Table of Contents

Preface

Chapter 1: Synthesis and Applications of Nanomaterials

Synthesis and Characterization of Silver Nanoparticles Prepared from Pomegranate Peel Extracts and its Antibacterial Activity	
N.A. Sobhy, H.M. Ahmed and M.A. El-Khateeb	3
Preparation and Characterization of Iron Nanoparticles by Green Synthesis Method and its Application in Water Treatment	
H.M. Ahmed, N.A. Sobhy, M.A. El-Khateeb, M.M. Hefny and F.M. Abdel-Haleem	11
Green Biosynthesis of Zinc Oxide Nanoparticles Utilizing Pomegranate Peel Extract for Grey Water Treatment	
H.M. Ahmed, N.A. Sobhy, W.A. Ibrahem and M.E. Fawzy	27
Design and Implementation of Montmorillonite Clay-Based Catalyst for Carbon Nanotube	
Synthesizing M. Morsy, H. Shoukry, M. Garieb, A. El-Nagar, W.M. Taha and M.M. Mokhtar	37
Heptachlor Epoxide -Pesticide- Removal from Aqueous Solutions Using Nano Zero Valent Iron: Operating Conditions, Response Surface Methodology, and Artificial Intelligence Neural Networks	
N.Y. Mohamed and A.S. Mahmoud	51
Chapter 2: Solid Waste Utilisation in Building Materials	
Properties of Pervious Concrete Made with Ferrochrome Slag as a Coarse Aggregate K. Al-Jabri and K.M.A. Abosohel	69
Effect of Glass Powder on High-Strength Self-Compacting Concrete Durability M. Amin, A.M. Zeyad, B.A. Tayeh and I.S. Agwa	77
Shear Behavior of Reinforced Fiber Concrete Beam Using Steel Lathe Scrap Waste and End Hooked Steel Fiber D.F. Arafa and M.S. Moawad	89
Characteristics of High-Strength Concrete Reinforced with Steel Fibers Recovered from	
Waste Tires A.E.M.M. Elrefaei, M.M. Alsaadawi and W. Wagdy	105
Development of Architectural Green Mortar Incorporating Waste Glass and its Impact on	
Energy Saving in Buildings M.G. Eisa, H. Sameh and M.M. Abd El-Razik	117
Chapter 3: Advanced Building Materials	
Role of Carbon Nanotubes in Expanding the Properties of Cement-Based Composites for Construction: An Overview	127
I.M. Katar Dry Mix for Facade Self-Cleaning Silicate Paint	127
G.I. Yakovlev, Z. Saidova, I. Ginchitskaia, N. Kuzmina, D. Trofimova, A.F. Buryanov and A.E.M.M. Elrefaei	145
Efficiency of Bacteria-Based Self-Healing Mechanism in Concrete S. Shaaban, N. Hammad, A. Elnemr and I.G. Shaaban	157
Properties of Cement-Based Composites Modified with Metal/Carbon Nanocomposite S.N. Semyonova, G.I. Yakovlev, I.S. Polyanskikh, A.F. Buryanov and A.V. Shaybadullina	167
Influence of Silica Nanoparticles on the Properties of Nanocomposite Based on Epoxy as Concrete Protective Coating M.A. Shohide and M.A. Ahmed	175

Recent Progress in Limestone-Calcined Clay Cement (LC3): A Review G.E. Abdelaziz, H. Shoukry, A.A. Selim and M.S. Saif Impact of Accelerated Weathering on Fire Resistance Performance of Intumescent Materials A. Zaki, R.M. Elkady, T.M. Khalaf, M.A. Elkady and S. Shebl	187 197
Chapter 4: Concrete Structural Elements	197
Behavior of Reinforced Concrete Beams Strengthened in Negative Moment Region Using CFRP Plates S.A. Gawad Aly	207
Chapter 5: Building Design and Structural Health Monitoring	
Design Criteria for Designing Sustainable Commercial Buildings in Hot and Arid Climate H.A. Helal and R.F. Ismail	223
Innovative Environmental Solution for One Floor Existing Commercial Buildings Located in Hot Climate to Be Naturally Ventilated (Case Study at Ras El Bar, Egypt) R.F. Ismail and H.A. Helal	233
SHM of Tahya Masr Cable-Stayed Bridge Using Resensys Wireless Sensors A. Elbaz, K. Heiza, H. Marzouk and O. Nawawy	245