

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Nanoscale Materials and Technologies

Metal Nano Particles Formation on Rotating Powder (NPP) Substrate in Physical Vapor Deposition	
S.K. Koh, C. Lee, J.H. Lee, B.K. Kang, H. Kaji, M. Hayash and W.H. Cho	3
Comparative Studies of Nanostructured Aluminum Alloys by Destructive and Nondestructive Testing	
N. Lvova, I. Evdokimov and S. Perfilov	9
Instant Microwave Synthesis of Titania Nanoflowers for Application in DSSCs	
S. Javed, M.A. Akram and M. Mujahid	14
Sensitive Determination for Papain Conjugated CdSe Quantum Dots by Dynamic Light Scattering Analysis	
A. Ratan Mandal, A. Ishteev, S. Volchematiev and D.V. Kuznetsov	19
Preparation and Characterisation of Surface Adsorbed Reduced Graphene Oxide/Polyaniline Nanocomposite on Polymer Membrane for Trimethylamine Sensing	
R.A.G. Rañola, I. Concina, E. Comini, F.B. Sevilla and G. Sberveglieri	24
Pressure Dependence of AZO Film Deposited by RF Powered Magnetron Sputtering System	
F.L. Shain, A.M. Mani, L.M. Li, U.F. Shuib, S. Salleh, A. Alias and K.A. Mohamad	29
One-Pot Synthesis of High Aspect Ratio Copper Nanowires in Aqueous Solution	
M. Tan and M.D. Balela	34
Synthesis of Amorphous Fe-Doped SiO₂ Anode Nanomaterial via Sol-Gel Method	
C.P. Garrido and R.B.M. Cervera	38
Numerical Study of Adsorption Enhancement by Nanoparticles Scale Inhibitor	
J.K.Y. Teck, R.H. binti Abu and S.U. binti Masuri	43
Synthesis and Surface Modification of ZnO Nanorods Arrays	
M.A. Akram, S. Javed and M. Mujahid	49
Influence of Synthesis Conditions on the Properties of SnO₂ Nano-Crystalline via Hydrothermal Methods	
J.G. Song, L. Hua, Q. Shen, F. Wang and L.M. Zhang	54
FCC Gasoline Upgrading over Modified Nanoscale HZSM-5 Catalyst	
X.B. Zhao	58
Effect of Surface Stress on the Deformation of an Half-Plane Applied to Nanometer Materials	
Z.Y. Ou and J. Guo	66
Nano-Scale Friction of Multi-Phase Powder Metallurgy Tool Steels	
A. Gåård, P. Karlsson, P. Krakhmalev and E. Broitman	70
Effect of Minimum Quantity Lubricant of Al203 Nanoparticle with SDBS on Surface Roughness during Turning of Mild Steel	
M.A.M. Ali, A.N.M. Khalil and A.I. Azmi	75
Impact of Nanoparticles on Structure and Functional Properties of PBTG Biofilms	
Y.S. Park and C.W. Joo	80
The Dynamic Mechanical Analysis of a Clamped-Free Timoshenko Nano-Beam Subjected to the Moving Force the Nonlocal Effects	
D.X. Lei, Z.L. Huo and Z.Y. Ou	86
Mobility Investigation of Nanoparticle-Stabilized Carbon Dioxide Foam for Enhanced Oil Recovery (EOR)	
T.A.T. Mohd, N. Alias, N.A. Ghazali, E. Yahya, A. Sauki, A. Azizi and N.M. Yusof	90
Study of Nanocrystalline ZnAl₂O₄ and ZnFe₂O₄ with SiO₂ on Structural and Optical Properties Synthesized by Sol-Gel Method	
M.S. Zulfakar, H. Abdullah, W.N. Wan Jalal, Z. Zainuddin and S. Shaari	96

Ag-Fe Alloy Nanoparticles Embedded in Polyaniline Nanocomposite Thin Films for <i>E. coli</i> Monitoring Sensor	101
H. Abdullah, N.M. Naim, N.A.N. Azmy, A.A. Umar, A.A. Hamid and S. Shaari	
On the Formation of Nanograined LiCo₂O₃(OH) Spinel-Type Material Synthesized via Modified Low-Temperature Sol-Gel Approach	106
R.B.M. Cervera and S. Yamaguchi	
Nanoclay as Anti-Blistering Agent in Polyester Based Coating: Effect of Sea Water and Distilled Water Exposure	111
S.N. Surip, A.M.A. Rahman and W.N.R.W. Jaafar	
Graphene-CNTs into Neuron-Synapse Like Configuration a New Class of Hybrid Nanocomposites	116
A.F. Avila, A.M. de Oliveira, V.C. Munhoz and G.C. Pereira	
Optical and Morphological Properties of TiO₂ Nanotubes for Sensor Applications	121
A. Dussan and H.P. Quiroz	
Nanofibrous Filters for Respirators	126
L. Vyslouzilova, M. Seidl, J. Hruza, J. Bobek, D. Lukas and P. Lenfeld	
Acetylene Sensing Characteristics of SnO₂ Nanowires	132
B. Wang	
Controllable Growth of Highly Oriented ZnO Nanorod Arrays on Copper by a Two-Step Route	137
Y.M. Xia, Y.F. Zhang, X.Q. Yu and F. Chen	
A Computational Chemistry Approach for Investigation of Low Friction Mechanisms Based on FEP Film with Functionalized SiO₂ Nanoparticles	142
Y. Morita, M. de Weser and G. Schottner	
Synthesis of Zinc Oxide Nano Rods by Microwave Assisted Precipitation Method Using Polyacrylic Acid	151
R. Suntako	
Synergistic Effect of Graphene Nanoplatelets and Nanoclay on Epoxy Polymer Nanocomposites	155
M. Nuruddin, R. Gupta, A. Tcherbi-Narteh, M. Hosur and S. Jeelani	
Improved Nanoindentation Phase Transformation in Functional Structure of NiTi SMA and Graphene	160
A. Amini, C.H. Yang and Y. Xiang	
Green Synthesis of Silver Nanoparticles Using Prunus Amygdalus Extract and their Anti-Microbial Activity	165
S.K. Srikanth, D.D. Giri, C. Upadhyay, P.K. Mishra and S.N. Upadhyay	
Nanoparticles Stabilized Carbon Dioxide Foams in Sandstone and Limestone Reservoir	170
A. Azizi, H. Husin, N.A. Ghazali, M.K. Khairudin, A. Sauki, N.H. Alias and T.A. Tengku Mohd	
Investigation on Voltage Breakdown of Natural Ester Oils Based-On Zno Nanofluids	175
W. Saenkhumwong and A. Suksri	
Patterning of Polymer Arrays with Enhanced Aspect-Ratio Using Hybrid Substrate Conformal Imprint Lithography	179
V.R. Kolli, C. Woidt and H. Hillmer	
Hybrid Hetero <i>p-n</i> Junction between ZnO Microspheres and <i>p</i>-Type Materials	184
T. Ikebuchi, N. Tetsuyama, M. Higashihata, H. Ikenoue, D. Nakamura and T. Okada	
Mechanism of Carrier Transport in n-Type β-FeSi₂/Intrinsic Si/p-Type Si Heterojunctions	189
N. Promros, M. Takahara, R. Baba, T.M. Mostafa, M. Shaban and T. Yoshitake	
Resistive Switching Properties of Zr, Ti, and Zn Metal Oxides	194
C.H. Lai, W.S. Chen, C.H. Hsu, Y.M. Lee, J.S. Lin and T.M. Chen	

Chapter 2: Polymeric and Composite Materials and Their Properties

Optimization of Moulding Parameters on the Electrical Conductivity of Carbon Black/Graphite/Epoxy Composite for Bipolar Plateusing the Taguchi Method	201
H. Suherman, Irmayani and J. Sahari	
Buckling Optimization of Composite Shells by Utilizing Finite Element Analysis, Neural Networks and Genetic Algorithm	207
H. Amirabadi and M. Mostofi	

Growth of Anodized Layer and Cerium Sealing on Al7xxx/SiC Composite	212
B. Munir, V. Rizkia, J.W. Soedarsono, B. Suharno and A. Rustandi	
Mechanical and Morphological Properties of Buckminster Fullerene (C60) Added Glass Fiber Reinforced Polyamide 66 Multiscale Composites	218
R. Keskin, İ. Gocek and G. Ozkoc	
Fracture Mechanism of Polypropylene-Kenaf Composite under Cyclic Loading	223
A. Murdani, Maskuri, P.H. Suharti and C. Makabe	
Reuse of Byproduct Alumina Composite Powder from Hydrogen Production Process	229
K. Velmanirajan, R.S. Abinesh, S. Manoharan, K. Anuradha, R. Karunakaran, J. Pakia Selvi and Partheeban	
Comparative Study between SiC Reinforced Al 64430 Metal Matrix Composites and RHA Reinforced Al 64430 Metal Matrix Composites	234
M. Laad, V.S. Jatti and S. Yadav	
Preparation and Performance Analysis of Mesh Hydroxyapatite/Sodium Alginate Composite Scaffold	239
Y. Xu, J.P. Zhou, Z.Y. Wei, L.Y. Dang and F.L. Wu	
Influence of Acid/Ether-Ratio on Composition and Dispersive Property of Polycarboxylic Type Water Reducers	245
C.Z. Li and F.C. Zhang	
Development of the Bending Actuator with Nafion-Pt IPMC Tube	251
N.L.Q. Nhat and T. Nguyen Truong	
Analysis of Mechanical Properties of Wood Dust Reinforced Epoxy Composite Using Response Surface Methodology	258
R. Kumar, K. Kumar and S. Bhowmik	
Biocomposite from Acrylonitrile-Butadiene-Styrene Polymer and Kenaf Whole Stem Fibre: Mechanical Properties	263
M.T.M. Lufti, D.L. Majid, A.R.M. Faizal and N. Mazlan	
Molecular Dynamics Study of H₂O Molecular Diffusion Behavior in PAM/PVA Polymer Blends	268
Q.H. Wei, Y.N. Wang, M.M. Yang, W.H. Chai and Y.F. Zhang	
An Experimental Study on the Usage of Poisson's Ratio as a Damage Index	273
C. Yilmaz, C. Akalin, E.S. Kocaman and M. Yildiz	
Flow Behavior of Wood Treated with Melamine Formaldehyde Resin under Non-Equilibrium Thermal-Compression	278
T. Miki, R. Nakaya, M. Seki, S. Tanaka, N. Sobue, I. Shigematsu and K. Kanayama	
Mechanical Properties of Poly(Butylene Succinate) Reinforced with Alpha Cellulose	283
S. Liprapan, T. Nhujak and P. Potiyaraj	
Compatibilization Efficiency of Reactively Modified Poly(butylene succinate) as a Compatibilizer for Poly(butylene succinate) Composites	288
V. Tansiri and P. Potiyaraj	
Modification of the Mechanical Behavior in the Glass Transition Region of Poly(lactic acid) (PLA) through Catalyzed Reactive Extrusion with Poly(carbonate) (PC)	292
V.T. Phuong, M.B. Coltell, I. Anguillesi, P. Cinelli and A. Lazzeri	
Effect of Fiber Content on Failure Modes of Glass Fiber Reinforced Injection Molded Polyamide 66 Composites	296
I. Gocek, R. Keskin and G. Ozkoc	
Effect of Particle Size of Natural Based Carbon Filler to the Absorbency of Superabsorbent Polymer Composite Synthesis by Graft Polymerization Method	301
W.S.N. Wan Yaacoba, S.S. Jamarib and S. Ghazalic	
Mechanical Properties and Thermal Behavior of TPS/PBS Blends with Maleated PBS as a Compatibilizer	306
Q.J. Yin, F.P. Chen, H. Zhang and C.S. Liu	
Synthesis and Water Retention Properties of Poly(Acrylamide)-g-Kenaf Fiber Hydrogel	310
I.N.A. Badaruddin and S. Hashim	

Chapter 3: Investigations in Rubber Based Materials

Electrical Characteristics of Silicone Rubber as Insulation Materials	317
M. Abd El-Khalek, L. Saad Nasrat, M. Abd El-Hamed and S. El-Debeiky	

A Study on Epoxidised Natural Rubber and Cis 1,4-Polybutadiene Blend	324
M.M. Kamal	
Electrospun Cellulose Acetate Fiber Containing Rubber Extract	329
N. Suwannateep, C. Meechaisue and H. Ruch	
The Influence of Agglomerators on Powdering of Chloroprene Rubber PCR-244	334
X.L. Wei, Y.L. Wei, G.B. Gong, T. Liang, W.J. Cai and L. Gao	
Research in Powdering Effects of Environmentally-Friendly Powder Rubber PSBR1500E	338
T. Liang, X.L. Wei, P.H. Yan, G.B. Gong, W.J. Cai and D.D. Wang	
Influence of Modified Cassava Peel Waste (CPW) Loading on Tensile Properties of Natural Rubber Latex (NRL) Products	342
H. Harahap, K. Hadinatan, A. Hartanto, E. Surya, I. Surya and H. Ismail	
Cure Characteristics and Ageing Resistance of Recovered Waste Pre-Vulcanized Nitrile/Epoxydized Natural Rubber Latex Blends in Nitrile Butadiene Rubber Compounds	347
A.I.H. Dayang Habibah, V. Devaraj, H. Kamarularifin and I. Suhawati	

Chapter 4: Surface Engineering and Technologies of Coating

Transparent and Hydrophilic TiO₂ Anatase as Top-Protective Layer for CSP Reflectors	355
H. Ennaceri, A. Khaldoun, A. Benyoussef, T. Köhler, R. Sáez-Araoz and A. Ennaoui	
Artificial Neural Network Modeling of Titanium Alloy Tribological Behaviour in Beta Solution Treated Condition	360
S.G. Setti and R.N. Rao	
Fabrication and Evaluation of Corrosion Behavior of Nickel Alloy Metal Matrix Composite with Influence of Chills	365
G. Purushotham and J. Hemanth	
The Effect of Styrene-Ethylene-Butadiene-Styrene on the Friction and Wear Properties of Polystyrene/Low Density Polyethylene Blends	370
M. Taşdemir and I. Miskioglu	
Surface Modification on Vulcanized Rubber by DBD Plasma	375
Pongsopa, K. Honglertkongsakul and P. Homhuan	
The Novel Electroless Plating Process for Enhancing Coating Adhesion Strength	379
R. Yang, H.F. Guo, S.Y. Sun, J. Han and L.B. Xing	
Non-Linear Insulator Performance of Wind Turbine Blade Surface against Lightning Strike	383
W. Sasimma, T. Wongwuttanasatian and A. Suksri	

Chapter 5: Bio- and Eco Materials

Durability of Wood Shavel Composites with Environmental Friendly Based Binder	391
J. Endawati and L. Diasti	
Response Surface Methodology to Optimize the Preparation of Chitosan/Alginate Nanoparticles Containing Curcumin Diethyl Disuccinate	398
S. Bhunchu, P. Rojsitthisak and P. Rojsitthisak	
Green Manufacturing of Eco-Materials by Urban Mining from Landfill Dump Site	403
S. Kerdsuwan	
Control of the Ozonation by-Products by O₃/BAC in Shanxi Yellow River Water Treatment	408
R. Du, J.J. Zhou, F.J. Wang, J. Liu, X.B. Tang, J.F. Zou, Y.X. Yuan and J.G. He	
Study on Gamma Irradiation on Sago Starch-Chitosan-PVA Blend Films	413
S. Idris, H. Abdullah and C.T. Ratnam	
Synthesis of Biodegradable Polyester by Polycondensation with Tunable Properties	418
L.X. Yeen and M.U. Wahit	
Surface Modification of 316 L Stainless Steel by Sol-Gel Ceramic Coating and its Cytocompatibility	423
H. Lee, J.D. Liao, M.H.N. Thi, Y.H. Lin, P.L. Shao, C.K. Yao and Y.D. Juang	
Synthesis of Self-Healing Thermosetting Resin Based Capsules and their Related Complexities	428
I. Choudhury, S. Halder, A. Mathur, W. Nath and A. Phukan	

Experimental Researches of Co-Cr Alloys Powders Manufactured by Sintering Process DMLS and Ni-Cr Alloys Used in Dentistry D.I. Băilă	433
Investigation of Ag Oxidation and Ion Adsorption on Small Intestinal Submucosa in Simulated Body Fluid through Simultaneous Electrochemical and SPR Measurements C.C. Manole and I. Demetrescu	438
Rapid Biomimetic Coating of Biocompatible Calcium Phosphate on Titanium: Influence of Pretreated NaOH Concentration and Cleaning Method F. Thammarakcharoen, N. Hobang and J. Suwanprateeb	444
Chapter 6: Metals and Alloys, Industrial Chemical Technologies	
Tuning the Microwave Dielectric Properties of Nd_{0.96}Yb_{0.04}(Mg_{0.5}Sn_{0.5})O₃ by Introducing Ca_{0.8}Sr_{0.2}TiO₃ Y.C. Chen, C.H. Li, H.X. Liu and J.Y. Fu	451
Mesoporous Titanium Dioxide Thin Films on Quartz via Electrochemical Anodisation Process S. Uttiya, O. Cavalleri, M. Biasotti, M. Pani, M.M. Carnasciali, D. Caviglia, L. Mattera and M. Canepa	456
Predicting Methane Diffusivity in Polymeric Membranes by Molecular Dynamics M.K. Hadj-Kali, A. Bessadok-Jemai, S. Haider and Y. Alzeghayer	461
Crystallization of Aragonite from Vaterite Precursor during Various Refluxing Times R. Ševčík, P. Mácová and M. Pérez-Estébanez	466
The Influence of Electric Parameters on Film Quality of GZO Thin Film Fabricated by APPJ Process K.C. Chiang, Y.Y. Tsai, S.C. Chang, J.M. Hsu and C.C. Weng	471
An Analysis of Burn Defect in Hard Anodized Process of AL 3003 J. Thangthong and S. Prombanpong	475
Grafting of Linear Low Density Polyethylene (LLDPE) onto Tallow via Anhydride: Effect of Residence Time H. Alwi, S.H. Hanipah, M. Zakaria, I. Subuki, M.Z. Shahrudin and A. Hadi	480
Effect of Cerium Addition and Cooling Rate on Microstructure of ADC12 Eutectic Cast Alloy R. Ahmad and M.B.A. Asmael	486
Effect of Lanthanum Addition on Fluidity of Complex Al-11Si-Cu-Mg Cast Alloy R. Ahmad and M.B.A. Asmael	490
Effect of Lanthanum Addition on Microstructure and Hardness as Cooling Rate Function of ADC12 Eutectic Cast Alloy R. Ahmad and M.B.A. Asmael	495
Effect of HCl Concentration on the Phase and Microstructure of TiO₂ Film Synthesized by Low-Voltage Anodization of Titanium K.T. Lau and Z.L. Loganathan	500
Effect of Zr, Nb and Ti Additions on Injection Molded 316L Stainless Steel: Microstructural, Mechanical Properties and Corrosion Resistance H.O. Gulsoy, S. Pazarlioglu and S. Ozbey	505
Study of Mechanical Properties of Stainless Steel Oil Spill Plate on UG Finite Element Method R.L. Li and F. Hu	510
Effect of Different Operating Temperatures on Mechanical Properties of Several Rolled Aluminum Alloys W.B. Zhu, X.Q. Jiang, Q. Li and S.Y. Wang	514
Effect of Processing Factors on the Bonding Strength of Fibrous Assemblies by Dielectric Heating C.W. Joo and D.S. Park	519
Research on Heavy-Duty Coating Protection System of Magnesium Alloy R.T. Yan, Y.Y. Li, C.W. She, H.G. Li and H.P. Li	525
Caustic Magnesia Production in Microfluid Furnace J. Spišák, M. Truchlý, J. Mikula and V. Šindler	529

A Numerical Study on Stir Casting Process in a Metal Matrix Composite Using CFD Approach	533
J. George, S. Janardhanan and T.M. Sijo	
Performance of Mixed Cellulase-Amylase Immobilized on PSF Membrane Support via Cross-Linked with Glutaraldehyde in Enzymatic Hydrolysis	533
F. Hamzah, N.H. Saleh, N. Alimin, S.F. Abdul Manaf, N.M. Manshor, S. Samsudin and N.M. Yusof	
Energy Analysis of Hydrogen Production from Methanol under Atmospheric Pressure and Supercritical Water Conditions	542
N. Srisiriwat	
Preparation and Characterization of sPDVB/SPPO Composite Proton Exchange Membrane for Fuel Cell	548
G.W. Zou, X. Liu, C.B. Cong, Q. Zhou and K. Zhao	
Sulfate Ion Influence of LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ as Cathode Material for Lithium-Ion Batteries	554
J.F. Dai, J.F. Liu and B. Fu	
Lost Circulation Material Characteristics of Apple Skin Powder in Drilling Mud	560
N.A. Ghazali, M.Y.M. Yusof, A. Azizi, T.A.T. Mohd, N. Alias, A. Sauki and E. Yahya	
Effect of Alloying Elements and Impurity (N) on Bulk and Grain Boundary Cohesion in Cr-Base Alloys	564
V.N. Butrim, I.M. Razumovskii, A.G. Beresnev, A. Kartsev, V.I. Razumovskiy and A.S. Trushnikova	
Effect of Heat Treatment on Hardness and Microstructures of AISI 1045	569
I. Akhyar and M. Sayuti	
Thermodynamic Analysis of the Effects of Alloying Elements on the Stacking Fault Energy in Ruthenium-Bearing Nickel Alloys	575
T. Kitashima	
Effects of Al³⁺ and Zr⁴⁺ Cations on the Growth of Dendritic Lithium	580
S.K. Jeong	

Chapter 7: Technologies of Materials Processing

Sensitivity Analysis of Material Constitutive Model Parameters in Numerical Simulation of the Orthogonal Turning Process	591
K.S.V. Sekar and K.M. Pradeep	
Solid State Welding Process for Aerospace Components	597
H.H. Jung, Y.R. Lee, J.H. Yoon, J.T. Yoo, K.J. Min and H.S. Lee	
Determination of Optimum Parameter Levels for Quality Characteristics in Conventional Drilling of Thick Polymeric Composites	601
B. Ramesh, A. Elayaperumal and S. Satishkumar	
Laser Surface Melting of Ti₆Al₄V Alloy with Ti-BN-C Mixed Powders	607
X. Zeng, T. Yamaguchi and K. Nishio	
Processing of High Strength Magnesium Alloy with Enhanced Plasticity Using Squeeze Casting	613
K.S. Tun, G.C. Sim, X.H. Tan, K.W.J. Chan, W.O.R. Kwok, T.K. Lee and M. Gupta	
Investigation into Effect of Cutting Conditions on Surface Roughness while Dry Machining Al-11%Si and Al-11%Si-1% Bi Die Casting Alloy	617
M.M. Barzani, A.A.D. Sarhan, S. Farahani and R. Singh	
Surface Roughness Analysis of Carbon/Glass Hybrid Polymer Composites in Drilling Process Based on Taguchi and Response Surface Methodology	622
C.L. Tan, A.I. Azmi and N. Muhammad	
Evaluation of Two Different Energy Inputs for Deposition of Stellite 6 by Laser Cladding on a Martensitic Stainless Steel Substrate	628
A. Kusmoko, D. Dunne and H.J. Li	
Effect of Incremental Forming Process Parameters on Aluminum Alloy Using Experimental Studies	633
S.D. Majagi, G. Chandramohan and M. Senthil Kumar	
Surface Morphology and Wear Analysis of Stellite 6 Deposited on 9Cr-1Mo Steel Substrate by Laser Cladding	640
A. Kusmoko and H.J. Li	

Chapter 8: Materials and Related Technologies in Construction

Porosity and Microstructure Phase of Self Compacting Concrete Using Sea Water as Mixing Water and Curing	
Erniati, M.W. Tjaronge, V. Sampebulu and R. Djamaluddin	647
Quasi-Static Lateral Crushing of Non-Woven Kenaf Fibre Reinforced Composite Hexagonal Tubes	
M.F.M. Alkbir, S.M. Sapuan, A.A. Nuraini and M.R. Ishak	652
Performance Evaluation of Lightweight Oilwell Cements	
A. Sauki, M.I. Juanda, A. Azizi, M. Asadullah, T.A. Tengku Mohd, N.A. Ghazali and N.H. Alias	657
Characterization of Groundnut Husk Ash (GHA) Admixed with Rice Husk Ash (RHA) in Cement Paste and Concrete	
E.N.N. Ogork, O.A. Uche and A. Elinwa	662
Fibre Reinforced Concrete Class Control via Fib Model Code 2010 Approach	
V.E. Rusanov	672
Mechanical Performance of a Plate Made by RC and Repaired through SFRC Material	
A. Dal Cin, L. Massaria and E. Siviero	677
Numerical Study on Uniaxial Compression Failure of Brittle Material with a Single Flaw	
J.S. Tian and C. Zhao	683
Influence of Inner Steel Tube Diameter on Compressive Behavior of Square FRP-HSC-Steel Double-Skin Tubular Columns	
B.A. Louk Fanggi and T. Ozbaekoglu	688
Lattice Boltzmann Modeling of the Effective Thermal Conductivity for Complex Structured Multiphase Building Materials	
M. Hussain, S. Ahmad and W.Q. Tao	694
Residual Mechanical Parameters of Masonry Exposed to Fire: A New Numerical Approach	
S. Russo and F. Sciarretta	700
First Evaluation of the Structural Performance of Traditional Brickwork after Standard Fire Exposure	
F. Sciarretta	706
Frictional Loss of Prestress Caused by Locally Deflected Tendons in Prestressed Concrete Girder Bridges	
K.J. Shin, Y.Y. Kim and H.W. Lee	716
Influences of Concentric and Eccentric Loads on Buckling of Fixed-End Supported Pultruded FRP Channel Beams	
J. Thumrongvut and S. Seangatith	721
Response of Circular Footing on New Key Engineering Material - Granulated Blast Furnace Slag as Structural Fill	
L. Yadu and R.K. Tripathi	726
The Colorants Effects of Fe_2O_3 on Borosilicate Glasses Prepared from Subbituminous Fly Ash	
W. Rachniyom, Y. Ruangtawee, K. Boonin, K. Phachana and J. Kaewkha	731
Choice between Retrofitting and Reconstruction of Buildings in Reinforced Concrete after an Earthquake	
B. El Kechebour and H. Zeloum	736
A Demonstrated Net Zero Energy Building in Thailand: The Way for Sustainable Development in Buildings	
T. Wongwuttanasatian, D. Soodphakdee, N. Malasri and K. Triratanasirichai	741
Effect of Carbonation on the Sulfate Attack of Concrete Materials	
S.P. Zhang, B.H. Zhao and L. Zong	748
C80 Early Strength Micro Expansion of Steel Tube Reinforced Concrete Research	
C.Z. Sun and Z. Wang	752
Analysis on Energy Performance of Educational Facility by Composition of Double Glass	
Y.S. Shin and G.H. Kim	756
Influence of FRP-to-Concrete Gap Effect on Axial Strains of FRP-Confined Concrete Columns	
T. Vincent and T. Ozbaekoglu	760

Chapter 9: Physical Properties of Materials in Mechanical Engineering

The Effect of Mechanical Stress and Surface Tracking of 22 kV Cable Spacer N. Nilbunpot and A. Suksri	769
The Investigation of the Factors of the Fracture Toughness Based on the Compact Tension Specimen Y.W. Wang, X. Du, G.P. Zou and C.B. Ma	775
Numerical Simulation of Spherical Indentation Method to Identify Metal Material Properties R. Chen, X.Y. Li, L.L. Zhang and X.Y. Wang	779
Thermal Conductivity and Specific Heat Capacity of Different Compositions of Yttria Stabilized Zirconia-Nickel Mixtures M.R. Abbas, A.M. Noor, S. Rajoo, N. Ahmad, U.M. Basheer and M.H.M. Sah	783
Experimental Verification of Effect of Adhesive Layer Thickness Used for Strain Gauge Mounting K. Subrahmanyam, K. Vadivuchezhian and N. Chockappan	789
Research on Damage Mechanism of Aluminum Foam Sandwich Plate Subjected to Blast Loading Z. Wang, W.L. Yu, T. Wang and J.T. Wang	794
The Mechanical Properties and the Influence of Parameters for Metallic Closed-Cell Foam Subjected to High-Strain Rates C.E. Lord and Z. Huang	799
Sintered SiO₂ Modulus of Rupture Optimization by Means of Artificial Neural Networks M. Kvíčala and M. Štamborská	807
The Main Factors that Influence the Mechanical Properties of Honeycomb Board C.B. Ma, Y.W. Wang, G.P. Zou and X. Du	812
Mechanical Properties of High-Strength Steel Obtained Using DIC for Specimens with a Hole M. Štamborská, M. Kvíčala and M. Losertová	816
Recycled Plastic Quality Indicator Development Using Material Testing Results and Radar Chart D.S. Gabriel, T.P. Soemardi, T.Y.M. Zagloel and G. Kiswanto	821
Finite Element Modeling of Effect of Adhesive Layer and Carrier Thickness Used for Strain Gauge Mounting K. Vadivuchezhian, K. Subrahmanyam and N. Chockappan	828
Silver-Mediated Perylene-3, 4, 9, 10-Tetracarboxylate Tetrapotassium Salt Aggregation for Highly Sensitive Detection of Iodide in Water J.J. Ma, L.C. Yin, G. Zou and Q.J. Zhang	833
A Phenomenological Predictive Model for Thermo-Mechanical Fatigue of Notched Type 304 Stainless Steel J.O. Karl, A.T. Copeland and A.K. Besio	838
Study of Sodium Chloride's Effect on Warm Fog Dissipation and its Mechanism Research X.H. Xing, T.L. Song, X.D. Li, Q. Zhang and R.J. Yang	844
Optimizing Detection Parameters of Magnetic Barkhausen Noise Using Heat Affected Zone in Welded Ship Steel Plate M. Swallem, M.M. Blaow and A.M. Adarrat	849