

Table of Contents

Preface

Chapter 1: Metallurgical Engineering

Nanocracks in Austenitic Chromium-Nickel Structural Steel Thin Films T. Eterashvili	3
Copper Effect on Micro- and Nanostructures of Steels T. Berikashvili, A. Gigineishvili and L. Chkhartishvili	9
Methods for Formation of Complex Fe-Mn-B-SHS Ligatures and Investigation Their Structure and Properties G. Zakharov, M. Chikhraze, L. Chkhartishvili, N. Khidasheli, D. Kvaskhvadze, Z. Aslamazashvili and B. Godibadze	27

Chapter 2: Friction Stir Processing

Experimental Research on Submerged Underwater Friction Stir Processing of EN AW 1200 Aluminum Alloy L.N. Botila, I.A. Perianu, I. Duma, E. Dobrin, R.N. Popescu and R. Faur	35
Submerged Friction Stir Processing of En Aw 5754 Aluminum Alloy L.N. Botila, I.A. Perianu, I. Duma, V.. Constantin, R. Faur and R.N. Popescu	45
Aspects of Fracture Surface Analysis of Aluminum Alloy EN AW 6082 Submerged Friction Stir Processed L.I. Sirbu, L.N. Boilă, R.R. Herci, R. Faur and F.A. Bude	55
Fracture Surface Analysis of EN AW 5754 Aluminium Alloy during Submerged Friction Stir Processing G.V. Mnerie, L.N. Boilă, R. Faur, B. Savić and A. Akac	65

Chapter 3: Antibacterial and Antioxidant Materials

Development and Characterization of a Curcumin-Loaded Alginate-Xanthan Gum Hydrogel for Antibacterial Activity and Controlled Drug Release L. Torres, S. Cespedes, S. Kim, J. Nakamatsu, M. Obregón Príncipe and D. Castillo	79
Beta-Cyclodextrin Inclusion Complexes of Rose Oil and Rose Extract: Preparation and Physical Properties T. Chimsook	87

Chapter 4: Sustainable Building Materials

Compressive Strength Assessment of Polymer- Soilcrete Blocks for Sustainable Mass Housing C.M. Ikumapayi, C. Arum, O. Ekundayo, H. Ogunsuyi, B. Ojokoh, O. Omotayo, O.G. Mark, R.C. Arum, I. Uchenna, O. Awe, S.O. Oluwadare and O.S. Showunmi	99
Durability Scrutiny and Performance Prediction of Geopolymer Concrete Containing Bespoke Activator and Superplasticizer L.O. Agashua, C. Arum, B.D. Oluyemi-Ayibiowu and C.M. Ikumapayi	111
Influence of Redispersible Polymer Type and Content on Restrained Shrinkage Cracking in Non-Structural Concrete Patch Repair Mortars P.A. Arito	123
Development of Response Surface Models for Strength and Flow Characteristics of PET Fibre-Reinforced Self-Compacting Laterized Concrete Containing Fly Ash M. Adetutu, C. Arum, O. Omotayo and S. Alabi	137