Ferroelectric, Piezoelectric Materials and Device Applications (FM)

Oral Presentation

Nov. 7, 2011 (Mon.)

FM 1 (Ferroelectric, Piezoelectric Materials and Device Applications 1)

Halla

Chair: Prof. Sahn Nahm (Korea University, Korea) 15:00-16:10

FMIS1 15:00-15:30 Invited Speech
Crystal Structure and Piezoelectric Properties of Four Component Langasite $A_3BGa_3Si_2O_{14}$
Hitoshi Ohsato[1,2,3], Tsuyoshi Iwataki[3]
[1]Hoseo University, Korea, [2]Nagoya Research Institute, Japan, [3]Nagoya Institute of Technology, Japan

FM1140 15:30-15:50
Magnetoelectric Effect in Lead Free $K_{0.5}Na_{0.5}NbO_3$-$CoFe_2O_4$ Multilayer Composites
Deepak Patil[1], Yi Sheng Chai[1], June-Hee Kim[2], Joong Hee Nam[2], Jeong-Ho Cho[2], Byung-Ik Kim[2], Kee Hoon Kim[1]
[1]Seoul National University, Korea, [2]Korea Institute of Ceramic Engineering and Technology, Korea

FM330 15:50-16:10
Synthesis of Antiferroelectric Lead Zirconate ($PbZrO_3$) Nanofibers via the Electrospinning Method
Chanisa Nawanil[1,2], Banjong Boonchom[1], Jutarat Prachayawarakorn[1], Naratip Vittayakorn[1,2]
[1]King Mongkut's Institute of Technology Ladkrabang, Thailand, [2]CHE, Thailand

Nov. 7, 2011 (Mon.)

FM 2 (Ferroelectric, Piezoelectric Materials and Device Applications 2)

Halla

Chair: Prof. Hitoshi Ohsato (Nagoya Institute of Technology, Japan) 16:30-18:00

FMIS2 16:30-17:00 Invited Speech
Realization of the High Energy Density Piezoelectric Ceramics for Energy Harvesting Devices
In-Tae Seo[1], Yu-Joung Cha[1], In-Young Kang[1], Jae-Hong Choi[1], Sahn Nahm[1], Tae-Hyun Seung[2]
[1]Korea University, Korea, [2]Hanyang University, Korea

FM859 17:00-17:20
Low Voltage Operation of Organic Ferroelectric FET Memory using Thinned P(VDF-TeFE)
Takeshi Kanashima, Tomohiro Watanabe, Masanori Okuyama
Osaka Univeristy, Japan

FM467 17:20-17:40
A Study on High-Output Piezoelectric Micropumps for Application in DMFC
Jung-Ho Park[1], Mi-Young Seo[1], Young-Bog Ham[1], So-Nam Yun[1], Dong-Il Kim[2]
[1]Korea Institute of Machinery & Materials, Korea, [2]MFtech Co., Ltd., Korea

FM1249 17:40-18:00 **Flexible Energy Harvesters based on Laser Transferred Piezoelectric Micro-ribbons**
Hyun-Cheol Song, Young Ho Do, Chong-Yun Kang, Seok-Jin Yoon
Korea Institute of Science & Technology, Korea

Nov. 8, 2011 (Tue.)

FM 3 (Ferroelectric, Piezoelectric Materials and Device Applications 3)

Halla

Chair: Dr. Jungho Ryu (Korea Institute of Material Science, Korea) 09:10-10:20

FMIS3 09:10-09:40 Invited Speech **Piezoelectric Enhancement of Relaxor-based Lead-free Piezoelectric Ceramics by Nanodomain Engineering**
Satoshi Wada, Ryuta Mitsui, Ichiro Fujii, Kouichi Nakashima, Nobuhiro Kumada
University of Yamanashi, Japan

FM485 09:40-10:00 **Effects of $BiFeO_3$ on the Ferroelectric Phase Transition Temperatures of $Pb(Zr,Ti)O_3$ System**
T. K. Song[1], J. S. Park[1], M. H. Lee[1], D. J. Kim[1], M.-H. Kim[1], J.-H. Jeon[2]
[1]Changwon National University, Korea, [2]Korea Institute of Materials Science, Korea

FM141 10:00-10:20 **Improved Electrical Properties and Sintering Ability of $(K,Na)NbO_3$-based Piezoceramics with the Addition of $BiFeO_3$**
Jia-Jun Zhou, Jing-Feng Li, Xiao-Wen Zhang
Tsinghua University, China

Nov. 8, 2011 (Tue.)

FM 4 (Ferroelectric, Piezoelectric Materials and Device Applications 4)

Halla

Chair: Prof. Satoshi Wada (University of Yamanashi, Japan) 10:40-11:40

FM556 10:40-11:00 **Relaxor Behavior in Nb- or Ta-doped Bi-based Perovskite Ceramics**
Hyoung-Su Han, Kyung-Jong Kim, Ill-Won Kim, Chang-Won Ahn, Jae-Shin Lee
University of Ulsan, Korea

FM1286 11:00-11:20 **R-Curve Behavior of $Pb(Mg_{1/3}Nb_{2/3})O_3$-0.29 mol % $PbTiO_3$ Single Crystal**
Kyle G. Webber[1], Yo-Han Seo[1], Ho-Yong Lee[2], Emil Aulbach[1], Wook Jo[1], Jürgen Rödel[1]
[1]Technische Universität Darmstadt, Germany, [2]Sun Moon University, Korea

FM1562 11:20-11:40 **High Performance Piezoelectric Thick Films by Residual Stress Controlling**
Jungho Ryu[1], Guifang Han[1], Woon-Ha Yoon[1], Jong-Jin Choi[1], Byung-Dong Hahn[1], Jong-Woo Kim[1], Joon Hwan Choi[1], Cheol-Woo Ahn[1], Dong-Soo Park[1], Dae-Yong Jeong[2]
[1]Korea Institute of Materials Science (KIMS), Korea, [2]Inha University, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

Nov. 8, 2011 (Tue.)

FM 5 (Ferroelectric, Piezoelectric Materials and Device Applications 5)

Halla

Chair: Prof. Keehong Um (Hansei University, Korea) 15:30-16:40

FMIS4 15:30-16:00 Invited Speech
Phase Diagram of $(Bi_{1/2}Na_{1/2})TiO_3$-$xBaTiO_3$
Wook Jo, Jürgen Rödel
Technische Universität Darmstadt, Germany

FM871 16:00-16:20
Preisach P-E Hysteresis Model with Iteration Method
Hideyuki Ikeda, Yoichi Kadota, Takeshi Morita
The University of Tokyo, Japan

FM293 16:20-16:40
Thermally Stable Electrostrictive Coefficient in $BaZrO_3$-Modified $Bi_{1/2}(Na_{0.82}K_{0.18})_{1/2}TiO_3$ Ceramics
Vu Diem Ngoc Tran[1], Hyung-Su Han[1], Han-bok Lee[1], Thi Hinh Dinh[1], Woo Jo[2], Jae-Shin Lee[1]
[1]University of Ulsan, Korea, [2]Technische Universität Darmstadt, Germany

Nov. 8, 2011 (Tue.)

FM 6 (Ferroelectric, Piezoelectric Materials and Device Applications 6)

Halla

Chair: Dr. Wook Jo (Technische Universität Darmstadt, Germany) 17:00-18:30

FMIS5 17:00-17:30 Invited Speech
Phase Transition in Mixed $Bi_{0.5}Na_{0.5}TiO_3$ and $Bi_{0.5}(Na_{0.75}K_{0.25})_{0.5}TiO_3$-$BiAlO_3$
Soon Jong Jeong[1], Dae-Su Lee[1,2], Dong-Hwan Lim[1], Min-Soo Kim[1]
[1]Korea Electrotechnology Research Institute, Korea, [2]Busan National University, Korea

FM136 17:30-17:50
Applications of Piezoelectric Materials for Developing Audio Devices
Keehong Um[1], Dong-Soo Lee[2]
[1]Hansei University, Korea, [2]FILS CO., Ltd., Korea

FM34 17:50-18:10
Influences of Co dopant on the Phases, Microstructures and Dielectric Properties of PZT Ceramics
B. Cherdhirunkorn[1], B. Pidthong[1], P. Jeamwutthisak[1], D.A. Hall[2], M. Shuaib[2], T. Tunkasiri[3]
[1]Thammasat University, Thailand, [2]University of Manchester, UK, [3]Chiang Mai University, Thailand

FM320 18:10-18:30
Thin Ceramic Ionizer using Planar Dielectric Barrier Discharge
Sang-Moon Shin[1], Dae-Uk Kim[1], Se-Yeol Kim[1], Weon-Pil Tai[2], Jin-Kyu Kang[3], Jae-Shin Lee[3]
[1]Encomm Co. Ltd., Korea, [2]Ulsan Techno-Park, Korea, [3]University of Ulsan, Korea

Nov. 9, 2011 (Wed.)

FM 7 (Ferroelectric, Piezoelectric Materials and Device Applications 7)

Halla

Chair: Dr. Anuson Niyompan (Ubon Ratchathani University, Thailand) 09:10-10:20

FMIS6 09:10-09:40 Invited Speech
Large Strain Response in textured $Bi_{0.5}(Na,K)_{0.5}TiO_3$-based Lead-free Piezoceramics by Reactive Templated Grain Growth
Ill Won Kim[1], Chang Won Ahn[1], Gang Ho Choi[1], Aman Ullah[1], Sung Sik Won[1], Dae Soo Lee[2], Soon Jong Jeong[2], Jae Shin Lee[1]
[1]University of Ulsan, Korea, [2]KERI, Korea

FM368 09:40-10:00
Microwave Sintering of Bi-based Lead-free Ceramic Multilayer Actuators
Van-Quyet Nguyen, Hyoung-Su Han, Han-Bok Lee, Jong Il Yoon, Kyoung Kwan Ahn, Jae-Shin Lee
University of Ulsan, Korea

FM1600 10:00-10:20
Lead-free Piezoelectric Multi-layer Ceramics and Speaker
In-Tae Seo, In-Young Kang, Yu-Joung Cha, Chang-Hoi Choi, Sahn Nahm
Korea University, Korea

Nov. 9, 2011 (Wed.)

FM 8 (Ferroelectric, Piezoelectric Materials and Device Applications 8)

Halla

Chair: Prof. Ill Won Kim (University of Ulsan, Korea) 10:40-12:00

FM1160 10:40-11:00
Formation and Dielectric Properties of Ferroelectric Glass-ceramics Containing Sodium Niobate and Sodium Barium Niobate Crystals
A. Niyompan, K. Srisurat, R. Tipakontitikul
Ubon Ratchathani University, Thailand

FM1124 11:00-11:20
Processing, Structure, and Electrical Properties of MnO_2-doped PYN-PZT Ceramics
Yixuan Zhang[1], Haiyan Chen[2], Dali Mao[1]
[1]Shanghai Jiaotong University, China, [2]Shanghai Maritime University, China

FM1563 11:20-11:40
Room Temperature Multiferroic $BiFeO_3$-$Ba(Cu_{1/3}Nb_{2/3})O_3$ Films
Jungho Ryu[1], Chang-Woo Baek[2], Nam-Keun Oh[1], Woon-Ha Yoon[1], Jong-Jin Choi[1], Byung-Dong Hahn[1], Jong-Woo Kim[1], Joon Hwan Choi[1], Cheol-Woo Ahn[1], Dong-Soo Park[1], Dae-Yong Jeong[3]
[1]Korea Institute of Materials Science (KIMS), Korea, [2]Myongji University, Korea, [3]Inha University, Korea

FM329 11:40-12:00
Crystallized $BaTiO_3$ Thin Film on Flexible Substrate by Excimer Laser Annealing
Min-Gyu Kang[1,2], Young-Ho Do[1], Seung-Min Oh[1,2], Chong-Yun Kang[1], Sahn Nahm[2], Seok-Jin Yoon[1]
[1]Korea Institute of Science and Technology, Korea, [2]Korea University, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

Nov. 10, 2011 (Thu.)

FM 9 (Ferroelectric, Piezoelectric Materials and Device Applications 9)

Halla

Chair: Dr. Cheng-Che Tsai (Tung Fang Design University, Taiwan) 09:10-10:20

FMIS7 09:10-09:40 Invited Speech
KNN-based Lead-free Piezoelectric Ceramics: Sintering, Property Enhancement and Applications
Jing Feng Li, Ke Wang, Zong-Yang Shen
Tsinghua University, China

FM345 09:40-10:00
Preparation of KNN-based Piezoelectric Multilayer Actuators using Microwave Sintering
Han-Bok Lee[1], Hyoung-Su Han[1], Soon-Jong Jeong[2], Jae-Shin Lee[1], Mohammad Reza Bafandeh[3], Mohammad Hasan Abbasi[3], Ali Saidi[3]
[1]University of Ulsan, Korea, [2]Korea Electrotechnology Research Institute, Korea, [3]Isfahan University of Technology, Iran

FM1443 10:00-10:20
The Growth Mechanism and Morphology of (K,Na)NbO_3 Particles during Hydrothermal Reaction
Jae-Ho Jeon, Byeong-Jae Shin, Jong-Bong Lim, Si-Young Choi
Korea Institute of Materials Science, Korea

Nov. 10, 2011 (Thu.)

FM 10 (Ferroelectric, Piezoelectric Materials and Device Applications 10)

Halla

Chair: Prof. Jing Feng Li (Tsinghua University, China) 10:40-12:00

FM1069 10:40-11:00
Piezoelectric Properties of Lithium Modified Potassium Sodium Niobate Ceramics Synthesized by Hydrothermal Method
Takafumi Maeda[1], Yuriko Yokouchi[1], Peter Bornmann[2], Tobias Hemsel[2], Takeshi Morita[1]
[1]The University of Tokyo, Japan, [2]University of Paderborn, Germany

FM791 11:00-11:20
Effect of Fe Substitution on Microstructure and Piezoelectric Properties of $(Na_{0.52}K_{0.4425}Li_{0.0375})(Nb_{0.8825}Sb_{0.08}Ta_{0.0375})O_3$ Ceramics
KabSoo Lee, JuHyun Yoo
Semyung University, Korea

FM352 11:20-11:40
Comparison between Microwave and Conventional Sintering of Modified Potassium Sodium Niobate Piezoelectric Ceramics
Mohammad Reza Bafandeh[1], Han-Bok Lee[2], Chang-Ho Yoon[2], Soon-Jong Jeong[3], Jae-Shin Lee[2], Mohammad Hasan Abbasi[1], Ali Saidi[1]
[1]Isfahan University of Technology, Iran, [2]University of Ulsan, Korea, [3]Korea Electrotechnology Research Institute, Korea

FM1439 11:40-12:00 **Atomic Structural Characterization on Sodium Bismuth Titanate via Cs-corrected STEM**
Si-Young Choi, Jae-Ho Jeon
Korea Institute of Materials Science, Korea

Nov. 10, 2011 (Thu.)

FM 11 (Ferroelectric, Piezoelectric Materials and Device Applications 11)

Halla

Chair: Dr. Jae-Ho Jeon (Korea Institute of Material Science, Korea) 15:00-16:30

FMIS8 15:00-15:30 Invited Speech **Comparison of Piezoelectric Properties between $BaTiO_3$ -and $BaZrO_3$-Modified Bi-Perovskite Ceramics**
Vu Diem Ngoc Tran, Hyuong-Su Han, Thi Hinh Dinh, Jae-Shin Lee, Chang-Won Ahn, Ill-Won Kim, Aman Ullah
University of Ulsan, Korea

FM335 15:30-15:50 **The Surface Reaction of $Na_{0.5}K_{0.5}NbO_3$ Thin Films in Inductively Coupled Plasma**
Young-Hee Joo, Jong-Chang Woo, Chang-Il Kim
Chung-Ang University, Korea

FM951 15:50-16:10 **NKN-based Piezoelectric Thin Films on STO Substrate by PLD Process**
Seung Min Oh[1,2], Min-Gyu Kang[1], Young Ho Do[1], Chong Yun Kang[1], Sahn Nahm[2], Seok Jin Yoon[1]
[1]Korea Institute of Science and Technology, Korea, [2]Korea University, Korea

FM1126 16:10-16:30 **Dielectric Properties of Layered $ZnTa_2O_6$ / PTFE Composites**
Chang-Jun Jeon, Eung-Soo Kim
Kyonggi University, Korea

Poster Presentation

Nov. 7, 2011 (Mon.)

FMP 1 (Ferroelectric, Piezoelectric Materials and Device Applications) Poster Presentation 1

Lobby 8F

Chair: Dr. Hyun-Cheol Song (Korea Institute of Science and Technology, Korea) 13:30-15:00

FM1692 **Piezoelectric and dielectric properties of $(Bi_{1/2}Na_{1/2})TiO_3$-$(Bi_{1/2}K_{1/2})TiO_3$ modified with $Ba(Cu_{1/3}Nb_{2/3})O_3$**
Chang-Woo Baek[1], Jae-Deuk Kim[1], Seong-Wha Lee[1], Jung-ho Ryu[2], Woon-Ha Yoon[2], Dong-Soo Park[2], Dae-Yong Jeong[3]
[1]Myongji University, Korea, [2]Korea Institute of Materials Science (KIMS), Korea, [3]Inha University, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM1663 **Dielectric and Piezoelectric Properties of $Li_{0.02}(Na_{0.55}K_{0.45})_{0.98}[(Nb_{0.77}Ta_{0.18}Sb_{0.05})O_3$ as a Function of Calcination Temperature**
Youngkwang Oh, Juhyun Yoo
Semyung University, Korea

FM1593 **A Study on Piezovoltaic Phenomena of PVDF and PZT**
Tae-Yong Lee, Won-Young Hur, Joon-Tae Song
Sungkyunkwan University, Korea

FM1505 **Study on Reliability Evaluation and Failure Mechanism of Eco-friendly Piezoelectric Dynamic Speaker in $BaTiO_3$ System**
In-Jung Cho, Hyoung-Seuk Choi, Sun-Hwa Han, Won-Seon Seo
Korea Institute of Ceramic Engineering & Technology(KICET), Korea

FM1498 **Effect of Heating Rate on Sintering to Controlled Ni Electrode Interface in Ultrathin $BaTiO_3$ based Mulilayer Ceramic Capacitor**
Jung-Rag Yoon, Dong-Sun Shin
SAMWHA CAPACITOR Co. LTd, Korea

FM1444 **Synthesis of $K_{0.5}Na_{0.5}NbO_3$ Powders by Mechanical Activation Assisted Process**
Jae-Ho Jeon, Wook-Gyeong Jang, Byeong-Jae Shin, Si-Young Choi
Korea Institute of Materials Science, Korea

FM1421 **Study on the Design Method of Traveling Wave Ultrasonic Motor for Performance Optimization**
Jin-Heon Oh, Kee-Joe Lim
Chungbuk National University, Korea

FM1365 **Single Frequency Continuous Wave Terahertz Imaging of DNA Marker and Protein Marker on Membrane**
Hongbing Zhang, Kazutaka Mitobe, Masafumi Suzuki, Yoko Mitobe, Tomonori Habuchi, Noboru Yoshimura
Akita University, Japan

FM1364 **Dielectric Properties of $ZnNb_2O_6$/Epoxy Composites**
Sung-Kun Yoon[1], Hyeung-Gyu Lee[2], Woo-Sung Lee[2], Eung Soo Kim[1]
[1]Kyonggi University, Korea, [2]Korea Electronics Technology Institute, Korea

FM1355 **Piezoelectric Properties of $0.98(Na_{0.5}K_{0.5})NbO_3$-$0.02Ba(Zr_{0.52}Ti_{0.48})O_3$ Ceramics with ZnO Content**
Seung-Hwan Lee[1], Sung-Gap Lee[2], Young-Hie Lee[1]
[1]Kwangwoon University, Korea, [2]Gyeongsang National University, Korea

FM1353 **Electrical and Structural Properties of $0.98(Na_{0.5}K_{0.5})NbO_3$-$0.02Ba(Zr_{0.52}Ti_{0.48})O_3$ Ceramics with CuO Content**
Seung-Hwan Lee[1], Sung-Gap Lee[2], Young-Hie Lee[1]
[1]Kwangwoon University, Korea, [2]Gyeongsang National University, Korea

FM1349 **Investigation on the Design of Ultrasonic Linear Motor for Optimizing the Motor Performance**
Han-Joo Lee[1], Jin-Heon Oh[1], Yoo-Min Kim[1], Kee-Joe Lim[1], Hyun-Hoo Kim[2]
[1]Chungbuk National University, Korea, [2]Doowon Technical University, Korea

FM1348 **Preparation and Characteristic of PSN-PMN-PT Ceramics and Single Crystals**
Zengzhe Xi, Tingting Zhang, Wei Long, Xiaojuan Li, Pinyang Fang
Xi'an Technological University, China

FM1347 **Morphology and Control of $BaTiO_3$ in $BaCl_2$-$BaTiO_3$ System**
Zengzhe Xi, Tong Li, Wei Long, Xiaojuan Li, Pinyang Fang
Xi'an Technological University, China

FM1346 **Characteristics of PVDF-TrFE (75/25) Thin Films with a Polyvinyl Alcohol (PVA) Buffer Layer for FeRAM**
Kyung-Eun Park, Guizhe An, Bo Jin, Byung-Eun Park
University of Seoul, Korea

FM1344 **Fabrication of MFIS Structure using CEP Film as a Buffer Layer**
Bo Jin, Guizhe An, Kyung-Eun Park, Byung-Eun Park
University of Seoul, Korea

FM1337 **Piezoelectric Properties of $(Na_{0.5}K_{0.5})NbO_3$-$BiTiO_3$ Ceramics with Variation of Sintering Temperature**
Sung-Gap Lee, Tae-Ho Lee, Dae-Young Kim, Seo-Hyeon Jo
Gyeongsang National University, Korea

FM1336 **Structural Properties of Semiconducting $YB_2Cu_3O_{7-x}$ Thin Films Fabricated by Sol-gel Method**
Sung-Gap Lee[1], Gwang-Ho Jung[1], Seo-Hyeon Jo[1], Young-Hie Lee[2], Young-Gon Kim[3]
[1]Gyeongsang National University, Korea, [2]Kwangwoon University, Korea, [3]Chosun University College of Science & Technology, Korea

FM1332 **Electrical Properties of Semiconducting Y-Ba-Cu-O Thin Films for Infrared Detectors**
Sung-Gap Lee[1], Gwang-Ho Jung[1], Dae-Young Kim[1], Young-Hie Lee[2]
[1]Gyeongsang National University, Korea, [2]Kwangwoon University, Korea

FM1296 **Effects of Mn Addition on Properties of $0.75BiFeO_3$-$0.25BaTiO_3$ Ceramics**
Sujittra Chandarak[1], Shashank Priya[2], Sutham Srilomsak[1], Saroj Rujirawat[3], Rattikorn Yimnirun[3]
[1]Suranaree University of Technology, Thailand, [2]Virginia Polytechnic Institute and State University, USA, [3]Synchrotron Light Research Institute, Thailand

FM1236 **Effect of Radio-activation on Dielectric Properties of $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$**
Ki-Bok Kim, Nam-Kyoung Choi, Yong-Il Kim, Gil-Woong Choi, Young-Gyun Kim, Seung-Seok Lee
Korea Research Institute of Standards and Science, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM1209 **Enhanced Electrical Properties of $LiTaO_3$-Modified (K, Na)NbO_3 Lead-free Ceramics Fabricated by Microwave Sintering**
Haiyan Chen[1], Yixuan Zhang[2], Jilan Yang[1]
[1]Shanghai Maritime University, China, [2]Shanghai Jiaotong University, China

FM1148 **Microwave Dielectric Properties of Ceramic / Semi-crystalline Polymer Composites**
Dong-Hyeok Im, Han-Sae Ju, Eung-Soo Kim
Kyonggi University, Korea

FM1144 **Ferroelectric Property and Microstructure Evolution of Polycrystalline $BiFeO_3$ Films Prepared by Pulsed Laser Deposition Under Magnetic Field**
Jung Min Park[1], Seiji Nakashima[2], Masayuki Sohgawa[1], Takeshi Kanashima[1], Masanori Okuyama[1]
[1]Osaka University, Japan, [2]University of Hyogo, Japan

FM1138 **Synthesis and Crystal Structure of KNN Nanopowders**
Yixuan Zhang[1], Haiyan Chen[2], Dali Mao[1]
[1]Shanghai Jiaotong University, China, [2]Shanghai Maritime University, China

FM1129 **Strain Characteristics and Electrical Properties of $[Li_{0.055}(K_{0.5}Na_{0.5})_{0.945}](Nb_{1-x}Ta_x)O_3$ Ceramics**
Jong-Kyu Lee[1], Jeong-Ho Cho[2], Byung-Ik. Kim[2], Eung-Soo Kim[1]
[1]Kyonggi University, Korea, [2]Korea Institute of Ceramic Engineering and Technology, Korea

FM1108 **Design of Driving Circuit of Piezoelectric Actuator for the Generation of Tactile Sensation on Touch Screen**
JiChul Park, KabSoo Lee, LarkHoon Hwang, Juhyun Yoo
Semyung University, Korea

FM1087 **Phase Formation and Dielectric Properties of Ferroelectric Glass-Ceramics in Na_2O-BaO-Nb_2O_5-SiO_2 System**
O. Kalawa, K. Srisurat, R. Tipakontitikul, A. Niyompan
Ubon Ratchathani University, Thailand

FM1083 **Crystallization and Dielectric Properties of Ferroelectric Glass-Ceramics in K_2O-Nb_2O_5-Al_2O_3-SiO_2 System**
T. Sichumsaeng, U. Bunprajum, R. Tipakontitikul, A. Niyompan
Ubon Ratchathani University, Thailand

FM1076 **Dynamic Analysis of Butterfly-shaped Ultra Slim Piezoelectric Actuator for Thin Electronic Devices**
Who-Hee Lee[1,2], Young-Ho Do[1], Byeong-Kwon Ju[2], Chong-Yun Kang[1], Seok-Jin Yoon[1]
[1]Korea Institute of Science and Technology, Korea, [2]Korea University, Korea

FM1055 **Generating Characteristics of a Cross-Shape Piezoelectric Generator Depending on Elastic Body Material and Leg Length**
Jung-Hoon Lim[1], Choong-Hyo Park[1], Jong-Wook Kim[1], Seong-Su Jeong[2], Myong-Ho Kim[1], Tae-Gone Park[1]
[1]Changwon National University, Korea, [2]Gyeongnam Provincial Namhae College, Korea

FM1025 **Photocurrent Behavior in $(K_{0.5}Na_{0.5})(Nb_{0.995}Mn_{0.005})O_3$ Lead-free Ferroelectric Thin Films with Different Top Electrodes**
Jungmin Park[1], Chang Won Ahn[1], Hae Jin Seog[1], Song A Chae[1], Bong Chan Park[1], Won Seok Woo[1], Ill Won Kim[1], Byung Moon Jin[2]
[1]University of Ulsan, Korea, [2]Dong-eui University, Korea

FM930 **Preparation and Application of Silicone Elastomer to Dielectric Elastomer Actuators**
Kyoungho Min, Minho Kim, Soon Man Hong, Chong Min Koo
Korea Institute of Science and Technology, Korea

FM928 **Fabrication and Properties of Lead-zirconium-titanate-terfenol-d Produced using a Bi-layer Ion Beam Sputter Deposition Technique**
Dong Jin Yoon, Jai-Yeoul Lee, Hee Young Lee
Yeungnam University, Korea

FM923 **The Piezoelectric Properties of Lead-free $(Na_{0.5}K_{0.5})NbO_3$ Ceramics with Various $K_4CuTa_8O_{23}$ Doping and Sintering Temperatures**
Jung-Rag Yoon, Chang-Bae Lee, Kyung-Min Lee
Samwha Capacitor Co., Ltd., Korea

FM920 **Improved Piezoelectric Properties of Ag Doped $0.94(K_{0.5}Na_{0.5})NbO_3$-$0.06LiNbO_3$ Ceramics by Template Grain Growth Method**
Moon-Soon Chae, Kyung-Su Lee, Jung-Hyuk Koh
Kwangwoon University, Korea

FM917 **Comparative Analysis of $Ag(Ta,Nb)O_3$ Ceramics and Thick Film on Alumina Substrates**
Ku-Tak Lee, Jung-hyuk Koh
Kwangwoon University, Korea

FM915 **Investigations on Morphology and Domain Configurations in 0-3 Lead Magnesium Niobate Titanate -Portland Cement Composites by SEM and PFM**
Nittaya Jaitanong[1], Arnon Chaipanich[2]
[1]Maejo University, Thailand, [2]Chiang Mai University, Thailand

FM900 **On-off Pneumatic Valve Having a Self-closed Function by an Air Pressure Affects the Piezoelectric Actuator**
So-Nam Yun[1], Young-Bog Ham[1], Jung-Ho Park[1], Hwang-Hun Jeong[1], Eun-Joo Lee[2]
[1]Korea Institute of Machinery & Materials, Korea, [2]Woosong University, Korea

FM840 **Effects of Zn Substitution on Dielectric and Piezoelectric Properties of $(Na_{0.54}K_{0.46})_{0.96}Li_{0.04}(Nb_{0.90}Ta_{0.10})O_3$ Ceramics**
Sunmin Byeon[1], Juhyun Yoo[1], Hyunsang Yoon[2]
[1]Semyung University, Korea, [2]Kookje College, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM812 **Piezoelectric Driven Dispensing Head for Encapsulation of LED Chip**
Young-Bog Ham, Soo-Kwan Jang, Sung-Jin Oh, Eun-Chae Jeon, Jung-Ho Park, So-Nam Yun, Sang-Gyu Choi
Korea Institute of Machinery & Materials, Korea

FM778 **Dielectric and Piezoelectric Properties of Na Excess Doped ($Li_x(Na_{0.56}K_{0.46})_{1-x}(Nb_{0.81}Ta_{0.15}Sb_{0.04})O_3$ Ceramics**
Jung-rae Noh, Juhyun Yoo
Semyung University, Korea

FM773 **Piezoelectric and Dielectric Properties of $(Na_{0.54}K_{0.46})_{0.96}Li_{0.04}(Nb_{0.96}Sb_{0.04})O_3$ Ceramics Substituted with Co**
Minho Park[1], Juhyun Yoo[1], Yongwook Park[2]
[1]Semyung University, Korea, [2]Namseoul University, Korea

FM717 **Effect of a Sintering Condition on Piezoelectric Properties in $BiFeO_3$-$BaTiO_3$ Ceramics**
Y. J. Lee[1], S. H. Han[2], H. -W. Kang[2], W. S. Lee[2], H. -G. Lee[2], J. S. Kim[1], C. I. Cheon[1]
[1]Hoseo University, Korea, [2]Korea Electronics Technology Institute, Korea

FM201 **Effect of Sintering Temperature on Structure and Electrical Properties of $[(Na_{0.535}K_{0.48})_{0.95}Li_{0.05}](Nb_{0.94}Sb_{0.06})O_3$ Lead-free Piezoelectric Ceramic**
Xiao-Kun Zhao, Bo-Ping Zhang, Qian Zhang, Wei-Gang Yang, Nan Ma
University of Science and Technology Beijing, China

FM472 **A Piezoelectric-Driven Tilt Mirror for Laser Scanner**
Jung-Ho Park, Hu-Seung Lee, So-Nam Yun, Young-Bog Ham, Dong-Won Yun
Korea Institute of Machinery & Materials, Korea

FM725 **Development of Piezoelectric Actuated Pump for Fuel Delivery in Portable Fuel Cell Devices**
Young-Bog Ham[1], Sung-Jin Oh[1], Mi-Young Seo[1], Jung-Ho Park[1], So-Nam Yun[1], Dong-Jin Oh[2]
[1]Korea Institute of Machinery & Materials, Korea, [2]MFtech Co., Ltd., Korea

FM845 **Fabrication and Sensitivity Characteristics of Acoustic Emission(AE) Sensor using Thickness Shear mode**
Yeongho Jeong[1], Sunmin Byeon[2], Juhyun Yoo[2], Jaeil Hong[3]
[1]Chungju National University, Korea, [2]Semyung University, Korea, [3]Dongseoul College, Korea

Nov. 8, 2011 (Tue.)

FMP 2 (Ferroelectric, Piezoelectric Materials and Device Applications) Poster Presentation 2

Lobby 8F

Chair: Prof. Keehong Um (Hansei University, Korea) 14:00-15:30

FM706 **Piezoelectric Properties of $KNbO_3$-$BiFeO_3$ Ceramics**
J. H. Choi, J. S. Kim, C. I. Cheon
Hoseo University, Korea

FM694 **Ferroelectric Hysteresis Behavior of 0-3 Sodium Potassium Niobate-Portland Cement Composites**
A. Chaipanich[1], R. Potong[1], R. Rianyoi[1], P. Jarupoom[1], K. Pengpat[1], R. Yimnirun[2]
[1]Chiang Mai University, Thailand, [2]Suranaree University of Technology and Synchrotron Light Research Institute, Thailand

FM615 **Two Dimensiomal Ferroelectric Polymer at an Air/Water Interface**
Chi Sup Jung, Hyun Kyu Park, Bo Ram Kim, Pyungwoo Jang, SeomoonKyu, Kwang Ho Kim
Cheongju University, Korea

FM578 **A Coupled Piezoelectric-electromagnetic Energy Harvester for High Power Generation using Micromachining Technology**
Doo-Yeol Cha, Sung-Pil Chang
Inha University, Korea

FM577 **Different Annealing Treatment on Ferroelectric and Electrical Characteristics of $CaBi_4Ti_4O_{15}$ Thin Films**
Chia-Lin Wu[1], Jian-Yang Lin[2], Kai-Huang Chen[3], Chien-Min Cheng[3]
[1]National Yunlin University, Taiwan, [2]Tung-Fang Design University, Taiwan, [3]Southern Taiwan University, Taiwan

FM576 **Dielectric and Piezoelectric Properties of Ceramic-polymer Composites with 0-3 Connectivity Type**
Young Jun Choi[1,2], Myong-Jae Yoo[1,2], Hyung-Won Kang[1], Hyeung-Gyu Lee[1], Sahn Nahm[2], Seung Ho Han[1]
[1]Korea Electronics Technology Institute, Korea, [2]Korea University, Korea

FM567 **Fabrication and Ferroelectric Properties of Lead-free NKN Thin Films Deposited by RF Magnetron Sputtering using High Density Ceramic Target**
Hye Yeon Jeong[1], Seok Geun Ahn[1], Hak In Hwang[1], Hyeung-Gyu Lee[1], Chang Won Ahn[2], Il Won Kim[2], Seung Ho Han[1]
[1]Korea Electronics Technology Institute, Korea, [2]University of Ulsan, Korea

FM563 **Effect of Excess Alkaline Element on Ferroelectric Properties of Lead-free NKN Thin Films Deposited by RF Magnetron Sputtering**
Hye Yeon Jeong[1], Hak In Hwang[1], Hyeung-Gyu Lee[1], Chang Won Ahn[2], Il Won Kim[2], Seung Ho Han[1]
[1]Korea Electronics Technology Institute, Korea, [2]University of Ulsan, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM552 **Rapid Temperature Annealing Treatment on Physics and Electrical Characteristics of $(Bi_{3.9}La_{0.1})(Ti_{2.9}V_{0.1})O_{12}$ Ferroelectric Films**
Chun-Cheng Lin[1], Jen-Hwan Tsai[1], Chien-Min Cheng[2], Kai-Huang Chen[3]
[1]Chinese Air Force Academy, Taiwan, [2]Southern Taiwan University, Taiwan, [3]Tung-Fang Design University, Taiwan

FM544 **Giant Dielectricity and Sintering Behavior of CuO Doped $(Ba_{0.5}Sr_{0.5})TiO_3$ Ceramics**
Seok-Woo Yun, Ku-Tak Lee, Jung-Hyuk Koh
Kwangwoon University, Korea

FM530 **Electric Field-Induced Strain of $Bi_{1/2}(Mg_{1/2}Sn_{1/2})_{1/2}O_3$-Modified $Bi_{1/2}(Na_{0.82}K_{0.18})_{1/2}TiO_3$ Lead-free Ceramics**
Chang-Ho Yoon[1], Van Quyet Nguyen[1], Ky-Nam Pham[2], Chang Won Ahn[1], Ill Won Kim[1], Jae-Shin Lee[1]
[1]University of Ulsan, Korea, [2]Norwegian University of Science and Technology, Norway

FM512 **Electric Properties of Cantilever using Textured-$BiNaKTiO_3$ Ceramic for Micro-Power Generator**
Dong-Hwan Lim[1,2], Soon-Jong Jeong[1], Dae-Su Lee[1,3], Min-Soo Kim[1], Jae-Sung Song[1]
[1]Korea Electrotechnology Research Institute, Korea, [2]Changwon National University, Korea, [3]Busan National University, Korea

FM511 **Raman Spectroscopic Investigation of Sn- and Nb-Doped BNKT Ceramics**
Thi Hinh Dinh[1], Ky-Nam Pham[2], Dae Jun Heo[1], Hyoung-Su Han[1], Jae-Shin Lee[1], Wook Jo[3]
[1]University of Ulsan, Korea, [2]Norwegian University of Science and Technology, Norway, [3]Technische Universität Darmstadt, Germany

FM508 **Piezoelectric Properties of $Pb(Zr,Ti)O_3$-$Pb[(Zn,Ni)_{1/3}Nb_{2/3}]O_3$ Thick Films for Energy Harvesting Device Application**
Young Hun Jeong[1], Kyoung Bum Kim[1], Young-Jin Lee[1], Jeong-Ho Cho[1], Jong-Hoo Paik[1], Sahn Nahm[2]
[1]Korea Institute of Ceramic Engineering & Technology, Korea, [2]Korea University, Korea

FM504 **Non-stoichiometric Effect in $(K,Na)NbO_3$-based Perovskite Ceramics**
Jeong-Ho Cho, Young-Jin Lee, Young-Hoon Jeong, Myoung-Pyo Chun, Joong-Hee Nam, Jong-Hoo Paik, Byung-Ik Kim
Korea Institute of Ceramic Engineering and Technology, Korea

FM503 **Effect of $BiAlO_3$ Concentration on the Dielectric and Piezoelectric Properties of Lead-Free $(Bi_{0.5}Na_{0.5})_{0.94}Ba_{0.06}TiO_3$ Piezoelectric Ceramics**
Chang Won Ahn, Aman Ullah, Ali Hussain, Song A Chae, Jae Shin Lee, Ill Won Kim
University of Ulsan, Korea

FM502 **Dielectric and Piezoelectric Properties of $Bi(Zn_{0.5}Ti_{0.5})O_3$-Modified Morphotropic Phase Boundary $Bi_{0.5}(Na_{0.82}K_{0.18})_{0.5}TiO_3$ Piezoelectric Ceramics**
Aman Ullah[1], Chang Won Ahn[1], Gang Ho Choi[1], Dae Soo Lee[2], Soon Jong Jeong[2], Ill Won Kim[1]
[1]University of Ulsan, Korea, [2]KERI, Korea

FM1123 **Enhanced Piezoelectric and Temperature Stability Properties of Non-stoichiometry of NKN Based Lead-free Piezoelectric Ceramics for Power Applications**
Cheng-Che Tsai[1], Ching-Hsing Pei[1,2], Ming-Chung Kuan[1]
[1]Tung Fang Design University, Taiwan, [2]Southern Taiwan University, Taiwan

FM825 **Low-Temperature Sintering and Piezoelectric Properties of $0.65Pb(Zr_{1-x}Ti_x)O_3$-$0.35Pb(Ni_{1/6}Zn_{1/6}Nb_{2/3})O_3$ Ceramics**
Hwi-Yeol Park, Yu-Ri Cho, Hyeung-Gyu Lee, Hyung-Won Kang, SeungHo Han
Korea Electronics Technology Institute, Korea

FM410 **The Defect and Phase Transition Effects on Electric Field Induced Large Strain Behavior of $(Bi_{0.5}Na_{0.5})_{0.94}Ba_{0.06}TiO_3$ Lead-free Piezoceramics**
Pin-Yi Chen[1], Cheng-Sao Chen[2], Jaw-Yeu Liang[3], Chen-Chia Chou[3], Haydn Chen[4]
[1]Ming-Chi University of Technology, Taiwan, [2]Hwa-Hsia Institute of Technology, Taiwan, [3]National Taiwan University of Science and Technology, Taiwan, [4]Tung-Hai University, Taiwan

Nov. 10, 2011 (Thu.)

FMP 3 (Ferroelectric, Piezoelectric Materials and Device Applications) Poster Presentation 3

Lobby 8F

Chair: Dr. Si-Young Choi (Korea Institute of Materials Science, Korea) 13:30-15:00

FM285 **Study of Composition Effect on Transparent Conductive Indium Zinc Tin Oxide Thin Films Deposited by RF Magnetron Sputtering**
Damisih, Hong Chan Ma, Ferdyano Finanda, Hee Young Lee
Yeungnam University, Korea

FM1679 **Low-temperature Sintering and High D_{33} of (Ba,Ca) TiO_3-0.04LiF Lead-free Piezoelectric Ceramics**
Li-Feng Zhu, Bo-Ping Zhang, Wei-Gang Yang, Nan Ma, Xiao-Kun Zhao
University of Science and Technology Beijing, China

FM1429 **Dependence of Electrical Properties on Structural Characteristics of $Li_{0.055}[Ag_x(K_{0.5}Na_{0.5})_{1-x}]_{0.945}(Nb_{0.93}Ta_{0.07})_{0.9875}Sb_{0.0125}O_3$ $(0.01 \leq x \leq 0.05)$ Ceramics**
Kwang-Seok Shin[1], Jeong-Ho Cho[2], Byung-Ik. Kim[2], Eung Soo Kim[1]
[1]Kyonggi University, Korea, [2]Korea Institute of Ceramic Engineering and Technology, Korea

FM1438 **Topochemical Synthesis of Tantalum-doped $K_{0.5}Na_{0.5}NbO_3$ or $NaNbO_3$ Templates with a High Anisotropy**
Si-Young Choi, Jae-Seok Lee, Jae-Ho Jeon
Korea Institute of Materials Science, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM486 **Dielectric and Composition Properties of (1-x)$CaTiO_3$-x$CuTiO_3$ Thin Films by Continuous Composition Spread Sputtering Method**
Hyo-Min Kang[1,2], Seok-Jin Yoon[1], Yong-Soo Cho[2], Ji-Won Choi[1]
[1]Korea Institute of Science and Technology, Korea, [2]Yonsei University, Korea

FM460 **Inkjet Printing of Barium Titanate-Silver-Resin Percolative Composite**
Jongwoo Lim[1,2], Jihoon Kim[1], Ho-Gyu Yoo[2], Jong-Hee Kim[1]
[1]KICET, Korea, [2]Korea University, Korea

FM448 **Electromechanical Properties of 0-3 Non Lead Barium Zirconate Titanate-Portland Cement Composites**
R. Potong, R. Rianyoi, A. Chaipanich
Chiang Mai University, Thailand

FM447 **Effect of Barium Titanate Particle Size on Electromechanical Properties of Lead-free Cement based Piezoelectric Composites**
R. Rianyoi, R. Potong, A. Chaipanich
Chiang Mai University, Thailand

FM443 **Study on the Performance Prediction Technique for a Traveling Wave Type Ultrasonic Motor**
Jin-Heon Oh, Kee-Joe Lim
Chungbuk National University, Korea

FM435 **<100>-Textured $(Na_{0.5}K_{0.47}Li_{0.03})(Nb_{0.8}Ta_{0.2})O_3$ Ceramics using Templated Grain Growth**
H. J. Cho[1], M.-H. Kim[1], J.-H. Jeon[2], T. K. Song[1]
[1]Changwon National University, Korea, [2]Korea Institute of Materials Science, Korea

FM430 **Measurement of Space-charge Field in Doped Lithium Niobate Crystals**
Bonghoon Kang[1], Gi-Tae Joo[2]
[1]Far East University, Korea, [2]Seoul National University of Technology, Korea

FM429 **External DC Poling of Lithium Niobate Fiber Crystals**
Bonghoon Kang[1], Gi-Tae Joo[2]
[1]Far East University, Korea, [2]Seoul National University of Technology, Korea

FM412 **Electrical Properties of Nb Doped Bi(NaK)TiO_3-$BiAlO_3$ Ceramics**
Dae-Su Lee[1], Dong-Hwan Lim[1], Min-Soo Kim[1], Kwang-Ho Kim[2], Soon-Jong Jeong[1]
[1]Korea Electrotechnology Research Institute, Korea, [2]Busan National University, Korea

FM369 **Temperature Dependence of Polarization and Strain Hysteresis Loops in Sn-doped Lead-free $Bi_{1/2}(Na_{0.82}K_{0.18})_{1/2}TiO_3$ Piezoelectric Ceramics**
Hyoung-Su Han[1], Malik Rizwan[1], Kyung-Jong Kim[1], Wook Jo[2], Jae-Shin Lee[1]
[1]University of Ulsan, Korea, [2]Technische Universität Darmstadt, Germany

FM350 **Ultrasonic Viscosity Sensor using Ring-shaped Piezoelectric Ceramic Resonators**

Chang-Ho Yoon[1], Tae-Yop Lee[1], Dea-Jun Heo[1], Yun-Po Ok[2], Weon-Pil Tai[3], Jae-Shin Lee[1]
[1]University of Ulsan, Korea, [2]Korea Electrotechnology Research Institute, Korea, [3]Ulsan Techno Park, Korea

FM341 **Low Temperature Sintering of $Bi_{1/2}(Na_{0.82}K_{0.18})_{1/2}TiO_3$ Ceramics by Co-doping with CuO and $BaZrO_3$**

Jin-Kyu Kang[1], Rizwan Malik[1], Van-Quyet Nguyen[1], Weon-Pil Tai[2], Jae-Shin Lee[1]
[1]University of Ulsan, Korea, [2]Ulsan Fine Chemical Industry Center, Korea

FM312 **Design and Fabrication of Piezoelectric Transformers using Lead-free Ceramics**

Dae-Uk Kim[1,2], Sang Moon Shin[1], Se-Yeol Kim[1], Chang-Ho Yoon[2], Jae-Shin Lee[2], Weon-Pil Tai[3]
[1]Encomm Co. Ltd., Korea, [2]University of Ulsan, Korea, [3]Ulsan Techno-Park, Korea

FM303 **Effect of Reoxidation on Positive Temperature Coefficient Behavior of $BaTiO_3$-$K_{0.5}Bi_{0.5}TiO_3$ Ceramics**

Qibin Yuan[1,2], Yongping Pu[1], Jifeng Wei[1]
[1]Shaanxi University of Science and Technology, China, [2]Ministry of Education, China

FM280 **Piezoelectric Properties of Lead-free $Bi_{0.5}(Na_{1-x}K_x)_{0.5}TiO_3$ Thin Films Derived from Chemical Solution Deposition**

Song A Chae[1], Chang Won Ahn[1], Han Na Lee[1], Hak In Hwang[2], Se Hong Jhang[2], Ill Won Kim[1]
[1]University of Ulsan, Korea, [2]KETI, Korea

FM279 **Effect of Li Substitution on Ferroelectric and Piezoelectric Properties of Lead-free $(K_{0.5-x/2}Na_{0.5-x/2}Li_x)(Nb_{0.995}Mn_{0.005})O_3$ Thin Films**

Hae Jin Seog[1], Chang Won Ahn[1], Sun Young Lee[1], Aman Ullah[1], Hak In Hwang[2], Seung Ho Han[2], Ill Won Kim[1]
[1]University of Ulsan, Korea, [2]KETI, Korea

FM253 **Microstructure and Piezoelectric Properties of Li Modified (Na, K)NbO_3 Ceramics**

Sin-Woong Kim, Sung-Chan Lee, Soon-Jong Jeong, In-Sung Kim, Jae-Sung Song, Min-Soo Kim
Korea Electrotechnology Research Institute, Korea

FM252 **Piezoelectric and Electromechanical Properties with Textured KNLNT Lead-free Piezoelectric Ceramics**

Sung-Chan Lee, Sin-Woong Kim, Soon-Jong Jeong, In-Sung Kim, Jae-Sung Song, Min-Soo Kim
Korea Electrotechnology Research Institute, Korea

FM230 **Research on the Relationship between Performance and Stator Configuration of Traveling Wave Ultrasonic Motor**

Jin-Heon Oh[1], Han-Joo Lee[1], Kee-Joe Lim[1], Hyun-Hoo Kim[2], Dae-Hee Park[3]
[1]Chungbuk National University, Korea, [2]Doowon Institute of Technology, Korea, [3]Wonkwang University, Korea

Ferroelectric, Piezoelectric Materials and Device Applications

FM208 **Effect of Sintering Temperature on Piezoelectric and Ferroelectric Properties of Lead-Free Piezoelectric Ta-modified $(K_{0.5}Na_{0.5})NbO_3$ Ceramics**

Chien-Min Cheng[1], Kai-Huang Chen[2], Jen-Hwan Tsai[3], Chun-Cheng Lin[3]
[1]Southern Taiwan University, Taiwan, [2]Tung-Fang Design University, Taiwan, [3]Chinese Air Force Academy, Taiwan

FM207 **The Influence of Lithium and Potassium Doping on the Structure and Electrical Characteristics of $Li_x(K_yNa_{1-y})_{1-x}(Nb_{0.9}Ta_{0.06}Sb_{0.04})O_3$ Lead-free Piezoelectric Ceramics**

Chien-Min Cheng[1], Min-Chang Kuan[1], Jen-Hwan Tsai[2], Kai-Huang Chen[3]
[1]Southern Taiwan University, Taiwan, [2]Chinese Air Force Academy, Taiwan, [3]Tung-Fang Design University, Taiwan

FM206 **Structure and Electrical Characteristics of Lead-free $Li_x(K_{0.5}Na_{0.5})_{1-x}(Nb_{0.8}Ta_{0.2})O_3$ Piezoelectric Ceramics Improved by Pre-calcined Method**

Chien-Min Cheng[1], Min-Chang Kuan[1], Jen-Hwan Tsai[2], Kai-Huang Chen[3]
[1]Southern Taiwan University, Taiwan, [2]Chinese Air Force Academy, Taiwan, [3]Tung-Fang Design University, Taiwan

FM198 **Preparation and Characterization of Highly-dispersed Barium Titanate Nanoparticles**

Tatsuya Kita[1], Takahiro Takei[1], Nobuhiro Kumada[1], Ichiro Fujii[1], Kouichi Nakashima[1], Tohru S. Suzuki[2], Tetsuo Uchikoshi[2], Yoshio Sakka[2], Yasunari Miwa[3], Shinichiro Kawada[3], Masahiko Kimura[3], Yoshihiro Kuroiwa[4], Satoshi Wada[1]
[1]University of Yamanashi, Japan, [2]National Institute for Materials Science, Japan, [3]Murata Manufacturing Co., Ltd., Japan, [4]Hiroshima University, Japan

FM195 **Piezoelectric and Dielectric Properties of $BaTiO_3$ - Bismuth Copper based Perovskite-type Ceramics**

Atsushi Shimamura[1], Nobuhiro Kumada[1], Ichiro Fujii[1], Kouichi Nakashima[1], Masaki Azuma[2], Yoshihiro Kuroiwa[3], Satoshi Wada[1]
[1]University of Yamanashi, Japan, [2]Tokyo Institute of Technology, Japan, [3]Hiroshima University, Japan

FM154 **Microstructure of Potassium Niobate-Barium Titanate Ceramics and Their Dielectric Property**

Kenta Yamashita[1], Ichiro Fujii[1], Kouichi Nakashima[1], Nobuhiro Kumada[1], Yoshihiro Kuroiwa[2], Tohru S. Suzuki[3], Tetsuo Uchikoshi[3], Yoshio Sakka[3], Satoshi Wada[1]
[1]University of Yamanashi, Japan, [2]Hiroshima University, Japan, [3]National Institute for Materials Science, Japan

FM133 **The Temperature Dependences of the Electron-deformation Potential Phonon Interacting System of Quasi Two Dimensional System under Circularly Oscillating Fields in CdS, GaN and ZnO**

Su-Ho Lee[1], Jeong-Young Sug[2], Jae-Hyun Park[1], Geon Sa-Gong[1], Min-Suk Seong[1]
[1]Donga University, Korea, [2]Kyungpook National University, Korea

FM116 **Study of Electrical and Dielectric Properties of Y_2O_3 Doped $Ba_{1-x}(Bi_{0.5}Na_{0.5})_xTiO_3$ Ceramics**
Yongping Pu, Haidong Wu, Jifeng Wei, Qibin Yuan
Shaanxi University of Science and Technology, China

FM99 **Effects of Transition Metal Doping on Ferroelectric Properties of $Bi_{0.9}Nd_{0.1}FeO_3$ Thin Films Prepared by Chemical Solution Deposition Method**
C.M. Raghavan, J. W. Kim, S. S. Kim, G. H. Kim, Y. R. Bae, E. S. Kim, H. J. Kim, D. Do, M. H. Lee, Tae Kwon Song, Y. S. Sung, M. H. Kim
Changwon National University, Korea

FM97 **Enhancement of Ferroelectrity in Gadolinium and Transition Metal Co-doped $BiFeO_3$ Thin Films via Chemical Solution Deposition Technique**
J. W. Kim, S. S. Kim, G. H. Kim, Y. R. Bae, E. S. Kim, H. J. Kim, C.M. Raghavan, D. Do,M. H. Lee, Tae Kwon Song, Y. S. Sung, M. H. Kim
Changwon National University, Korea

FM93 **Electric Generation by Normal Shock Loading of Undoped and Nb^{5+} or Fe^{3+} Doped $Pb(Zr_{0.52}Ti_{0.48})O_3$ Ceramics**
Kyung Ho Cho, Chang Eui Seo, Yoon Soo Choi, Minsu Seo
Agency for Defense Development, Korea

FM92 **The Shock Response of Porous $Pb(Zr_{0.52}Ti_{0.48})O_3$ Ceramics with Different Pore Size and Porosity**
Chang Eui Seo, Kyung Ho Cho, Yoon Soo Choi
Agency for Defense Development, Korea

FM63 **Investigation and Electrical Properties of Parallel Piezoelectric Transformers**
Insung Kim[1], Soonjong Jeong[1], Jaesung Song[1], Minsoo Kim[1], Viet-Thang Vo[2]
[1]Korea Electrotechnology Research Institute, Korea, [2]University of Science and Technology, Korea

FM35 **Analysis and Modeling of Ring-dot Disk-type Piezoelectric Transformer using the CuO-doped NKN-based Piezoelectric Ceramics**
Ching-Hsing Pei[1], Cheng-Che Tsai[2], Jiann-Sheng Jiang[2], Jing Lee[1]
[1]Southern Taiwan University, Taiwan, [2]Tung Fang Design University, Taiwan