

Table of Contents

Preface

Chapter 1: Some Aspects of Nanotechnology Applications In Different Sectors

Brief Review on Nanotechnology as an Effective Tool for Production of Biofuels	
A.K. Yadav, M. Purushotham, N.I. Gour, G.G. Gurnule, V.C. Choudhary and K.R. Yadav	3
Carbon Based Nanomaterials Technology for Tribology Applications - A Review	
R. Sivanand, V. Gajendiran, H.A. Alshamsi, R. Raffik, A. Sharma and K. Pant	9
Critical Review on the Impact of Nanotechnology in Concrete Materials	
A.N. Shankar, M.M. Farouq, F.K. Bondinuba, V.K. Singh, D.S. Aliyu and V.Y. Ganvir	17
Critical Review on Recent Advancement in Nanotechnology for Biomedical Application	
J. Alsadi, R.M. Hernandez, S.H. Hasham, C.K. Dixit, A. Dubey and A. Unnisa	25

Chapter 2: Materials for Pollutants Detection

A Novel Green Synthesized Carbon Dots for the Detection of Organophosphate Pesticides in Fruits and Vegetables	
T. Nayak, N. Simon, A.K. Yadav, N.I. Gour, S. Debnath, M. Purushotham and P.S. Kadam	35
Co-MoF Derived Colorimetric Sensors for Detection of Environmental Toxic Heavy Metal Analysis	
R.M.A. Ismail, E.A. Enemose, M. Al-Jamal, S.K. Ramachandran, H. Al-Mattarneh and D. Gangodkar	43

Chapter 3: Materials for Pollutants Degradation

Mn-BIM Based Photo-Catalytic Degradation of Hazardous Industrial Organic Pollutants in Fresh Water	
R.M.A. Ismail, R. Rathinam, M. Al-Jamal, S.K. Ramachandran, H. Al-Mattarneh, B. Pant and P.Y. Patil	53
Facile Synthesis of Proficient Visible Light Active Photo-Catalyst for Degradation of Organic Industrial Waste Water	
S.K. Shukla, J. Alsadi, R.M.A. Ismail, H. Al-Mattarneh, M. Khudier, E. Potrich and E.M. Omoniyi	59

Chapter 4: Materials for Biochemical Investigations

L-Cysteine Passivated Carbon Quantum Dots as Biosensor for early Stage Detection of Prostate Cancer	
K. Maya, L. Rane, T.I. Ahmed, M.J. Ansari, C.K. Dixit and R. Kanaoujiya	67
Detection of Cancer Cells Using G-Rich DNA Based Target Binding-Switching Calorimetric Biosensor	
A. Babakulihev, N. Maiti, A.A. Antony, M.J. Ansari, S.S. Chobe and C.K. Dixit	73
Magnetic Nanoparticle-Based Biosensors for the Sensitive and Selective Detection of Urine Glucose	
T.I. Ahmed, R. Aruldoss, B. Pant, I. Kulandhaisamy, R. Raffik and G.B. Sonawane	79
TiO₂ Nanoparticles Based Peroxidase Mimics for Colorimetric Sensing of Cholesterol and Hydrogen Peroxide	
R. Rathinam, D.P. Singh, A. Dutta, S. Rudresha, S.R. Ali and P. Chatterjee	85
Improved Sensitivity of NiO@R-Go Nanocomposite for Detecting H₂S Biomarker of Halitosis Prognosis	
A. Dubey, K. Pant, H. Bagde, V.H. Ñopo Vidal, J.C. Cotrina-Aliaga and S. Mujoo	91

Green Synthesized Carbon Quantum Dots from Curcuma Longa for Ascorbic Acid Detection

A. Singh, K. Kulathuraan, K. Pakiyaraj, V. Gajendiran, D.P. Singh and K. Sengar

97

Chapter 5: Materials in Pharmacology

Application of Porous Nanomaterials for Sustained and Targeted Drug Release

M.J. Ansari, A. Unnisa, A. Singh, D. Verma, R. Kanaoujiya and J.L.A. Gonzales

105

Smart Mesoporous Silica Nanocomposite for Triggered and Targeted Ibuprofen Drug Delivery

B. Pant, S. Mujoo, S.R. Ali, V. Gajendiran, L.S. Amaral and M.M. Hossain

111