Contents

VOLUME 1

ELECTROCHEMISTRY AND CATALYSIS

Developing an Apatite for Fuel Cells
P.R. Slater, I.R. Tolochard, J.E.H. Sansom and M.S. Islam

3

Cyclic Properties of Hydrogen Absorbing Alloys
Hideaki Itoh, Hirokazu Arashima, Tomohiro Ueno, Takakazu Miyaki, Yoshiki Kabutomori and Kaito Chinni

9

Mineralization of Reactive Dye-Black B by Fenton, Electro-Fenton and Photo-Fenton
Yi-Fong Huang, Po-Shun Chang, Yeo-Hui Huang and Chih-Yung Chen

20

Photocatalytic H2 Evolution over a New Series of Photocatalysts In12NM2
Dae WANG, Zhigang Zou and Jinhua Ye

28

Photocatalytic H2 Evolution over a New Series of Photocatalysts In12NM2
Dae WANG, Zhigang Zou and Jinhua Ye

35

Synthesis of Titanium Dioxide-Bentonite Nanocomposite by Using Indonesian Natural Bentonite as Raw Material and Its Application for Degradation of Methyl Orange under Solar Light Irradiation
Yeatesh Aravyn, Indranu Kantini, Thio Kay Hoh, Luke Matthew, G.O. Lu and Hisao Yoshida

43

A Novel Calcium-Ferrite Based Catalyst for Propylene Oxidation
Daisuke Hirasayashi, Takeshi Yoshikawa, Kazuhito Machizuki, Yoshitomo Kojima and Kenji Suzuki

49

Influence of Micro-Structural Features on Conducting Properties in Nano-Structured MsGd12-xO2-x Composites (M: Sm, Gd, or Dy, x=0.1-0.25) Compounds for Fuel Cell Application
Toshikiyo Mori, Dingshong Ou, Fei Ye, Richard Buchanan, Yong Wang and John Drennan

56

Properties of TiO2: Functionally Graded Material Fabricated by Vacuum Filtration and Compression
Yoshikazu Uchida, Shuntarou Higa, Yoshiyuki Uchida and Nishiy Hayashi

63

Application of TiO2 Photocatalyst in Water Treatment
Jong-Ho Kim, Kyong-Ju Na, Gun-Soo, Dong-Lyun Cho, Byung-Chul Choi, Jong-Bom Kim, Sun-Jung Song, Song-Mi Lee, Hee-Ju Park and Geon-Joong Kim

71

Ammonia Decomposition Catalyst with Resistance to Coexisting Sulfur Compounds
Shigeyuki Uemya, Masayuki Uchida, Hiroshi Moritomi, Ryo Yashiro and Makoto Nishimura

79

PROCESSES FOR RECYCLING

A New Method of Recycling Textile Rayon Tube Glasses
Francois Misas, Pascal Yot, Martine Cambon and Michel Ribes

115

Glass-Ceramics Prepared from Sludge Generated by a Water Purification Plant
Aliko Nakamura, Tomohiro Taya, Yoshikazu Kameshima, Akira Nakajima and Kyoshi Odake

130

Effect of Irradiation Conditions on Aluminum Alloy Sorting by Using Nd: YAG Laser
Hiroshi Nishikawa, Kouhei Sato, Seiji Katsuyama and Takashi Takeshita

135

Removal of Lead from Aqueous Effluents by Adsorption on Coconut Shell Carbon
M. Chandra Sekhar

142

Recovery of Non-Renewable Resources from Waste
Franz-Georg Simon, Christian Adam, Burkart Adamczyk and Karin Weimann

148

Effects of Seeding on Synthesis of MCM-22 (MWW) by Dry-Gel Conversion (DGC) Method
Shymal Kumar Saha, Yoshihiro Kubota and Yoshihiro Sugii

156

Study on the Treatment of Heavy Metal Solution by Adsorption of an Industrial Waste Iron Oxide Material (Sl. adsorbent)
L.C. Su, C.P. Huang, Y.H. Huang and C.Y. Chen

163

Water Absorption as a Tool for Evaluating the Fiber-Matrix Interaction in Composites
Bibin Mathew Cherian, Sheryl A. Paul and Sabu Thomas

173

Preparation of Eu2+ and Dy3+ Co-Doped Strontium Aluminate (SrAl2O4)
Kazuhito Hasazaki, Gen-yo Kaneko, Hiroshi Araki, Chika Yoshida, Hiroyuki Kitaigawa and Yasuyuki Noda

184

Addition of Novel Compatibility for Poly(L-lactic acid) and Poly(caprolactone)
Blends and Its Effect
N. Tamura, K. Ban, S. Takahashi and T. Kasemura

189

Photocatalytic Decomposition of Gaseous Organic Compounds over Al2O3-Nb2O5 (A=N, K, Rb, and Cs)
Tetsuya Kako, Zhigang Zou and Jinhua Ye

86

Zinc-Aluminophosphate ZnAPO-5: Synthesis by Dry-Gel Conversion Methods and Catalytic Properties in the Isopropylation of Styrenyl
Shyamal Kumar Saha, Suresh B. Waghmode, Hiroyoshi Masakawa, Yoshihiro Kubota, Yoshihiro Sugii and Sung-June Cho

92

Evaluation of Nanoporous Aluminum Silicate Including Active Oxygen Species
K. Mochizuki, D. Hirabayashi, Y. Kojima and K. Suzuki

100

Comparison of Stability for Two Crystal Structures of Zn1Ni10 Metal and Hydrogen Solid Solution
Takuya Kishida and Hiroyuki T. Takeshita

105
Recycling Technologies for Glass-Fiber-Reinforced Polycarbonate Used in Notebook Computers
Takamitsu Nakamura, Koichi Kimura, Yuho Horikoshi and Koutsu Nishi

Removal of Lead from Copper Alloy Scrap by Compound-Separation Method
Atsushi Nakano, Nuno Tauliqu Rochman and Hideaki Sueyoshi

ENVIRONMENTAL IMPACT

SEM and TEM Characterization of Particulates Emitted during Coal and Tire Combustion
Reto Giordi, Huijun Li, Katherine Smith and Mark Blaftford

Separation of Toxic Chlorophenols from its Aqueous Solution by IPN Membrane Pervaporation
Swati Saha Das, Ajit K. Banthia and Basudan Adhikari

Addressing the Potential Environmental and Human Health Impact of Engineered Nanomaterials
Andrew D. Maynard and Eileen D. Kuempel

Eco-Friendly Functional Nanoparticles
K. Manzoor, V. Aditya, S.R. Varadan, N. Kumar and T.R.N. Kutty

Nanotechnology from the Viewpoint of Ecomaterials
Kohmi Hatada, Ritsuko Kuroda and Masahiro Takamura

Reliability of Solder Joint with Sn-Ag-Cu-Ni-Ga Lead-Free Alloy under Heat Exposure Conditions
Ikko Soshi, Satoshi Tsumoda, Hirohiko Watanabe, Tatsuhiko Asei and Megumi Negano

Drag Reduction of Thermal Transportation System Using Functional Fluids
Misaya Kumada

Environmental Perspective of Lead-Free Copper Alloys Products Manufacturing System Using Scrap
Atsushi Nakano, Nuno Tauliqu Rochman and Hideaki Sueyoshi

ECO-FUNCTION

Deformation Characteristics at Elevated Temperature in Recycled AZ91
Lee Jae-Seol, Yasumasa Chino and Mamoru Matsubuchi

Dynamic Properties of Starch-Based Biodegradable Foams
B. Wang, J. Song, Y. Wang and Y. Gao

Upgrade Recycling of AZ31 Mg Alloy Machined Chips by Solid State Recycling with High Extrusion Ratio
Yasumasa Chino, Lee Jae-Soel and Mamoru Matsubuchi

Kenaf Fiber-Reinforced Polyactic Acid Used for Electronic Products
Shin Sentiwa, Kazuhiko Inoue and Masatoshi Iji

Fabrication and Piezoelectric Properties of [Bi0.5(Na1/2−x−y−z−w−tLa0.5)(Ag2−n)0.5]0.5TiO3

Lead-Free Piezoelectric Ceramics
Dummin Lin, Dingquan Xiao, Jianguo Zhu and Peng Yu

Adsorption Properties of Woodceramics
Riko Ozasa, Toohiro Otakabe, Tadashi Ani, Yuko Nishimoto, Yan Cao, Nathan Whitney and Wei-Ping Pan

Influence of an Immersion Gold Plating Layer on Reliability of a Lead-Free Solder Joint
Ikku Shoji, Hiroki Goto, Kiyotomo Nakamura and Tohishiku Ootubo

Synthesis and Characterization of Periodic Copolymers from Succinate, 1,4-Butanediol, and 1,4-Diaminobutane
Hideki Abe, Hiroaki Tetsuka and Yoshiharu Doi
EOC-FUNCTION (Continued from Volume 1)

Flame Retardancy of Novel Clay Nanocomposites
Hitoshi Nishizawa, Masayuki Otsuka and Naoko Okubo
Surface Structure of Woodceramics Manufactured from Cedar
Yutaka Sawada, Sachiko Sasaki, Riko Ozao, Yoko Nishimura, Toshito Oka, Mieko Ide and Azusa Shida
High Speed Twin Roll Casting of Aluminum Alloy Thin Strips Containing Fe as Impurity
Toshio Haga, Masaaki Iwata, Hitoshi Watari and Shinji Kumai
Flame-Retarding Epoxy-Laminate-Type Printed Wiring Board with No Halogen and Phosphorus Compounds
Yukihira Kuchi, Masatoshi Ii, Hiroaki Nageshima and Takashi Miwa
Comparison of Immersion Gold Plating in Reliability of a Lead-Free Solder Joint with Autocatalytic Electroless Gold Plating
Kyotaro Nakamura, Ikuo Shoji, Hiroki Goto and Toshikazu Okubo
Japanese Ecomaterials in Recent Several Years through Web-Sites Survey
Katsutoshi Yamada, Kohmei Hatao and Kiyoshi Ijima
Novel Ecology-Friendly Flame Retardant Systems for Aromatic Vinyl Polymers
Masanao Kawabe, Takashi Matsuda, Makoto Himeno, Yasuji Shichiri, Masahiro Shimoda, Hisayuki Yano, Syuei Namekawa and Isamu Akiba
Standard Gibbs Energies of Formation of the Mg–Zn Binary Compounds
Determined by Solution Calorimetry and Measurement of Heat Capacity
From Near Absolute Zero Kelvin
Masao Morishita and Koichiro Kyama
Sustainable Circulation of Lignocellulosics Through the Phase-Separation System
M. Funakoshi, Y. Nagamatsu, K. Mikame, E. Chmaee and M. Aoyagi
Isothermal Fatigue Properties of Lead-Free Solder Alloy Evaluated by Miniature Size Specimen
Yoshiharu Kariya and Tatsumo Suga
Innovative Reuse of Agricultural Wastes as Industrial Raw Materials to Form Magnesium Composites
Katsutoshi Kondoh, Hideki Ogihara, Junko Umeda, Yoshinari Oki and Takateru Umeda
Geometrical Aspects of the Crystal Chemistry of Apatite: An Analysis of Calcium-Lead Fluoro-Vanadates
Effects of Boron and Phosphorus on Surface Hot Shortness in Steels Containing Copper and Tin
Chihiro Nagasaka and Koji Shibata

Properties of Cast Magnesium Alloy by Horizontal Strip Casting Process
Hassan Watari, Toshihisa Haga, Keith Davey and Nobuhiro Koga
Compressive Properties of Porous Aluminum Fabricated at Various Conditions by the Spacer Method
Masayuki Hakamada, Tatsuno Nomura, Tetsunori Kurokawa, Yasuo Yamada and Mamoru Matsushita
Luminescent Properties and Preparation of Fine-Grain Blue- Emitting Phosphor OsAlOx Eu-pattern for Color PDP
Noncomposites Based on Poly(butylen e adipate-co-terephthalate) and Montmorillonite
Mitsuru Shibata and Yoshihiro Soneya
Production of 3-Dimensional Powder Laminating Fabrication to Metallic Components
Kazumi Minagawa, Hideaki Katasawa, Susumu Takakiri, Yoshiaki Osawa, Katsumi Makawana and Kohmei Hatao
Isora Fibres: An Effective Reinforcement for Eco Friendly Composites Morphology, Surface Modification, Thermal and Mechanical Properties
Lovely Mathew, Joseph K.J. and Rani Joseph
High Thermoelectric Properties of PbTe with Sb2Te3 as Dopants
Pine Lan Zhu, Yashio Imai, Yukihito Isoda, Yoshihiko Shinohara, Xiaopeng Jia and Guanglian Zou
Temperature Dependence of Young’s Modulus and Internal Friction in Sn-82Sn-3Bi and Sn-82Sn Alloys of Lead-Free Solders
Mohd. Redzuan Jameladin and Teruki Uno
Energy Absorption and Cushioning Behaviour of Foam-Filled Aluminum Tubes
Yasuo Yamada, Takumi Banno, Zhenhai Xie and Cufu Mei
Woodceramic Heating Elements for Low-Temperature Heating
Junichiro Tsuru, Riko Ozao, Toshito Oka, Toshikazu Suda and Ryuichi Yamamoto
Mechanical Properties of Thermomechanical Treated Hybrid-Epoxy C/SiC Al-Si-X Materials
Osamu Umezawa, Yoshiaki Osawa and Susumu Takamori
Surface Modification of Aluminum Alloyed Cast Iron
Susumu Takakiri, Hideaki Kikukawa, Kazumi Minagawa, Yoshiaki Osawa and Kohmei Hatao
Manufacture of Low-Density Boards from Wood Elements Obtained by the Water Vapor Explosion Process
Yasushi Hinmatani, Atsushi Miyatake and Kenji Shindo
Nondestructive Evaluation of Strength Performance for Finger-Jointed Wood
Using Flexural Vibration Techniques
Hee-Seop Byeon, Seung-Won Oh and Han-Min Park
Application of Fine Metal Powder to Rapid Tooling Process for Obtaining Dense P/M Products
H. Kikisawa, K. Minae, S. Takamori, Y. Osawa and K. Hada 506

Improvement of Mechanical Properties of Recycled CFRP Reinforced by Thin CFR/P Sheets
Hiroshi Zushi, Dai Shiozawa, Isamu Ohzawa, Kiyoshi Uzawa and Jun Takahashi 512


Fabrication of a Porous Alumina-Spinel Body through a Direct Polyphosphate Casting Process
Minoru Hashiba, Atsumi Harada, Naoki Adachi, Seizo Obata, Osamu Sakurada and Koji Hiratsuka 529

Effect of Electrolytic Conditions on Thermoelectric Properties of Polyphosphate Yoshihiko Shinozaka, Kentaro Hiraishi, Hachiro Nakamichi, Yoshio Imai and Yoshihisa Tada 536

ENVIRONMENTAL DESIGN AND ASSESSMENT

Zachi Pistola, Jerry Ku and K. Y. Simon Ng 543

Simulation and Prototype Development of a Closed-Loop Manufacturing System for Realizing Inverse Manufacturing
Shirouke Konoha, Masayuki Some, Yoshitaka Nishikori and Yasushi Umetsu 549

Conceptual Design of Super Environment-Conscious Intelligent Composites
Incorporated with Life-Cycle Program of Self-Repair and Self-Collapse and Application for Environment-Conscious Interior Planning in Buildings
Tohio Fukushima 556

Comparison between Eco-Profiles of Innovative PA-CVD and Traditional Galvanic Coatings
B. Dalladefelt, S. Grassini and L. Malafa 563

Factor X on Home Appliances at a Household Level in Japan: Study on the Improvement of Resource Factor X Based on this Study
Tsako Aoe 566

Life-Cycle Assessment of LSI Packaging Material Made from Bio-Based Polymer
Yoko Hanikoshi, Takafumi Hashimoto, Kenichi Yuzaki and Yukio Ando 576

DRE Approach for Industrial Machinery—Identifying the Environmental Requirement on QFDE
Kojiro Masui, Kazuhiko Kaneko and Tomohiko Sakai 581

Waste Input-Output Material Flow Analysis of Metals
Shinichiro Nakamura and Kenichi Nakajima 586

Kohmi Hada, Takashi Nakamura, Toru Morikawa, Elji Hosoda and Ryotaka Yamamoto 591

Properties of Composite Boards Made of Sawdust and Rice Husk
Seung Won Oh and Hae Seop Byun 603

LCA Evaluation of Longevity and Recyclability of Materials in Eco-Design
Hong Nguyen, Tominori Honda and Ryochi Yamamoto 608

Quantitative Evaluation of Recyclability of Materials for Material Selection
Hong X. Nguyen, Tominori Honda and Ryochi Yamamoto 615

Mitsunori Shimada, Kiyoshi Ima, Yasushi Sawatani, Kenichi Nakajima, Tetsuya Nagasaka, Tetsuomi Tsukihashi, Yukih Moriguchi and Kohmi Hada 620

Structural Analysis and LCA of Lightened Buses by Carbon Fiber Reinforced Plastics
Tetsuya Suzuki, Mitsuharu Kan, Michitaka Yamanoto, Kiyoshi Uzawa, Jun Takahashi and Jun-ichi Kasa 634

Authors Index A-1