

Table of Contents

Preface

Chapter 1: Properties and Processing Technologies of Aluminum and Aluminum Alloys

Feasibility Study of Solid-State Recycling through Direct Hot Rolling of AA5754 Aluminum Chips for Automotive Applications

M. El Mehtedi, P. Buonadonna, R. El Mohtadi, G. Loi, F. Aymerich, N. Ben Khalifa and M. Carta 3

Optimization of Geometric Design of Extruded Products Incorporating Properties, Cost and CO₂ Footprint

A. Nesse, M. Iddberg, O.R. Myhr and T. Furu 13

Influence of Different Aging Times and Temperatures on Microstructural and Mechanical Properties of EN AW-6XXX Aluminum Alloys

C. Soffritti, C. Morales, A. Fortini and M. Merlin 25

Effect of Homogenization Cycle on Precipitation of Dispersoids and Abnormal Grain Growth in an Al-Mg-Si Alloy

S.K. Gahlyan, P.S. Wanjari, S. Agrawal, B. Bharadwaj, M. Saxena and V. Srivastava 35

Chapter 2: Additive Manufacturing

Further Analysis into Best Infill Structure Used in Additive Manufacturing for Mechanical Applications

M.C. Matei, N.A. Sîrbu, S.V. Galatanu, N. Trihenea and A.I. Biholar 51

An Analysis of the Advancements in Laser-Powered Direct Energy Deposition for Parts Repair

N. Trihenea, V.. Constantin and D.A. Predu 63

Chapter 3: Polymers and Composites

Polystyrene Novel Composites with Enhanced Thermal Stability and Improved Conductivity

S.U. Rehman, S. Javaid, M. Shahid, B. Rashid and F. Ahmad 71

Life Estimation and Thermal Degradation Kinetics of Ethylene-Propylene-Diene Monomer (EPDM) and Silicone Rubber (SiR) Blend

A. Ameer, N. Afaq, K. Hussain and M. Farooq 77

Investigating the Mechanical Enhancement of Epoxy Composites with Human Hair

T. Yaiphuak, S. Inglam, U. Wongwaitongtee, P. Naronglerdrit, A. Dagnaud and S. Wanchat 89

Investigating the Debonding of Aluminum and Carbon Fiber Reinforced Polymer (Al-CFRP) in Type-III Filament-Wound Composite Vessels Subject to Temperature Variations

M.R.A. Hassan, Y. Arai, Y. Miyakawa, W. Araki, A. Kurosawa, N. Sasaki, T. Ohbuchi and T. Iijima 95

Influence of Silane-Modified Soybean Oil as an Environmentally Friendly Processing Oil on the Properties of Silica-Reinforced Rubber Compounds

A. Mingsamoh, C. Hayichelaeh, P. Sunintaboon and K. Boonkerd 103

Effect of Limonene on the Tensile Properties and Chemical Changes of Natural Rubber Products

S.Y. Yang, N.Y.G. Lai, R.S. Chen, M.A. Tarawneh and L.J. Yu 109