State of Composite Stay Rope for Suspending Permanent Structures and their Components I. Belmas, D. Kolosov, O. Bilous, H. Tantsura, S. Onyshchenko and K. Antonova	117
Experimentation Evaluation of Dynamics of Steel Wire Rope B. Bhashi, S. Sreejath and S.P. Singh	133