

Table of Contents

Preface

Chapter 1: Properties and Processing of Steel and Alloys

Mechanical Properties Comparison Between Induction Hardening and Rehardening of <i>Axle Shaft</i> AISI 1043 According to JIS G 0559 Standard M. Muslimin, G. Sudarmawan, Z. Yoslin and D. Luqyana	3
Strength Analysis of ST 41 Steel as Propeller Shaft with Quenching Heat Treatment and Tempering after Carburizing Carbon Media Variations U. Budiarto, H. Yudo, D. Adani, A.H. Muhammad and M. Iqbal	13
Experimental Investigation on the Effect of EDM Wire Cut Parameters on the Formation of Cr_{23}C_6 in AISI 316 Steel M. Muslimin, M. Iqbal, S. Ruswanto, F. Triawan and F. Mahmuddin	23
Analysis of Voltage, Current Density, and Welding Speed of Flux Core Arc Welding on the Hardness and Micro-Structure of High Strength Low Alloy (ASTM A572) M.Z. Afkari, S. Hastuty, M.A. Barrinaya, M. Awwaluddin, M.S. Anwar, G.K. Sunnardianto and F. Mahmuddin	33
The Influence of Machining Variables on the Quality of the Shaping Process on Hard Steel A.Y. Aminy, A. Hayat and M. Mudassir	41

Chapter 2: Materials and Processing Technologies in Photovoltaics

Conductive Glass with Simple Spray Deposition Method for Dye-Sensitized Solar Cell Application A. Hayat, M. Dahlan, A.E.E. Putra and N. Amaliyah	51
Semiconductor TiO_2 Coating Deposited by Microwave Plasma Method N. Amaliyah, A. Hayat, A.E.E. Putra, I. Rahim and A. Sakka	57

Chapter 3: Electronic Devices Based on Silicon Carbide

Impact of Dimensions and Doping on the Breakdown Voltage of a Trench 4H-SiC Vertical JFET F. Monaghan, A. Martinez, F. Craig and M. Jennings	69
Early Burn-In Parasitic Conduction in 500 °C Durable SiC JFET ICs P.G. Neudeck, D.J. Spry, D. Lukco and L.Y. Chen	77
Optimization of TaSi_2 Processing for 500 °C Durable SiC JFET-R Integrated Circuits D.J. Spry, P.G. Neudeck, C.W. Chang, S. Rajgopal and J.M. Gonzalez	83
High Density 65W AC-DC Adaptor Enabled by SiC MOSFET with Ultralow $V_{\text{GS(on)}}$ F.J. Hsu, C.T. Yen, H.T. Hung, J.W. Hu and C.F. Huang	89
650V Vertical SiC MOSFETs and Diodes with Improved Terrestrial-Neutron Single-Event Burnout D.J. Lichtenwalner, S. Ganguly, B. Fetzer, C. Woods, D.A. Gajewski, S.H. Ryu, B. Hull, S. Allen and J.W. Palmour	95
Investigations on 4H-SiC Low Voltage nMOSFETs with Thin Thermal SiO_2/ Deposited Oxide Gate Dielectric K. Cho, B. Lee, K.M. Kim, D. Choi and K.S. Park	101
Reduction of Forward Bias Degradation in 4H-SiC PiN Diodes Fabricated on 4H-SiC Bonded Substrates N. Hatta, S. Ishikawa, K. Ozono, K. Masumoto, K. Yagi, M. Kobayashi, S. Kurihara, S. Harada and K. Kojima	107

Chapter 4: Materials in Construction

Evaluation of the Alkali-Aggregate Reaction Mitigation Potential of Alkali-Activated Fly Ash-Based Matrices Containing Different Reactive Aggregates L. Kaefer, L.A. Dias, A.H. Meinhart, D.C.M. Arnold, A.S. Vargas, F.d.P. Morisso and C.T. Oliveira	117
Determination of Elastic Constants of Cross-Laminated Bamboo (CLB) through Non-Destructive Testing E.V.M. Carrasco, F.M.G. Ramos, L.G. Moura, L.N. Okubo, O.C.P. Ferreira, B.M.O. Pinto and F.C. Rodrigues	129
Properties of Polycarboxylate Superplasticizers with Different Molecular Structure: A Comparative Study R.H. Yang, P.Y. Zhang, Z.Y. Mao, D.M. Wang, Q. Sun, Y. Li, Y. Gu, W.S. Wang and T.S. He	139
Study on Subgrade Performance Evolution and Geocell-Reinforcement Effect of Subgrade in a Seasonal Frozen Area M. Cheng, S. Li, X.W. Luo, Z. Lu and H.L. Yao	157

Chapter 5: Design and Testing of Technological Equipment

Investigation of Bulk Material Transportation by Screw Conveyer with Hinge-Pan Operating Device O. Lyashuk, R. Rohatynskyi, I. Hevko, O. Dmytriv, O. Tson, I. Tkachenko, M. Sokol, R. Leshchuk and V. Kobelnyk	169
Fabrication of Chemotaxis Microfluidic Device Mould Using Digital Light Processing 3D Printing Method A.N.Q. Jemy, K. Saptaji, F. Triawan, I. Ifat and I. Setiawan	183