

Table of Contents

Preface

Chapter 1: Properties and Treatment of Steel and Alloys

Modeling of the Diffusion Process of Nitrogen Redistribution in Steel during Complex Ion Nitriding S. Shevchenko, O. Horova, M. Pogribniy, A. Vasilchenko and O. Rebrova	3
Influence of Carbon Content on the Strengthening Characteristics of Steels during AFSH O. Volkov, V. Subbotina, Z. Kraievska, A. Vasilchenko and O. Lyubchenko	11
Study of the Kinetics of Plastic Deformation Propagation in a Welded Joint of 10G2FB Steel after Submerged Arc Welding D. Laukhin, O. Beketov, N. Rott and B. Tsymbal	19
Microstructural Effects on the Fragmentation of High-Carbon Steel Cylindrical Shells under Explosive Loading S. Fedoriachenko, B. Tsymbal, V. Korol and D. Harkavenko	31
Steel Microstructure Prediction Mechanism Using Convolutional Neural Networks S. Fedoriachenko, K. Ziborov, I. Lutsenko and D. Harkavenko	39
Effect of Si Content on Property of Al-Si-Mg Strip Cast Using High Speed Twin Roll Caster T. Haga, H. Ochi, H. Fuse, H. Watari and S. Nishida	47
Microstructural and Mechanical Properties of Flash SPS WC-Co/AISI 304L Diffusion Bonded B. Maamache, N. Ouali, B. Belkessa, H. Maamar, P. Hvizdoš and B. Cheniti	53
Effect of Impurity on Casting of Al-25%Si Heat Sink with Thin Fins H. Fuse, T. Haga, H. Ochi, H. Watari and S. Nishida	59
Effect of Mold Lubricant on Flow Length of Al-Mg Alloy in Die Casting H. Fuse, T. Haga, H. Sakaue, H. Ochi, H. Watari and S. Nishida	65
Study on Cutting Edge Shape in Surface Processing with Indexable Non-Rotational Cutting Tool Using Damping Alloy K. Shimana, S. Arikawa, R. Iwamoto, S. Yoshimitsu and Y. Kobaru	71

Chapter 2: Friction Stir Processing

Development of a Finite Element Model for Thermal Analysis of FSW Butt Welding of AA2124/SiC/25p-T4 Aluminium Metal Matrix Composite M. Pop-Calimanu and I.A. Perianu	79
SEM and EDX Analysis of the Fracture Surface of the Submerged Friction Stir Processed EN AW 7075 Aluminum Alloy R.R. Herci, L.N. Boilă, L.I. Sîrbu and R. Faur	91
Analysis of the Fracture Surface in Multiple Pass SFSP Processing of Aluminium Alloy EN AW 1200 E. Dobrin, L.N. Boilă, R. Faur, G.V. Mnerie, L.I. Sîrbu and A. Anaghostopoulou	101
Comparative Analysis of the Fracture Surfaces for FSP and SFSP Processed EN AC 5083 Cast Aluminium Alloy A.O. Raia, L.N. Boilă, A.C. Bucur and A. Cazacu	109

Chapter 3: Building Materials

Analysis of Mechanical Strength in Concrete Specimens with Inclusion of Recycled Glass in Peru A.B. Huruchi, R.M. Aguilar and R.M. Delgadillo	125
Effect of Concrete Deep Penetration Sealer on Durability of Concrete K. Huang, A. Cheng, Y.T. Tseng, Y. Lin, Y. Zhang and P.C. Cheng	131