

Table of Contents

Preface and Organizing Committees

I. Infrastructural and Bio-Materials

Effect of Precursor Supply on (100) and (001) Orientations of α-Al₂O₃ Film Prepared by Laser CVD	
K. Hokuto, A. Ito, T. Kimura and T. Goto	3
Thin-Film Compositions on Base of Hafnium Dioxide and Aluminum Oxide: Synthesis and Characterization	
M.S. Lebedev	7
Preparation of SiNO_f/BN High Temperature Wave-Transparent Composites by Precursor Infiltration and Pyrolysis Method	
F. Cao, Z.Y. Fang, F. Chen, C.R. Zhang, Q. Shen, S.Q. Wang and B. Li	11
Preparation of SiAlON-cBN Composites Using Ni Nanoparticle Precipitated cBN Powders	
J.F. Zhang, R. Tu and T. Goto	17
Thermal Conductivity Design and Evaluation of Zirconium Phosphate Bonded Silicon Nitride Porous Ceramics	
J.Y. Wu, F. Chen, M.Z. Li, Q. Shen and L.M. Zhang	21
Preparation of Nano-Sized ZrO₂ Powders by Polyvinyl Alcohol-Gel Method	
X.L. Ji, G.M. Li, H. Wang and W.W. Wan	27
Effect of Heating Rate on the Synthesis and Sintering of Ternary Carbide Zr₂Al₃C₄ through Spark Plasma Sintering	
L.M. Zhang, Q.L. Guo, J.G. Li and Q. Shen	32
Densification and Microstructure of Monolithic TiN and TiB₂ Fabricated by Spark Plasma Sintering	
M. Kitiwan, A. Ito and T. Goto	38
Thermo-Mechanical Analysis of Si₃N₄-Based Seal Coatings on Si₃N₄ Substrate	
S. Liu, F. Chen, Y. Yang, Q. Shen and K.P. Zhang	42
Interface Reaction Behavior between Mn and SiO₂ Formed by RF Sputter Deposition	
B.T. Bae, H. Nakano and J. Koike	48
Phase Transformation and Densification of hBN-TiN Composites Fabrication by Spark Plasma Sintering	
M. Kitiwan, A. Ito and T. Goto	52
Formation of Mo₂S₃ Layers on the Surface of Graphitic Platelets	
V.O. Koroteev, A.V. Okotrub, Y.V. Shubin and L.G. Bulusheva	56
Foaming of CNTs/PMMA Nanocomposite with Supercritical Carbon Dioxide	
Y.L. Xiong, Q. Shen, H. Yuan, F. Chen and G.Q. Luo	61
Silicon Carbide Coating on Diamond Powder by Rotary Chemical Vapor Deposition	
H. Katsui, Z.H. He and T. Goto	65
Mechanical Properties of Silicon Nitride Porous Ceramics with Bimodal Porosity	
F. Chen, Q. Shen and L.M. Zhang	69
Carbon Nanomaterials for Drug Delivery	
M. Kakran and L. Li	76
Investigation of a Tb-Doped HfO₂ Single Crystal Grown by a Skull Melting Method	
S. Kurosawa, Y. Futami, V.V. Kochurikhin, M.A. Borik, Y. Yokota, T. Yanagida and A. Yoshikawa	81
Surface Modification of Micro/Nano-Fabricated Filters	
M. Ebrahimi Warkiani, H.Q. Gong and A. Fane	87
New Fe-B-P-Cu Nanocrystalline Soft Magnetic Alloys with High J_s Combined with Low Coercivity H_c	
Z.Q. Zhang, P. Sharma and A. Makino	99
Evaluation of Texture Developed in High-Temperature β-Phase during Friction Stir Welding of Ti-6Al-4V	
S. Mironov, Y.S. Sato and H. Kokawa	106

The Effect of Co Addition on Glassy Forming Ability and Soft Magnetic Properties of Fe-Si-B-P Bulk Metallic Glass	
X. Li, Y. Zhang, H. Kato, A. Makino and A. Inoue	112
Young's Modulus Changeable β-Type Binary Ti-Cr Alloys for Spinal Fixation Applications	
X.F. Zhao, M. Niinomi, M. Nakai and J. Hieda	117
Continuous Dynamic Recrystallization during Warm Deformation of Tempered Lath Martensite in a Medium Carbon Steel	
U.H. Lee, N. Kamikawa, G. Miyamoto and T. Furuhara	124
Effect of Phosphorus on Microstructure, Mechanical Properties, and Formation of Retained Austenite in TRIP Steels	
E.P. Kwon, S. Fujieda, K. Shinoda and S. Suzuki	128
Fabrication of Nanocrystalline $Fe_{84.3}Si_4B_8P_3Cu_{0.7}$ Powders with High Magnetization	
Y. Zhang, Y.R. Wen and A. Makino	133
Dynamic Strain Aging in Biomedical Co-Cr-Mo-Based Alloys with Nitrogen Doping	
K. Yamanaka, M. Mori, Y.P. Li, Y. Koizumi and A. Chiba	141
Local Atomic Arrangement of Amorphous $Zr_{50}Ni_{50}$ Alloy Analyzed by AXS-RMC Method	
T. Kawamata, Y. Yokoyama and K. Sugiyama	146
Microstructure and Mechanical Properties of a Biomedical β-Type Titanium Alloy Subjected to Severe Plastic Deformation after Aging Treatment	
H. Yilmazer, M. Niinomi, M. Nakai, J. Hieda, T. Akahori and Y. Todaka	152
Difference of Microstructure and Fatigue Properties between Forged and Rolled Ti-6Al-4V	
Y.S. Lee, M. Niinomi, M. Nakai, J. Hieda, T. Maeda, Y. Shirai and I. Inagaki	161
Microstructural Change of β' Phase and Hardness Change in As-Solutionized Dental Ag-20Pd-12Au-14.5Cu Alloy	
Y.H. Kim, M. Niinomi, J. Hieda, M. Nakai and H. Fukui	166
Effect of Microalloying Elements on Solidification Microstructure of the $La(Fe_{0.89}Si_{0.11})_{13}$ Alloy	
K. Niitsu and R. Kainuma	172
Study on Microstructure and Property of Diffusion-Bonded Mo-Cu Joints	
J. Zhang, G.Q. Luo, M.J. Li, Q. Shen and L.M. Zhang	178

II. Electronics Materials

Growth of b-Axis-Oriented $BaTi_2O_5$ Nanopillars by Laser Chemical Vapor Deposition	
D.Y. Guo, A. Ito, R. Tu and T. Goto	185
Deposition of $BaTi_2O_5$ Films on Si Substrates by Using MgO Buffers	
L. Li, C.B. Wang, Q. Shen and L.M. Zhang	189
Effect of Nitridation on Indium-Composition of InGaN Films	
J.H. Choi, P.S. Kumar, S.Y. Ji, S. Kanako, T. Hanada, R. Katayama and T. Matsuoka	193
Ba_2TiO_4 and $Ba_4Ti_{13}O_{30}$ Thick Films Prepared by Laser Chemical Vapor Deposition and their Microstructure	
D.Y. Guo, A. Ito, R. Tu and T. Goto	199
Search for New Superconductors by Soft-Chemical Techniques	
M. Kato, T. Takamatsu, H. Yagyu, T. Noji and Y. Koike	203
Preparation of c-Axis-Oriented $Y_2Ba_4Cu_7O_{15-\delta}$ Films by Laser CVD with Ultrasonically Nebulized Precursor	
A. Ito, M. Sato and T. Goto	207
Effect of Sb_2O_3 Doping Ratio on Electrical and Optical Properties of ATO Films by Pulsed Laser Deposition	
N. Li, F. Chen, Q. Shen, C.B. Wang and L.M. Zhang	211
Comprehensive Approach for the Construction of New Material for Electronic Multipliers	
E.S. Vikulova, K.V. Zherikova, L.N. Zelenina, T.P. Chusova, S.V. Sysoev, V. Shevtsov, A.P. Zubareva, N.B. Morozova and I.K. Igumenov	215
Growth of Heavily Indium Doped Si Crystals by Co-Doping of Neutral Impurity Carbon or Germanium	
K. Inoue, Y. Tokumoto, K. Kutsukake, Y. Ohno and I. Yonenaga	220

Nd³⁺ Doped LiCaAlF₆ Single Crystal for Scintillator Application	
T. Yanagida, Y. Futami, N. Kawaguchi, J. Pejchal, Y. Fujimoto, S. Kurosawa, Y. Yokota and A. Yoshikawa	224
Densification of ATO Nanoceramics by Spark Plasma Sintering	
X.P. Li, F. Chen, Q. Shen, A.X. Wang and L.M. Zhang	230
Optical and Scintillation Properties of Eu-Doped Calcium Orthoborate	
Y. Fujimoto, Y. Futami, T. Yanagida, S. Kurosawa, N. Kawaguchi, K. Fukuda, D. Totsuka and A. Yoshikawa	235
Crystal Growth and Scintillation Properties of Ce³⁺ and Mg²⁺ Co-Doped LiCaAlF₆ Single Crystal	
A. Yamaji, Y. Fujimoto, T. Yanagida, N. Kawaguchi, Y. Futami, Y. Yokota and A. Yoshikawa	240
Study on Phase Diagram of Ca₃NbGa₃Si₂O₁₄ Piezoelectric Material by Differential Thermal Analysis and X-Ray Diffraction Measurement	
Y. Futami, Y. Yokota, M. Sato, K. Tota, J. Pejchal, T. Yanagida, K. Onodera and A. Yoshikawa	247
Preparation of Bi_{3.6}Ho_{0.4}Ti₃O₁₂ Ceramics by Hot-Press Sintering	
C.B. Wang, L. Fu, Q. Shen and L.M. Zhang	253
Proton Dynamics in Water Nanotube of New Molecular Porous Crystal	
H. Matsui and M. Tadokoro	257
Ferromagnetic Resonance Study on FePt Thin Films with In-Plane Magnetization Using Coplanar Waveguide	
J.G. Kang, M. Mizuguchi and K. Takanashi	261
Spin Pumping in a Ferromagnetic/Nonmagnetic/Spin-Sink Trilayer Film: Spin Current Termination	
K. Harii, Z. Qiu, T. Iwashita, Y. Kajiwara, K. Uchida, K. Ando, T. An, Y. Fujikawa and E. Saitoh	266
Studies on Properties of Epoxy Resin Base Piezoelectricity Damping Carbon Fiber Composite Materials	
Y. Qin, S.W. Zhao, B.F. Dai, Q.L. Mei and Z.X. Huang	271

III. Energy and Environmental Materials

Preparation of Titania Solid Films by Laser CVD Using CO₂ Laser	
M. Gao, A. Ito, R. Tu and T. Goto	279
Physical Properties of the SiC_xN_yH_z Films	
V.R. Shayapov, M. Rumyantsev, N.I. Fainer and B.M. Ayupov	283
Microcolumnar and Granular Structures of TiO₂ Films Prepared by Laser CVD Using Nd:YAG Laser	
M. Gao, A. Ito, R. Tu and T. Goto	287
Ionic Conductivity and Crystal Structure of TM-Doped Mg_{0.5}Ti₂(PO₄)₃ (TM = Fe, Mn, Co and Nb)	
H. Takahashia and H. Takamura	291
Orientation and Morphology of LiCoO₂ Prepared by Chemical Vapor Deposition on Al₂O₃ Single Crystal	
H. Katsui, Y. Yuji and T. Goto	300
Environmental Structural Analysis of Raney Ru(Ni) Fine Particles	
R. Murao, K. Sugiyama, S. Kameoka and A.P. Tsai	304
1-xFe_x)₂H_y (x ≤ 0.3, 4.0 ≤ y ≤ 4.5) and Complex Hydride, Y(Mn1-xFe_x)₂H₆	
M. Kano, T. Ito, M. Matsuo, S. Takagi, S. Semboshi and S. Orimo	310
Charging and Discharging Phenomena in Organic Photoconductors Observed Using Electron Holography	
K. Takahashi, Y. Murakami and D. Shindo	315

IV. Basic Materials Science

Tantalum Vacancy Effects on Electrical Conductivity of La₃Ta_{0.5}Ga_{5.5}O₁₄ and Ba-Based P321 Crystals	
C.Y. Chung, R. Yaokawa, H. Mizuseki and Y. Kawazoe	325

Emission Characteristics of Copper Ionic Lines from the 3d⁹5s-3d⁹4p Transition in a Low-Pressure Laser-Induced Plasma		
L. Zhang, K. Shunsuke and K. Wagatsuma		331
Optical Conductivity of Rattling Phonons in Type-I Clathrates Ba₈Ga₁₆Ge₃₀ and Ba₈Ga₁₆Sn₃₀		
K. Iwamoto, T. Mori, S. Kushibiki, H. Honda, H. Matsumoto, K. Suekuni, M.A. Avila, T. Takabatake and N. Toyota		341
Suppression of Spin Pumping in the Presence of Thin Titanium Interlayer		
H. Nakayama, T. Tashiro, R. Takahashi, Y. Kajiwara, T. Ohtani, K. Ando, R. Iguchi, K. Uchida, T. Yoshino and E. Saitoh		347
Features of the Mackay Clusters with and without a Center Atom in Al Based Approximants of Icosahedral Quasicrystals		
S. Suzuki, R. Simura and K. Sugiyama		353
Dislocation Dynamics in Bending Deformation of Si		
I. Yonenaga and K. Nakajima		357
Computer Simulation Model for Multi-Size Spherical Particles Reinforced Composite Materials		
Z. Chen, Z.X. Huang, R.Y. Dou, J. Dai, M.X. Shi and J.Y. Ji		361