# Table of Contents

## Preface, Committee

### Chapter 1: Polymers and Composites

**Preparation and Characterization of Poly(Lactic Acid) (PLA)/Polyoxymethylene (POM) Blends**  
M. Haniff, M. Bijarimi, M.S. Zaidi and A. Sahrim  
3

**Energy Absorption Capacity of Basalt Sandwich Composite Cylinder Subjected to Axial Compression Loadings**  
7

**Assessment of Bulk Mechanical Properties of HDPE Hybrid Composite Filled with 1D/2D Nanofiller System**  
N. Dhar Badgayan, S. Kumar Sahu, S. Samanta and P.S. Rama Sreekanth  
12

**Effect of Acid-Doped Polyaniline-Zinc Oxide Composite on the Removal of Methyl Orange under Visible Light Exposure**  
A.M.J. Leonor, A.V. Gillado and M.U. Herrera  
17

**Antimicrobial Activity of Copper Sulfate and Copper Oxide Embedded on Polyurethane Foam**  
M.L.D. Pulutan, M.C.T. Garcia and M.U. Herrera  
22

**Dynamic Mechanical Thermal Analysis of High Density Polyethylene Reinforced with Nanodiamond, Carbon Nanotube and Graphite Nanoplatelet**  
S. Kumar Sahu, N. Dhar Badgayan, S. Samanta and P.S. Rama Sreekanth  
27

**Properties of Sago Starch-Based Biopolymers with Clay, Cellulose, Zinc Oxide and Chitosan Fillers**  
32

**Short Review: Potential Production of Acacia Wood and its Biocomposites**  
M.K. bin Bakri, E. Jayamani, S.K. Heng and A. Kakar  
37

**Heat Treated Luffa - PLA Composites: Effect of Cyclic Moisture Absorption and Desorption on the Mechanical Properties**  
A. Kakar, E. Jayamani, M.K. bin Bakri and S.K. Heng  
42

**Determination of Fracture Toughness of PMMA under Impact Loading Using Izod Impact Tester**  
P. Pokasawat and P. Poapongsakorn  
47

**Mechanical Properties of Herbal Patches from Chitosan-Based Polymer Blends for Medical Applications**  
J. Suksaeree  
52

### Chapter 2: Materials for Electrochemical Devices and Sensors

**Design and Fabrication of Thick Film Dissolved Oxygen Sensor Based on RuO2 Working Electrodes for Water Quality Monitoring**  
G. Wiranto, S. Widodo, I.D.P. Hermida, R.V. Manurung, G. Sugandi, Z. Arifin and Wiendartun  
59

**Effect of Heat Treatment Condition on the Characteristics of MnO2 Added-Fe2TiO5 Ceramics for NTC Thermistors Using Local Iron Oxide**  
Wiendartun, J. Kamal, D. Rusdiana, A. Setiawan and D.G. Syarief  
64

**Effect of S:Fe Molar Ratios on the Direct Formation of Nanocrystalline Pyrite FeS2 Thin Films by Chemical Spray Pyrolysis under a Low Substrate Temperature**  
69

**Sintering Temperatures Investigation on the Electrical Characteristics of Fe2TiO5/MnO2 Ceramics-Based NTC Thermistor**  
Wiendartun, D. Rusdiana and A. Setiawan  
74

**Preparation of Nano-Structured Cathode for Proton-Conducting Fuel Cell by Dispersing Agent-Assisted Sol-Gel Method**  
I. Ismail, A.M. Md Jani and N. Osman  
78
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesis, Structure and Transport Properties of Novel Chlorine-Doped Perovskite Based on Ba$<em>2$CaNbO$</em>{5.5}$</td>
<td>N. Tarasova, I. Animitsa and A. Galisheva</td>
<td>88</td>
</tr>
<tr>
<td>Chapter 3: Carbon and Carbon Based Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study on Industrial-Scale Fabrication of Graphene Nanoplatelets (GNPs) from Natural Graphite</td>
<td>T.A. Nguyen, N. Thi Tham, P. Nguyen Thi Hong, S.V. Bhosale and D.D. La</td>
<td>101</td>
</tr>
<tr>
<td>Effect of SiC Whiskers on the Microstructure and Thermal Conductivity of Carbon Foam</td>
<td>S.J. Yu, Z.F. Chen and Y. Wang</td>
<td>106</td>
</tr>
<tr>
<td>Study on Morphological, Optical and Electrical Properties of Graphene Oxide (GO) and Reduced Graphene Oxide (rGO)</td>
<td>E. Jaafar, M. Kashif, S.K. Sahari and Z. Ngaini</td>
<td>112</td>
</tr>
<tr>
<td>Enhanced Dielectric and Electrical Properties in Polyurethane Composites with Graphene Nanosheets</td>
<td>Ardimas and C. Putson</td>
<td>117</td>
</tr>
<tr>
<td>Synthesis of Filamentous Carbon Material via Decomposition of CF$_2$Cl$_2$ over Self-Organizing Ni-Cr Catalyst</td>
<td>Y. Bauman, I. Mishakov, D. Korneev and A. Vedyagin</td>
<td>122</td>
</tr>
<tr>
<td>Chapter 4: Nanomaterials and Nanotechnology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrate Reduction Using As-Synthesized Nanoparticles Zero Valent Iron (NZVI) at Ambient Environment</td>
<td>M.K. Lai, H.H. Teo, S. Satheshkumar and C.K. Ng</td>
<td>129</td>
</tr>
<tr>
<td>Laponite Nanoparticle as a High Performance Rheological Modifier in Water-Based Drilling Fluids</td>
<td>F. Liu, G.C. Jiang, K. Wang and J.X. Wang</td>
<td>134</td>
</tr>
<tr>
<td>Sol-Gel Synthesis of Nanostructured Alumina Supports for CO Oxidation Catalysts</td>
<td>E. Krivoshapkina, P. Krivoshapkin and A. Vedyagin</td>
<td>152</td>
</tr>
<tr>
<td>The Effect of Milling Time on the Size of Silica Particles from Silica Sand</td>
<td>A. Ismail, I. Akbar Alamsyah, M. Kholil, B. Heru Susanto and M. Nasikin</td>
<td>162</td>
</tr>
<tr>
<td>Spectroscopic, Structural, and Morphology of Nickel Oxide Nanoparticles Prepared Using Physalis angulata Leaf Extract</td>
<td>N. Sulaiman and Y. Yulizar</td>
<td>167</td>
</tr>
<tr>
<td>Chapter 5: Technologies in Chemical Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application and Research of High Molecular Carboxylates in Desulphurization System of Thermal Power Plant</td>
<td>Y.C. Kang, B. Li and Q.L. Zhang</td>
<td>175</td>
</tr>
</tbody>
</table>
Enhanced Adsorption Properties of Ag-Loaded β-Zeolite towards Toluene
V. Temerev, A. Vedyagin, K. Iost, T. Afonasenko and P. Tsyrulnikov

Effect of Particle Size and Chitosan Loading on Post-Combustion Carbon Dioxide Capture of Chitosan-Coated Natural Zeolite Adsorbent
D.J.B. Tan and B.B. Pajarito

Study of Photodegradation of Methylene Blue by Microbial Synthesized ZnS Material
Y.B. Li, Q.Y. Gu, X.Y. Liu and M.J. Zhang

Chapter 6: Metals and Alloys

Assessment of Corrosion Behavior in Artificial Saliva of Wires for Orthodontic Applications
A. Phukaothai, A. Khantachawana, P. Kaewtatip and S. Dechkunakorn

Effects of Zr on the Microstructure and Mechanical Properties of 6061 Alloys
Y.C. Tzeng

A Comparative Study ofDelayed Hydride Cracking in Zr-3.5Sn-0.8Nb-0.8Mo and Zr-2.5Nb
Q. Fang

Effects of Manganese on the Microstructures, Mechanical Properties and Deformation Characteristics of Cu-29Zn Alloy
I. Basori, H.J. Pratwi and B.T. Sofyan

Numerical Studies on Low-Velocity Impact Failure Response of Al 1100 under Blunt and Hemispherical Impactors
S. Sahu, M.Z. Ansari and C.D. Cho

Selective Grain Growth and Grain Boundary Character Distribution Relationships in Magnetostrictive Fe-Ga Thin Sheets
S.M. Na, N.J. Jones and A.B. Flatau

Chapter 7: Materials Processing

Wear Resistance Improvement by Nanostructured Surface Layer Produced by Burnishing
H. Kato, H. Ueki, K. Yamamoto and K. Yasunaga

Goss Texture Formation by Asymmetric Rolling in Steel Sheet
I.S. Kim, S.K. Nam, G.H. Kim and D.N. Lee

Effect of Cold Rolling on the Microstructure and Hardness of Al\textsubscript{5}Cr\textsubscript{12}Fe\textsubscript{35}Mn\textsubscript{28}Ni\textsubscript{20} High Entropy Alloy
S. Elkatafry, M.A.H. Gepreel and A. Hamada

Influence of Heating Friction Stir Spot Welding Process Parameters on Steel Aluminum Forming Quality
K. Xu and S.Q. Zhang

Corrosion, Wettability, and Adhesion of Acrylic Coatings Containing Silane-Treated Mineral Fillers on Carbon Steel
B.B. Pajarito, A.J.F. Caguntas, N.B. Felices, H.O.S. Tubalinal and G.L.D. Leuterio

Servo Forging Technology and Mold Development of the Pulley of AISI-1010 Low Carbon Steel
T.S. Yang, C. Wang, L.X. Liu and S.H. Yao

Effects of Formulation and Temperature on the Rheological Behavior of Nitroguanidine-Based Propellants

Numerical Simulation of Extrusion Molding of Single - Hole Propellant
C.J. Zhu, F.Q. Nan and Y. Liang

Multi-Objective Optimization of Bi-Layer Metallic Sheet Using Pareto-Based Genetic Algorithm
R. Darabi, H.D. Azodi and D.W. Jung

An Error Compensation Method for Rectangular Window Based on NURBS Reconstruction Theory
D.X. Li, A.M. Wang and P.H. Ren
Chapter 8: Building Materials and Structures

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Influence of Fly Ash and Aggregates Composition on Pervious Concrete Characteristics</td>
<td>J. Endawati, R. Utami and Rochaeti</td>
<td>297</td>
</tr>
<tr>
<td>Reutilizing Sediment Soil Wastes from Water Supply Treatment Process as Replacement Materials of Non-Fired Wall Tiles</td>
<td>U. Wangrakdiskul and R. Neamlut</td>
<td>303</td>
</tr>
<tr>
<td>Modal Stress Analysis of a Cracked Woven Composite Beam under Compression</td>
<td>M. Yetmez</td>
<td>316</td>
</tr>
<tr>
<td>Properties of Non-Autoclaved Aerated Concrete with Quadruple Cementitious Mixture Using Response Surface Method</td>
<td>E. Sharafutdinov, A. Abdigaliyev, A. Sheriye, D.C. Zhang and C.S. Shon</td>
<td>337</td>
</tr>
<tr>
<td>Thermal Conductivity of Aerated Concrete Based on Response Surface Method</td>
<td>A. Ulykbanov, E. Sharafutdinov, E. Ramazanova and C.S. Shon</td>
<td>342</td>
</tr>
</tbody>
</table>