

# Table of Contents

## Preface

## Chapter 1: Advanced Materials, Processing Technologies, Chemical Engineering

<b>Effects of Starting Materials on Preparation and Properties of Pure SiC Ceramics via the HTPVT Method</b>	
Y.C. Deng, N.L. Zhang, Y.M. Zhang, B. Wang and J.F. Yang	3
<b>Effect of Residual Stress and Microcracks in Chrome Plating Layer to Fatigue Strength of Axle-Shaped Machine Parts</b>	
V.P. Nguyen, T.N. Dang and C.C. Le	10
<b>Study on Microstructure and Properties of Cu-9Ni-6Sn Alloy Applied for Electric Measurement</b>	
S.M. Thang, T.N. Tran and D.N. Nguyen	17
<b>Synthesis and Photocatalytic Activity of Fluorine DOPED-g-C<sub>3</sub>N<sub>4</sub></b>	
N.V. Phuc, D.T. An, N.N. Tri, T.H. Ha, T.T.T. Hien, N.P. Hung and V. VO	24
<b>Effects of Sintering and Compress on Porosity, Mechanical Properties and Conductivity of Cu-Al<sub>2</sub>O<sub>3</sub> Composite Materials Fabricated by Mechano-Chemical Method</b>	
H.K. Thanh, D.D. Nguyen and T.V. Dung	33
<b>Effects of some Parameters on Properties of Cu-Al<sub>2</sub>O<sub>3</sub> Composite Materials Synthesized by Internal Oxidation Process</b>	
H.K. Thanh and D.D. Nguyen	38
<b>Sulfur-Doped g-C<sub>3</sub>N<sub>4</sub> with Enhanced Visible-Light Photocatalytic Activity</b>	
T.D. An, N.V. Phuc, N.N. Tri, H.T. Phu, N.P. Hung and V. VO	43
<b>Mechanical Properties of SS400 Steel Plate at Elevated Temperatures</b>	
G.H. Vuong, N. Thi Hong Minh and N. Duc Toan	51
<b>Producing of Carbon Fibers from Commercial Viscose Fibers</b>	
H.S. Nguyen, L.H. Vu, V.C. Pham, X.T. La and T.H. Le	58
<b>The Influence of Alumina Filler on Mechanical, Thermal and Electrical Properties of Bulk Moulding Compounds (BMCs) Composite</b>	
T.H. Le and H.T. Nguyen	65
<b>Effect of Ultrasonic Vibration on Increasing Embossing Speed during Hot Glass Embossing Process</b>	
L.P. Nguyen, M.H. Wu and C.H. Hung	71
<b>Study on the Cutting Properties of the Singer Layer Metal Bonded cBN Grinding Wheel by Electroplating in Grinding of Heat-Treated Steel SKD11</b>	
T.H. Son and T.T.V. Nga	80
<b>Analysis and Fabrication of a Mechanical Quick-Stop for Research on Chip Formation in Hard Turning Process</b>	
N.T.Q. Dung	87
<b>Study the Effect of Chemical Treatment on Substrate Surface on the Formation Nanodots Array and its Optical Properties</b>	
T.D. Phuc and Y. Masahiko	95
<b>Research on Relative Wear and Roughness Follow the Current Density in EDM Die Sinking</b>	
Q.H. Tran, V.S. Hoang and V.K. Tran	102
<b>Effect of Feed Rate, Tool-Path and Step over on Geometric Accuracy of Freeform Surfaces when 3 Axis CNC Milling</b>	
Q.H. Van and T.B. Ngoc	107
<b>Surface Modification Process by Electrical Discharge Machining with Tungsten Carbide Powder Mixing in Kerosene Fluid</b>	
V.T. Le, T.L. Banh, X.T. Tran and N. Thi Hong Minh	115
<b>Determining the Optimal Parameters of Chip Shrinkage Coefficient and Cutting Force in High-Speed Machining for Aluminum Alloy A6061</b>	
D.T. Pham, N. Duc Toan, T.H. Doan and T.H. Pham	123

<b>A Research on Technology for Manufacturing Body Shell of Anti-Tank Rocket</b> B.K. Khanh, N.H. Tuan, V.T. Tuyen and N.T. Huy	131
<b>Finite Element Modeling Method of Centrifugally Rotary Processing</b> V.T. Nguyen, A.N. Soloviev, M.A. Tamarkin and I.A. Panfilov	140
<b>Improvement for Microstructure of Severely Deformed JIS S45C Steel after Rolling Process</b> V.P. Nguyen, N.P.L. Nguyen and T.N. Dang	148
<b>Investigation of the Effects of Technological Parameters on Surface Roughness in Extrusion Bars of Aluminum Alloy</b> T.M. Nguyen, Đ.Q. Tran, V.N. Pham and V.C. Nguyen	155
<b>Study Computational Simulation and Experimental of Butt-Joint by Visual-Weld Software and MIG Welding Process</b> Q.M. Nguyen	161
<b>Optimizating Spray Parameters of High Velocity Oxy Fuel (HVOF) for Cr<sub>3</sub>C<sub>2</sub> - NiCr Coating</b> V.C. Dinh, T.P. Nguyen, T.H. Doan and V.K. Bui	168
<b>Influence of Nitride Hard Coating on Friction and Soldering on Surface of Aluminum High Pressure Die Casting Core</b> T.C. Luu, T.B. Dinh, T.P.M. Nguyen and P.H. Tuan	177
<b>Effects of Ti Target Poisoning to Titanium Nitride Coating Fabricated by a Physical Vapor Deposition Technique</b> Q.D. Nguyen, Q.D. Phan, Đ.Q. Tran and D.C. PHAM	185
<b>Experimental Researching of Thermal - Assisted Milling with Induction on Surface Roughness of SKD11 Steel</b> M.T. Bich, P.T. Hoa, B.T. Long and N. Duc Toan	190
<b>A Simulation Study on Improving Formability of SUS304 Sheet Metal Deep Drawing Process</b> N. Duc Toan and D.T. Vu	197
<b>Investigation of Springback Prediction for an Aluminum 7000 Sheet Subjected to Press Forming</b> Q.T. Pham, J.H. Song, J.C. Park and Y.S. Kim	203
<b>A Comparative Investigation of the Porous NiTi Alloys Synthesized by Self-Propagating High-Temperature Synthesis and Combined Process of Decomposition and Sintering</b> D.T. Nguyen, H.K. Thanh and T.V. Dung	211
<b>Investigation of BTEX Adsorption on Carbon Nanotubes Cartridges from Air Samples</b> H.Q.A. Le and D.T. Phan	216
<b>Effect of Ethylene Vinyl Axetate (EVA) on the Mechanical Properties of Low-Density Polyethylene/EVA Blends</b> T.H.N. Pham, T.M.H. Le and X.W. Zhang	223
<b>Feasibility of Studying Fuel Mixer Design for High Power Engines Using Completely Biogas</b> T.P. Tran, Q.M. Nguyen and Q.C. Tran	231
<b>A Study on Reasonable Ratios of Vegetable Oils and Diesel Oil in Mixed Fuel Used as an Alternative Fuel for Marine Diesel Engines in Vietnam</b> T.N. Tran, V.U. Dang and D.A. Nguyen	244
<b>Study of Possibility of Producing Syngas from Industrial Scale Continuous Downdraft Coffee Husk Gasifier</b> N.D. Tung	254
<b>Equilibrium Moisture Content of Ganoderma Lucidum</b> P.V. Kien, N. Hay and L.A. Duc	266
<b>Prediction of Combustion Behavior in a Boiler Fired by Mixture of Vietnamese Anthracite and Coal Gas Using CFD</b> G.M. Tran and D.D. Le	275

## **Chapter 2: Building Materials and Construction Technologies**

<b>Compressive Resistance of Environmental Concrete Using Fly Ash and Fine Aggregate for Replacing Traditional Sand</b> D.L. Nguyen and M.T. Duong	283
---	-----

<b>Mechanical Properties of Composites with Geopolymer Matrices Reinforced by Basalt Fabric</b>	
I. Petříková, B. Marvalová and J. Lampa	289
<b>Quantitative Study of Hydration of C3S and C2S in the Reactive Powder Concrete together with its Strength Development</b>	
Q.S. Bach	294
<b>Investigation of Blended Cement Hydration in the Reactive Powder Concrete with Increasing Levels of Silica Fume Addition</b>	
Q.S. Bach	304

### **Chapter 3: Machine and Machine Parts Designing, Mechatronics and CAD/CAM/CAE**

<b>Modeling and Calculating Vibration Characteristic of Car Body Assembled and Manufactured in Vietnam</b>	
T.C. NGUYEN	315
<b>Modeling Energy Harvesting Devices with Non-Uniformly Polarized Piezoceramic Materials</b>	
A.N. Soloviev, L.V. Duong, P.A. Oganessian and E.V. Kirillova	322
<b>First Experiences with Microsoft Kinect V2 for 3D Modelling of Mechanical Parts</b>	
T.L. Binh and V.B. Bui	329
<b>Design and Optimization of a New Hollow Circular Flexure Hinge for Precision Mechanisms</b>	
V.K. Nguyen, D.L. Tuong, H. Pham and P.H. Hoang	337
<b>Designing, Manufacturing and Testing the Cycling Training System Featuring Magnetorheological Brake</b>	
B.T. Diep, H.L. Dai, D.Q. Bui, Q.K. Tran, M.H. Huynh and Q.H. Nguyen	346
<b>Hysteresis Identification of Bidirectional Magneto-Rheological Actuators Employing Preisach Model</b>	
B.T. Diep, N.Y.P. Vo and T.D. Le	355
<b>Hysteresis Investigation of Shear-Mode MR Damper for Front-Loaded Washing Machine</b>	
D.Q. Bui, B.T. Diep, H.L. Dai, L.V. Hoang and Q.H. Nguyen	361
<b>Effects of Using Nitrile Rubber Foam and Solar Panels on Cover for Cooling Outdoor Sparking Car</b>	
T.L. Nguyen	371
<b>Vibration Analyses of a Tapered Composite Thin-Wall Box Beam with Rectangular Section</b>	
B.V. Binh and L.T. Hien	379
<b>Effects of Capacitor on the Hybrid Ignition System</b>	
D.Q. Am, D.V. Dung and N.T. Ngoc	388
<b>Experimental Investigation into the Influence of Compression Ratio on Operating Characteristics of Single Cylinder CNG Engine with Port Injection</b>	
T.D. Quoc, T.T. Tam and L.A. Tuan	396
<b>Experimental Research on the Effect of Wing Structure on Aeroelasticity Phenomenon</b>	
N.K. Tran, D.C. Dang, D.H. Dao, P.K. Nguyen and T.K.D. Hoang	403
<b>A Way to Enhance the Efficiency of a Vertical Axis Wind Turbine</b>	
Q.T. Phan, T.T.H. Phan, A.S. El-Gizawy and T.H.M. Phan	410
<b>A Research on Locating AGV via RSS Signals</b>	
N. Duy-Anh and M.K. Huynh	418
<b>Numerical Investigations of Aerodynamics Characteristics of Main Rotors in Helicopter UAV Used for Pesticide Spraying in Agriculture</b>	
N.K. Tran, V.Q. Dao, P.K. Nguyen, T.K.D. Hoang and V.K. Nguyen	425
<b>Effect of Shapes and Turbulent Inlet Flow to Vortices on Delta Wings</b>	
N.K. Tran, V.K. Nguyen, P.K. Nguyen, T.K.D. Hoang and V.Q. Dao	434
<b>Research to Evaluate the Quality of Passenger Bus Body Frame, Assuring the Passive Safety in the Design Process</b>	
T.C. NGUYEN	440
<b>An Approach to Improve on Stiffness for Aerostatics Bearing</b>	
A.V.H. Nguyen and T.N. Dang	448

<b>Optimal Selection of Marine Propellers Based on Wageningen B-Series</b> M.T. Pham, K.H. Ngo and T.H. Le	455
<b>Finite Element Analysis in Automobile Chassis Design</b> T.Q. Nguyen	461
<b>Machining Based Geometric Error Estimation Method for 3-Axis CNC Machine</b> T.K. Hoang and N.M.D. Ta	469
<b>A Methodology for Generating a Variable-Pitch Rotor of Twin-Screw Vacuum Pump</b> V.T. Tran	475
<b>Probabilistic Analysis on the Uncertainty in Natural Frequency of Functionally Graded Material Beams</b> V.T. Nguyen and D.L. Nguyen	484
<b>Model Design and Numerical Simulation for Plastic Recycle Machine</b> N.A. Phuong, H.T. Tung, P.T. Huy, T. Guidat, T.T. Tran and D.H.M. Hieu	489
<b>Researching on Measurement Strategies of Fuel Tank Corrosion Using Phased Array Technology</b> T.T. To and T.N. Dang	499
<b>Development of Magnetorheological Brake with Tooth-Shaped Disc for Small Size Motorcycle</b> D.T. Le, N.D. Nguyen, D.T. Le, N.T. Nguyen, V.V. Pham and Q.H. Nguyen	508
<b>Analyzing Rotor Profile's Effects to Performance of Roots Vacuum Pump Applied the CFD Method</b> T. NGUYEN, B.N. Tuyen and V.T. Tran	518
<b>Investigation and Optimization of Power Based Smart Home Module Integrated with Automatic Solar Tracking System and MPPT Technique</b> T.V. Dang, S.T. Dinh and X.T. Bui	526
<b>Determination of the Expedient Motion Trajectory of the Bucket on the Side Dump Bucket Loader MVC E500-1 during the Digging and Filling Materials</b> V.H. Ta and V.D. Chu	533
<b>The Influence of Part Geometry on Changes of the Dynamic Geometric Parameters of Cutting Tools and Cutting Conditions when Contour Turning on CNC Lathes</b> B.N. Tuyen and N.C. Cong	540

## **Chapter 4: Industrial Engineering**

<b>Snow Utilization as Cold Heat Source - Advantages and Features</b> S. Kamimura and Y. Ito	549
<b>Continuous Improvement of Productivity and Quality with Lean Six-Sigma: A Case Study</b> L.D. Minh, V.T.H. Ni and D.N. Hien	557
<b>Asian Agriculture Growth Strategy</b> N. Ito	567
<b>Researching and Applying the Line Balancing Methods in Optimizing Automobile Assembly Lines</b> N.P. Trung and L.M. Tai	574
<b>Evaluating Energy Efficiency of Production Machine</b> T.A.L. Nguyen, L.N.H. Tran, H. Paris and M. Museau	580
<b>A Multiple Objective Model for Vehicle Routing Problem with Time Windows: A Case Study</b> H.T.T. Ai, N.T. Thi and N.V. Can	588