

Table of Contents

Preface

Chapter 1: Properties and Processing Technologies of Structural Materials

Rapid Dissolution of Secondary Phase in Cold-Rolling Al-Cu-Mg Alloy by Electropulsing Treatment	
W.N. Shi, H.F. Zhou and X.F. Zhang	3
Self-Healing Microbial Concrete - A Review	
S. Farhadi and S. Ziadloo	8
Control and Mechanism Analysis of Serrated Chip Formation in High Speed Machining of Aluminum Alloy 7050-T7451	
Q.H. Shi, Z.C. Hao, S. Wang, X.L. Fu and H. Wang	13
Utilization of Local Waste Materials in High-Performance and Self-Compacting Concrete	
S.M. Soleimani, A.R. Alaqqad, T. Afrasiab, A. Jumaah, A. Behbehani, A. Majeed, M.H. Al-Swwaf and S. Al-Muhanna	18
Study on the Influence of Anisotropy on Cutting Performance of Aviation Aluminium Alloy 7050-T7451	
H. Wang, Y. Meng, D.D. Li, X.L. Fu and Q.H. Shi	29
Static Softening Behavior of Low Carbon High Niobium Microalloyed Steel	
D.X. Xia, H.K. Du, X.E. Zhang, X.C. Li and Y.C. Pei	36
Experimental Study on Friction Characteristics of Micro-Arc Oxidation Modified Layer on Titanium Alloy Surface	
X.S. Lao, X.F. Zhao, Y. Liu, C.H. Dai and W.J. Lv	44
Mechanical Behavior of Mode I Fractured Concrete Repaired by Polymethyl Methacrylate (PMMA)	
Y.C. Kan, M.G. Lee and H.W. Lee	50
Modification and Scale-Up Process of Citrogypsum to α-Calcium Sulfate Hemihydrate over Sodium Chloride Solution	
T. Sirimahasal, Y. Kalhong, L. Simasatitkul, S. Pranee and S. Seeyangnok	55
Research on Additive Manufacturing Technology in the Field of Mold Repair	
J.Y. Lin, W.H. Cui, B. Han, H. Wang and X.H. Liu	61
Review and Prospect of the Influence of Laser Cladding Process Parameters on the Properties of Die Cladding Layer	
B. Han, H. Wang, J.Y. Lin and X.H. Liu	67
Study on the Friction Characteristics of Plasma Spray Modified Layer on Titanium Alloy in Artificial Sea Water Environment	
X.S. Lao, X.F. Zhao, Y. Liu, C.H. Dai and Z.X. Zhao	73

Chapter 2: Materials for Biomedical Application

Porous Bioceramic Made from Cow Bone Powder Mixed Calcium Phosphate Glass: Clinical Trial	
S. Punyanitya, R. Koonawoot, P. Chankachang, S. Thiansem, A. Raksujarit and W. Sontichai	81
Preparation of Crude Turmeric Extract Loaded Poly(Acrylamide-co-Acrylic Acid) Microspheres for Drug Release System	
M. Puanglamjeak, S. Pranee and S. Seeyangnok	86
Preparation and Characterization of a New Absorbent Pad from Rice Starch	
S. Punyanitya, S. Thiansem, R. Koonawoot, W. Sontichai and S. Suchaitanawanit	91
Clinical Trial of a Novel Starch-Based Adhesive Bandages for Medical Dressing	
S. Punyanitya, B. Khantawa, S. Thiansem, R. Koonawoot, P. Chankachang and S. Suchaitanawanit	96

Influence of Sieving Polymer Concentration and Applied Voltage on Separation Accuracy of the Capillary Gel Electrophoresis for Small DNA Fragments

T. Nakazumi and Y. Hara 101

The Thermal Properties of Polyurethane/Neoprene Blends on Prosthetic Foot

M.Z. Mohamad Noor, M.A. Mohd Azmi, M.S.Z. Mad Desa, M.B. Mat Piah and A. Ramli 106

Encapsulation of Turmeric Crude Extracted in Chitosan Hydrogel Beads for Antimicrobial in Animal Health Care Applications

S. Seeyangnok, P. Sae-Khow, S. Pranee and K. Wootitunthipong 111

Mixed Langmuir Monolayers of C18 Fatty Acids: Effect of Degree of Saturation

L.T. Gew and M. Misran 117

Chapter 3: Technologies of Chemical Production

Calculation of Activation Energy of Commercial Grade H₂O₂ from DSC for Using Evaluation Thermal Hazard

S. Anothairungrat and K. Piyamongkala 127

Influence of Different Preparation Methods of Silver-Modified Carbon Nitride on the Photocatalytic Activity towards Indigo Carmine Dye

L. Svoboda, R. Dvorsky, J. Bednář, D. Matýsek and M. Pomiklová 133

To the Question of Efficiency of Different Methods of Dispersion of Nanosecuring Suspensions

K.M. Htet, A. Galinovskij and A.S. Provatorov 139

Synthesis of Zeolite X from Bentonite via Hydrothermal Method

S. Srilai, W. Tanwongwal, K. Onpech, T. Wongkitikun, K. Panpiemrasda, G. Panomsuwan and A. Eiad-Ua 144

Synthesis of Nanoporous Material from Lignin via Carbonization Assisted Acid Activation

N. Ngamthanacom, N. Kaewtrakulchai, W. Chaiwat, L. Chuenchom, M. Fuji and A. Eiad-Ua 149

Horse Manure Derived Nitrogen-Doped Porous Carbon via Hydrothermal Carbonization for Promising Applications

T. Liamprawat, P. Verasarut, N. Kaewtrakulchai, G. Panomsuwan, M. Fuji and A. Eiad-Ua 155

The Production of Biodiesel from Waste Cooking Oil (Simultaneous Esterification and Transesterification Using Fe/Zeolite Catalysts from Waste Geothermal)

N.L. Muna, A.A. Mu'alimah, D.B. Pridiana, A.K. Widodo, S.R. Adiyar and E.H. Elinda 161

Effect of Poly(Acrylic Acid) Based Polymer Flocculants on Sedimentation of Surface Water

S. Sunthornvatin, S. Pranee and S. Seeyangnok 168

Photocatalytic Degradation of Methylene Blue Using Zinc Oxide/Styrene Butadiene Rubber Photocatalyst

R. Nordin, N. Latiff, R. Yusof, W.I. Nawawi Wan Ismail, M.S. Zakaria and Z.A.M. Ishak 173

Pilot Scale Continuous Adsorption of Soluble Oil Wastewater by Modified Sugarcane Bagasse with Al₂(SO₄)₃ as Adsorbent

T. Janpattanapong, K. Piyamongkala and V.L.R. Manguiam 177

The Effect of Different Extracting Conditions on the Antibacterial Activity of *Moringa oleifera* Lam. Leaves Extract for the Development of Antibacterial Meat Tray

C. Piayamawadee and D. Aht-Ong 183

Chapter 4: Composites and Polymers, Synthesis of Nanomaterials

A Simple Synthesis of Silver Nanoparticles on Cellulose Paper for Antimicrobial Applications

W. Handayani, A. Listyarini, Yasman and C. Imawan 191

Characterizing Interfacial Thermal Conductivity in Graphene Nanocomposites

P.Y. Tseng, W.J. Ke and J.L. Tsai 197

Effect of Soybean Oil in Eggshell Powder Filled Polylactic Acid Composites on its Mechanical, Thermal and Rheological Properties

A. Wiriya-Amornchai, P. Nu-Yang and P. Bunroek 204

Improved Thermoelectric Behavior of Super-Growth Carbon Nanotube Using Tetrathiafulvalene-Tetracyanoquinodimethane Nanoparticles

S. Hata, T. Yoshizumi, S. Hoshino, M. Gotsubo, Y. Shiraishi and N. Toshima 209

Hydrophilic/Hydrophobic Property Changes on Polyacrylonitrile/Cellulose Acetate Nanofiber Membrane	
A. Kusumaatmaja, W. Nur, Chotimah and K. Triyana	215
Swelling of PVA/Chitosan/TiO₂ Nanofibers Membrane in Different PH	
A.D. Nugraheni, D. Purnawati, A. Rohmatillah, D.N. Mahardika and A. Kusumaatmaja	220
Eco-Friendly Preparation of Nanofibrillated Cellulose from Water Hyacinth Using NaOH/Urea Pretreatment	
K. Pakutsah and D. Aht-Ong	225
Observation of Coating-Substrate Adhesion of Nanocomposite Hard Coating with Respect to the Deposition Parameters and Surface Finishing of Cemented Carbide Substrate	
T. Vopát, M. Sahul, M. Haršáni, T. Zlámal and O. Vortel	231
Investigation of Mechanical Properties of MWCNTs Doped Epoxy Nanocomposites in Tensile, Fracture and Impact Tests	
A. Esmaeili, C. Sbarufatti and A.M.S. Hamouda	239
Deformation and Fracture Mechanics of Superior Nanocomposites	
L. Anggraini	244
Structure and Properties of Sputtered Ti-O-N Nanocomposite Films	
J.L. Huang and M.S. Wong	250
Fabrication of Poly(Butylene Succinate) Composite Films with Silver Doped ZSM-5: Effect of Silver ZSM-5 on Antibacterial Activity and Biodegradable Behavior	
N. Wattanawong, K. Chatthaipaiboon, N. Sreekin and D. Aht-Ong	256
The Effect of Thermal Aging on Mechanical Properties and Morphological Properties of Thermoplastic Vulcanizates Based on Natural Rubber and Polystyrene	
P. Nu-Yang, A. Wiriya-Amornchai, J. Yoon, C. Saechau and P. Rattanamusik	262
Combining Cellulose and ZnO for Extend the Shelf Life of Fruit	
A.K. Widodo, D.B. Pridiana, N. Arrizqi, M.N. Fajrina, D. Setyawan and D.A. Laksono	267
Modeling of Polymeric Liquid Material Properties Effect on Pressure Transients in the Elastic Pipe	
S. Levitsky and R. Bergman	272
A Preliminary Study on the Effect of <i>Pandanus amaryllifolius</i> Extract as Green Stabilizer to the Growth of Nanostructured ZnO	
R.M. Akhir, S.Z. Umbaidilah, N.A. Abdullah, M.R. Mahmood and Z. Khusaimi	277
Patterned ZnO Nanowires between Interdigitated Electrodes by Integrating Hydrothermal Approach with Photolithography Process	
Y.J. Chang	283

Chapter 5: Functional and Special Materials

Experimental Investigation the Effect of Cleaning on the Optical and Mechanical Properties of PV Module Glasses	
N. Zubir, M. Hasanuzzaman and N.A. Rahim	291
Characterization of a Chromium (III) Ion Probe and its MOF-Supported Material	
Y.Y. Guo, L.C. Peng, L. Yi and S. Yao	296
Structural and Optical Properties of Commercial Microparticle Zinc Oxide	
R. Nordin, N. Latiff, R. Yusof, W.I. Nawawi Wan Ismail, M.S. Zakaria and Z.A.M. Ishak	302
The Detection of Cu²⁺ Ions Using Paper-Based Silver Nanoparticles as a Colorimetry Indicator	
W. Handayani, N.I. Pratiwi, A. Listyarini, Yasman and C. Imawan	306
A Performance Study of CNT/TiO₂/ PVA Loaded on the Paper Filter for Benzene Treatment from Cigarette Smoke	
M. Wongaree and A. Bootwong	312
Active Starch/PVA Composite Films Containing <i>Syzygium oleana</i> for Ammonia Vapor Colorimetric Indicators	
A. Listyarini, W. Handayani, V. Fauzia and C. Imawan	318
Growth of less than 20 nm SnO Nanowire Using AAO Template for Gas Sensing	
B.C. Cheng, J.B. Shi, P.F. Wu, P.Y. Hsu, H.S. Lin, H.W. Lee and C.K. Ye	325
The Effect of Doping on the Structure of Zinc Oxide Obtained by Atomic Layer Deposition	
G. Sugurbekova, Y. Sugurbekov, G. Demeuova, O. Ualibek, A. Kurbanova, O. Toktarbaiuly and O. Maitit	330