

Table of Contents

Preface

Chapter 1: Functional Ceramics and Semiconductors

Growth of Ga₂O₃ Nanowires by a Vapor Transport Method and their Optical Transmittance Spectra S. Ozaki and Y. Nakahata	3
Optical Absorption and Photoluminescence in Defect-Stannite-Type Semiconductor ZnGa₂Se₄ S. Ozaki and S. Mukada	10
Pore Structure of TiO₂- Modified ZrO₂ Particles Prepared by the Glycothermal Method F. Sugiyama, S. Hayashi and S. Iwamoto	17
Visible-Light Sensitive Photocatalytic Activity of FeO_x- and P-Modified TiO₂ with Rutile Structure T. Hirai, Y. Hayashi and S. Iwamoto	23

Chapter 2: Electrochemical Engineering

Increased Current Density of a Redox Flow Battery with a Carbon Paper Partially Modified by Porous Carbon Nanofibers H. Ishitobi, S. Sugawara, K. Oba and N. Nakagawa	31
Structure, Morphology and Catalytic Activity of PtRu/RGO Prepared by Different Processes K. Dejima, H. Ishitobi and N. Nakagawa	38
Dependence of Ionic Conductivity on the Thickness of β-AgI Thin Film Prepared on Polyethylene Terephthalate S.I. Furusawa and Y. Fukuda	47

Chapter 3: Biochemical Engineering

Systematic Evaluation of Hybridization Property and Photo-Crosslinking Ability of Modified Oligonucleotides Containing Benzophenone-Bearing Glycol Nucleoside Analogs M. Sunaga, D. Motegi, Y. Motegi, K. Shinozuka and T. Moriguchi	57
Novel Long Peptide Antigens Containing MHC Class I and Class II Binding Sequences Designed from <i>Plasmodium falciparum</i> Enolase H. Oku, Y. Hashimoto, T. Matsukawa, K. Shinozuka and Y. Oku	63

Chapter 4: Signal and Data Processing

Noise Filter Reducing Deformation in Digital Holography Y. Takahashi, T. Okada, R. Sekiguchi and M. Fukushima	71
A Study on Generating Fake Images of Podocyte Cells Based on Acgans with Restriction of Learning Y. Ono, T. Matsuura, T. Matsuzaki, K. Hiromura and T. Aoki	76
Consideration on Input Signal for ADC Histogram Test in Short Time Y. Zhao, A. Kuwana, Y.Y. Du, Y. Ozawa, Y. Sasaki, H. Kobayashi, T. Nakatani, K. Hatayama, K. Sato, T. Ishida, T. Okamoto and T. Ichikawa	83
Electron Density and Effective Atomic Number Measurement by Using a Newly Developing Photon Counting CT System H. Sakurai, K. Hoshi, Y. Harasawa, D. Ono, K. Zhang, A. Nagao, Y. Ohno, N. Sunaguchi, K. Suzuki and M. Torikoshi	93

Chapter 5: Power Electronics and Electronics Circuits

EMI Reduction of PFC Rectifier and LLC Converter with Automatic Output Ripple Improvement Y. Kobori, N. Oiwa, S. Katayama, A. Bustoni, Y.F. Sun, M.T. Tran, A. Kuwana and H. Kobayashi	103
Pulse Coding Controlled Switching Converters with Notch Frequency Generation in Noise Spectrum Y. Kobori, Y.F. Sun, M.T. Tran, A. Kuwana and H. Kobayashi	118
Frequency Stabilization and EMI Noise Reduction of COT Method Ripple-Controlled Switching Converters with Output Voltage Ripple Cancellation Y. Kobori, Y.F. Sun, M.T. Tran, A. Kuwana and H. Kobayashi	130
Automatic Current Balance for Multi-Phase Switching Converters with Ripple Control or Soft Switch Y. Kobori, J. Li, Y.F. Sun, M.T. Tran, A. Kuwana and H. Kobayashi	143
EMI Noise Reduction of DC-DC Switching Converters with Automatic Output Ripple Cancellation Y. Kobori, Y.F. Sun, M.T. Tran, A. Kuwana and H. Kobayashi	157
Pulse Coding Controlled Switching Converter with Notch Generation and its Conversion Voltage Ratio Analysis Y.F. Sun, Y. Kobori, A. Kuwana and H. Kobayashi	171
Design Proposal for Inductor Type Buck Converter in Bluetooth Receiver Chip with Overshoot Cancellation and Ripple Reduction Technique M.T. Tran, Y.F. Sun, Y. Kobori, A. Kuwana and H. Kobayashi	179
Pass-Band Gain Improvement Technique for Passive RC Polyphase Filter in Bluetooth Low-IF Receiver Using Two RC Band-Stop Filters M.T. Tran, N. Kushita, A. Kuwana and H. Kobayashi	192

Chapter 6: Machinery and Equipment

Rehabilitation Assistance Systems for Three-Dimensional Gait Analysis Using Motion Capture Devices Y. Yuminaka, M. Fujii, S. Nakazato, S. Tsukagoshi, Y. Ikeda, M. Hasegawa and N. Wada	209
Numerical Simulation for the Starting Characteristics of a Wind Turbine A. Kuwana, X.Y. Bai, D. Yao and H. Kobayashi	215
Evaluation of a Network Switch with Whitelist-Based Packet Monitoring and Control in Hospital Networks O. Takaki, I. Suzuta, K. Torikai, Y. Saito, T. Kato, T. Sato, H. Endo and Y. Atarashi	222