

Table of Contents

Preface

Chapter 1: Photocatalytic Materials

Z-Scheme over all Water Splitting on Rh/K₄Nb₆O₁₇ Nanosheets Photocatalyst	3
H.Y. Lin and Y.L. Ye	
Bismuth Vanadate-Based Photoelectrodes for Photoelectrochemical Water Splitting: Synthesis and Characterisation	9
C.S. Yaw, M.N. Chong and A.K. Soh	
Grafting of TiO₂ on PMMA Film and Reusability in Photodegradation of Organic Dye	17
R. Klaysri, S. Wichaidit, P. Praserthdam and O. Mekasuwandumrong	
Photocatalytic Activation of TiO₂ Biomaterials by UV and X-Rays	22
K.H. Cheung, P. Koshy, M.B. Pabbruwe, B. Lee and C.C. Sorrell	

Chapter 2: Nanomaterials for Solid State Gas Sensors

Investigating the Selective Behaviour of CuO in Gas Sensing Applications	33
S. Palzer, J. Wöllenstein and J. Kneer	
Sensitivity and Selectivity of SnO₂-Based Sensor for CO and H₂ Detections: A Novel Method to Detect Simultaneously the CO and H₂ Concentrations	40
X.M. Guo, J.T. Zhao, X.T. Yin and S.L. Huang	
Enhanced Gas Sensing Properties of Different ZnO 3D Hierarchical Structures	48
A. Fioravanti, A. Bonanno, M. Mazzocchi, M.C. Carotta and M. Sacerdoti	
Green Synthesis of Biopolymer-Silver Nanocomposites for Gas Sensing	54
S.A. Pande	
Sensing Properties of Diode-Type Gas Sensors	61
Y. Shimizu and T. Hyodo	

Chapter 3: Non-Volatile Memory Devices

Potential Fluctuation in RRAM Based on Non-Stoichiometric Hafnium Sub-Oxides	69
D.R. Islamov, V.N. Kruchinin, V.S. Aliev, T.V. Perevalov, V.A. Gritsenko, I.P. Prosvirin, O.M. Orlov and A. Chin	
The Resistive Switching Behavior of ZnO Films Depending on Li Dopant Concentration and Electrode Materials	75
A. Igityan, Y. Kafadaryan, N. Aghamalyan and S. Petrosyan	
Integrating MTJ Devices into a 130nm CMOS Process Flow	81
M. Buchbinder, O. Eli, S. Rozental, Y. Bouhnik, S. Greenberg, K. Mani, Y. Cohen, K. Mackay, J. Pereira and J.A. Herault	
Toward Sub-20 nm Magnetic Tunnel Junction for Embedded Cache Memory	90
T. Sugii, H. Noshiro, Y. Yamazaki, C. Yoshida and Y. Iba	
Memory Loss in a Tantalum Oxide Memristor	94
A. Ascoli, R. Tetzlaff, L.O. Chua, J.P. Strachan and R.S. Williams	