

Table of Contents

Preface

Chapter 1: Materials Science

Physical Properties Study of Sodium Doped Boro-Tellurite (Na_2O : TeO_2 - B_2O_3 - ZnO) Glasses

A. Marzuki, H. Purwanto, A.D. Sutomo, H. Harjana, A.H. Ramelan, D.E. Fausta, R.W. Astuti, A.N. Rahmawati, F.A. Alvyanti and R. Oktafiani 3

Thermal Stability of $\text{ZnO}/\text{Ti}_2\text{O}_3$ Substitution on Tellurite-Zinc-Bismuth-Sodium (TZBN) Glasses

A. Marzuki, A.D. Sutomo, H. Purwanto, R. Riyatun, D.E. Fausta, L.A. Putri and R.W. Astuti 11

The Effect of Adding TiO_2 Filler on The Physical and Mechanical Properties of Bioplastic Based Potato Starch (*Solanum tuberosum* L.) and Glycerol from Waste Cooking Oil

S. Qoirinisa, D. Irwanto, K. Karmanto and E. Sedyadi 19

The Effect of Position of Cyano-3-Acetic Acid Electron Withdrawing Group on γ -Mangostin as a Sensitizer on Dye-Sensitized Solar Cells (DSSC): Theoretical Study

Z.A. Nurkholiq and S. Sudarlin 29

Chapter 2: Materials Processing Technologies

Fatigue Performance and Impact Toughness of PBF-LB Manufactured AlSi 10Mg

T. Rautio, M. Jaskari, M. Hietala, A. Mustakangas and A. Järvenpää 37

Design of Experiment for Determining Setting Parameter on Plasma Arc Machining for Stainless Steel Plate Cutting with Full Factorial Design

R. Ahmaddani and K. Dwijayanti 45

Titanium Nitriding: A Systematic Literature Review

A.W. Yuda, A. Arifin, I. Yani and B. Oemar 58

Chapter 3: Biophysics and Biomedical Engineering

A Systematic Literature Review on the Methods of Breast Cancer Classification

S. Uyun, N.M. Barkah, I.E. Putri and N. Faridah 71

Neural Network Synchronization of the Morris-Lecar Neuron Model Coupled with Short-Term Plasticity (STP)

A. Yuniati and R. Dwi Astuti 80

Calculation of Absorbed Dose of ^{103}Pd and ^{131}Cs Sources in Prostate Cancer Brachytherapy Simulation Using Monte Carlo N-Particle 6 (MCNP-6) Software

M.R. Munggara, N. Handayani and F. Arianto 90

Molecular Simulation of Coffee Beans' Natural Products as Lead Compounds for Stroke Remedy

M. Rubani and A.A. Parikesit 100

Chapter 4: Biomass Processing

Coconut Shell, Rice Husk, and Corn Cob Pyrolysis with Zeolite Catalyst

K. Sa'diyah, C. Sindhuwati, P.H. Suharti, F. Rohman and C.E. Lusiani 113

Bioelectricity Production through Dual-Chamber Microbial Fuel Cell Using Tofu Liquid Waste: Effect of Differences in Electrolyte Solutions

M. Purwanto, M.A. Ramdani, W.W. Firdhaus and R.R. Yogaswara 120

Influence of the Nitrogen Flowrates on the Bio Oil Production and Characterization from Pyrolysis of Oil Palm Empty Fruit Bunch

D.S. Fardhyanti, H. Prasetiawan, H. Ardiansyah, D.H. Siami and R. Aswar 126

Adsorption Study of Activated Carbon from Coffee Grounds with H₃PO₄ Activator as Silver (Ag) Adsorbent M.A. Taqwim and S.Y. Prabawati	137
Development of Geothermal Sludge Derived - Silica Catalyst for Sago Starch Hydrolysis O.K.A. Ariq, W.N. Bunga, E.M. Idzati, F. Kurniawansyah, H. Ni'mah, H.T.B.M. Petrus and M. Mahfud	145
Effect of Reaction Time on Production Biodiesel of <i>Schleichera oleosa</i> S. Suherman, A. Ilmi, M. Sabri and A.S. Silitonga	150

Chapter 5: Agricultural Technologies and Food Production

Identification of Disease in Tomato Plants Based on Image: Systematic Literature Review E.S. Mansur, M.R. Mustopa, R. Habibullah and S. Uyun	163
The Effect of Crude Ficin Enzyme Concentration on the Characteristics of Peptones from Yellowfin Tuna (<i>Thunnus albacares</i>) Dark Meat I. Ismed, R. Yenrina, H. Hasbullah, Y. Yusniwati, D. Syukri, T. Anggraini and A.R. Mardiah	169
Pysicomechanical Properties of Edible Film with the Addition of Red Ginger (<i>Zingiber Officinale</i> Var. <i>Rubrum</i>) A. Arnamalia, E. Sedyadi, D. Irwanto and E.W. Widowati	177
The Effect of Adding Variations in Glycerol Concentration from Used Cooking Oil on the Physical Properties of Edible Film Made from Potato Starch M.E. Permata, E. Sedyadi, D. Irwanto and K. Karmanto	191
Biosynthesis and Characterization of Edible Films from Kepok Banana Peel Starch with a Combination of Glycerol-Sorbitol Plasticizer A. Lutviyani, E. Sedyadi and I.N. Indrajati	201

Chapter 6: Machines and Equipment Design

Experimental Study of the Liquid Cold Plate Cooling System for Lithium-Ion Battery in Electric Vehicle M.R. Hilmy, M.A. Rahman, I. Pranoto, K. Khasani and J. Waluyo	213
Development of the Extrusion Based Food 3D Printer Machine by Modifying Fused Deposition Modelling (FDM) 3D Printer F. Bestiara, K. Saptaji, T.K. Dewi, F. Triawan, A.I. Ramadhan and A. Azhari	221

Chapter 7: Data and Image Processing

Application of Optical Character Recognizer Prototype and Convulsion Neural Network for Vehicle License Plate Detection F. Achmadi, F.R. Nufaily, A.F. Bahar and S. Uyun	233
Landsat Satellite Image Quality Improvement Using Discrete Cosine Transform Method D. Rahmadi and S. Rachmawati	241
Analysis on Students' Academic Performance in Relation to the Results of Pre-University Examination C. Qi and S. Binti Saharan	246
Time Series Analysis on Covid-19 Cases in Malaysia and Thailand K.E. Xinne and S. Binti Saharan	256
Analysis of the Influence of Promotion, Price, Ease of Use, and Flexibility on Shopping Behavior of E-Commerce Users in Jabodetabek Y. Saputro, M.W. Musthofa and I. Setyaningsih	266

Chapter 8: Information Technologies

Applying Visualization and Analysis Data to Investigate Cyber Crimes (Case: Web Defacement) M. Kusuma, D. Hariyadi and I.D. Sari	277
--	-----

Web Application Vulnerability Analysis Using the OWASP Method (Case Study: OJS CSFD UIN Sunan Kalijaga Yogyakarta)	
B.H. Arromdoni, M. Kusuma and B. Sugiantoro	285
Development Web-Based Economic Data Application of Nu DIY Using Extreme Programming	
D. Millatina, H. Nursidik, M.Y. Ahmadi and M.G. Wonoseto	293
Exploring Sacred Texts: Leveraging Computer Science for Dataset Similarity Analysis in Religious Studies	
M. Raffiudin	301
Cyber Crime Identifying Using Machine Learning Techniques - Based Sentiment Analysis	
Y. Yunitasari, L.S.T.T. Sofyana and M.U. Siregar	310

Chapter 9: Industrial Engineering and Operational Research

Optimizing Alfian's Cassava Stick Production to Maximize Business Profits Imron Rosidi	
D. Haerohmansyah, E. Puspitasari and D.A. Kurniawati	319
Exploring the Adoption of Electric Motorcycle Based on Habits, Knowledge, Costs, and Infrastructure in Indonesia	
M. Hanafillah, Y. Yuniaristanto and W. Sutopo	325
Overview of Sleep and Fatigue at Indonesian Coal Mining Workers Working with Shift Work	
S.D.A.M. Sunarno, K.B. Sedilla, T. Nishimura and T. Maeda	333
OHS Performance Assessment on Production Floor at PT. XYZ	
N.P. Goesman, A. Nurjannah and I. Prakoso	339
Flowshop Production Scheduling Using the Campbell, Dudek, Smith (CDS), Palmer, and Dannenbring Methods to Minimize the Total Production Time (Case Study: PT. Naturindo Fresh Kulon Progo, Indonesia)	
T. Alfudad and K. Dwijayanti	351
Design for Manufacturing and Assembly for Holzwig-Based Dining Chairs and Table	
I. Prakoso, A. Miftahul Putra, M. Krisnawati and S. Waluyo	363
Ready Mix Concrete Production Scheduling and Truck Mixer Allocation Using Genetic Algorithm: A Case Study	
M. Krisnawati, F.R.A. Syailendri and A.A. Sibarani	374
Bakpia Quality Control Analysis Using the Statistical Quality Control (SQC) Method (Case Study: SMEs Bakpia Latief, Kediri)	
A.Y. Heryanto	383
Implementation of Taguchi Method to Assessment Workspace Design	
C.N. Mazda and I. Setyaningsih	392
Improvement of Bottlenecks in Printed Brown Sugar Production Using Line Balancing and Simulation	
I. Prakoso, D. Priyanto, H. Asyari, A.A. Sibarani and N.M. Shandi	399
Placement Optimization of Air Force Fighter in the National Air Defense System	
H.A. Rifki R., S. El Achzaabi, S. Aprilia, G. Riano and B. Ismoyo	408
Value Stream Mapping in Crude Palm Oil Industry: A Brief Review	
S. Anwar	415
Selection of Squadron Main Base Air Force Fighters Using the Analytical Hierarchy Process Method	
A. Pradhypa, M. Bhakti, G. Riano and B. Ismoyo	422
Household Water Supply in Yogyakarta (Indonesia) and Hanoi (Vietnam)	
A. Khusnuryani and E. Sulistiyowati	432