Table of Contents

Preface

Chapter 1: Properties of Structural Metals and Alloys

High Temperature Shape Memory Alloys Z.T. Khulief and H.F. Mahdy	3
Structural Characterization and Mechanical Properties of Ductile Iron - Enhanced Alloyed	
Ductile Iron A.A. Mnati, K.K. Resan and E. Omaraa	13
Using Strain Energy Method to Estimate Buckling in Steel Column AISI 1312 during	
Effects of Fire Hazard A.H. Fahem and M.N. Hawas	23
Enhancing the Oxidation Behavior of Zr-Modified Aluminide Coatings on Inconel 600 at	23
Different Temperatures	
N.M. Dawood and A.M. Salim	37
Chapter 2: Polymers and Composites	
Analytical Analysis to Predict the Generated Stresses and Strains of Laminated Composite Tube due to Internal Pressure	
M.F. Al-Edhari, K.M.H. Raheem and F.T. Al-Maliky	49
Study of the Life of Partial Removable Denture Manufactured by PMMA Reinforced with Nano TiO ₂	
E.A. Abbod, S.H. Challoob, K.K. Resan and E. Omaraa	59
Study the Optical and Morphological Properties of Prepared PANI/TiO₂ Nanocomposites R.A. Talib, D.K. Thbayh and K.A. Mohammed	69
Effect of Static Magnetic Field on Anchusa-Italica-Doped Pentacene T.A. Alaridhee, F.H. Malk and A.A. Hussein	77
Chapter 3: Functional Nanomaterials	
Utilization of Iron Oxide Nanoparticles (Hematite) as Adsorbent for Removal of Organic Pollutants in Refinery Wastewater K.M. Mousa Al-Zobai and A.A. Hassan	89
Gold Nanoparticles Ablated in Ethanol: Topographical and Morphological Properties for	07
Refractive Index Sensors F.G. Khalid, M.N.A.K. Alghurabi, M.S. Al Wazny, M.H.A. Wahid and W.A. Hekmat	99
Chapter 4: Technology of Pulsed Laser Deposition	
Study the Influence of CNTs Deposited by Laser on the Surface of Al 2024 Alloy T.A. Tawfiq, A.M. Jassim and H.A. Alani	111
Using the PLD Method: Investigation of the Influence of Laser Wavelengths on the Optical Morphological and Structural Findings of LiNbO ₃ Nano-Photonic Films E.T. Salim, R. Mahmood, F.G. Khalid and U. Hashim	123
Visible Ranges Photo Detector Fabricated Based on Nano Copper Oxide Deposited by	
Reactive Pulsed Laser Deposition Z.S. Alshaikhli, S.F.H. Alhasan, E.T. Salim and N.A. Parmin	133
Fabrication of Solar Cell Based on Copper Oxide Nanostructures Deposited Using Reactive	
Pulsed Laser Deposition S.F.H. Alhasan, M.A. Abduljabbar, Z.S. Alshaikhli, M.A. Fakhri and N.A. Parmin	142

Optical and Photolumenance Studies of Deposited CuO ₂ Nano-Structures at Different Laser	
Energies Effects M.A. Fakhri, M.N.A.K. Alghurabi, F.H. Alsultany and M.H.A. Wahid	151
Laser Energies Effects on Physical Properties of CuO₂ Nano-Structures W.A. Hekmat, N. Numan, F.H. Alsultany and U. Hashim	161
Chapter 5: Building Materials	
An Eco-Sustainable Production of Cement Mortar Containing Waste Glass as Partial Replacement of Cement	172
K.K. Aswed and I.K. Harith Effect of Proposed Accelerated Curing Method on High Volume Fly Ash Concrete I.K. Harith, B.H. Amanah and M.H. Naser	173 184
Effect of Elevated Temperature on the Physical and Mechanical Properties of Crushed Clay Bricks Aggregate Concrete A.M. Almusawi, R. Shabbar and Q.A. Jabal	194
Study some Mechanical and Thermal Properties of reinforced Perlite Concrete R.S. Al-Jadiri, M.A. Al-Wahab Ali and Q.J. Frayyeh	203
Estimated Fatigue Life of Recovery Reclaimed Asphalt Pavement Binder A.H.A. Al-Haddad	213
Suitable Ultra-Thin Asphalt Binder Achieved the Energy Equilibrium Y.H. Abed and A.H.A. Al-Haddad	226