

Table of Contents

Preface

Chapter 1: Membranes and Membrane Technologies

Innovative MXene/TiO₂ Photocatalytic Membranes: A Comprehensive Approach to Efficient Visible Light Photodegradation and Sustainable Energy Generation	
F. Mir, J. Jaafar, A.A. Khan, M. Kamal, Z. Khan, A.F. Ismail, M.H.D. Othman, M.A. Rahman and F. Aziz	3
Optimizing PVDF Membranes Performance with Rotary Spacer Membrane Filtration System for Oil/Water Emulsion	
N.I. Mat Nawi, N.A.H. Sapiaa Md Nordin and M.R. Bilad	21
Surface Modification of Polyimide Membrane via Radiation Induced Graft Copolymerization of Methyl Methacrylate: Effects of Monomer Concentration and Radiation Dose	
A.F. Johari, M.N. Zainol Abidin, S.F. Mohamad, S. Mansur and S. Mohamad	29

Chapter 2: Heat and Mass Transfer and Thermoelectric Conversion

Numerical Simulation of Heat Transfer in MHD Hybrid Blood Nanofluid Flow through a Bifurcated Stenosed Artery	
S.N.A. Hamid, K. Thirunanasambantham, Z. Ismail and L.Y. Jiann	39
Exploring Magnetic Field-Dependent Viscosity of Hybrid Ferrofluid on Elongated Surfaces	
N.I. Kamis, N.A. Rawi, L.Y. Jiann and S. Shafie	47
Numerical Simulation of Non-Isothermal Laminar Oil Flow in an Axisymmetric Pipe	
D. Bossinov	55
Effect of Mass Flow Rates of the Liquid Petroleum Gas on the Power of the Thermoelectric Generator	
T.W.B. Riyadi, N.A. Nugraha, E.M. Suroto, H. Haryanto, A. Sulistyanto, A. Hendrawan, N.T. Atmoko and D. Gustiani	61

Chapter 3: Materials for Optoelectronics and Energy Storage Devices

One-Pot Hydrothermal Synthesis of N-Doped Carbon Quantum Dots Using the Shrimp Powder for Highly Sensitive and Rapid Detection of Fe³⁺	
Y. Wang, C.X. Li, X.X. Hu, F. Wen, A.W. Yu, H. Qiu and J.Y. Shen	71
Application of Sb³⁺-Doped Cs₂ZnCl₄ Single Crystals in Near-Infrared Imaging	
M. Wang and C. Yin	77
Preparation and Stability Improvement of Intercalated Black Phosphorus Single Crystal	
G.C. Qin, Z.W. Jiao, Y.H. Wu, S.C. Liu, A.L. Sun, Y.Q. Gao and W.J. Huo	85
Synthesis of Ni-Rich Cathode from Li-Ion Battery Waste Using Environmentally Friendly Hydrometallurgy Process: Effect of Heat Treatment Atmosphere	
O. Floweri, K. Salamayana, J. Karunawan, O.B. Abdillah, P.N. Suryadi, J.F. Warman, M. Muchlis and F. Iskandar	93