Table of Contents

Preface

Chapter 1: Properties and Technologies for Processing of Structural Materials

Improvement of CNC Lathe Performances by Tungsten-Carbide Tool Using Desirability Function Analysis for Fabrication of Miniature Component A.S. Hameed, M.S. Jafar and B. Mallick	3
Crystal Structure and Colorimetric Behavior of Low Melting Point Ternary Alloy T.T. Issa, S.M. Majeed and D.S. Ahmed	12
The Cyclic Fatigue Behavior for 6061-T6 Al Alloy Shafts Processed by Laser Shock Peening A.R. Alhamaoy, G.S. Sadiq, F.I. Hussein and S.N. Ali	21
Investigation Corrosion and Wear Behavior of Nickel-Nano Silicon Carbide on Stainless Steel 316L N.M. Dawood, N.S. Radhi and Z.S. Al-Khafaji	33
Chapter 2: Polymers and Polymer Composites	
Tailoring Polylactic Acid Properties for Packaging Applications: Effects of CoAddition of Halloysite Nanotubes and Selected Plasticizers	
A.M. Alakrach, N.N. Zulkepli, A.A. Al-Rashdi, S.S. Ting, R. Hamzah and O.S. Dahham Modification of Polylactic Acid/ Halloysite Bionanocomposites Using Electron Beam	47
Radiation: Physical, Barrier and Thermal Properties	
A.M. Alakrach, N.N. Zulkepli, A.A. Al-Rashdi, S.S. Ting, R. Hamzah and O.S. Dahham Synthesis, Characterization and Reactivity Ratios of Poly Phenyl Acrylamide-Co-Methyl	57
Methacrylate A.H. Mohammed, T.A. Mahmood, S.A. Yousif, A. Musa and N.N. Dally	66
Mechanical Properties of Chemical Treated Jute Fiber Reinforced Polymer Composites W.M. Salih	75
Effect of Iodine Addition on Improving the Electrical Conductivity and Activation Energy of Electrospun PMMA Thin Films M.A. Najim, A.R. Jabur and A.A. Hameed	84
Evaluating and Modeling of Tensile Creep Rupture Behavior for Neat and Reinforced Polyamide 6.6 O.S. Abdullah, S.S. Hassan and A.N. Al-Khazraji	95
Studying some Optical Properties of Polyethylene Glycol Doped with Al- Nanoparticles E.T. Abd-Al Hussein and A.M. Hameed	104
Structure and Electrical Properties of ZnO Nanoparticles Blend with POT-DBSA D.K. Thbayh, R.A. Talib, D.N. Ahilfi, T.A. Alaridhee and K.M. Ziadan	114
Chapter 3: Ceramics and Metal Matrix Composites	
Thermal Conductivity Optimization of Porous Alumina Ceramics via Taguchi Model M.A. Aswad, A.N. Saud and M.A. Ahmed	125
Characterization of Bulk BaTiO ₃ Material for Optical Modulator Applications S. Al-Ithawi, W.A. Hekmat, K.A. Hubeatir, S. Basil Ali, S.M. Kadhim and M.S. Hamza	132
Effect of Friction Stir Processing Parameters on the Properties of AA7075-T73/Al2O3 Surface Metal Matrix Composite A.H. Al-Helli, A.R. Alhamaoy and A.M. Takhakh	140
Mechanical and Wear Behavior of Al7075 - Graphite Self-Lubricating Composite Reinforced by Nano-WO ₃ Particles	
A.D. Mahdi, S.S. Irhayyim and S.F. Abduljabbar	151

Erosion-Corrosion Behavior of Al-20%Ni-Al ₂ O ₃ Metal Matrix Composites by Stir Casting N.M. Dawood	161
Mechanical Properties and Wear Characteristic of (Aluminum-Zinc Oxide) Metal Matrix Composite Prepared Using Stir Casting Process A.H. Jasim, W.M. Joudi, N.S. Radhi and A.N. Saud	175
A.11. Jasiiii, W.IVI. Joudi, N.S. Kadiii alid A.N. Sadd	173
Chapter 4: Functional and Special Materials	
Study the Effect of the Heat Treatment on the Photoelectrochemical Performance of Binary Heterostructured Photoanode Ag ₂ S/ ZnO Nanorod Arrays in Photoelectrochemical Cells A.A. Al-Zahranil, Z. Zainal, Z.A. Talib, H. Ngee Lim and A.M. Holi	187
Photo Voltaic Properties of Ag ₂ O/ Si Heterojunction Device: Effect of Substrate Conductivity M.T. Awayiz and E.T. Salim	200
Physical Investigations of Niobium Oxide Nanorod Imploring Laser Radiation R.O. Mahdi, M.A. Fakhri and E.T. Salim	211
DFT Study of New Donor-π-Acceptor Materials Based on Thieno[2,3-b] Indole Candidate for Organic Solar Cells Application	
F.A. Al-Temimei, L.A. Alasadi and A.S. Alaboodi Synthesis of Hg ₂ Sr _{2-x} Ba _x Ca ₂ Cu ₃ O ₁₀ Superconductor and Study the Structure and Electrical	221
Properties	230
S.F. Nawaf, N. Ali Shafeek and M.H. Darweesh Measurement of Electrical Conductivity Degree of some Metallic Conductors by Using the	230
LC Circuit S.F. Nawaf, S.S. Salih and M.O. Salih	239
Chapter 5: Materials and Technologies for Sensors, Photonics and Optoelectronics	
Enhanced Absorption Edge of Anchusa-Italica-Doped Pentacene towards Optoelectronic Applications	
T.A. Alaridhee, F.H. Malk, A.A. Hussein and D.S. Abid	251
Analysis of Thermal Effects within Cylindrical Shape Solid-State Laser Rod M.J. Abdul Razzaq and K.A. Hubeatir	264
Effect of Doping Alumina by Nano Mn on the Sensing Applications W.A. Kadhim, A.L. Khalaf, R.A. Azeez, M.H.A. Rahima and S.F. Hasany	273
An Overview of Au & Photonic Crystal Fiber of Sensors H.S. Ali and M.A. Fakhri	282
Photonic Crystal Fiber Sensor for Blood with Different Concentration of Zinc R. Hani, B.R. Mahdi and A.Z. Mohammad	290
Chapter 6: Materials and Technologies in Biomedicine and Pharmacology	
Thermal Conductivity and Specific Heat Evaluation of Tissue Using Laser S.I. Younis, H.I. Qatta, M.J. Abdul Razzaq and K.S. Shibib	303
Synthesis AgNPs in Starch Solution by Green Method for New Medical Drugs A.J. Bohan, D.S. Ahmed and G.K. Salman	311
Advanced Structured of MgO Thin Film for Bio Applications A.A. Abdul-Hamead	319
Evaluation of Mechanical Properties for Selected Dental Composite Resin Polymerized by Light Curing Technology at Different Thickness F.M. Hamam, B.A.M. Bader and M.Y. Slewa	331
Impact and Flexural Strength of Kaolinite / Glass Fibers Reinforced Heat-Cured Acrylic	221
Denture W.A. Hussain, B.A.M. Bader, M.Y. Slewa and L.H. Alwan	340

Spectrophotometric Determination of Sulphamethoxazole Drug by New Pyrazoline Derived from 2,4-Dinitro Phenyl Hydrazine	
A.A.M. Al Rashidy, K.A. Al Badrany and G.M. Al Garagoly	350
Synthesis and Characterization of some 2-Azetidinones Derived from 3-Nitro Phthalic Anhydride and Evaluation their Biological against Bacteria and Fungi A.K.J. Al-Joubory, R.H. Saleh and O.A. Mohammed	360
Impacts of <i>In Vivo</i> Exposure Static Magnetic Field to Blood Viscosity B.T. Mustafa, S. Yaba and A.H. Ismail	369
Improving the Composite Materials for Bi Lateral Prosthesis with Below Knee Amputation S.M. Abbas, G.S. Sadiq and M. Abdul Sattar	379
A Swelling Study in Different PH and Mechanical Properties of Biodegradable Films Based on Pluronic F-127/ Poly-Vinyl Alcohol Z.J. Sweah	389
Mechanical Behavior of Structural Light Weight Concrete Using Low-Strength Clay Bricks Aggregates	200
A.A. Khamees, W.A. Tameemi and O.M. Al Qassag	399
Experimental Evaluation of the Static Magnetic Field Effect on White Blood Cells: <i>In Vivo</i> Study B.T. Mustafa, S.P. Yaba and A.H. Ismail	412
Chapter 7: Technologies for Chemical Engineering	
Improving Porosity of Activated Carbon Nanotubes via Alkali Agents for the Enhancement of Adsorptive Desulfurization Process	422
M.A. Shihab, A.T. Nawaf, S.A. Mohamedali and M.N. Alsalmaney	423
Utilization of Nano and Micro Particles to Enhance Drilling Mud Rheology L. Jassim, R. Yunus and U. Rashid	435
Synthesis of some 2-Pyridones by Application of L-L Phase Transfer Catalysis Method A.M. Mustafa, M.S. Hussein and A.Z. Tareq	448
Chapter 8: Materials and Technologies in Environmental Engineering	
Effect of CaCO ₃ Form on Soil Inherent Quality Properties of Calcareous Soils M.I. Umer, S.M. Rajab and H.K. Ismail	459
Removal of Organic Dyes by Using Cellulose-Chitosan-Nanowires Hybrid Composition Beads	468
A Z. Tareg	
A.Z. Tareq Disinfection of Drinking Water from <i>Escherichia coli</i> and <i>Pseudomonas aeruginosa</i> by Using Silver Nanoparticles	
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using	478
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif	478 489
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif Magneto-Optical Measurements of Magnetic Nanoparticles Using Laser for Environmental	
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif	
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif Magneto-Optical Measurements of Magnetic Nanoparticles Using Laser for Environmental Applications	489
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif Magneto-Optical Measurements of Magnetic Nanoparticles Using Laser for Environmental Applications I. Rawa, A.I. Mahmood and R.M. Chyad Chapter 9: Materials and Technologies in Construction Influence of Acetic Acid on Gypseous Soil	489 498
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif Magneto-Optical Measurements of Magnetic Nanoparticles Using Laser for Environmental Applications I. Rawa, A.I. Mahmood and R.M. Chyad Chapter 9: Materials and Technologies in Construction Influence of Acetic Acid on Gypseous Soil L.N. Snodi and I.S. Hussein Behavior of Reactive Powder Concrete Slab with Smeared Reinforcement under Impact	489
Disinfection of Drinking Water from Escherichia coli and Pseudomonas aeruginosa by Using Silver Nanoparticles R.S. Jawad, A.H. Younus, H.H. Abbas, A. Shihab, A.R. Jawad and N. Al Muski Removal of Organic Contaminants from Textile Wastewater by Adsorption on Natural Biosorbent Z. Hussain, Z. Fadhil, S. Kareem, S. Mohammed and E. Yousif Magneto-Optical Measurements of Magnetic Nanoparticles Using Laser for Environmental Applications I. Rawa, A.I. Mahmood and R.M. Chyad Chapter 9: Materials and Technologies in Construction Influence of Acetic Acid on Gypseous Soil L.N. Snodi and I.S. Hussein	489 498

Improve Mass Concrete by Controlling the Crack Sealing Mechanism Using Microcapsules of Zinc Oxide	
A.Z. Dahesh, F.M. Othman and A.A. Abdul-Hamead	541
Experimental Study of Strengthening of RC Columns with Steel Fiber Concrete W.J. Mhuder and S.M. Chassib	551
The Effect of Using Sugar-Cane Bagasse Ash as a Cement Replacement on the Mechanical Characteristics of Concrete A.N. Abbas, H. Al-Nealy, A. Al-Saadi and M. Imran	565
Influence of Corrugation Pattern on the Stiffness of Thin Plates W.M. Khalaf, R.N. Kiter and M.Y. Abood	578
Assessment of Self-Consolidation Concrete Produced with Micro Steel and Macro Synthetic Polyolefin Fibers D.H. Hameed and A.A. Al-Saeedi	594
Numerical Tracking of the Behavior of Repaired Reinforced Concrete Beams by CFRP Sheets against Shear H.H.H. Kammona, M.A. Attiya and Q.M. Shakir	604
Microstructural Analysis for Cement Mortar with Different Nano Materials Z.F. Jawad, R.J. Ghayyib and A.J. Salman	615
Effect of Different Curing on Mechanical Properties of Polymer - Cement Composites B.M. Fahad and B.M. Matlik	627