

Table of Contents

Preface

Chapter 1: Overview of Research in Materials for Energy Conversion, Micro- and Optoelectronics

Bibliometric Overview of Research on Materials for Microbial Fuel Cells: Catalysts and Coatings as Key Factors for Efficiency S.J. Rojas Flores, M. De La Cruz Noriega, R. Nazario Naveda, S.M. Benites and D. Delfin Narciso	3
Trends in Functional Materials for Energy Conversion of Perovskites and Graphene: A Bibliometric Analysis since 2010-2025 S.J. Rojas Flores, M. De La Cruz Noriega, R. Nazario Naveda, S.M. Benites and D. Delfin Narciso	13
Tunable Electronic and Optical Properties of Silicene Quantum Dots under External Electric Fields: A DFT Investigation M.T. Tran	23
Humidity Sensor Based on LaFe.Mn.O Perovskite Prepared by Sol Gel Method S.N. Sitohang, D. Triyono, R.A. Rafsanjani and A.F.F. Alaih	39
Fast Response and Stable Humidity Sensing Performance of La_{0.9}Mg_{0.1}FeO₃ Perovskite Material H.B. Hidayah, D. Triyono, A.F.F. Alaih, R.A. Rafsanjani and N.N.E. Dewi	49
Impedance Spectroscopy Study of Mg₄Nb₂O₉ - TiO₂ Composites for Ceramic Capacitors Applications J.C. Sales, F.A.C. Nobrega, J.P. Costa do Nascimento, A.J.M. Sales, P.M.d.O. Silva, F.F. do Carmo, R.F. Abreu, M.A. Santos da Silva and A.S.B. Sombra	57

Chapter 2: Pollutants Removal and Waste Recycling

Adsorption of Remazol Brilliant Blue R Dye Using N-Doped Carbon Based on Palm Empty Fruit Bunches Modified with Magnetite S. Susanto, I.L. Kusuma, P. Prayitno, H.P. Buwono, M. Mufid, C.S. Widagdo and R. Hamzah	71
Sustainable Air Quality: Leveraging Cellulose Acetate for Sustainable Air Purification N. Kanani, K.L.R. Mansauda, Y. Yusuf, D. Satria, D. Sukamto, D.T. Suprayogi, S. Ula and M.P. Pinem	85
Comparative Characterization of Biomass-Derived Carbons from Coconut Shell and Rice Husk: Structural, Thermal, Elemental, and Optical Properties U. Nuraini, D.P.S. Zahara, F.S. Fuadah, F.A. Nisah and M.I. Mauliana	93
Characteristic Analysis of Ni-Zirconia Sulfate and Natural-Based Catalysts for Waste Cooking Oil Conversion into Sustainable Aviation Fuel R.J. Ardi, A. Pawoko, T. Lamhotmatua, H. Ardhyanta, A. Altway, K. Antonius, A. Alifatul, S. Mulyani and T. Widjaja	99
Turning Waste into Value: A Systematic Review of Eggshell Powder Applications in Green Soil Stabilization F. Harjanto, H. 'Azmi, T.I.K. Amar, S. Maghfuri and A.G. Laksita	109
Mechanical Characterization of Forged Carbon Composites from Waste Prepreg K. Wongtimnoi, N. Razali and L. Mezeix	117
Mechanical Performance of Cementitious Composites Reinforced with Low Coconut Fiber Content D. Ferreira dos Santos and P. Bachmeyer de Meirelles	131