

Table of Contents

Preface, Conference Committee

Chapter 1: Alloys and Alloys Processing Technology

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

Chapter 2: Steel and Technologies of Metals Processing

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

Chapter 3: Ceramics and Glass

Structural Characterization of a Glass Ceramic Developed from TiO₂ and a Novel Material-Silica Xerogel Converted from Sago Waste Ash	81
H. Aripin, S. Mitsudo, I.N. Sudiana, N. Busaeri, B. Sunendar and S. Sabchevski	
Electrical Properties of Modified BNT Based Lead-Free Ceramics	87
S. Manotham, T. Tunkasiri, P. Jaita, P. Butnoi, D.R. Sweatman, R. Sanjoom and G. Rujijanagul	
Fabrication and Properties of Mullite Ceramics from Ranong Kaolin	92
N. Lertcumfu, S. Eitssayeam, K. Pengpat, T. Tunkasiri, D.R. Sweatman, P. Jaita, R. Sanjoom and G. Rujijanagul	

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

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

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	175
P. En-Oon, P. Sansunon and K. Piyamongkala	
Synthesis of Carbon-Supported Metal Catalysts by HTC and Electroplating Processes from Cattail Flower	181
W. Gunpum, K. Faungnawakij, N. Viriya-Empikul and A. Eiad-Ua	
Production of γ-Valerolactone from Methyl Levulinate via Catalytic Transfer Hydrogenation on Nickel-Copper Oxide Catalyst	187
W. Tanwongwal, S. Kuboon, W. Kraithong and A. Eiad-Ua	
TiO_2 Powder Synthesized via the Solvothermal Method and Enhanced Photocatalytic Degradation of Methomyl	191
P. Jansanthea, W. Chomkitichai, J. Ketwaraporn, P. Pookmanee and S. Phanichphant	
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	196
S. Thongsermsuk, B. Chalermsinsuwan, P. Kuchonthara and P. Piumsomboon	

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

Chapter 6: Nanocomposite Materials and Nanotechnology

Metal Oxide Nanocomposites: Advantages and Shortcomings for Application in Conductometric Gas Sensors	223
G. Korotcenkov, S.H. Han and B.K. Cho	
Impedance Spectroscopic Inspection Toward Sensitivity Enhancement of Ag-Doped WO_3 Nanofiber-Based Carbon Monoxide Gas Sensor	230
P. Boonma, P. Jaroenapibal, M. Horprathum, S. Pornnimitra, B. Charoen and N. Triroj	
The Improvement in Mechanical and Thermal Properties of Biodegradable Poly(Butylene Succinate) (PBS) Nanocomposites with Low Loadings of Graphene Oxide (XGO)	235
A. Buasri, U. Kampichit, P. Salacharoen, P. Sangsawee and V. Loryuenyong	
Preparation of Zeolite Nanocrystals via Hydrothermal and Solvothermal Synthesis Using of Rice Husk Ash and Metakaolin	242
N. Setthaya, P. Chindaprasirt and K. Pimraksa	
Effects of TEOS Precursor and Reaction Time on the Synthesis of Silica Coated Single-Walled Carbon Nanotubes	248
W. Suprompituk, T. Radpakdee, N. Pholdee and P. Jaroenapibal	
Characterization of Bismuth Vanadate Nanopowder Prepared by Microwave Method	253
P. Pookmanee, P. Intaphong, J. Phanmalee, W. Kangwansupamonkon and S. Phanichphant	

Chapter 7: Materials in Biomedical Engineering and Construction

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