

Table of Contents

Preface, Conference Committee

Chapter 1: Alloys and Alloys Processing Technology

Welding Repair of Aluminium Alloy 6082 T6 by TIG Welding Process K. Hoyingchareon and P. Muangjunburee	3
Improvement of Welding Repair Aluminium Alloy 6082T6 by MIG Welding Process N. Nimaeh and P. Muangjunburee	8
Effect of Alloying Elements on the Hardness Property of 90% Copper-10% Nickel Alloy A.M. Taher	13
Effect of Water Flow Direction on Cut Features in the Laser Milling of Titanium Alloy under a Water Layer O. Tevinpibanphan, V. Tangwarodomnukun and C. Dumkum	18
Characteristics of Machining Parameters on WEDM Titanium Alloy J.B. Saedon, N. Jaafar and M.A. Yahaya	23
Effect of Porosity on Residual Stress of 2024-Aluminum GTAW Specimen P. Poolperm and W. Nakkiew	28
Effect of Precipitate on Microstructure Evolution and Hardness of Al-Cu Alloy during Torsion Deformation S. Khamsuk, N. Park, D. Terada and N. Tsuji	33
Direct Measurements of Magnetocaloric Effect in a Single Crystalline $\text{Ni}_{2.13}\text{Mn}_{0.81}\text{Ga}_{1.06}$ Heusler Alloy V. Khovaylo, K. Skokov, S. Taskaev, A. Karpenkov, D. Karpenkov and E. Airiyan	38

Chapter 2: Steel and Technologies of Metals Processing

Influence of Steel Strip-Feeding Process on Density and Segregation of Casting Ingot S. Zhao, D.L. Wei, J.H. Xu, H. Chen and L. Zhang	45
Microstructure Change in ASSAB 760 Steel during Cementation and Quenching Process L. Anggraini, M. Adikusumo and R.A. Dahar	50
Microstructure and Wear Resistance of Hard-Facing Weld Metal on JIS-S50C Carbon Steel in Agricultural Machine Parts K. Kimapong, P. Poonayom and V. Wattanajitsiri	55
Life Extension of Propeller Shafts by Hardfacing Welding S. Sitthipong, P. Towatana, A. Sitticharoenchai and C. Meengam	62
Fine Blanking Technology Optimization of Front End Cover of Timing System for Compressed X.Y. Li, C.D. Zhu and Y.C. Zhu	67
An Effect of Friction Bonding Parameters to Delamination Defect T. Yupapornsopa, S. Prombanpong and J. Juntawongso	73

Chapter 3: Ceramics and Glass

Structural Characterization of a Glass Ceramic Developed from TiO_2 and a Novel Material-Silica Xerogel Converted from Sago Waste Ash H. Aripin, S. Mitsudo, I.N. Sudiana, N. Busaeri, B. Sunendar and S. Sabchevski	81
Electrical Properties of Modified BNT Based Lead-Free Ceramics S. Manotham, T. Tunkasiri, P. Jaita, P. Butnoi, D.R. Sweatman, R. Sanjoom and G. Rujijanagul	87
Fabrication and Properties of Mullite Ceramics from Ranong Kaolin N. Lertcumfu, S. Eitssayeam, K. Pengpat, T. Tunkasiri, D.R. Sweatman, P. Jaita, R. Sanjoom and G. Rujijanagul	92

Influence of Sintering Temperature on Electrical Properties of Modified-PZT Piezoelectric Ceramics	
P. Jaita, R. Sanjoom, C. Kruea-In, T. Tunkasiri and G. Rujijanagul	97
Electrical Properties of BNKTZ Ceramics as a Function of Calcination Temperature	
P. Butnoi, S. Manotham, P. Jaita, R. Sanjoom, D.R. Sweatman, G. Rujijanagul and T. Tunkasiri	103
Effect of Electrode on Electrical and Ferroelectric Behavior of Modified BNT Lead-Free Ceramics	
R. Sanjoom, P. Jaita, C. Kruea-In, D.R. Sweatman, T. Tunkasiri and G. Rujijanagul	109
Effect of High-Frequency Microwaves on the Microhardness of Alumina Ceramic	
I.N. Sudiana, S. Mitsudo, M.Z. Firihi and H. Aripin	114
Thermal and Physical Properties of White-Opaque Sanitary Glazes Using Lampang Pottery Stone as Raw Materials	
P. Sirilar, N. Srisukhumbowornchai, P. Thanakijkasem, S. Sirisoonthorn and G. Klein	118
X-Ray Diffraction Characteristics of Kovar Alloy and Al_2O_3 Ceramics	
Q.L. Gao, Y.L. Zhang, J.M. Zhou, J.G. Peng and S.L. Hu	123
The Study of Physical and Optical Properties of Barium Borophosphate Glasses	
N. Chanthima, N. Sangwanatee and J. Kaewkhao	128
Defect Reduction in the CO_2 Laser Cutting of Glassware Rim	
A. Phophoung and V. Tangwarodomnukun	133
Total and Partial Photon Interactions of $\text{BaSO}_4\text{-Na}_2\text{O-B}_2\text{O}_3\text{-SiO}_2$	
N. Chanthima, J. Kaewkhao, S. Sarachai, N. Sangwanatee and N.W. Sangwanatee	138

Chapter 4: Preparation and Properties of Thin Films

Effect of Anodizing Voltage on Anodic Titanium Dioxide (ATO) Growth Based on an Ethylene Glycol Solution Containing NH_4F	
C. Mangkornkarn, B. Samransuksamer, M. Horprathum, P. Eiamchai, A. Eiad-Ua and K. Onlaor	147
Nanoporous Anodic Aluminum Oxide (AAO) Thin Film Fabrication with Low-Grade Aluminium	
P. Sumtong, A. Eiad-Ua and K. Chalapat	152
Preparation and Characterization of Bionanocomposite Films Made from Carrageenan, Beeswax and ZnO Nanoparticles	
B. Meindrawan, N.E. Suyatma, T.R. Muchtadi and E.S. Iriani	157
Physico-Mechanical Properties of Starch-Based Nanocomposite Film Incorporated with Hydrothermally Synthesized Zinc Oxide Nanoparticles	
Y. Andiyana, N.E. Suyatma and Suliantari	162
An Effect of Process Parameters to Anodic Thickness in Hard Anodizing Process	
A. Rattanasatitkul, S. Prombanpong and P. Tuengsook	168

Chapter 5: Materials and Technologies in Chemical Engineering

Adsorption of Direct Red 80 Dye from Solution by Sugarcane Bagasse and Modified Sugarcane Bagasse as Adsorbents	
P. En-Oon, P. Sansunon and K. Piyamongkala	175
Synthesis of Carbon-Supported Metal Catalysts by HTC and Electroplating Processes from Cattail Flower	
W. Gunpum, K. Faungnawakij, N. Viriya-Empikul and A. Eiad-Ua	181
Production of γ-Valerolactone from Methyl Levulinate via Catalytic Transfer Hydrogenation on Nickel-Copper Oxide Catalyst	
W. Tanwongwal, S. Kuboon, W. Kraithong and A. Eiad-Ua	187
TiO_2 Powder Synthesized via the Solvothermal Method and Enhanced Photocatalytic Degradation of Methomyl	
P. Jansanthea, W. Chomkitichai, J. Ketwaraporn, P. Pookmanee and S. Phanichphant	191
Effects of ZnO Addition on $\text{Fe}_2\text{O}_3/\text{Al}_2\text{O}_3$ Oxygen Carriers on CH_4 Reduction for Chemical Looping Combustion	
S. Thongsermsuk, B. Chalermssinsuwan, P. Kuchonthara and P. Piumsomboon	196

Fantastic Carbon Material for Nickel/Carbon Support Catalyst Reducing via Calcination Enhanced with Hydrothermal Carbonization	
B. Jomhataikool, W. Gunpum, W. Kraithong, N. Viriya-Empikul and A. Eiad-Ua	201
Effect of Alkaline Activation on Low Grade Natural Kaolin for Synthesis of Zeolite A	
P. Asawaworarit, N. Chollacoop, N. Viriya-Empikul and A. Eiad-Ua	206
Characterization of Diatomite, Leonardite and Pumice	
P. Pookmanee, A. Wannawek, S. Satienerakul, R. Putharod, N. Laorodphan, S. Sangsrirachan and S. Phanichphant	211
Gas Atomizer Making to Produce Tin Powders	
K. Pipatpanyanugoon and C. Nakvachiratrakul	216

Chapter 6: Nanocomposite Materials and Nanotechnology

Metal Oxide Nanocomposites: Advantages and Shortcomings for Application in Conductometric Gas Sensors	
G. Korotcenkov, S.H. Han and B.K. Cho	223
Impedance Spectroscopic Inspection Toward Sensitivity Enhancement of Ag-Doped WO₃ Nanofiber-Based Carbon Monoxide Gas Sensor	
P. Boonma, P. Jaroenapibal, M. Horprathum, S. Pornnimitra, B. Charoen and N. Triroj	230
The Improvement in Mechanical and Thermal Properties of Biodegradable Poly(Butylene Succinate) (PBS) Nanocomposites with Low Loadings of Graphene Oxide (XGO)	
A. Buasri, U. Kampichit, P. Salacharoen, P. Sangsawee and V. Loryuenyong	235
Preparation of Zeolite Nanocrystals via Hydrothermal and Solvothermal Synthesis Using of Rice Husk Ash and Metakaolin	
N. Setthaya, P. Chindaprasirt and K. Pimraksa	242
Effects of TEOS Precursor and Reaction Time on the Synthesis of Silica Coated Single-Walled Carbon Nanotubes	
W. Suprompituk, T. Radpakdee, N. Pholdee and P. Jaroenapibal	248
Characterization of Bismuth Vanadate Nanopowder Prepared by Microwave Method	
P. Pookmanee, P. Intaphong, J. Phanmalee, W. Kangwansupamonkon and S. Phanichphant	253

Chapter 7: Materials in Biomedical Engineering and Construction

Effects of Hydroxyapatite/Silk Fibroin/Chitosan Ratio on Physical Properties of Scaffold for Tissue Engineering Application	
W. Wattanutchariya, A. Oonjai and K. Thunsiri	261
Comparative Studies of the Light Yield Non-Proportionality and Energy Resolution of CsI(Tl), LYSO and BGO Scintillation Crystals	
P. Limkitjaroenporn, N. Sangwaranatee, W. Chaiphaksa and J. Kaewkhao	266
Compressive Strength Development of High Strength High Volume Fly Ash Concrete by Using Local Material	
M. Solikin	271
Study on the Performance of Orthodontic Self-Drilling Correction Screw of Ti6Al4V and Stainless 316L	
T.V. Do, Q.C. Hsu, P.H. Chen and Y.L. Chen	276
Influence on Fatigue and Biomechanics of Cone Fit of Dental Implant around the Surrounding Bone Tissue	
L. Liu, X. Zhang, Y.F. Zhou, X.S. Chen and Y.L. Wang	281