



Advanced Engineering and Technology

Part 1

Edited by
Dongkeon Kim, Jong Wan Hu,
Jongwon Jung and Junwon Seo



TRANS TECH PUBLICATIONS

Advanced Engineering and Technology

PART 1

Selected, peer reviewed papers from the
International Conference on
Advanced Engineering and Technology
(ICAET 2014),
December 19-21, 2014, Incheon, South Korea



Edited by

**Dongkeon Kim, Jong Wan Hu,
Jongwon Jung and Junwon Seo**



Copyright © 2015 Trans Tech Publications Ltd, Switzerland

All rights reserved. No part of the contents of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland
<http://www.ttp.net>

Volumes 752-753 of
Applied Mechanics and Materials 2-part-set
ISSN print 1660-9336
ISSN cd 1660-9336
ISSN web 1662-7482

Full text available online at <http://www.scientific.net>

Distributed worldwide by

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland

Fax: +41 (44) 922 10 33
e-mail: sales@ttp.net

and in the Americas by

Trans Tech Publications Inc.
PO Box 699, May Street
Enfield, NH 03748
USA

Phone: +1 (603) 632-7377
Fax: +1 (603) 632-5611
e-mail: sales-usa@ttp.net

printed in Germany

Advanced Engineering and Technology

PART 1

Edited by
Dongkeon Kim
Jong Wan Hu
Jongwon Jung
Junwon Seo

Preface

The 2014 International Conference on Advanced Engineering and Technology (ICAET 2014) will take place in Incheon, at Incheon National University (INU), South-Korea, December 20-21, 2014. This conference is sponsored by Incheon Disaster Prevention Research Center (IDPRC) in INU. The ICAET 2014 is an annual international conference aimed at presenting current research being carried out in the fields of materials, structures and mechanical engineering. The idea of the conference is for the scientists, scholars, engineers and students from universities, research institutes and industries all around the world to present on-going research activities. This allows for the free exchange of ideas and challenges among the conference participants and encourages future collaboration between members of these groups. The conference will also foster cooperation among organizations and researchers involved in the merging fields and will provide in-depth technical presentations with abundant opportunities for individual discussions with the presenters.

The book is a collection of accepted papers. All these accepted papers were subjected to strict peer-reviewing by 2-3 experts referees including preliminary review process conducted by conference editors and committee members before their publication by Trans Tech Publication (TTP). This book is separated into twelve main chapters including 1. Metal and Alloy Materials and Technologies 2. Advanced Materials Engineering and Applications, 3. Materials Testing, Analysis and Processing Technology, 4. Structural Engineering, Dynamics and Applied Mechanics, Building Materials and Building Management 5. Mechanical Engineering and Design, Manufacturing Technology 6. Automation, Robotics and Control 7. Measurement, Monitoring and Detection, Identification and Advanced Systems 8. Communication, Graphic and Image Processing, Information Technologies Applications 9. Energy Control and Power Systems, Electrical and Electronic Engineering 10. Disaster Prevention and Mitigation Technology, Environmental Protection and Safety Management 11. Industrial Engineering, Production Quality and Management, The committee of ICAET 2014 should show our sincere thanks to all authors for their high-quality research papers and careful presentations. All reviewers should be also thanked for their careful comments and advices.

Thanks are all finally given to TTP as well for producing this volume.

The Organizing Committee of ICAET 2014

Committee Chair Prof. D. Kim, Dong-A University
Prof. J.W. Hu, Incheon National University, South Korea
Prof. J.W. Jung, Louisiana State University, United States
Prof. J. Seo, South Dakota State University, United States

Committee

Core Committee

- Executive Committee

Chief Patron: Prof. D. Kim, Dong-A University, Korea

Prof. J. Hu, Incheon National University, Korea

- Organizing Committee

Organization: Incheon National University, Korea

Disaster Prevention Research Center, Korea

Organizing Chairs: Prof. D. Kim and Dr. M. Kaloop

Conference Secretary: President H.K. Son, IETP Association Inc, Korea

Technical Committee

Prof. Y. H. Jeong, Kangwon National University, Korea

Prof. H. S. Kim, Ehwa Womans University, Korea

Prof. J. W. Jung, Louisiana State University, USA

Prof. J. W. Seo, South-Dakota State University, USA

Prof. J. Lee, Purdue University, USA

Prof. R. T. Leon, Virginia Tech, USA

Prof. R. DesRoches, Georgia Tech, USA

Prof. S. H. Kim, Southern Georgia Polytech, USA

Prof. U. S. Kim, California State University, USA

Prof. S. Lim, Inha University, Korea

Prof. J. Y. Park, Inha University, Korea

Prof. K. H. Moon, Inha University, Korea

Prof. D. W. Kack, Incheon National University, Korea

Prof. H. K. Lee, Incheon National University, Korea

Prof. J. W. Kim, Korea Institute of S&T Evaluation and Planning (KISTEP), Korea

Prof. S. G. Jeong, Korea Institute of S&T Evaluation and Planning (KISTEP), Korea

Prof. S. H. Lee, Korea Institute of S&T Evaluation and Planning (KISTEP), Korea

Prof. D. G. Kim, Korea Hydro & Nuclear Power Co., LTD, Korea

Prof. J. H. Lee, Daegu University, Korea

Prof. M. W. Park, Myongji University, Korea

Prof. S. H. Yun, Hanyang University, Korea

Prof. M. H. Tak, Hanyang University, Korea

Prof. M. H. Noh, Research Institute of Industrial Science and Technology (RIST), Korea

Table of Contents

Preface	v
Committee	vi

PART 1

Chapter 1: Metal and Alloy Materials and Technologies

Study of Surface Segregation Defect of 7075 Aluminum Alloy in Semi-Solid Squeeze Casting	
N. Umudee, J. Wannasin, S. Janudom, R. Canyook, T. Plookphol and S. Wisutmethangoon	3
Effects of Solid Fractions in a Slurry Die Casting Process on Defects of 7075 Aluminum Alloy	
W. Jumpol, J. Wannasin, S. Janudom, R. Canyook, T. Plookphol and S. Wisutmethangoon	7
Deposition and Characterization of CoCrAlY Coatings by Multi-Chamber Detonation Sprayer	
M.G. Kovaleva, Y.N. Tyurin, N.J. Vasilik, O.V. Kolisnichenko, M.S. Prozorova, M.Y. Arsenko, V.V. Sirota and I.A. Pavlenko	11
Properties and Peculiarities of WCCoCr Coatings Formed by Multi-Chamber Detonation Sprayer	
Y.N. Tyurin, M.G. Kovaleva, N.J. Vasilik, O.V. Kolisnichenko, M.S. Prozorova, M.Y. Arsenko, V.V. Sirota and I.A. Pavlenko	17
Corrosion of Fe-2.25Cr-1.6W-0.1Mo Steels in Na₂SO₄ Salts at 800 and 900°C	
P. Yadav, S.H. Bak and D.B. Lee	22
Corrosion of T92 Steels in Na₂SO₄ Salts at 800 and 900°C	
D.B. Lee	26
The Simulation of the Electrolyte Temperature Effect on the Value Change of the Microhardness of Anodic Alumina Oxide Layers	
L. Sobotova, M. Badida, J. Kmec, M. Gombar and D. Kucerka	30
Corrosion of SUS 310 Steels at 600-800°C in N₂/H₂O/H₂S Gases	
M.J. Kim and D.B. Lee	35
Stress Distribution Surrounding Endodontic Prefabricated Parallel Post	
W.M.K. Helal and D.Y. Shi	39
Effects of Magnesium Content on Ballistic Performance of Al-8Zn-SiC Composite after Heat Treatment Process	
B.T. Sofyan, L. Aksari, A. Septiani and D. Rahmalina	44
Mechanical Response of Aluminium Alloy AA6061 Butt-Welded Joints Subjected to Two Initial Tempers and Different Heat Treatments	
A. Alisibramulisi, O.G. Lademo, O.R. Myhr and P.K. Larsen	51
Finite Element Analysis of Stress and Strain Distribution in Gold Thin Film Deposited on Polycarbonate Substrate Subjected to Tension and Cooling	
N. Tada and Y.F. Hu	55

Improved Surface Integrity during End Milling AISI 316L Stainless Steel Using Heat Assisted Machining

A.U. Alkali, T.L. Ginta, A.M. Abdul-Rani and H. Fawad62

Chapter 2: Advanced Materials Engineering, Technologies and Applications

Effect of Physicochemical Parameters on Methylene Blue Adsorption by Sulfuric Acid Treated Spent Grated Coconut

K. Khalid, M.A.K. Megat Hanafiah and W.K.A. Wan Mat Khalir71

Synthesis and Characterization of Gold Nanoparticles Grafted on Nanoporous Anodic Aluminum Oxide (AAO) Membrane

H. Yazid, N.Z. Nekhia, R. Adnan and A.M. Md Jani77

Preparation and Characterization of Temperature-Sensitive 2-Hydroxy-3-Allyloxy Propyl Starch Ether

B.Z. Ju, W. Ma, H.L. Yuan and S.F. Zhang81

Chemical Changes of Cement Caused by Aggressive Environment

R. Pernicová and D. Dobiáš86

Synthesis and Performances of Crosslinking Polymeric Dyes

B.T. Tang, W.T. Wang, J.J. Qiu, J. Huang and S.F. Zhang90

Synthesis of Ettringite

J. Gemrich, K. Jiroušková, K. Kulísek and R. Magrla98

Computational Study of Bone Tissue Mechanical Properties Dependence on Nanoscale Morphological Characteristics

A.S. Semenov, A.I. Grishchenko and B.E. Melnikov103

Sintering Behavior and Microstructure Character of Magnesia Partially Stabilized Zirconia Ceramics

L. Jiang, S.Q. Guo, Y.Y. Bian, S. Chen, Y.L. Xu, Y.H. Liu and W.Z. Ding109

Study on Microstructural Properties of PAN/MnO₂ Nanofibers via Electrospinning Method

N. Yusof, I.E. Affandi, N. Abdullah, A.F. Ismail and J. Jaafar113

Study about Stress-Strain Properties with Mini Specimen and Microstructure of Nuclear Fuel Element Cladding of Al-Alloy (98% Al + 1% Fe + 1% Ni) after Being Tempered at Temperatures between (100 – 650) °C

U. Sudjadi and M.H.A. Hasa119

Application of Finite Element Analysis to the Interface Decohesion of CFRP/SMA Composite

N.Y. Kim and S. Young125

Influence of Irradiation Doses on Mechanical Properties of Glass Fiber Filled PBT

P. Kratky, D. Manas, M. Manas, M. Stanek, M. Ovsik, V. Senkerik and J. Navratil130

Influence of Irradiation Doses on Mechanical Properties of PA6

P. Kratky, D. Manas, M. Manas, M. Stanek, M. Ovsik, A. Skrobak and M. Reznicek136

Formulation of Nanofiltration Flat Sheet Membrane Using Cellulose from Kenaf Core

S. Abdullah, N.M. Abdullah and R. Mohd Tajuddin142

Morphology-Controlled CaCO₃ Nanostructures by Modified Co-Precipitation in Pulsed Mode

M.M. Nassar, T.E. Farrag, M.S. Mahmoud and S. Abdelmonem148

Formation of High Aspect Ratio Nanostructures Using Focused Ion Beam Induced Deposition of Carbon

O.A. Ageev, O.I. Ilin, A.S. Kolomiitsev, S.A. Lisitsyn, V.A. Smirnov and E.G. Zamburg154

Improvement of Surface Properties of Micro-Mold via SAM Coating for Fabrication of Microfluidic Device	
B. Saha and J.H. Lee	159
Modelling of the Influence of a Pointed Field Emission Cathode Design from the Silicon Carbide with Graphene Film on the Electric Field Strength	
A.M. Svetlichnyi, O.A. Ageev, E.Y. Volkov, I.L. Jityaev and M.V. Dem'yanenko	163
Anisotropic Wetting Behavior on Injection Molded Polypropylene Parts Inspired by Surface Structure of Moss	
M. Boruvka	168
Synthesis of Superhard Coatings Using Pulsed Beams of High-Energy Gas Molecules	
S. Grigoriev and A. Seleznev	172
Investigation of Optimal Silk Film Thickness in Silk Microneedle Fabrication	
S. Jiruedee, W. Luangweera, B. Sookyu, K. Patoomvasna, A. Pimpin, C. Rattanasumawong, T. Palaga, S. Damrongsakkul and W. Srituravanich	177
Strength Development of Fine Grained Mortar Containing Fly Ash and Rice Husk Ash	
Z. Jamellodin, H. Mohd Saman, S.H. Adnan, N.S. Mohammad and W.Y. Wan Yusof	182
Microstructural Stability and Creep Behavior of Directionally Solidified $MgAl_2O_4/Y_3Al_5O_{12}$ Eutectic Composite	
S. Abali	189
Rutting Performance of Hot Mix Asphalt Mixture Using Nanopolyacrylate Polymer Modifier	
E. Shaffie, J. Ahmad and D. Kamarun	194
The Liquid Condensation Conditions in the Dry Gas Seal System	
A.L. Ma and P.Y. Song	199
Effect of Si on the Thermal Stability of Ferritic Heat-Resistant Ductile Iron	
K.H. Choe, K.W. Lee and M.H. Kim	205
Complex Formation of Polyacrylic Acid with Surfactants of Different Hydrophobicity	
S. Tazhibayeva, K. Musabekov, Z. Kusainova, A. Sapieva and N. Musabekov	212
Polymer-Based Fluidic Devices Integrated with Perforated Conical Nanopores in Freestanding Polymer Membranes	
J.S. Choi and S.G. Park	217
Luminescence and Morphology Control of Phosphor Materials Synthesized by Melt Synthesis Method	
K. Toda, T. Ishigaki, S. Kamei, S.W. Kim, K. Uematsu, M. Sato and M. Yoshimura	221
Electret State in Composite Polymer Materials Based on Low Density Polyethylene and Polypropylene	
Y. Gorokhovatsky and D. Temnov	225
Removal of Ammonia Nitrogen from Domestic Wastewater Using Vertical Aerated Limestone Filter	
R. Hamdan, I.I. Ibrahim and A.N. Abdul Talib	232
Magnetic Condition Flat Core/Shell Nanoparticles	
L. Afremov and A. Elovskii	238
“Average Spin” Approximation in the Heisenberg Model	
L.L. Afremov and A.A. Petrov	243
Formation of Tobermorite at Different Materials Composition of Aerated Concrete	
E. Venhodová, R. Janovský and R. Drochytka	247
Methylene Blue Adsorption onto NaOH Treated <i>Leucaena leucocephala</i> Leaf Power	
M.A.K. Megat Hanafiah, N.F. Mansur, W.M.N. Wan Ab Rahman and M. Ismail	251

Modified Vermiculites Study by Various Physicochemical Methods

N.P. Shapkin, V.I. Razov, I.G. Khalchenko, V.I. Mayorov, A.L. Shkuratov, V.O. Trukhin and
V.V. Kotochentsev257

Residual Stress Effects on Fatigue Crack Growth in Directionally Solidified YAG/Spinel Eutectics

S. Abali.....263

Designing of Details Taking into Account Degradation of Structural Ceramics at Exploitation

V. Kuzin, S. Grigoriev, M. Volosova and M. Fedorov268

Structural and Optical Analysis of Eu³⁺ Doped BiVO₄ Nanophosphor by Combustion Method

R.S. Yadav, Y. Dwivedi and S.B. Rai.....272

Study of the pH Effects on the Phosphorus Removal Mechanism in Lab-Scale Electric Arc Furnace Slag and Limestone Filters in Synthetic Wastewater

W.A. Wan-Mohamed, R. Hamdan and N. Othman277

Chapter 3: Material Testing, Analysis and Processing Technology**Impact of Electrode Wire Feed Ways on Residual Stresses in Welded Joints**

A. Kryukov and N. Pavlov285

Experimental Characterization of Multiaxial Glass Laminates for Front End Cab

L. Fojtl, S. Rusnáková, M. Žaludek and V. Rusnák.....291

The Effect of Alkali Silica Gel Formation from Alkali Silica Reaction in Mesoscopic Scale

M. Tabet and A. Guettala295

Effect of Particle Size of Recycled Polyamide 6 to Impact Toughness and Hardness

V. Senkerik, M. Stanek, D. Manas, M. Manas, A. Skrobak and J. Navratil300

Influence of Recycled Particle Size to Tensile Properties of Polyamide 6

V. Senkerik, M. Stanek, D. Manas, M. Manas, A. Skrobak and J. Navratil304

Mechanical Properties of Injection Molded Rubber Testing Samples

A. Skrobak, M. Stanek, D. Manas, M. Ovsik, V. Senkerik and M. Reznicek308

Use of Theory of Hypothesis at Evaluation of Creep Curves

M. Reznicek, V. Pata, D. Manas, M. Stanek, A. Skrobak, M. Ovsik and M. Malochova312

Ionizing Radiation Effect of PBT Measured by Nano-Indentation Test

M. Ovsik, D. Manas, M. Manas, M. Stanek, A. Skrobak and P. Kratky317

Micro-Hardness of PA6 Influenced by Beta Irradiation

M. Ovsik, D. Manas, M. Manas, M. Stanek, M. Reznicek and P. Kratky322

Material Properties of PA6/rPA6_x Blend

J. Navratil, M. Manas, M. Stanek, D. Manas, M. Bednarik and A. Mizera.....326

Recycling of Radiation Crosslinked Polyamide 6

J. Navratil, M. Manas, M. Stanek, D. Manas, M. Bednarik and A. Mizera.....331

Tensile Behaviour and Temperature Stability of Modified HDPE by Radiation Cross-Linking after Temperature Load

A. Mizera, M. Manas, D. Manas, M. Stanek, J. Navratil and M. Bednarik.....337

Surface Energy of Selected Polyolefins after Radiation Cross-Linking

M. Bednarik, D. Manas, M. Manas, M. Stanek, J. Navratil and A. Mizera342

The Basic Mechanisms of Turbine Dummy-Blades Assembly and Dry-Friction Dampers Interaction Experimental Investigation	
M.S. Nikhamkin, N.A. Sazhenkov, I.V. Semenova and S.V. Semenov	346
Influence of Non-Newtonian Behavior Index on Curing Rate when Injection Molding	
M. Stanek, K. Kyas, D. Manas, M. Manas, M. Ovsik, V. Senkerik and A. Skrobak.....	351
Influence of Content of Crosslinking Agent on the Micromechanical Properties of Glass-Filled Polyamide 6	
D. Manas, M. Ovsik, M. Manas, M. Stanek, M. Spanhelova, M. Bednarik and V. Senkerik.....	357
Micromechanical Properties of Surface Layer of Electron Beam Irradiated of Glass-Filled PA6	
D. Manas, M. Ovsik, M. Manas, M. Stanek, P. Fiala, M. Bednarik and V. Senkerik.....	363
Analysis of Materials Based on Inverse Modeling	
P. Tomasek.....	369
Thermo-Mechanical Properties and Tensile Behaviour of Modified LDPE by Radiation Cross-Linking after Temperature Load	
A. Mizera, M. Manas, D. Manas, M. Stanek, J. Navratil and M. Bednarik	373
Influence of Ionizing Beta Radiation on the Surface Energy and Strength of Bonded Joints (at an Elevated Temperature) of Thermoplastic Material	
M. Bednarik, D. Manas, M. Manas, M. Stanek, J. Navratil and A. Mizera	378
FE Analysis of the Effect of Material Gradient on the Performance of a Functionally Graded Endodontic Prefabricated Parallel Post	
W.M.K. Helal, D.Y. Shi and Z.K. Wang	382
<i>In Vitro</i> Antimicrobial Properties of Propolis against Caries-Associated Microorganisms	
B. Thaweboon, S. Thaweboon, R. Kaypetch and T. Muadcheingka	387
The Evaluation of the Equations of State Used for the Joule-Thomson Effect Analysis in the Dry Gas Seal	
C.X. Deng and P.Y. Song	391
Modeling of the 2D Halbach Array with Different Dimensions of Magnets Based on Magnetization Direction	
G.D. Liu, Y.F. Zhou, R.G. Zhou and L.G. Huo	396
Surface Defects Formation in Grinding of Silicon Nitride Ceramics	
V. Kuzin, S. Grigoriev, S. Fedorov and M. Fedorov	402
Test Research on Rubber Powder Asphalt Mixture under the Action of Temperature and Chlorine Salt	
M.G. Ying, D.Q. Zhong, A.Q. Ma and Y.G. Fan.....	407
An Experimental Testing of Fillet Welded Specimens	
M. Krejsa, J. Brozovsky, D. Mikolasek, P. Parenica, L. Zidek and J. Kozak	412
Dependence of Relaxation Time on the Core Size Two-Phase Nanoparticles Magnetite/Titanomagnetite	
I. Iliushin, L. Afremov and S. Anisimov.....	418
Effect of Surface Shape on Light Absorption	
O. Bílek and M. Vašina.....	422
Improvement of Two-by-Four Timber System Stiffness by Using Polyurethane Foam as a Cladding Insulation	
P. Agel, A. Lokaj and K. Klajmonova	428
Comparison of Pavement Response Analysis between a 18-Axles Truck and Standard Thai Truck	
B. Chaichannawatik, T. Laosirihongthong, T. Boonyoo and S. Suparp	433

Operational Characteristics of Coin Type Molten Carbonate Fuel Cell Fueled by Ash Free Coal	
T.K. Kim, Y.J. Kim, S.W. Lee, C.G. Lee and M. Wołowicz.....	438
The Development of Bi-Ag Sandwich Sheets for Fire Assay Applications	
P. Ruethaitananon, N. Praphairaksit and K. Wongpreedee.....	444
The Analysis of Temperature and Strain Rate Influence on Flow Stress of Mg Alloy AZ31	
M. Kapustová and M. Balážová.....	448
Femtosecond Ti:Sa Laser Processing of Silica	
M. Babiý, Y. Biryukova, S. Golik and V. Lisitsa.....	452
Experimental Analysis on Heat Transfer Enhancement of Double Pipe Heat Exchanger Using Alumina/Water Nanofluid and Baffled Twisted Tape Inserts	
P.C. Sreekumar, K. Krishnamoorthy and R. Ratheesh.....	458
The Study of Deep-Hole Drilling BTA Drill Whirl Caused by Cutting Fluid	
Z.Y. Chen, Z. Dong, X.B. Huang and Y.L. Li.....	466
Investigation on Mechanical Properties of Natural Fiber Composite Using RTM Manufacturing Method	
H.B. Park.....	473
A Parameter Study for the Test Condition of Kolsky Bar Experiment	
Y.S. Kim and S. Young.....	477
Surface Modification of Zirconia (Y-TZP) Ceramics Induced by Pulsed Laser Machining	
V. Kuzin, S. Grigoriev, M. Fedorov, M. Portnoy and V. Ermolin.....	481
Microstructural and Mechanical Properties of Selective Laser Melted Al 4047	
S. Siddique, E. Wycisk, G. Frieling, C. Emmelmann and F. Walther.....	485
An Effective Jig for Friction Stir Welding of Pipe Butt Joint	
A. Ismail, M. Awang and M.A. Rojan.....	491
Computer Aided Analysis and Prototype Testing of Nanocoated Mechanical Components	
J.Z. Li.....	496
Finite Element Analysis of Residual Stress Level Prediction for TIG Welding Process	
A. Baisukhan and W. Nakkiew.....	500

Chapter 4: Structural Engineering, Dynamics and Applied Mechanics, Building Materials and Building Management

Numerical Simulation for Predicting Fire Behavior of Axially Loaded Circular Concrete Filled Steel Tubular Columns	
A.N. Rizalman, M. Md Tahir, S. Mohammad and A. Sulaiman.....	507
Structural Behavior of Reinforced Rubbercrete Beams in Shear	
B.S. Mohammed and R.C.H. Loong.....	513
Monitoring the Degradation of UHPC Boards	
M. Kostelecká.....	518
Failure Modes and Acceptance Criteria of Reinforced Prestressed Concrete Railway Sleepers Based on Dynamic Loading Tests	
M. Karmazínová.....	522
Behaviour of Composite Column of Cold-Formed Steel Section without Web Stiffener Integrated with Ferrocement Jacket	
A. Saggaff, K. Alenezi, M. Md Tahir, T. Alhajri and M. Ragae.....	528

Behaviour of Composite Column of Cold-Formed Steel Section with Web-Stiffener Integrated with Ferrocement Jacket	
K. Alenezi, M. Md Tahir, T. Alhajri and M. Ragae.....	533
Finite Element Modelling of Innovative Precast Cold-Formed Steel Ferrocement as Composite Beam	
A. Saggaff, T. Alhajri, M. Ismail, K. Alenezi and M. Ragae.....	539
Development of High-Volume High Temperature Fly Ash Concrete (HVFA)	
R. Hela and L. Bodnarova.....	544
Numerical Models of End-Plate Assembling Bolt Connection of Angle Profiles	
A. Jurčiková, P. Pařenica and M. Rosmanit.....	552
Conditioned and Orthogonalised Reverse Path Nonlinear Methods on Multi-Degree-of-Freedom System	
H.M.Y. Norfazrina, P. Muhamad, B.A. Aminudin, M.R. Raihan, A.W. Azella and R.M.S. Zetty.....	558
Research of Methods of Accuracy Increase of Building Weld-Fabricated Constructions	
V. Parlashkevich.....	564
Experimental Test of Reinforcing a Masonry Column with Fiber Reinforced Strain Hardening Cementitious Composite	
M. Jašek, J. Hurta and J. Brožovský.....	568
FRP-Concrete-Steel Double Skin Tubular Cantilever Beams: Behavior under Cyclic Loading	
Y. Idris and T. Ozbakkaloglu.....	572
Effect of Inner Steel Tube Cross-Sectional Shape on Compressive Behavior of Square FRP-Concrete-Steel Double-Skin Tubular Columns	
B.A. Louk Fanggi and T. Ozbakkaloglu.....	578
Ultrasonic Inspection of Thin Duplex Steel Weld Joints by TOFD	
E. Hodúlová, I. Kovaříková, B. Šimeková and K. Ulrich.....	584
Investigation on the Use of Fly Ash and Residual Rice Husk Ash for Producing Unfired Building Bricks	
C.L. Hwang and T.P. Huynh.....	588
The Method of Separation of Variables in the Problem of Theory of Elasticity for Radially Inhomogeneous Cylinder	
V.I. Andreev.....	593
Settlement Researches of Seismically Isolated Buildings	
V.I. Andreev, O.V. Mkrtychev, G.A. Dzinchvelashvili and A.A. Bunov.....	599
Crack Behaviour of Retrofitted Pre-Tensioned Concrete Beam	
N.H. Suliman, A.A. Bakar, S.H. Hamzah and N. Shahar.....	605
Flexural Behavior of GFRP RC Beam Strengthened with Carbon Fiber Reinforced Polymer (CFRP) Plate: Cracking Behavior	
N. Salleh, A.R. Mohd Sam and J. Mohd Yatim.....	610
Application of Grid Approximation Method for the Calculation of Monolithic Reinforced Concrete Frame Taking into Account Construction Sequence and Concrete Creep	
O.B. Zavyalova and A.I. Shein.....	617
Finite Element Modelling of Reinforced Concrete Slab at Elevated Temperature Using ABAQUS	
M.A. Ab-Kadir and A.S.M.A. Awal.....	623
Mold Issue in Details within the External Walled Structure	
H. Sevcikova, E. Rykalova, R. Fabian, Z. Perina, M. Halírova and M. Wolfova.....	628
Analysis of Resonant Vibration of Railway Vehicle	
D. Gong and W.J. Sun.....	632

Study on Wheel-Rail Coupled Vibration of Metro with Co-Simulation of Finite Element Analysis and Multi-Body Dynamics Simulation	
W.J. Sun, D. Gong and J.S. Zhou.....	636
Numerical-Analytical Solution of Two-Dimensional Problem for Elastic Radially Inhomogeneous Thick-Walled Cylinder	
V.I. Andreev.....	642
Calculation and Reliability Assessment of Timber Structure Bolt Connection Subjected to Double Unequal Shears	
J. Musílek and K. Kubečka.....	648
Reliability of Timber Structure Bolt Connection Subjected to Double Unequal Shears	
J. Musílek and K. Kubečka.....	652
An Analytical Study on the Performance of Wind Resistant System Considering Climate Change	
D.K. Kim, H.M. Son and J.W. Hu.....	656
Wind Tunnel Experiments Focused on the Bridge Deck Stability Coefficients	
M. Machacek, S. Pospisil and M. Krejsa.....	662
Effect of Sea Water Submersion on GFRP-S Bonding Capacity of Reinforced Concrete Beam	
R. Irmawaty, R. Djamaluddin and R. Kwandou.....	668
Design and Analysis of Automobile Bonnet Using Natural Flax Composite Structure	
C.D. Kong, H.S. Lee, G.L. Park, G.S. Park and H.B. Park.....	674
Performance Enhancement of the Existing Bridges due to Overweight Vehicles with Multi-Axle Loading	
S. Suparp and P. Joyklad.....	678
Modeling of Deformation and Fracture of Concrete Structures with FRP Reinforcement	
A.V. Benin, S.G. Semenov and A.S. Semenov.....	685
Indices for Fast Assessment of Bridge Condition in Taiwan	
N.J. Yau and H.K. Liao.....	689
Changes in Floor Impact Sound Insulation Performance with Time	
K.W. Kim, J.O. Yeon and K.S. Yang.....	698
Experimental Investigation of Concrete Confinement with Textile Reinforced Concrete	
H.Y. Yin, Y. Xun, C.B. Ji and S. Sun.....	702
Reliability of Timber Structure Bolt Connection Subjected to Double Unequal Shears	
J. Musílek and K. Kubečka.....	711
The Development of Concrete Life Cycle Assessment System	
Y.J. Bok, S.H. Tae, T.Y. Kim and K.H. Yang.....	715
Penetration Rate of Various Injection Gels in Dependence on Wetness of Building Materials	
R. Drochytka, J. Melichar and P. Dohnálek.....	720
Selection of Insulation Materials and Insulation Performance with Consideration of Building Energy when Designing a Building	
Y.S. Jeong.....	724
Influence of the Installation Lines to the Acoustic Properties of Dividing Wall	
J. Winkler, D. Kubeckova, L. Kucerova and N. Zdrzilova.....	728

CHAPTER 1:

Metal and Alloy Materials and Technologies

