2018 ISAF-FMA-AMF-AMEC-PFM Joint Conference (IFAAP2018)
Technical Program

May 28 Mon. | May 29 Tue. | May 30 Wed. | May 31 Thu.

Monday, May 28, 2018

A B C D E F G H I J P

08:45 - 9:15 Opening Hall A

Plenary session
Hall A 09:15 - 10:45
Session chair: Ronald G. Polcawich & Alexei Gruverman

09:15 **Plenary1** **Jürgen Rödel** Plenary Talk ISAF
Lead-Free Piezoceramics: From Basic Science to Application
J. Rödel
Department of Materials Science, Technische Universität Darmstadt, Germany

10:00 **Plenary2** **Patrycja Paruch** Plenary Talk PFM
Pushing at the Walls: PFM Insights into the Fundamental and Functional Properties of Ferroelectric Domain Boundaries
P. Paruch
DQMP, University of Geneva, Switzerland

Oral session: Quantum beam science
Hall A 11:00 - 12:30
Session chair: Kenji Ohwada

11:00 **28am-A01** **Sergey Vakhrushev** Invited Talk IFAAI
Mode Coupling and Incommensurate Phases in Zr-rich $PbZr_{1-x}Ti_xO_3$
S. B. Vakhrushev[1,2*], D.A. Andronikova[1,2], A. A. Bosak[3], Y. A. Bronwald[1,2], D. Y. Chernyshov[4], and I. Leontiev[5]
[1]Ioffe Institute, Russia
[2]Peter the Great St. Petersburg Polytechnic University, Russia
[3]ESRF, France
[4]SNBL, ESRF, France
[5]Southern Federal University, Russia

11:30 **28am-A02** **Shinobu Aoyagi** Invited Talk IFAAI
Time-Resolved Structure Analysis of Piezoelectric Crystals by X-ray Diffraction under Alternating Electric Field
S. Aoyagi[1*], H. Osawa[2], K. Sugimoto[2], Y. Nakahira[3], C. Moriyoshi[3], Y. Kuroiwa[3], H. Takeda[4] and T. Tsurumi[4]
[1]Department of Information and Basic Science, Nagoya City University, Japan
[2]Research and Utilization Division, Japan Synchrotron Radiation Research Institute, Japan
[3]Graduate School of Science, Hiroshima University, Japan
[4]School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan

12:00 **28am-A03** **Tomoaki Yamada** Invited Talk AMF
Charge Screening Strategy for Controlling Domain Structure and Piezoelectric Property in Ferroelectric Nano-Rods
T. Yamada[1,2*], D. Ito[1], T. Sluka[3], O. Sakata[4,5], H. Funakubo[5], T. Namazu[6], M. Yoshino[1], N. Setter[3,7] and T. Nagasaki[1]
[1]Department of Energy Engineering, Nagoya University, Japan
[2]PRESTO, Japan Science and Technology Agency, Japan
[3]Ceramics Laboratory, Swiss Federal Institute of Technology-EPFL, Switzerland
[4]Synchrotron X-ray Station at SPring-8 and Synchrotron X-ray Group, National Institute for Materials Science, Japan
[5]School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan
[6]Department of Mechanical Engineering, Aichi Institute of Technology, Japan
[7]Department of Materials Science and Engineering, Tel-Aviv University, Israel

Oral session: Relaxor ferroelectrics
Hall A 14:00 - 15:30
Session chair: Kyle Webber

14:00 **28pm-A01** **Marco Deluca** Invited Talk IFAAI
Ba-Based Lead-Free Relaxor Ferroelectrics

M. Deluca[1] and V. Buscaglia[2]
[1]Materials Center Leoben Forschung GmbH, Austria
[2]CNR-ICMATE, Italy

14:30 **28pm-A02** **Stanislav Kamba** Invited Talk IFAAI

Hint of a Structural Phase Transition in Polar Nanodomains of $Pb(Mg_{1/3}Nb_{2/3})O_3$

S. Kamba[1*], D. Nuzhnyy[1], J. Petzelt[1], V. Bovtun[1], M. Kempa[1], B. Hehlen[2] and J. Hlinka[1]
[1]Department of Dielectrics, Institute of Physics of the Czech Academy of Sciences, Czech Republic
[2]Laboratoire Charles Coulomb, UMR 2251, CNRS-Université de Montpellier, France

15:00 **28pm-A03** **Hana Ursic** Invited Talk ISAF

Domain Structure in Relaxor-Ferroelectric $Pb(Mg_{1/3}Nb_{2/3})O_3$ and $Pb(Sc_{1/2}Nb_{1/2})O_3$-Based Ceramics

H. Ursic[1*], M. Otonicar[1], M. Dragomir[1,2], G. Esteves[3], D. Hou[3], J. L. Jones[3], M. Vrabelj[1], T. Rojac[1], A. Bencan[1] and B. Malic[1]
[1]Jožef Stefan Institute, Slovenia
[2]McMaster University, Canada
[3]North Carolina State University, USA

Oral session: Dielectric materials
Hall A 15:45 - 17:00
Session chair: Alp Sehirlioglu

15:45 **28pm-A04** **Xiang Ming Chen** Invited Talk AMEC

$CaTiO_3$ Ceramics with Greatly Enhanced Energy Storage Density

X. M. Chen*, H. Y. Zhou, X. Q. Liu and X. Li Zhu
Laboratory of Dielectric Materials, School of Materials Science and Engineering, Zhejiang University, China

16:15 **28pm-A05** **Sylvia Gebhardt** Invited Talk IFAAI

Perovskite-Type Ceramics and Multilayer Device Structures for Electrocaloric Cooling

C. Molin, P. Neumeister, H. Neubert, and S. E. Gebhardt*,
Smart Materials and Systems, Fraunhofer IKTS, Fraunhofer Institute for Ceramic Technologies and Systems, Germany

16:45 **28pm-A06** **Takashi Teranishi** ISAF

Artificial Dielectric Interfaces for Ultrahigh Rate Lithium Ion Batteries

T. Teranishi, N. Katsuji, Y. Yoshikawa, H. Hayashi and A. Kishimoto
Graduate School of Natural Science and Technology, Okayama University, Japan

Oral session: Relaxor ferroelectrics
Room B 11:00 - 12:30
Session chair: Marco Deluca

11:00 **28am-B01** **Shujun Zhang** Invited Talk IFAAI

The Impact of Local Structural Inhomogeneity on Electrical Properties of Perovskite Ferroelectrics

S. Zhang[1*], F. Li[2], L.-Q. Chen[2] and T. R. Shrout[2]
[1]ISEM, AIIM, University of Wollongong, Australia
[2]MRI, Pennsylvania State University, US

11:30 **28am-B02** **Zuo-Guang Ye** Invited Talk AMF

Ferroelectric-to-Relaxor Crossover and Random Fields in Lead-free Perovskite Solid Solutions

Z.-G. Ye[1,2*], J. Zhuang[2,1], A. A. Bokov[1]and W. Ren[2]
[1]Department of Chemistry and 4D LABS, Simon Fraser University, Canada,
[2]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & ICDR, Xi'an Jiaotong University, China

12:00 **28am-B03** **Zijin Yang** AMEC

$Ba_5RSn_3Nb_7O_{30}$(R=La. Nd, Sm) New Relaxor Ferroelectrics with Filled Tungsten Bronze Structure

Z. J. Yang* and X. M. Chen
School of Materials Science and Engineering, Zhejiang University, China

12:15 **28am-B04** **Ye Zhao** AMEC

Electrocaloric Effect in Relaxor Ferroelectric $Ba(Ti_{1-x}Ce_x)O_3$ Ceramics

Y. Zhao*, X. Q. Liu and X. M. Chen
Laboratory of Dielectric Materials, School of Materials Science and Engineering, Zhejiang University, China

Oral session: Electron microscopy and nanostructures
Room B 14:00 - 15:15

Session chair: Jon Ihlefeld

14:00 **28pm-B01** **Elizabeth Dickey** Invited Talk IFAAI

Aberration-Corrected STEM for Probing Local Structure of Ferroelectrics

E. C. Dickey*, J. M. LeBeau and M. J. Cabral
Department of Materials Science and Engineering, North Carolina State University, USA

14:30 **28pm-B02** **Kenji Tsuda** FMA

STEM-CBED Study on the Temperature Dependence of the Local Structures of Tetragonal $BaTiO_3$

K. Tsuda
Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Japan

14:45 **28pm-B03** **Peng Gao** ISAF

Atomic-Scale Mechanism of Polarization Charge Screening at the Surface and Interface in Ferroelectric Thin Films

P. Gao[1,2]
[1]Electron Microscopy Laboratory, and International Center for Quantum Materials, School of Physics, Peking University, China
[2]Collaborative Innovation Centre of Quantum Matter, China

15:00 **28pm-B04** **Xiao Qiang Liu** AMEC

First-Order Hybrid Improper Ferroelectric Phase Transition in $(Sr,Ca)_3Sn_2O_7$ Ceramics

X. Q. Liu*, J. J. Lu and X. M. Chen
Laboratory of Dielectric Materials, School of Materials Science and Engineering, Zhejiang University, China

Oral session: Electron microscopy and nanostructures
Room B 15:30 - 17:00
Session chair: Satoshi Wada

15:30 **28pm-B05** **Huarong Zeng** AMEC

Advanced Scanning Probe Microscopy of Electronic Ceramics

H. R. Zeng*, J. Zou and K. Y. Zhao
Key Laboratory of Inorganic Functional Materials, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

15:45 **28pm-B06** **Kyuichi Yasui** ISAF

Origin of a Broader Peak in Dielectric Constant as a Function of Temperature for an Ordered Assembly of $BaTiO_3$ Nanocubes

K. Yasui*, K. Mimura, N. Izu and K. Kato
National Institute of Advanced Industrial Science and Technology (AIST), Japan

16:00 **28pm-B07** **Hiroki Itasaka** FMA

Nano-Scale Raman Investigation of Monolayered $BaTiO_3$ Nanocubes

H. Itasaka[1*], K. Mimura[1], M. Nishi[2] and K. Kato[3]
[1]Inorganic Functional Materials Research Institute, National Institute of Advanced Industrial Science and Technology, Japan
[2]Department of Material Chemistry, Kyoto University, Japan
[3]National Institute of Advanced Industrial Science and Technology, Japan

16:15 **28pm-B08** **Matthew Cabral** ISAF

Quantifying Short-Range Chemical Order and Structural Distortion in Relaxor Ferroelectrics by Correlated STEM Imaging and X-ray Diffuse Scattering

M. J. Cabral[1*], S. Zhang[2], M. J. Miller[3], B. J. Reich[3], E. C. Dickey[1] and J. M. LeBeau[1]
[1]Deparment of Materials Science and Engineering, North Carolina State University, USA
[2]Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong, Australia
[3]Deparment of Statistics, North Carolina State University, USA

16:30 **28pm-B09** **Yao Lu** AMEC

Synthesis, Structural Characterization, and Physical Properties of Ba_2VFeO_6 Nanocrystals

Y. Lu, Z. P. Pei, H. Wu, P. J. Xue and X. H. Zhu
National Laboratory of Solid State Microstructures, School of Physics, Nanjing University, China

16:45 **28pm-B10** **Md Al Helal** FMA

Angle Resolved Raman Scattering on Relaxor Ferroelectrics with Intermediate Random Fields

M. A. Helal[1,2*], S. Tsukada[3], S. Svirskas[4], J. Banys[4] and S. Kojima[1]
[1]Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan
[2]Department of Physics, Begum Rokeya University, Bangladesh
[3]Faculty of Education, Shimane University, Japan
[4]Faculty of Physics, Vilnius University, Lithuania

Oral session: Dielectric materials
Room C 11:00 - 12:30
Session chair: Matjaz Spreitzer

11:00 **28am-C01** **Prasit Thongbai** Invited Talk IFAAI

Dielectric and Electrical Properties of TiO_2-Based Ceramics

P. Thongbai[1*], P. Srepusharawoot[1], W. Tuichai[1], P. Siriya[1], N. Thongyong[1], N. Chanlek[2], S. Danwittayakul[3] and S. Maensiri [4]
[1]Integrated Nanotechnology Research Center (INRC), Department of Physics, Faculty of Science, Khon Kaen University, Thailand
[2]Synchrotron Light Research Institute (Public Organization), Thailand
[3]National Metal and Materials Technology Center, Thailand
[4]School of Physics, Institute of Science, Suranaree University of Technology, Thailand

11:30 **28am-C02** **Cedric Meyers** ISAF

Voltage-Tunable Parallel-Plate Capacitors Fabricated on Low-Loss MBE-Grown BST

C. J. G. Meyers[1*], C. R. Freeze[2], S. Stemmer[2] and R. A. York[1]
[1]Department of Electrical and Computer Engineering, UCSB, USA
[2]Materials Department, UCSB, USA

11:45 **28am-C03** **Yue-Xuan Du** AMEC

Improving Quality Factor of $(Mg_{(1-x)}Zn_x)_2SnO_4$ Ceramics Investigated by Raman Spectroscopy

Y.-C. Chen and Y.-X. Du
Department of Electrical Engineering, Lunghwa University of Science and Technology, Taiwan

12:00 **28am-C04** **Metha Rattanapithaksuk** AMEC

Structural and Dielectric Properties of $Li_{0.30}Cr_{0.02}Ni_{0.68}O$ Ceramics Doped with Kaolinite

M. Rattanapithaksuk and J. Khemprasit
Materials Chemistry Research Center, Department of Chemistry and the Center of Excellence for Innovation in Chemistry, Faculty of Science, Khon Kaen University, Tha

12:15 **28am-C05** **Petr Yudin** ISAF

Pyroelectric Energy Harvesting from a Fluid Source

P. V. Yudin[1,2*], M. Yu. Hrebtov[1] and E. Maheux[3]
[1]Kutateladze Institute of Thermophysics, Siberian Branch of Russian Academy of Sciences, Russia
[2]Institute of Physics, Academy of Science of the Czech Republic, Czech Republic
[3]Ecole polytechnique, France

Oral session: Polarization rotation phenomena
Room C 14:00 - 15:15
Session chair: Catherine Elissalde

14:00 **28pm-C01** **Yoko Takada** ISAF

Formation Process of Ferroelectric $Pb(Zr,Ti)O_3$ Cubes by Hydrothermal Method Using Tetramethylammonium Hydroxide

Y. Takada[1*], K. Mimura[1] and K. Kato[2]
[1]Inorganic Functional Materials Research Institute, National Institute of Advanced Industrial Science and Technology, Japan
[2]National Institute of Advanced Industrial Science and Technology, Japan

14:15 **28pm-C02** **Hui Liu** ISAF

Role of Reversible Phase Transformation for Strong Piezoelectricity at MPB

H. Liu[1], Y. Ren[2], X. Xing[1] and J. Chen[1,*]
[1]Department of Physical Chemistry, University of Science and Technology Beijing, China
[2]Advanced Photon Source, Argonne National Laboratory, USA

14:30 **28pm-C03** **Kamal Asadi** ISAF

Device Physics of Polymeric Ferroelectric Memory Diodes

H. S. Dehsari[1], M. Ghittorelli[2], F. Torricelli[2] and K. Asadi[1]
[1]Max-Planck Institute for Polymer Research, Germany
[2]University of Brescia, Department of Information Engineering, Italy

14:45 **28pm-C04** **Sachio Horiuchi** FMA

High-Polarization Switching Functionalities in Hydrogen-Bonded Organic Crystals

S. Horiuchi[1*], K. Kobayashi[2], R. Kumai[2] and S. Ishibashi[1]
[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan
[2]High Energy Accelerator Research Organization (KEK), Japan

Oral session: Lead-free dielectric and piezoelectric materials
Room C 15:30 - 17:00

Session chair: Ken-ichi Kakimoto

15:30 **28pm-C05** **Theerachai Bongkarn** Invited Talk IFAAI

Solid State Combustion Synthesis and Characterization of Lead-Free KNLNTS-Based Ceramics

C. Kornphom[1] and T. Bongkarn[1,2,*]
[1]Department of Physics, Faculty of Science, Naresuan University, Thailand
[2]Research Center for Academic Excellence in Applied Physics, Faculty of Science, Naresuan University, Thailand

16:00 **28pm-C06** **Jeppe Ormstrup** ISAF

The Kinetics and Grain Orientation Dependence of the Electric Field Induced Phase Transition in Sm-Modified $BiFeO_3$ Ceramic

J. Ormstrup[1], M. Makarovic[2], M. Majkut[3], T. Rojac[2], J. Walker[4] and H. Simons[1]
[1]Department of Physics, Technical University of Denmark, Denmark
[2]Electronic Ceramics Department, Jozef Stefan Institute, Slovenia
[3]ESRF–The European Synchrotron, France
[4]Materials Research Institute, The Pennsylvania State University, USA

16:15 **28pm-C07** **Sanghoon Lee** ISAF

Dielectric and Piezoelectric Properties of $Bi_{1/2}Na_{1/2}TiO_3$-$SrTiO_3$ Lead-Free Ceramics

S.-H. Lee, S.-H. Kim, T. A. Duong, H.-S. Han and J.-S. Lee*
Materials Science and Engineering, University of Ulsan, South Korea

16:30 **28pm-C08** **Zhiguo Yi** Invited Talk AMF

Electrical and Photoelectric Properties of Layered-Perovskite Ferroelectric Materials

Z. Yi
Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, China

Oral session: Multiferroic materials
Room D 11:00 - 12:30
Session chair: Woo Seok Choi

11:00 **28am-D01** **Roger Whatmore** Invited Talk IFAAI

Multiferroic Behaviour and Structure of Aurivillius Bismuth Iron Manganese Titanate

L. Keeney[1*], A. Faraz[1], M. Schmidt[1], C. Downing[4], V. Nicolisi[4], M.E. Pemble[1,2] and R.W. Whatmore[2,3*]
[1]Tyndall National Institute, University College Cork, Ireland
[2]Department of Chemistry, University College Cork, Ireland
[3]Department of Materials, Imperial College London, United Kingdom
[4]Schools of Chem. & Phys., CRANN, AMBER, Trinity College Dublin, Ireland

11:30 **28am-D02** **Haijuan Li** ISAF

Synthesis, Structure, and Electric/ Magnetic Properties of Multiferroic (1-x)$Pb(Fe_{0.5}Nb_{0.5})O_3$-x$BiFeO_3$ Solid Solution

H. Li[1], J. Zhuang[1,*], N. Zhang[1], J. Zhang[1], W. Ren[1] and Z.-G. Ye[2,1,*]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China

11:45 **28am-D03** **Hongbo Liu** AMEC

Structure, Electric, and Magnetic Properties of $BiFeO_3$-$SrTiO_3$ Solid Solution

H. Liu* and L. Li
School of Materials Science, Shanghai University of Engineering Science, PR China

Oral session: Multiferroic materials
Room D 14:00 - 15:15
Session chair: Jiri Hlinka

14:00 **28pm-D01** **Houssny Bouyanfif** Invited Talk IFAAI

Antiferroelectric Like State in $BiFeO_3$/$LaFeO_3$ Superlattices

B. Carcan[1], H. Bouyanfif[1*], M. E. Marssi[1], F. L. Marrec[1], L. Dupont[2,3], C. Davoisne[2], J. Wolfman[4] and D. C. Arnold[5]
[1]LPMC EA2081, Université de Picardie Jules Verne, France
[2]LRCS UMR7314, Université de Picardie Jules Verne, France
[3]Plateforme de microscopie électronique, Université de Picardie Jules Verne, France
[4]GREMAN UMR7347, Université de Tours François Rabelais, France
[5]School of Physical Sciences, University of Kent, Canterbury, UK

14:30 **28pm-D02** **Qi Zhang** ISAF

Mixed-Phase Bismuth Ferrite Thin Films by Chemical Solution Deposition

Q. Zhang[1*], H.-H. Huang[1,2], D. Sando[1], M. Summers[1], P. Munroe[1], O. Standard[1] and N. Valanoor[1]
[1]School of Materials Science and Engineering, University of New South Wales, Australia
[2]Graduate School of Engineering, Toyota Technological Institute, Japan

14:45 **28pm-D03** **Nao Yoshimura** FMA

Growth Window in Metalorganic Chemical Vapor Deposition of $BiFeO_3$ Thin Films

N. Yoshimura, T. Tanaka, H. Fujisawa, S. Nakashima and M. Shimizu
Department of Electronics and Comp. Sci., University of Hyogo, Japan

15:00 **28pm-D04** **Tachgiss Jampreecha** AMEC

Fabrication, Structure and Dielectric Properties of Cu-Doped $BiFeO_3$ Thin Film

T. Jampreecha[1,2,*], J. Khajonrit[2], W. Meevasana[2] and S. Maensiri [2]
[1]School of Physics Institute of Science Suranaree University of Technology, Thailand
[2]Development and Promotion of Science and Technology Talents Project Royal Government of Thailand scholarship, Thailand

Oral session: Iron oxide octahedron based materials
Room D 15:45 - 17:00
Session chair: Houssny Bouyanfif

15:45 **28pm-D06** **Woo Seok Choi** Invited Talk AMF

Inversion Symmetry Breaking in Brownmillerite $SrFeO_x$ Epitaxial Thin Film

W. S. Choi
Department of Physics, Sungkyunkwan University, Korea

16:15 **28pm-D07** **Seiji Nakashima** FMA

Evidence of Acceptor Doping to $BiFeO_3$ Thin Films by Mn doping and Their Bulk Photovoltaic Effect

S. Nakashima[1*], K. Takayama[1], H. Fujisawa[1], T. Higuchi[2], A. Yasui[3], T. Kinoshita[3] and M. Shimizu[1]
[1]Dept. of Electronics and Computer Science, University of Hyogo, Japan
[2]Dept. of Applied Physics, Tokyo University of Science, Japan
[3]Japan Synchrotron Radiation Research Institute (JASRI), Japan

16:30 **28pm-D08** **Daniel Sando** ISAF

Some of the Optical Functionalities of $BiFeO_3$ Films

D. Sando[1,2*], M.N. Grisolia[2], J. Allibe[2], C. Carrtro[2], V. Garcia[2], S. Fusil[2], J. Bourderionnet[3], D. Dolfi,[3] A. Barthlmy[2], V. Nagarajan[1] and M. Bibes[2]
[1]School of Materials Science and Engineering, UNSW Sydney, Australia
[2]Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, France
[3]Thales Research and Technology France, France

16:45 **28pm-D09** **Shintaro Yasui** FMA

Preparation of $GaFeO_3$ Single Crystal and Epitaxial Thin Films on Single Crystal

K. Tachiyama[1*], T. Katayama[1], T. Osakabe[1], T. Dazai[1], J. Yu[2], H. He[2], H. Wang[2], Y. Hamasaki[3], S. Yasui[1], T. Taniyama[1] and M. Itoh[1]
[1]Laboratory for Materials and Structures, Tokyo Institute of Technology, Japan
[2]Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
[3]Department of Chemistry, Gakusyuin University, Japan

Oral session: $BaTiO_3$-based thin films
Room E 11:00 - 12:30
Session chair: Lane Martin

11:00 **28am-E01** **Sang Mo Yang** Invited Talk AMF

Scanning Probe Microscopy Studies of Ultrathin Epitaxial Ferroelectric Films

S. M. Yang*
Department of Physics, Sookmyung Women's University, South Korea

11:30 **28am-E02** **Trygve Ræder** ISAF

Effect of Crystallographic Orientation on the Out-of-Plane and In-Plane Ferroelectric Properties of $BaTiO_3$ Thin Films

T. M. Ræder*, E. Khomyakova, J. Glaum, M. A. Einarsrud and T. Grande
Department of Materials Science and Engineering, NTNU Norwegian University of Science and Technology, Norway

11:45 **28am-E03** **Piaojie Xue** AMEC

Synthesis, Microstructural Characterization and Properties of One-Dimensional $BaTiO_3$ Nanomaterials

P. Xue and X. Zhu
National Laboratory of Solid State Microstructures, School of Physics, Nanjing University, China

12:00 **28am-E04** **Satoshi Wada** FMA

Solvothermal Synthesis of Barium Titanate Nanocubes and Their Assembly

S. Ueno, S. Hatakeyama, M. Watanabe, K. Fukasawa, T. Chikata, I. Fujii and S. Wada
Material Science and Technology, Graduale Faculty of Interdyscyplinarny Research, University of Yamanashi, Japan

12:15 **28am-E05** **Xubing Lu** ISAF

Study on the Conductivity, Charge Transport, and Ferroelectricity in Epitaxial $BaTiO_3$ Films

X. Lu*, X. Jing, J. Zhou, C. Yang and J. M. Liu
Institute for Advanced Materials, South China Academy of Advanced Optoelectronics, and Guangdong Provincial Laboratory of Quantum Engineering and Quantum Mate
South China Normal University, P. R. China

Oral session: PMN-PT-based thin films
Room E 14:00 - 15:15
Session chair: Takao Shimizu

14:00 **28pm-E01** **Lane Martin** Invited Talk ISAF

Relaxor Ferroelectric Thin Films - Strain, Size, and Chemistry Effects and Potential for Novel Applications

L. W. Martin[1,2]
[1]Department of Materials Science and Engineering, University of California, USA
[2]Materials Sciences Division, Lawrence Berkeley National Laboratory, USA

14:30 **28pm-E02** **Tao Zhang** ISAF

Research on Fabrication and Mechanism of PMnN-PZT Thin Film on MgO(100) Substrate

T. Zhang[1*], D. Chen[1], Y. Y. Deng[1], J. Yang[1], A. Baghai-Wadji[1], K. Wasa[2] and S. Y. Zhang[1]
[1] College of Science, Xi'an University of Science and Technology, China
[2] Department of Micro-engineering, Kyoto University, Japan

14:45 **28pm-E03** **Matjaz Spreitzer** Invited Talk IFAAI

Structural Characteristics of Pulsed-Laser-Deposited $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ Epitaxial Thin Film for Energy-Harvesting Dev

M. Spreitzer,[1*], U. Gabor[1], H. Uršič,[2] E. Tchernychova,[3] Z. Samardžija,[4] W. J. Wu[5] and D. Suvorov[1]
[1]Advanced Materials Department, Jožef Stefan Institute, Slovenia
[2]Electronic Ceramics Department, Jožef Stefan Institute, Slovenia
[3]Department of Materials Chemistry, National Institute of Chemistry, Slovenia
[4]Department for Nanostructured Materials, Jožef Stefan Institute, Slovenia
[5]Department of Engineering Science and Ocean Engineering, National Taiwan University, Taiwan

Oral session: Thin film fabrication process
Room E 15:30 - 17:00
Session chair: Naoki Wakiya

15:30 **28pm-E04** **Khian-Hooi Chew** Invited Talk AMF

Thermodynamic Model for Phase Transitions in Antiferroelectric-Ferroelectric Superlattices

K.-H. Chew[1*], C.-Y. Lum[2] and K. G. Lim[3]
[1]Centre for Theoretical and Computational Physics, Department of Physics, University of Malaya, Malaysia
[2]Pre-Medical (Foundation Year) Programme, Penang Medical College, Malaysia
[3]University of Southampton Malaysia Campus, Malaysia

16:00 **28pm-E05** **Wei Ting Chen** ISAF

Study of High-Temperature Energy Harvesting Piezoelectric Device Utilizing High Temperature Endurable Bonding Approache

W. T. Chen[1], A. E. Gurdal[2], S. Tuncdemir[2], J. G.[1], H. Guo[1] and C. A. Randall[1,*]
[1]Center for Dielectrics and Piezoelectrics, Materials Research Institute, Department of Materials Science and Engineering, The Pennsylvania State University, USA
[2]Solid State Ceramics, Inc., USA

16:15 **28pm-E06** **Neamul Khansur** ISAF

Processing of Functional Ceramic Thick Films by Aerosol Deposition

N. H. Khansur* and K. G. Webber
Department of Materials Science and Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

16:30 **28pm-E07** **Masaki Yamaguchi** FMA

Modification Effects of Lead-free Ferroelectric Film Properties by Proton Beam Injection

M. Yamaguchi,[1] J. Hirade[1] and Y. Masuda[2]
[1]Department of Engineering, Shibaura Institute of Technology, Japan
[2]Department of Engineering, Hachinohe Institute of Technology, Japan

16:45 **28pm-E08** **Xin Zhu** AMEC

Fabrication, Structural Characterization, and Physical Properties of Ferroelectric Nanostructured Thin Films

W. R. Xia[1], Y. Lu[1], Z. P. Fei[1], P. J. Xue[1], X. H. Zhu[1*]and Z. G. Liu[2]
[1]National Laboratory of Solid State Microstructures, School of Physics, Nanjing University, China
[2]National Laboratory of Solid State Microstructures, Department of Materials and Science, Nanjing University, China

Oral session: Piezoelectric applications
Room F 11:00 - 12:30
Session chair: Kui Yao

11:00 **28am-F01** **Sebastjan Glinsek** Invited Talk ISAF

Inkjet Printing Deposition of Transparent Piezoelectric Stacks

N. Godard[1], S. Girot[1], S. Glinsek[1] and E. Defay[1*]
[1]Materials Research and Technology Department, Luxembourg

11:30 **28am-F02** **Kosuke Takahara** FMA

MEMS Tactile Device Based on Polymer/Thin-Film PZT Structure

K. Takahara, S. Tohyama, K. Kanda[1*], T. Fujita and K. Maenaka
Graduate School of Engineering, University of Hyogo, Japan

11:45 **28am-F03** **Quifa Zhou** FMA

Novel 3D Printing Technology for Piezoelectric Ultrasound Transducer Application

Z. Chen[2], X. Song[2], Y. Yang[2], Y. Chen[2] and Q. Zhou[1,2*]
[1]Roski Eye Institute, USA
[2]School of Engineering, University of Southern California, USA

12:00 **28am-F04** **Glen Fox** Invited Talk ISAF

Investigation of Non-Volatile Memory Behavior in PZT MEMS Cantilever Switches

G. R. Fox[1*], R. Q. Rudy[2], J. S. Pulskamp[2] and R. G. Polcawich[3]
[1]Fox Materials Consulting, LLC, USA
[2]RF MEMS and mm-Scale Robotics, U.S. Army Research Laboratory, USA

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 14:00 - 15:15
Session chair: Josh Agar

14:00 **28pm-F01** **Pankaj Sharma** Invited Talk PFM

Nonvolatile Memory Based on Ferroelectrics Domain Walls

P. Sharma
School of Materials Science and Engineering, The University of New South Wales Australia, Australia

14:30 **28pm-F02** **Mahshid Ahmadi** PFM

Exploring Anomalous Polarization Dynamics in a Series of Formamidinium Lead/Tin Iodide Perovskites

M. Ahmadi[1], L. Collins[2], A. Puretzky[2], J. Zhang[1], S. V. Kalinin[2*] and B. Hu[1*]
[1]Department of Materials Science and Engineering, University of Tennessee, USA
[2]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA

14:45 **28pm-F03** **Theodor S. Holstad** PFM

Electronic Bulk and Domain Wall Properties in B-Site Doped Hexagonal $ErMnO_3$

T. S. Holstad[1*], D. M. Evans[1], A. Ruff[2], D. R. Småbråten[1], J. Schaab[3], Ch. Tzschaschel[3], Z. Yan[4,5], E. Bourret[5], S. M. Selbach[1], S. Krohns[2] and D. Meier[1]
[1]Department of Materials Science and Engineering, NTNU, Norway
[2]Center for Electronic Correlations and Magnetism, University of Augsburg, Germany
[3]Department of Materials, ETH Zurich, Switzerland
[4]Department of Physics, ETH Zurich, Switzerland
[5]Materials Science Division, Lawrence Berkeley National Laboratory, USA

15:00 **28pm-F04** **Dengwei Hu** PFM

Piezoelectric Response of Perovskite Polycrystals

D. Hu[1*], F. Yao[1], F. Kang[1], W. Zhang[2], L. Miao[1], Z. Zhang[1], M. Fan[1] and Q. Feng[2]
[1]Faculty of Chemistry and Chemical Engineering, Engineering Research Center of Advanced Ferroelectric Functional Materials, Baoji University of Arts and Sciences, Cl
[2]Department of Advanced Materials Science, Faculty of Engineering, Kagawa University, Japan

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 15:30 - 16:30
Session chair: Pankaj Sharma

15:30 **28pm-F05** **Roger Proksch** PFM

Quantifying Voltage-Modulated Electromechanical Sensitivity and Hysteresis Measurements on the Nanoscale

L. F. Collins[1], O. S. Ovchinnikova[1] and R. B. Proksch[2*]
[1]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA
[2]Asylum Research, USA

15:45 **28pm-F06** **Olga Ovchinnikova** PFM

Multimodal Chemical and Functional Imaging of Nanoscale Transformations in Ferroelectric Thin Films

A. V. Ievlev, S. V. Kalinin and O. S. Ovchinnikova
Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA

16:00 **28pm-F07** **Joshua Agar** Invited Talk PFM

Extracting Physical Insight from Multidimensional Scanning Probe Spectroscopy Using Artificial Intelligence

J. C. Agar[1*], Y. Cao[2], B. Naul[3], S. Pandya[1], S. van der Walt[4], A. I. Luo[1], J. T. Maher[1], N. Balke[5], S. Jesse[5], S. V. Kalinin[5], R. K. Vasudevan[5] and L. W. Martin[1]
[1]Department of Materials Science and Engineering, University of California-Berkeley, USA
[2]Department of Materials Science and Engineering, University of Texas-Arlington, USA
[3]Department of Astronomy, University of California-Berkeley, USA
[4]Berkeley Institute of Data Science, University of California-Berkeley, USA
[5]Center for Nanophase Materials Science, Oak Ridge National Laboratory, USA

Oral session: Transport in ceramics
Room G 11:00 - 12:15
Session chair: Takeo Ohsawa

11:00 **28am-G01** **Taras Kolodiazhnyi** Invited Talk IFAAI

Donor-Induced Anderson localization of Small Polarons in Ceria

T. Kolodiazhnyi[1*], P. Tipsawat[2], T. Charoonsuk[3], S. Jungthawan[2] and N. Vittayakorn[3]
[1]National Institute for Materials Science, Japan
[2]School of Physics, Suranaree University of Technology, Thailand
[3]Department of Chemistry, King Mongkut's Institute of Technology Ladkrabang, Thailand

11:30 **28am-G02** **Tae Heon Kim** Invited Talk AMF

Strain-Driven Disproportionation at a Correlated Oxide Metal-Insulator Transition

T. H. Kim
Dept. of Physics, University of Ulsan, Republic of Korea

12:00 **28am-G03** **Donald Evans** ISAF

Controlled Alteration of Conductivity in Functional Oxides at the Nanoscale

D. M. Evans[1*], T. S. Holstad[1], A. B. Mosberg[2], P.-E. Vullum[2], D. Småbråten[1], S. Selbach[1], A. Van Helvoort[2] and D. Meier[1]
[1]Department of Materials Science and Engineering, Norwegian University of Science and Technology (NTNU), Norway
[2]Department of Physics, Norwegian University of Science and Technology (NTNU), Norway

Oral session: Zinc oxide
Room G 14:00 - 15:30
Session chair: Shintaro Yasui

14:00 **28pm-G01** **Zhenyong Man** AMEC

Electronic Structure and Defect Mechanism of Different Grain Boundaries in ZnO Ceramics

Z. Man, T. Tian, L. Zheng, J. Zeng and G. Li,*
Key Laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

14:15 **28pm-G02** **Takeo Ohsawa** AMEC

Electronic Transport Properties Governed by Polarity Control through Tailoring of ZnO Bilayer Structures

T. Ohsawa[1*], Y. Yamagata[1,2], T. Hosaka[1,2], S. Grachev[3], H. Montigaud[3], T. Ishigaki[2] and N. Ohashi[1]
[1]National Institute for Materials Science (NIMS), Japan
[2]Graduate School of Science and Engineering, Hosei University, Japan
[3]Surface du Verre et Interfaces, UMR 125 CNRS/Saint-Gobain Recherche, France

14:30 **28pm-G03** **Poonsuk Poosimma** AMEC

Improvement in the Breakdown Field of ZnO-Based Varistor Materials with Lanthanum Nitrate Additive

P. Poosimma*, P. Yukhajon and T. Chankhanittha
Materials Chemistry Research Center, Department of Chemistry and Center for Innovation in Chemistry, Faculty of Science, Khon Kaen University, Thailand

14:45 **28pm-G04** **Yutaka Adachi** AMEC

Polarity Dependence of Gas Sensing Properties of ZnO Films

Y. Adachi,* N. Saito, I. Sakaguchi and T. T. Suzuki
National Institute for Materials Science, Japan

15:00 **28pm-G05** **Noriko Saito** AMEC

Solvothermal Synthesis of ZnO Particles and Ethanol Gas Sensor Application

N. Saito[1*], K. Suematsu[2], K. Watanabe[2], A. Yutaka[1], H. Haneda[1], I. Sakaguchi[1] and K. Shimanoe[2]
[1]National Institute for Materials Science, Japan
[2]Kyushu University, Japan

15:15 **28pm-G06** **Chumpol Supatutkul** AMEC

Band Alignment (Re)engineering in $MAPbI_3$/ZnO-nanorods via Interfacial Ni-doping: The Density Function Theory Exploratio

C. Supatutkul*, S. Pramchu, A. P. Jaroenjittichai and Y. Laosiritaworn
Department of Physics and Materials Science, Faculty of Science,Chiang Mai University, Thailand

Oral session: Magnetic material
Room G 15:45 - 17:00
Session chair: Jörg Töpfer

15:45 **28pm-G07** **Danilo Suvorov** Invited Talk IFAAI

Studying the Effect of Zn-Substitution on the Physicochemical Properties of Cobalt Ferrite Nanoparticles

S. Jovanović[1,2], M. Vukomanović[1] and D. Suvorov[1*]
[1]Advanced Materials Department, Jožef Stefan Institute, Slovenia
[2]Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia

16:15 **28pm-G08** **Mahmoud Al Ahmad** ISAF

Combined Electric and Magnetic Field Tuning of the Impedance of Lanthanum Strontium Manganite Thin Film Interdigital Electrode Devices

M. A. Ahmad
Electrical Engineering Department, UAE University, UAE

16:30 **28pm-G09** **Sakthinathan Subramanian** AMEC

Fe_3O_4 Magnetic Nanoparticles Decorated Multiwalled Carbon Nanotubes/ Three-Dimensional Graphene Oxide Composite for Electrochemical Sensor and Oxygen Reduction Reaction Application

S. Sakthinathan and T. W. Chiu
Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan

16:45 **28pm-G10** **Yongyut Kaewjumras** AMF

A Study on Influence of Temperature on Vertical Hall Sensors

Y. Kaewjumras[1*], J. Prabket[2], S. Niemcharoen[1] and W. Titiroongruang [3]
[1]Dept. of Electronic, Faculty of Engineering King Mongkut's Institute of Technology Ladkrabang, Thailand
[2]Thai Microelectronics Center (TMEC) 51/4 Moo1, Thailand
[3]Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand

Oral session: Energy storage capacitor
Room H 11:00 - 12:30
Session chair: Eric Patterson

11:00 **28am-H01** **Yanan Hao** FMA

Ultrafine Ferroelectric Nanocrystals and Their Applications on High Energy-Storage Nanocomposite

Y. N. Hao
State Key Laboratory of Information Photonics and Optical Communications & School of Science, Beijing University of Posts and Telecommunications, China

11:15 **28am-H02** **Xuewen Jiang** ISAF

Fabrication and Dielectric Properties of $BaTiO_3$-$Bi(Mg_{1/2}Zr_{1/2})O_3$ Ceramics for Energy Storage Applications

X. Jiang, H. Hao*, J. Lv, M. Cao, Z. Yao and H. Liu
State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, School of Material Science and Engineering, Wuhan University of Technology, Ch

11:30 **28am-H03** **Xu Xinwei** AMEC

Flexible Mica Films for High-Temperature Energy Storage

X. Xu[1] and H. Wang[1,2,*]
[1]State Key Laboratory for Mechanical Behavior of Materials & School of Microelectronics, Xi'an Jiaotong University, China

11:45 **28am-H04** **Seung-Hyun Kim** ISAF

Flexible High Energy Density Capacitors with Strong Reliability

S.-H. Kim[1*], S. S. Won[1], M. Kawahara[2], C. Y. Koo[3] and A. I. Kingon[1]
[1]School of Engineering, Brown University, USA
[2]Kojundo Chemical Laboratory Co. Ltd., Japan
[3]Quintess Co. Ltd., Korea

12:00 **28am-H05** **Jing Gao** AMEC

Lead-Free Silver Niobate-Based Antiferroelectric Ceramics with High Energy Storage Performance

J. Gao[1], L. Zhao[1], Q. Liu[1], S. Zhang[2] and J.-F. Li[1,*]
[1]State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China
[2]Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong, Australia

12:15 **28am-H06** **Tao Zhang** FMA

$Ba_{0.3}Sr_{0.7}Zr_{0.18}Ti_{0.82}O_3$-MgO Ceramics: Stability of the Energy Storage and Charge-Discharge Properties Against Temperature External Electric Field

T. Zhang[1], Y. L. Feng[2], Y. H. Wu[1], M. J. Ding[2], X. Y. Zuo[1] and P. Yu[*]
[1]College of Materials Science and Engineering, Sichuan University, China
[2]Aurora Technologies Co., Ltd, Creativity Industry Garden of Haizhu, China

Oral session: Energy harvesting
Room H 14:00 - 15:30
Session chair: Matthias Radecker

14:00 **28pm-H01** **Sang Don Bu** Invited Talk AMF

Flexible Nanogenerators for Energy Harvesting Based on Perovskite Piezoelectric Manostructures

J. K. Han[1,2], S. Y. Cho[1], Y. B. Lee[2], S. W. Kang[1], K.-S. Ahn[2], J. Lim[2*] and S. D. Bu[1*]
[1]Department of Physics, Chonbuk National University, Korea
[2]Thin Film Materials Research Center, Korea Research Institute of Chemical Technology, Korea

14:30 **28pm-H02** **Yaojin Wang** ISAF

Flexible Ferroelectrics for Energy Conversion and Sense Applications

Yaojin Wang
School of Materials Science and Engineering, Nanjing University of Science and Technology, China

14:45 **28pm-H03** **Feifei Wang** AMF

Flexible Piezoelectric Energy Harvester Based on Environmental-Friendly Piezoelectric Nanofibers

F. Wang[*], X. Zhao, Y. Tang, T. Wang, Z. Duan and W. Shi
Key Laboratory of Optoelectronic Material and Device, Department of Physics, Shanghai Normal University, China

15:00 **28pm-H04** **Erling Ringgaard** ISAF

Piezoelectric Ceramics for Vibrational Energy Harvesting

E. Ringgaard, T. Zawada, L.M. Bierregaard, M. Guizzetti and R. Xu
Meggitt Sensing Systems, Denmark

15:15 **28pm-H05** **Tongqing Yang** ISAF

Energy Harvesting with a Piezoelectric Circular Diaphragm

T. Yang
Functional Materials Laboratory, School of Materials Science and Engineering, Tongji University, China

Oral session: Light irradiation effect on functional ceramics
Room H 15:45 - 17:00
Session chair: Yuji Noguchi

15:45 **28pm-H06** **Nazanin Bassiri-Gharb** Invited Talk IFAAI

Effects of Irradiation on Ferroelectric Thin Films

S. J. Brewer[1], S. C. Williams[2], H. Zhou[3], J. L. Jones[3], R. Q. Rudy[4], M. Rivas[4], R. G. Polcawich[4], E. R. Glaser[5], C. D. Cress[5] and N. Bassiri-Gharb[1,2*]
[1]George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, USA
[2]School of Materials Science and Engineering, Georgia Institute of Technology, USA
[3]Department of Materials Science and Engineering, North Carolina State University, USA
[4]Army Research Laboratory, USA
[5]Naval Research Laboratory, USA

16:15 **28pm-H07** **Evelyn Chin** ISAF

Effects of Gamma Irradiation on Functional Response of PMN-PT Thin Films

E. S. Chin[1*], C. D. Cress[2], S. C. Williams[1] and N. Bassiri-Gharb[1,3]
[1]School of Materials Science and Engineering, Georgia Institute of TechnologyAtlanta, USA
[2]Naval Research Laboratory, USA

[3]G.W. Woodruff School of Mechanical Engineering, Georgia Institute of TechnologyAtlanta, USA

16:30 **28pm-H08** **Amonrat Kerdpradist** AMF

Measurement and Extraction of Gamma Irradiation on Drain Current and Threshold Voltage of N-Channel MOSFET

A. Kerdpradist[1*], A. Ruangphanit[2], W. Titiroongruang[1] and R. Muanghlua[1]
[1]Department of Electronic Engineering, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand
[2]National Electronics and Computer Technology Center (NECTEC), National Science and Technology Development Agency (NSTDA), Thailand

16:45 **28pm-H09** **Winai Thongpan** AMEC

Electrochromic Properties of Vanadium-doped Tungsten Oxide Films Prepared by Sparking Method

W. Thongpan[1,2], D. Louloudakis[3] and P. Singjai[1,4*]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]Graduate School Chiang Mai University, Thailand
[3]Institute of Electronic Structure and Laser (IESL), Greece
[4]Materials Science Research Center, Faculty of Science, Chiang Mai University, Thailand

Oral session: Special Session: Dielectric & piezoelectric properties under high field
Room I 11:00 - 12:30
Session chair: Zhongyang Cheng

11:00 **28am-I01** **Xi Yao**

Introductry talk: Challenges When Bumping Across Highly Stressed Dielectrics

X. Yao
Xi'an Jiaotong University, China

11:15 **28am-I02** **Reimund Gerhard** Invited Talk AMF

Polymer Electrets and Ferroelectrets under High Electric Fields

R. Gerhard
Institute of Physics and Astronomy, University of Potsdam, Germany

11:45 **28am-I03** **Sheng-Guo Lu** Invited Talk IFAAE

Direct Measurement of Large Electrocaloric Effect in $Ba(ZrTi)O_3$ and $(PbLa)(ZrTi)O_3$ Ceramics

X.-D. Jian, B. Lu, D.-D. Li, Y.-B. Yao, T. Tao, B. Liang, J.-H. Guo, Y.-J. Zeng, J.-L. Chen and S.-G. Lu
Guangdong Provincial Research Center on Smart Materials and Energy Conversion Devices, Guangdong Provincial Key Laboratory of Functional Soft Condensed Matter, School of Materials and Energy, Guangdong University of Technology, China

12:15 **28am-I04** **Takaaki Tsurumi** FMA

Why Relaxors Shows High Breakdown Strength at High Temperatures?

T. Tsurumi, M. Karube, T. Hoshina and H. Takeda
Tokyo Institute of Technology, Japan

Oral session: Special Session: Dielectric & piezoelectric properties under high field
Room I 14:00 - 17:00
Session chair: Reimund Gerhard & Takaaki Tsurumi

14:00 **28pm-I01** **Mitch Thompson** Invited Talk AMEC

Behavior of Very Thin P(VDF-TrFE) Films of Various Compositions

M. Thompson[1] and Y. Wang[2]
[1]Sensors Solutions business unit, TE Connectivity, USA
[2]Retired

14:30 **28pm-I02** **Xiaoyong Wei** Invited Talk FMA

Antiferroelectrics Under High Field for Energy Storage Application

Y. Tian, R. Xu, Y. Feng, Z. Xu and X. Wei[*]
Electronic Materials Research Laboratory, the Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xian Jiaotong University, Chin

15:00 **28pm-I03** **Genshui Wang** Invited Talk FMA

Energy Storage Properties of Inorganic Antiferroelectrics

G. Wang[*], C. Xu, X. Chen, F. Gao, S. Yan, J. Ye, Z. Liu and X. Dong
Key Laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Chaina

15:30 **28pm-I04** **Zhongyang Cheng** Invited Talk AMF

Physics and Microstructure of Interfacial Layer and Its Role in Dielectric Composites

Z. Cheng
Materials Reserach and Education Center, Auburn University, USA

16:00 **28pm-I05** **Yang Shen** Invited Talk FMA

Dielectric Breakdown of Polymer Composites: Experiments & Phase-Field Simulations

Y. Shen[1*], J. Y. Jiang[1], Z. H. Shen[1] and L. Q. Chen[2]
[1]School of Materials Science and Engineering, State Key Lab of New Ceramics and Fine Processing, Tsinghua University, China
[2]Department of Materials Science and Engineering, The Pennsylvania State University, United States

16:30 **28pm-I06** **Do-Kyun Kwon** Invited Talk ISAF

Novel Dielectric Composites with 2-D Oxide Nanofillers for Pulse Power Capacitor Applications

Y. Goh[1], H. Bae[2], H. Cho[1], H. Shin, [1] and D.-K. Kwon[1,2*]
[1]Department of Materials Engineering, Korea Aerospace University, Korea
[2]Materials Research Institute, Korea Aerospace University, Korea

Oral session: Characterization of piezoelectric properties and application
Room J 11:00 - 12:30
Session chair: Yasuo Cho

11:00 **28am-J01** **Lorena Pardo** Invited Talk IFAAI

Advances on the Piezoelectric Ceramics Characterization from Resonance

L. Pardo
Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), c/Sor Juana Inés de la Cruz, Spain.

11:30 **28am-J02** **Thorsten Schmitz-Kempen** Invited(short) IFAAI

Piezoelectric Thin Film Characterization by Double-Beam Laser Interferometry and Cantilever Methods

T. Schmitz-Kempen, S. Tiedke and R. Kessels
aixACCT Systems GmbH, Germany

11:45 **28am-J03** **Jurij Koruza** Invited Talk ISAF

Switching Mechanisms in Polycrystalline Ferroelectric Materials

J. Schultheiß[1], M. Weber[1], L. Liu[2], J. E. Daniels[2] and J. Koruza[1*]
[1]Institute of Materials Science, TU Darmstadt, Germany,
[2]School of Materials Science and Engineering, UNSW, Australia

12:00 **28am-J04** **K. Sethupathi** FMA

Band Gap, Piezoelectricity and Temperature Dependence of Differential Permittivity and Energy Storage Density of PZT with Different Zr/Ti Ratios

S. Samanta, V. Sankaranarayanan and K. Sethupathi*
Department of Physics, Indian Institute of Technology Madras, India

Oral session: 2D materials, domain wall conduction, sulfides, nitrides
Room J 14:00 - 15:15
Session chair: Geoff Brennecka

14:00 **28pm-J01** **Yongxiang Li** Invited Talk AMEC

Synthesis, Characterisation and Piezoelectric Properties of 2D Tin Sulfides

H. Khan, T. Daeneke, K. Kalantar-zadeh and Y. Li*
School of Engineering, RMIT University, Australia

14:30 **28pm-J02** **Junling Wang** ISAF

Unique Properties of 2D Ferroelectric $CuInP_2S_6$

J. Wang*, L. You and Z. Liu
School of Materials Science and Engineering, Nanyang Technological University, Singapore

14:45 **28pm-J03** **Yelim Song** AMEC

Growth of AlN Crystals Using Sn-Flux

Y. Song[1,2*], F. Kawamura[1], T. Taniguchi[1], K. Shimamura[1,2] and N. Ohashi[1,3]
[1]National Institute for Materials Science, Japan
[2]Graduate School of Advanced Science and Engineering, Waseda University, Japan
[3]Materials Research Center for Element strategy, Tokyo Institute of Technology, Japan

15:00 **28pm-J04** **Silviu Sandu** ISAF

Complexion Formation in Ab-Normally Oriented Grains in AlScN Films

C. S. Sandu[1*], F. Parsapour[1], V. Pashchenko[1], T. LaGrange[2] and P. Muralt[1]
[1]Electroceramic Thin films Group, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland
[2]Interdisciplinary Centre for Electron Microscopy, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Oral session: BNT-based ceramics
Room J 15:30 - 17:00
Session chair: Hajime Nagata

15:30 **28pm-J05** **Ping Peng** AMEC

Pressure Induced Ferroelectric-Relaxor Phase Transition in $(Bi_{0.5}Na_{0.5})TiO_3$ Based Ceramics

P. Peng[1,2], H. Nie[1], Z. Liu[1], G. Wang[1] and X. Dong[1*]
[1]Key laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, People's Republic of China
[2]University of Chinese Academy of Sciences, People's Republic of China

15:45 **28pm-J06** **Ill Won Kim** AMF

High Electrostrictive Coefficients of Lead-Free Relaxor Ferroelectric BNKT-BNiT Ceramics by Compositional Tuning

I. W. Kim[1*], A. Ullah[1,2], M. Sheeraz[1], W. Jo[3], C. W. Ahn[1] and T. H. Kim[1]
[1]Department of Physics and EHSR C, University of Ulsan, Korea
[2]Department of Physics, University of Science and Technology, Pakistan
[3]School of Materials Science and Engineering, Ulsan National Institute of Science and Technology, Korea

16:00 **28pm-J07** **Jing Shi** ISAF

Tailoring Strain Response Through Defect-Dipole Alignment in Sodium Bismuth Titanate Based Ceramics

J. Shi[1*], X. Liu[2], W. Tian[1] and H. Fan[3]
[1]Key Laboratory of Electronic Equipment Structure Design (Ministry of Education), School of Mechano-Electronic Engineering, Xidian University, China
[2]2College of Materials Science and Engineering, Xi'an University of Science and Technology, China
[3]State Key Laboratory of Solidification Processing, School of Materials Science and Engineering, Northwestern Polytechnical University, China

16:15 **28pm-J08** **Wenxiong Zhang** AMF

Anomalous Piezoelectric Response of Ferroelectric Mesocrystalline $BaTiO_3/Bi_{0.5}Na_{0.5}TiO_3$ Nanocomposites Designed by Strai Engineering

W. Zhangand Q. Feng
Department of Advanced Materials Science, Faculty of Engineering, Kagawa University, Japan

16:30 **28pm-J09** **Sasiporn Prasertpalichat** AMEC

Effects of A-Site and B-Site Acceptor Dopants in $Bi_{0.5}Na_{0.5}TiO_3$-$BaTiO_3$ Lead-Free Ceramics

S. Prasertpalichat[1,2*], S. Kaengketkarn[1], T. Siritanon[3] and T. Bongkarn[1,2]
[1]Department of Physics, Faculty of Science, Naresuan University, Thailand
[2]Research Center for Academic Excellent in Applied Physics, Faculty of Science, Naresuan University, Thailand
[3]School of Chemistry, Institute of Science, Suranaree University of Technology, Thailand

16:45 **28pm-J10** **Zhi-Tao Li** ISAF

Highly Enhanced Depolarization Temperature in $(Bi_{0.5}Na_{0.5})TiO_3$-Based Lead-Free Piezoceramics

Z.-T. Li[1,2], H. Liu[1], M.-H. Zhang[2], J.-F. Li[2], K. Wang[2*] and J. Chen[1*]
[1]Department of Physical Chemistry, University of Science and Technology Beijing, China
[2]State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China

Poster session
Hall P 17:15 - 18:45

28pm-P001 **Yongyut Laosiritaworn** AMEC

First Principles Investigation of Structural Stability and Phase Transformation near Morphotropic Phase Boundary of $K_{1-x}Na_xNb$ Solid Solutions

S. Pramchu, A. P. Jaroenjittichai and Y. Laosiritaworn
Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand

28pm-P002 **Muhammad Yaseen** AMF

Effect of Pressure on Mechanical and Thermoelectric Behavior of $PbTiO_3$: FirstPrinciple Approach

M. Yaseen[1*], K. Asghar[1], M. Waqas[1] and W. Ren[2]
[1]Department of Physics, University of Agriculture University, Pakistan
[2]Electronic Material Research Laboratory, Key Laboratory of the Ministry of Education andInternational Center for Dielectric Research, Xi'an Jiaotong University, China

28pm-P003 **Muhammad Yaseen** AMEC

Effect of Pressure on Structural, Optical and Electronic Properties of $SrTiO_3$ by Modified Becke Johnson Potential

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28pm-P004 **Yue Liu** FMA

Molecular Dynamics Simulation of Ferroelectric Substrate Assistant Controlling Pd Thin Films Lattice Face Preference Growth: (001) and (111)

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28pm-P005 **Atchara Jaroenjittichai** AMEC

Band Alignment of Cesium-Based Halide Perovskites

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28pm-P006 **Kyohei Takae** FMA

Mesoscopic Heterogeneity and Glassy Behavior of Spheroidal Dipoles with Impurities

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28pm-P007 **Diego Ochoa Guerrero** ISAF

A New Methodology to Study Dielectric Relaxations in Ferroelectric Materials

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28pm-P008 **Hongbo Liu** ISAF

The Influences of Parameters for Predicted Electrocaloric Responses in Ferroelectrics

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28pm-P009 **Ge Wang** ISAF

Electric Field-Induced Metastable Ferroelectric Phase in Relaxor-Ferroelectric $Na_{0.5}Bi_{0.5}TiO_3$ - $xNaNbO_3$ Ceramics

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28pm-P010 **Makoto Iwata** FMA

Nonlinear Dielectric Constant in Relaxor Ferroelectrics $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$

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28pm-P011 **Kunyu Zhao** AMEC

Investigation of Domain Dynamics in Rare Earth Elements-Doped PMN-PT Transparent Ceramics via Piezoresponse Force Microscopy

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28pm-P012 **Qingyuan Hu** ISAF

Investigation of Domain Structure Evolution during Zero-Field Temperature Treatment in 0.67PMN-0.33PT Single Crystals

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28pm-P013 **Serges Mkam Tchouobiap** ISAF

Ferroelectric Phase Transition and Soft Mode Behavior in $Ba_xSr_{1-x}TiO_3$ Crystals Based on the Quasi-Harmonic Model

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28pm-P014 **ChienMing Lei** AMF

Investigating the Structure Transition and Microwave Property of Hexagonal $(Sr_xBa_{1-x})(Ti,Fe)O_3$ Ceramic

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28pm-P015 **Mahshid Ahmadi** ISAF

Observations of Soft Phonons in Methyl Ammonium Lead Iodide Perovskite

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28pm-P016 **Juras Banys** ISAF

Dielectric Properties and Phononic Modes of $Ag_xLi_{1-x}NbO_3$ Ceramics

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28pm-P017 **Vladimir Shur** AMF

Domain Formation by Electron Beam in Congruent Lithium Niobate

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28pm-P018 **Vladimir Shur** ISAF

Domain Structure Evolution in PMN-PT Single Crystal during Field Cooling

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28pm-P019 **Vladimir Shur** AMF

Formation of Self-organized Domain Structures during Local Switching on Non-Polar Cut of Lithium Niobate

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28pm-P020 **Tadashi Kuriharm** AMF

Dielectric and Thermal Studies in $RbNaSO_4$

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28pm-P021 **Tadashi Kurihama** AMF

Phase Transitions in $CsLiSO_4$

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28pm-P022 **Yui Ishii** FMA

Single Crystal X-ray Diffraction Study for $Ba_{0.93}Sr_{0.07}Al_2O_4$

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28pm-P023 **Yiqiang Qin** ISAF

Rigorous Intensity and Phase-Shift Manipulation in Optical Frequency Conversion

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28pm-P024 **Junji Nishiyama** AMEC

Conduction Mechanism of $SrTiO_3$ Crystal Fabricated by Annealing with NH_3 and O_2

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28pm-P025 **Weijin Hu** PFM

Intercorrelated In-Plane and Out-of-Plane Ferroelectricity in Ultrathin Two-Dimensional Layered Semiconductor In_2Se_3

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28pm-P026 **Stanislav Kamba** AMF

Electromagnons and Magnetoelectric Coupling in Multiferroics with the Y- and Z-type Hexaferrite Crystal Structures

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28pm-P027 **Shenglan Hao** AMEC

A Good Thermal Stability Orange-reddish Light Emitting Luminescent-ferroelectric Material: SCNN with Sm^{3+} Doped

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28pm-P028A **Yasmin Abdelrahman** ISAF

Polar Structure Control and Piezoelectric Performance of Electrospun PVDF

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28pm-P029A **Jeong Woo Lee** FMA

Elastic Anomalies of Barium Titanate ($BaTiO_3$) Single Crystals in the Paraelectric Phase Studied by Using Brillouin Spectrosco

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28pm-P030A **Seiichiro Azuma** FMA

Polarization Contributions to High Temperature DC Field Response for $BaTiO_3$ Ceramics

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28pm-P031A **Shuhei Takezawa** FMA

Ion Dynamics of $SrTiO_3$-$LiTaO_3$ Ceramics Studied by Far-Infrared Spectroscopic Ellipsometry

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28pm-P032A **Keisuke Yazawa** ISAF

Microstructure Effect on Ferroelectric and Ferroelastic Switching in Polycrystalline Ferroelectric Thin Film

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28pm-P033A **Yuta Kurokawa** FMA

Formation of Ferroelectric Domain Walls into (110)-oriented $BiFeO_3$ Thin Films

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28pm-P034A **Han-Byul Jang** AMF

Thickness Induced Superconductor-Insulator Transition in $La_{1.85}Sr_{0.15}CuO_4$ Thin Film by Bose-Glass Model

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28pm-P035A **Chaiyawat Kaewmeechai** AMEC

The First-Principles Pursuit of Photovoltaic Applications from $MgGeN_2$/GaN and $MgGeN_2$/ZnO Heterojunctions

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28pm-P036A **Jianfei Ye** ISAF

High Energy Density Nanocomposites Research Based on PVDF with Liquid Nitrogen Quenching

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28pm-P037A **See-Chuan Yam** AMF

Correlation between Molecular Polar Surface Area and Bioferroelectricity in DNA and RNA Nucleobases

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28pm-P038A **Wattana Tuichai** AMEC

Nonlinear Electrical Properties and Enhanced Dielectric Permittivity with Suppressed Loss Tangent in $(Al_{1/2}Ta_{1/2})_xTi_{1-x}O_2$ Ceramics

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28pm-P039A **Minkyu Choi** ISAF

Piezoelectric Coupling and Losses with Canted Polarization and Partial Electrode

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28pm-P040A **Eiichi Oishi** FMA

Light Scattering Study on Sodium Chlorate

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28pm-P041A **Jingjing Liu** ISAF

Study on the Polarization and Relation Processes of Ferroelectric Polymer Films Using the Sawyer-Tower Circuit with Square Voltage Waveform

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28pm-P042A **Jingjing Liu** ISAF

Metal-free Catalytic Reactions for the Controlled Hydrogenation of Poly(vinylidene fluoride-chlorotrifluoroethylene)

W. W. Zhang, Y. F. Zhao, S. B. Tan and Z. C. Zhang*
Department of Applied Chemistry, Xi'an Jiaotong University, P.R. China

28pm-P043A **Yumin Goh** ISAF

Enhanced Formation of Polar Phases of Poly(vinylidene fluoride) in Nanocomposites Induced by Exfoliated Muscovite

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28pm-P044A **Bo Wang** AMEC

Energy storage properties of $Sr_{0.8}(Na_{0.5}Bi_{0.5})_{0.2}TiO_3$ ceramics prepared by microwave sintering

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28pm-P045A **Thanyapon Wittinanon** AMEC

Aging Behavior of BT-PC-PVDF Composites

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28pm-P046A **Danielle Woodruff** ISAF

Grain Growth Kinetics of Nb Doped and Undoped $BaTiO_3$ with Varying Amounts of TiO_2.

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28pm-P047A **Sergejus Bal** ISAF

Dielectric Properties of $BaTiO_3$ Based Composites

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28pm-P048A **Seiya Kato** FMA

Dielectric Properties of $BaTiO_3$ under AC Electric Field Studied Bytime-resolved X-ray Absorption Spectroscopy

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28pm-P049A **Li Jian Hua** AMEC

Dielectric Properties and Microstructures of Non-reducible X8R $BaTiO_3$ Ceramics Co-doped with Sc_2O_3 and MgO

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28pm-P050A **Piyush Sapkota** AMEC

Grain-size Effect in Dielectric and Ferroelectric Properties of Barium Titanate Ceramics with Different Ba/Ti Ratios

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28pm-P051A **Jeeranan Nonkumwong** AMEC

Sintering Temperature Dependence on Phase formation, Microstructure and Dielectric Properties of Barium Zirconate Titanate Ceramics

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28pm-P052A **Haifeng He** AMF

Effects of Sintering Time on Microstructure, Electric Properties of $Ba_{0.7}Sr_{0.3}TiO_3$ Ceramics

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28pm-P053A **Gopal Khanal** AMEC

Assessment of Polishing- and Cutting-induced Piezoelectric Degradation in $BaTiO_3$ Ceramics

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28pm-P054A **Shuai Cheng** AMEC

Enhanced Insulating and PiezoElectric Properties of $0.7BiFeO_3$-$0.3BaTiO_3$ Lead-Free Ceramics by Optimizing Calcination Temperature: Analysis of Bi^{3+} Volatilization and Phase Structures

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28pm-P055A **Yutarou Iida** AMF

Effects of Ca Substitution on the Electromechanical Properties of $(Ba_{1-x}Ca_x)(Ti_{0.9}Hf_{0.1})O_3$ Piezoelectric Ceramics

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28pm-P056A **Surirat Yotthuan** AMEC

Phase Ratio, Dielectric, Ferroelectric and Magnetic Properties of BCTZ Ceramics with CuO Doping Synthesized by Solid State Combustion

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28pm-P057A **Minsu Kim** AMEC

Investigation of Suspension Condition for Fabrication of $(Bi_{0.5}Na_{0.5})TiO_3$-$BaTiO_3$ Green Ceramics by Electrophoretic Depositi

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28pm-P058A **Pichittra Thawong** AMEC

Effect of BFCO Contents on Phase Formation, Microstructure and Electrical Properties of BNT-BCTZ Ceramics were Prepared Combustion Technique

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28pm-P059A **Xing Liu** AMF

Giant Electrostrain Accompanying Structural Evolution in Lead-Free NBT-Based Piezoceramics

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28pm-P060A **Seong Hyun Kim** ISAF

The Reduced Reversible Phase Transition Field of Lead-Free Bi-Based Ceramic Composites by Adding Nonergodic Relaxor

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28pm-P061A **Hyun-Wook Nam** AMEC

Post-Annealing and Quenching Effect on Dielectrics, Piezoelectric and Ferroelectrics Properties in Bi-Based Piezoelectric Ceran

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28pm-P062A **Wook Hee Han** AMEC

The Structural and Piezoelectric Properties of (1-x)(0.94$Bi_{0.5}Na_{0.5}TiO_3$-0.06$BaTiO_3$)

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28pm-P063A **Alyssa Johnson** ISAF

Analysis of the Average vs. Local Structure of (1-x)$Na_{0.5}Bi_{0.5}TiO_3$-(x)$PbTiO_3$ near the Morphotropic Phase Boundary

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28pm-P064A **Xin Li** AMEC

Ultra-Broad Working Temperature Dielectric Material System $BaFe_{0.05}Nb_{0.05}Ti_{0.9}O_3$-$Bi_{0.5}Na_{0.5}TiO_3$-$BiMg_{2/3}Nb_{1/3}O_3$

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28pm-P065A **Takuya Kujirai** AMF

Low Sintering Temperature of ($Bi_{1/2}Na_{1/2}$)TiO_3–based Ceramics with Some Additive Dopants and Their Electrical Properties

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28pm-P066A **YuJie Wu** AMF

Study in Electric-Field-Induced Giant Strain of ($Bi_{0.5}Na_{0.5}$)$_{(0.925-x)}$$Ba_{0.075}Sr_xTiO_3$ Relaxor Ferroelectric Ceramics

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28pm-P067A **Minyoung Park** AMEC

The Dielectric Properties by Temperature of Bi(Mg,Ti)O_3-$PbTiO_3$ Ceramic

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28pm-P069A **Pamornnarumol Bhupaijit** AMEC

Effect of Fe^{3+} Substitution in B-site of BNKLT System on Phase Formation, Microstructure, Electrical and Magnetic Properties

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28pm-P070A **Trung Doan** AMEC

Controlled-Atmosphere Sintering of $KNbO_3$

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28pm-P071A **Akinori Tateyama** ISAF

Effect of Starting Material on the Deposition Behavior and Their Film Properties in Orientation-Controlled (K,Na)NbO_3 Thick F Prepared by Hydrothermal Method

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28pm-P072A **Mitsuki Kawano** ISAF

Domain Switching by Applied Electric Field in (001) and (111)-epitaxial ($K_{0.5}Na_{0.5}$)NbO_3 Films

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28pm-P073A **Kathleen Coleman** ISAF

Influence of Stresses on Properties of Piezoelectric Thin Film Devices

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28pm-P074A **Naoki Okamoto** FMA

The Effect of Crystal Distortion and Domain Structure on Piezoelectric Properties of $BiFeO_3$ Thin Films

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28pm-P075A **Sridevi Meenachisundaram** AMEC

Enhanced Ferroelectric Effect in Free-Standing PZT Thin Film by RF Sputtering

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28pm-P076A **K. Sethupathi** ISAF

Temperature Dependent Differential Permittivity and Energy Storage Density of PLZT Ceramics

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28pm-P077A **K. Sethupathi** AMEC

Dielectric and Piezoelectric Properties and Electrocaloric Effect in Relaxor PLZT Ceramics with Different Diffusivity

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28pm-P078A **Hui Wang** AMF

Growth, Characterization and Phase Transition of $La_2Ti_2O_7$ Single Crystals

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28pm-P079A **Kosuke Kuroishi** ISAF

Fabrication and Electrical Properties of Grain Oriented ($K_{0.5}Bi_{0.5}$)$_2Bi_4Ti_5O_{18}$ Ceramics

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28pm-P080A **Zhanhui Peng** AMEC

Improved Grain Boundaries Response and Dielectric Properties of $CdCu_3Ti_4O_{12}$ Ceramics by Doping with Zn^{2+} Ions

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28pm-P081A **Toshiki Mitani** FMA

High Frequency Dielectric Properties of Sn^{2+} Loaded Relaxor Ferroelectric (Sr, Ba)Nb_2O_6

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28pm-P082A **Fengqi Wang** FMA

Microstructure and Electric Properties of $(Ca_{1-x}Sr_x)_3(Ti_{1-y}Mn_y)_2O_7$ Ceramics

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28pm-P083A **Panadda Phansamdaeng** AMEC

Magnetic and Dielectric Properties of $BaTiO_3/MnCr_{0.2}Fe_{1.8}O_4$ Magnetoelectric Composites

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28pm-P084A **Arij Marzouki** ISAF

Study of Mutiferroic Properties and Enhanced Magnetoelectric Coupling in (BFCO-PZT) Composites

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28pm-P085A **Nitin Kumar** ISAF

Development of Co/Ti Modified Multiferroic $Bi(Co_{0.30}Ti_{0.30}Fe_{0.40})O_3$ Material for Device Applications

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28pm-P086A **Muhammad Naveed-Ul-Haq** ISAF

Converse Magnetoelectric Coupling in the Extrinsic Multiferroic Composite Ceramics $(1-x)(Ba,Ca)(Zr,Ti)O_{3-x}NiFe_2O_4$

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28pm-P087A **Yi-Shin Jou** FMA

Photovoltaic Effects and Microstructures in Multiferroic $(Bi_{0.93}Nd_{0.07})FeO_3$ Ceramics

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28pm-P088A **Yi-Shin Jou** FMA

Effects of Synthesizing Atmosphere in Microstructure and Photovoltaic Properties of Multiferroic $(Bi_{0.93}Nd_{0.07})FeO_3$ Ceramics

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28pm-P089A **Shinya Kondo** FMA

Experimental Study of Effect of Strain on Electro-Optic Effect in Epitaxial (Ba, Sr)TiO_3 Thin Films

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28pm-P090A **Todd Surta** ISAF

The Impact of Cation Disorder on Dielectric and Ferroelectric Properties in Highly Substituted $Bi_2Sr(A)TiNb_2O_{12}$ ($A = Ca^{2+}$, Sr Ba^{2+}) Aurivillius Phases

T. W. Surta[1], A. Manjon-Sanz[2], E. Qian[1], T. T. Tran[2], R. Mansergh[1], L. Fullmer[1] and M. R. Dolgos[1 *]
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28pm-P091A **Mikhail Belyanchikov** ISAF

Ferroelectricity of Nanoconfined Water Molecules

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28pm-P092A **Caiyan Wang** ISAF

Synthesis, Microstructure and Dielectric Properties of $Pb(Cd_{1/3}Nb_{2/3})O_3$: From Single Crystal and Ceramics Aspect

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28pm-P093A **Taro Aso** FMA

Brillouin Light-Scattering Studies of Ordered and Disordered Lead Scandotantalate Ceramics

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28pm-P094A **Kotaro Abe** FMA

Broadband Light-Scattering Study on PZN-PT under External Electric Field

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28pm-P095A **Rikuya Oishi** AMF

The Influence of A-site Vacancy on the Relaxor Behaviors of $(Sr_{0.7}Ba_{0.3})_{1+x}Nb_2O_{6+x}$ with Tungsten Bronze Structure

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28pm-P096A **Andraz Bradesko** ISAF

Multifunctional Cantilevers: a Step towards Electrocaloric Solid-State Cooling

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28pm-P097A **Takuto Oshima** FMA

Electro-Acoustical Constants and Rayleigh SAW Propagation Characteristics of $Ca_2Al_2SiO_7$ Single Crystal

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28pm-P098A **Fazel Parsapour** ISAF

Micromachined Aluminum Scandium Nitride Lamb Wave Resonators Utilizing Low Orders Symmetric Mode

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28pm-P099A **Masaaki Aramaki** FMA

Investigation of the Effect of Nonlinearity on the Electromechanical Properties of Piezoelectric MEMS Vibration Energy Harves

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28pm-P100A **Ayman Shahin** ISAF

Open-Cell PVDF Foams with Piezoelectric Properties for Noise Absorption

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28pm-P101A **Takuya OKayama** FMA

ZnO-FET with P(VDF-TrFE) Gate Insulating Film

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28pm-P102A **Mahmoud Al Ahmad** ISAF

Highly Sensitive Piezo-Based Touch Sensor for Robotics Applications

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28pm-P103A **Jeongjae Ryu** AMF

Flexible and Stretchable Hollow Fiber-Type Piezoelectric Nanogenerator and Strain Sensor

J. Ryu*, J. Kim, C. Oh, H. Kim, S. Cho, M. Glasser, H. Kim, K. No, S. Park and S. Hong
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28pm-P104A **Yingxiang Liu** AMEC

Design and Experiment Evaluation of a Rotatable and Deployable Sleeve Mechanism Using a Two-DOF Piezoelectric Actuator

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28pm-P105A **Junkao Liu** AMEC

A Long Stroke Linear Stepping Piezoelectric Actuator Using Two Longitudinal-Bending Hybrid Transducers

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28pm-P106A **Weishan Chen** AMEC

A Multi-Beams Linear Piezoelectric Actuator Operating in Resonant and Non-Resonant Modes

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28pm-P107A **Qi Su** AMEC

A Three-Dimensional Piezoelectric Nanopositioner Using a Sandwich Transducer

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28pm-P108A **He Li** AMEC

An Experiment Study on Temperature Characteristics of Linear Ultrasonic Motor

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28pm-P109A **Guo Li** AMEC

Study on the Broadband Piezoelectric Ceramic Transducer Based on Radial Enhanced Composite Structure

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28pm-P110A **Runar Dahl-Hansen** ISAF

Performance and Reliability of PZT-Based Piezoelectric Micromirrors Operated in Realistic Environments

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28pm-P111A **Ryohei Hasegawa** FMA

Effects of Dispersion State of Ceramic Fillers in Multilayer Ceramic/Polymer Piezoelectric Vibration Energy Harvester

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28pm-P112A **Sanghyun Yoon** AMEC

Optimum Piezoelectric Energy Harvester by Impedance Matching

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28pm-P113A **Jae-Hoon Ji** AMEC

Bi Excessed $(Bi,Sc)O_3$-$(Pb,Ti)O_3$ Ceramics for Energy Harvesting Applications

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28pm-P114A **Xuan Wang** FMA

Exploiting the Properties of Ternary Single Crystal PIN-PMN-PT to Establish a Structure for Both of Output Power and Bandwi Enhancement

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28pm-P115A **Yuancai Yang** AMEC

A Pendulum-Type Underwater Piezoelectric Energy Harvester Based on Flow Induced Vibration

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28pm-P116A **Holly Pearce** ISAF

Synthesis and Characterisation of Lead Free Porous Ferroelectrics for Strain Energy Harvesting in Car Tyres

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28pm-P117A **Ying Gong** AMEC

Piezoelectric Energy Harvester with Pelvic Fin Cylinder Vibrator

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28pm-P118A **Atal Swain** ISAF

Energy Harvesting and Magnetoelectric Effect in Lead Free Ferroelectric BCT-BZT

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28pm-P119A **Jinhwan Kim** AMEC

Enhanced Li and Sb Doped Lead-Free (Na,K)NbO_3 Piezoelectric Ceramics for Energy Harvester Applications

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28pm-P120A **Jinhwan Kim** AMEC

rGO Introduced PMN-PT PVDF Polymer Composite Films for High Performance Piezoelectric Energy Harvester

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28pm-P121 **Jing Qiu** AMEC

Giant Zero-Biased Flexible Magnetoelectric Laminate Composites for Wearable Magnetic Sensor

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28pm-P122 **Jing Qiu** AMEC

High Sensitivity Flexible Zero-Biased Magnetoelectric Sensor Based on Metglas/Poly(vinylidene fluoride) Heterostructures

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28pm-P123 **Jing Qiu** AMEC

A Multi-Source Energy Harvester with Integrated Structure Based on $Pb(Zr_{1-x}Ti_x)O_3$ Piezoelectric Ceramics

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28pm-P124 **Juhyun Yoo** ISAF

Piezoelectric and Energy Harvesting Properties of $(Na_{0.52}K_{0.443}Li_{0.037})(Nb_{0.883}Sb_{0.08}Ta_{0.037})O_3$ Ceramics

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28pm-P125 **Chae Il Cheon** AMEC

Piezoelectric Energy Harvesting Characteristics of $(K,Na,Li)(Nb,Ta)O_3$ Ceramics with Various Li Contents

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28pm-P126 **Mahmoud Al Ahmad** ISAF

Displacement Extraction of Piezoelectric Films

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28pm-P127 **Mahmoud Al Ahmad** ISAF

Heartbeat Rate and Blood Pressure Extraction of Respiratory Piezoelectric Based Signals

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28pm-P128 **Qiang Zhang** AMEC

A Novel Pipe Type Piezoelectric Actuator Using First Order Bending Vibration

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28pm-P129 **Yeong Ho Jeong** ISAF

Displacement Distribution Properties of Force Feedback Multilayer Piezoelectric Actuator

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28pm-P130 **Soon-Jong Jeong** AMEC

Properties of CuAg/$(Bi_{0.37}Na_{0.37}Sr_{0.26})TiO_3$Multilayer Ceramic Actuator

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28pm-P131 **Cuong Nguyen** ISAF

The Effect of Partial Clamping on Actuation of Piezoelectric Beams

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28pm-P132 **Chunlong Fei** ISAF

$BiScO_3$-0.64$PbTiO_3$ Piezoelectric Ceramics for High Temperature Ultrasonic Transducer Applications

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28pm-P133 **Shaopeng He** AMEC

Design and Experimental Research on a Deep-Sea Resonant Linear Ultrosonic Motor

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28pm-P134 **Chaodong Li** ISAF

A Humanoid Biped Piezoelectric Linear Ultrasonic Motor

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28pm-P135 **Xiaohui Yang** AMEC

Flexible Sandwich-Type Ultrasonic Motor with Four Feet

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28pm-P136 **Xiang Shi** AMF

Simulation Studies for Ring type Ultrasonic Motor Using Relaxor Ferroelectric Single Crystal with a Novel Cutting Orientation

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28pm-P137 **Xiaolong Lu** ISAF

Acoustic Topographical Manipulations for Nanomotors

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28pm-P138 **Soodkhet Pojprapai** ISAF

Piezoelectric Ceramic Polymer Composite for Force Sensor Application

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28pm-P139 **Kaoru Yamashita** ISAF

Piezoelectric Resonating Force Sensor in the Second Vibration Mode

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28pm-P140 **Kaoru Yamashita** ISAF

Piezoelectric Ultrasonic Microsensors on Buckled Diaphragms Using Sol-Gel Derived PZT Films

K. Yamashita*, S. Nakajima, J. Shiomi and M. Noda
Graduate School of Science and Technology, Kyoto Institute of Technology, Japan

28pm-P141 **Yusuke Takei** FMA

Mechanomyogram Measurement by PZT-Based AE Sensor

Y. Takei * and T. Kobayashi
National Institute of Advanced Industrial Science and Technology, Japan

28pm-P142 **Muangjai Unruan** AMF

Effect of Electric Field Frequency on Energy Density of PMN-PT Ceramics

M. Unruan[1*], S. Unruan[2] and R. Yimnirun[3]
[1]Department of Applied Physics, Faculty of Sciences and Liberal Arts, Rajamangala University of Technology Isan, Thailand
[2]Department of Materials Engineering, Faculty of Engineering and Architecture, Rajamangala University of Technology Isan, Thailand
[3]School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology, Thailand

28pm-P143 **Saichon Sriphan** AMEC

Effect of Barium Titanate Fibers Added into Polydimethylsiloxane Matrix with Interdigital Electrode on the Capacitive Property Flexible Piezoelectric Devices

S. Sriphan[1], C. Nawanil[1,2] and N. Vittayakorn[1,3,4]
[1]Advanced Material Research Laboratory, Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[2]Department of Physics, Faculty of Science, Udon Thani Rajabhat University, Thailand
[3]Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[4]Nano-KMITL Center of Excellence on Nanoelectronic Devices, King Mongkut's Institute of Technology Ladkrabang, Thailand

28pm-P144 **Kamal Asadi** ISAF

Revisiting Ferroelectricity in Nylons

S. Anwars and K. Asadi*
Max-Planck Institute for Polymer Research, Germany

28pm-P145 **Vladimir Pashchenko** ISAF

AlScN and AlN - Based Hybrid BAW/SAW Resonator with Enhanced Q-Factor and Electromechanical Coupling

V. Pashchenko[1*], F. Parsapour[1], H.-P. Zinn[2] and P. Muralt[1]
[1]Thin Films Group, Swiss Federal Institute of Technology in Lausanne, Switzerland
[2]GE Energy Switzerland GmbH, Switzerland

28pm-P146A **Shen Liu** AMEC

Simulation and Experimental Research on Ultrasonic Drawing of Irregular Shaped Copper Wires

S. Liu, X. Shan, S. Lv, Y. Shi and T. Xie*
School of Mechatronics Engineering, Harbin Institute of Technology, China

28pm-P147A **Yuancai Yang** AMF

A Cross-Shape Power-Superimposed Ultrasound Vibrator for Titanium Wiredrawing Using Bending Vibration Transducers

Y. C. Yang, X. B. Shan, H. L. Li and T. Xie*
School of Mechatronics Engineering, Harbin Institute of Technology, China

28pm-P148A **Yuancai Yang** FMA

Research on an Axial Ultrasonic Oscillatory System for Titanium Wiredrawing Using Bending Vibration Mode

Y. C. Yang, X. B. Shan and T. Xie*
School of Mechatronics Engineering, Harbin Institute of Technology, China

28pm-P149A **Shohei Nozawa** ISAF

$Bi_4Ti_3O_{12}/SrTiO_3$ Sol-Gel Composite for Ultrasonic Transducers

S. Nozawa, T. Yamamoto and M. Kobayashi
Graduate School Sci. Technol., Kumamoto University, Japan

28pm-P150A **Wipakorn Rittisut** ISAF

Synthesis And Characterization of Methylammonium Lead Halide Perovskites

W. Rittisut[1*], J. Padchasri[1], R. Yimnirun[2] and P. Kidkhunthod[3]
[1]School of Physics, Institute of Science, and NANOTEC-SUT COE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand
[2]School of Energy Science and Engineering,Vidyasirimedhi Instituteof Science and Technology, Thailand
[3]Synchrotron Light Research Institute (Public Organization), Thailand

28pm-P151A **Emily Wern Jien Yap** ISAF

Materials for Pyroelectric Micro X-ray Generators

E. W. Yap[1,2*], R. M. Preston[2] and J. E. Daniels[1]
[1]School of Materials Science and Engineering, UNSW Sydney, Australia
[2]CSIRO Mineral Resources, Lucas Heights Science and Technology Centre, Australia

28pm-P153A **Kosuke Fukui** FMA

Ferroelectrics-Active Carbon Composite Cathodes for Lithium Ion Capacitor

K. Fukui[*], T. Teranishi, H. Hayashi and A. Kishimoto
Graduate School of Natural Science and Technology, Okayama University, Japan

28pm-P154A **Masahiro Inohara** FMA

Dielectric SEI for All Solid State Lithium Ion Battery with High Power Density

M. Inohara[1*], Y. Yoshikawa[1], T. Teranishi[1], H. Hayashi[1], A. Kishimoto[1],T. Tanaka[2], K. Yoda[2], H. Motobayashi[2] and Y. Tasaki[2]
[1]Graduate School of Natural Science and Technology, Okayama University, Japan
[2]Toshima Manufacturing Co., Ltd, Japan

28pm-P155A **Jun-Ge Liang** FMA

Ultrafast Response Humidity Sensor using Aerosol-Deposited $BaTiO_3$-PTFE as Hygroscopic Film

J. G. Liang[1], C. Wang[1,2*], E. S. Kim[1], M. Y. Cho[3], J. M. Oh[3*], N. Y. Kim[1,*]
[1]RFIC Center, Kwangwoon University, S. Korea
[2]School of Electronics and Information Engineering, Harbin Institute of Technology, China
[3]Dept. of Electronic Materials Engineering, Kwangwoon University, S. Korea

28pm-P156A **Jun-Ge Liang** AMEC

Ultra-Sensitive Humidity Sensing Properties of Aerosol Deposited $BaTiO_3$-Ag Layer as Hygroscopic Film

J. G. Liang[1*], E.S. Kim[1], C. Wang[1,2], M.Y. Cho[3], J.M. Oh[3], N.Y. Kim[1]
[1]RFIC Center, Kwangwoon University, S. Korea
[2]School of Electronics and Information Engineering, Harbin Institute of Technology, China
[3]Dept. of Electronic Materials Engineering, Kwangwoon University, S. Korea

28pm-P157A **Xuan Wang** AMEC

Effect of Sintering Time and Donor Concentration on the La-doped $BaTiO_3$-$Na_{0.5}Bi_{0.5}TiO_3$ PTCR Ceramics

X. Wang[*], S. Liu, L. Zhang, J. Wang and Y. Zhao
State key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, China

28pm-P158A **Huanhuan Guo** AMEC

Crystal Structures and Microwave Dielectric Properties of $Ca_{1-x}Bi_xMo_{1-x}V_xO_4$ Ceramics with Low Sintering Temperatures

H. Guo and D. Zhou[*]
Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China

28pm-P159A **Meng Cao** AMEC

Epitaxial Growth of $BaTiO_3$-Based Thin Film by Polymer Assisted Deposition

M. Cao[1,2], C. Ma[1] and M. Liu[2]
[1]State Key Laboratory for Mechanical Behavior of Materials and School of Material Science and Engineering, Xi'an Jiaotong University, P. R. China
[2]School of Microelectronics, Xi'an Jiaotong University, P. R. China

28pm-P160A **Dan Liu** AMEC

Fabrication and Characterization of $La_{0.8}Sr_{0.2}CrO_3$/Pt Thin Film Thermocouple with Al_2O_3 Coating Layer for High Temperatur Sensing

D. Liu[1*], P. Shi[1], W. Ren[1], Y. Liu[1], M. Liu[1], B. Tian[2], W. Jing[2], Z. Jiang[2] and Z.-G. Ye[1,4]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China
[2]The State Key Laboratory for Manufacturing System Engineering, Xi'an Jiaotong University, China
[3]Department of Chemistry and 4D LABS Simon Fraser University, Canada

28pm-P161A **Rina Shimonishi** AMEC

Fabrication of Textured Porous $Ca_3Co_4O_9$ Ceramics for Thermoelectric Applications by a Topotactic Solid-State Reaction

R. Shimonishi, M. Hagiwara[*] and S. Fujihara
Department of Applied Chemistry, Faculty of Science and Technology, Keio University, Japan

28pm-P162A **Guodong Shen** AMEC

Enhanced Visible Light Photocatalytic Performance of a Novel Heterostructured $Bi_4Ti_3O_{12}$/BiOBr Photocatalyst

G.-D. Shen, Y.-P. Pu[*], Y.-F. Cui, P.-P. Jing and Y. Shi
School of Materials Science and Engineering, Shaanxi University of Science & Technology, China

28pm-P163A **Yuhui Huang** AMEC

From Core-Shell $Ba_{0.4}Sr_{0.6}TiO_3$@SiO_2 Particles to Dense ceramics with High Energy Storage Performance by Spark Plasma Sintering

Y.H. Huang[1,2], Y.J. Wu[1,2,*], B. Liu[1,2], T.N. Yang[3], J.J. Wang[3], J. Li[4], L.Q. Chen[3] and X.M. Chen[1]
[1]Laboratory of Dielectric Materials, Department of Materials Science and Engineering, Zhejiang University, China
[2]Cyrus Tang Center for Sensor Materials and Applications, Zhejiang University, China
[3]Department of Materials Science and Engineering, The Pennsylvan State University, United States
[4]College of Chemical Engineering and Materials Science, Zhejiang University of Technology, China

28pm-P164A **Xiaorui Tong** ISAF

A Unified Methodology for Modeling Defect Compositions at Grain Boundaries for Electroceramics with Dilute and High Solut Concentrations

X. Tong[1], W. J. Bowman[2], P. A. Crozier[3] and D. S. Mebane[1,*]
[1]Department of Mechanical and Aerospace Engineering, West Virginia University, USA
[2]Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, USA
[3]School for Engineering of Matter, Transport and Energy, Arizona State University, USA

28pm-P165A **Manlika Kamnoy** AMEC

Effect of CaO Additions and Heat Treatment on the Microstructure and Mechanical Properties of Lithium Disilicate Glass-Cerar

M. Kamnoy[1], U. Intatha[2], K. Pengpat[1] and S. Eittsayeam[1]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]School of Science, Mae Fah Luang University, Thailand

28pm-P166A **Pratthana Intawin** AMEC

Crystallization Kinetics and Heat Treatment Temperature on Microstructure of Na_2O-CaO-P_2O_5 Glass System

P. Intawin,[1] S. Eitssayeam,[1] T. Tunkasiri,[1,2] and K. Pengpat[1*]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]Science and Technology Research Institute, Chiang Mai University, Thailand

28pm-P167A **Kornkamon Meesombad** AMEC

Chemical Composition, Microstructure, Bandgap Energy and Electrocatalytic Activities of TiO_2 and Ag-Doped TiO_2 Synthesize Solution Combustion Technique

O. Jongprateep, K. Meesombad, R. Techapiesancharoenkij and K. Surawathanawises
Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand

28pm-P168A **Nicha Sato** AMEC

Electrocatalytic Properties of Cacium Titanate, Strontium Titanate and Strontium Calcium Titanate Powders Synthesized by Solu combustion Technique

O. Jongprateep[1,2,*] N. Sato,[1] R. Techapiesancharoenkij [1,2] and K. Surawathanawises[1]
[1]Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand
[2]Materials Innovation Center, Faculty of Engineering, Kasetsart University, Thailand

28pm-P169 **Ali Hussain** AMF

Enhanced Electromechanical Properties in $Bi_{0.5}(Zn_{0.5}Ti_{0.5})O_3$-Modified $BiFeO_3$-$BaTiO_3$ Piezoelectric Ceramics

A. Hussain[1,2], G.-H. Ryu[2,3], R. A. Malik[2], T.-K.Song[2], W.-J. Kim[4], I. Qazi[1] and M.-H.Kim[2]
[1]Department of Materials Science and Engineering, Institute of Space Technology, Pakistan
[2]School of Advanced Materials Engineering, Changwon National University, Korea
[3]Department of Materials Science and Engineering, North Carolina State University, USA
[4]Department of Physics, Changwon National University, Korea

Tuesday, May 29, 2018

A B C D E F G H I J P

Plenary session
Hall A 09:00 - 09:45
Session chair: Norifumi Fujimura

09:00 **Plenary3** **Takashi Eshita** Plenary Talk FMA

Development of Highly Reliable FRAM and its IoT Applications

T. Eshita
System Memory Company, FUJITSU SEMICONDUCTOR LIMITED, Japan

Oral session: Special Session: R & D in Japanese Industries
Hall A 10:00 - 11:15
Session chair: Ken-ichi Kakimoto

10:00 **29am-A01** **Kazuhiro Kaneko** Invited Talk (Short) FMA

Low Temperature Co-Fired Ceramic Materials with Three Different Dielectric Constants

K. Kaneko*, S. Fujita, H. Adachi, Y. Sugimoto and K. Murayama
Murata Manufacturing Co., Ltd., Japan

10:15 **29am-A02** **Yuji Umeda** FMA

Materials Informatics for Dielectric Materials

Y. Umeda[1,2*], H. Hayashi[2], H. Moriwake[3] and I. Tanaka[2,3]
[1]Materials Development Center, Technology & IP HQ, TDK Corporation, Japan
[2]Department of Materials Science and Engineering, Kyoto University, Japan
[3]Nanostructure Research Laboratory, Japan Fine Ceramics Center, Japan

10:30 **29am-A03** **Yoshiaki Oku** Invited Talk (Short) FMA

Application of PZT Thin Film Devices to Realize IoT Society

Y. Oku*, Y. Fujimori and T. Nagahata
Rohm Co., Ltd, Japan

10:45 **29am-A04** **Yoshikazu Akiyama** FMA

Study of Piezoelectric Resonance for IJP Derived PZT Thick Films

Y. Akiyama*, A. Takeuchi, M. Ishimori, S. Abe and O. Machida
Institute of Advanced Printing Technology RICOH COMPANY, LTD., Japan

11:00 **29am-A05** **Toshihiro Doi** Invited Talk (Short) FMA

Sol-gel Derived Ferroelectric Film

T. Doi* and N. Soyama
Mitsubishi materials corporation, Japan

Oral session: Special Session: R & D in Japanese Industries
Hall A 11:30 - 12:30
Session chair: Elizabeth Dickey

11:30 **29am-A06** **Tomohiro Date** FMA

A Newly Developed High Performance PZT Thin Films by Using Sputtering and Sol-Gel Hybrid Method for Piezo-MEMS Dev

T. Date[1*]K. Nomura,[1], Y. Fujimori[1], T. Nagahata[1] and I. Kanno[2]
[1]Rohm Co., Ltd, Japan
[2]Mechanical Engineering, Kobe University, Japan

11:45 **29am-A07** **Kenji Nomura** FMA

Effect of Pt/AlO_x Bottom Electrode on the Manufacturing Process Margin Improvement of La-Doped $Pb(Zr,Ti)O_3$ Thin Films

K. Nomura[1*], W. Wang[2], H. Yamaguchi[1], K. Nakamura[2], T. Eshita[2], S. Ozawa[2], K. Takai[2], S. Mihara[2], Y. Hikosaka[2], M. Hamada[2], M. Kojima[2] and Y. Kataoka[1]
[1]Devices & Materials Laboratory, Fujitsu Laboratories Ltd., Japan
[2]Technology Division, System Memory Company, Fujitsu Semiconductor Ltd., Japan

12:00 **29am-A08** **Yoshiki Iwazaki** Invited Talk (Short) FMA

First-Principles Calculation of Interface between Perovskite-Type Oxide and Metal Electrode

Y. Iwazaki*, T. Atsumi and Y. Ogata
TAIYO YUDEN CO., LTD., Japan

12:15 **29am-A09** **Hitoshi Saita** Invited Talk (Short) FMA

Thin Film Capacitor (TFCP) for High Performance Electronic Packages

H. Saita*, H. Inoue, H. Hirata and Y. Yano
TDK Corporation Technology & Intellectual Property HQ, Japan

Oral session: Special Session: R & D in Japanese Industries
Hall A 14:00 - 15:15
Session chair: Akira Ando

14:00 **29pm-A01** **Hideki Tanaka** Invited Talk (Short) FMA

Development of Mass Production of Ni-nanopowder for the Internal Electrode of MLCC by DC Thermal Plasma Process

H. Tanaka*, S. Kawaguchi, M. Maekawa, F. Shimizu, and Y. Akimoto
Shoei Chemical Inc., Japan

14:15 **29pm-A02** **Chie Kawamura** Invited Talk (Short) FMA

Development of Solid-State Synthesis Technique of $BaTiO_3$ Fine Particles for Thin-Layered Ni-MLCCs and Application of Synthesis of Various Ceramics Fine Powders

C. Kawamura*, D. Itoh, Y. Konish iand H. Kishi
Materials Research & Development Department, TAIYO YUDEN CO., LTD., Japan

14:30 **29pm-A03** **Kazumi Kaneda** FMA

The Temperature Coefficient of Permittivity Change Mechanism through Vanadium Addition of Multilayer Ceramic Capacitor v Nickel Electrode

K. Kaneda[1], M. Ryu[1,2], Y. Iwazaki[1] and Y. Konishi[1]
[1]Materials Research and Development Department, R&D Laboratory, TAIYO YUDEN CO., LTD., Japan
[2]Center for Dielectric Studies, Materials Research Institute, The Pennsylvania State University, USA

14:45 **29pm-A04** **Takao Sada** Invited(short) FMA

Study on Local Insulation Resistance Degradation of Ni-$BaTiO_3$ Multi-Layer Ceramic Capacitors

T. Sada*, K. Izawa, N. Fujikawa and Y. Fujioka
R&D Center Kagoshima KYOCERA Corporation, Japan

15:00 **29pm-A05** **Yoshito Saito** Invited Talk (Short) FMA

Mechanisms of MLCCs Insulation Resistance Degradation Under Highly Accelerated Temperature and Humidity Stress

Y. Saito*, T. Nakamura, K. Nada and H. Sano
Murata Manufacturing Co., Ltd., Japan

Oral session: Special Session: R & D in Japanese Industries
Hall A 15:30 - 16:45
Session chair: Clive A. Randall

15:30 **29pm-A06** **Koichiro Morita** FMA

Modified Lifetime Prediction for Multilayer Ceramic Capacitors Based on Space Charge Evolution

K. Morita*, T. Shimura, S. Abe and Y. Konishi
Materials Research and Development Department, TAIYO YUDEN CO., LTD., Japan

15:45 **29pm-A07** **Takeshi Kimura** Invited Talk (Short) FMA

Development of (K, Na)NbO_3-Based Lead-Free Piezoelectric Ceramics for Practical Applications

T. Kimura*, D. Nakata, H. Kozuka, M. Yamazaki, Y. Okimura, S. Taga and K. Ohbayashi
NGK SPARK PLUG CO., LTD., Japan

16:00 **29pm-A08** **Takayuki Goto** Invited Talk (Short) FMA

Development of Piezo Vibration Sensors

T. Goto*, I. Matsuda, J. Oshita, H. Shimizu,Y. Konishi and H. Kishi
Materials Research & Development Department, Research and Development Laboratory, Taiyo Yuden Co., Ltd., Japan

16:15 **29pm-A09** **Takeshi Nomura** Invited Talk IFAAI

Temperature Stable Ferroelectrics for BME-MLCCs of X9R Spec.

T. Nomura*, Y. Sasaki and Y. Akimoto
Shoei Chemical Inc., Japan

Oral session: Ferroelectric HfO_2 films (Stability)
Room B 10:00 - 11:15
Session chair: Norifumi Fujimura

10:00 **29am-B01** **Uwe Schroeder** Invited Talk ISAF

Robust Ferroelectric Performance by Lanthanum Doping in Hafnium Oxide

C. Richter[1], M.H. Park[1], T. Schenk[1], M. Pešić[1], M. Hoffmann[1], F. Fengler[1], D. Pohl[2], B. Rellinghaus[2], C. Zhou[3], C.-C. Chung[3], J. L. Jones[3], T. Mikolajick[1,4] and U. Schroeder[1,*]
[1]NaMLab gGmbH, Germany
[2]IFW Dresden, Germany
[3]Materials Science and Engineering, NC State University, USA
[4]Chair of Nanoelectronic Materials, TU Dresden, Germany

10:30 **29am-B02** **Matteo Cavalieri** FMA

Robust Ferroelectricity and Polarization Domain Dynamics in Ultrathin $Hf_xZr_{1-x}O_2$ Film Capacitors

M. Cavalieri[1*], I. Stolichnov[1], T. Mittmann[2], C. Richter[2], T. Schenk[2], T. Mikolajick[2,3], U. Schroeder[2] and A. Ionescu[1]
[1]Nanoelectronic Devices Laboratory, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
[2]Namlab gGmbH, Germany
[3]Chair of Nanoelectronic Materials, TU Dresden, Germany

10:45 **29am-B03** **Anastasiya Chouprik** ISAF

Electric Field-Induced Phase Transformations in Ferroelectric Polycrystalline $Hf_{0.5}Zr_{0.5}O_2$ Thin Films

A. Chouprik[1*], S. Zakharchenko[1], M. Spiridonov[1], S. Zarubin[1], A. Chernikova[1], R. Kirtaev[1], P. Buragohain[2], A. Gruverman[2,1], A. Zenkevich[1] and D. Negrov[1]
1Moscow Institute of Physics and Technology, Russia
[2]Department of Physics and Astronomy, University of Nebraska, USA

11:00 **29am-B04** **Takanori Mimura** ISAF

Temperature Stability of Ferroelectric Phase of Epitaxial Y-doped HfO_2 Films

T. Mimura[1], T. Shimizu[1], T. Kiguchi[2], A. Akama[2], T. J. Konno[2], Y. Katsuya[3], O. Sakata[3], H. Funakubo[1,2,4*]
[1]School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan
[2]Institute for Materials Research, Tohoku University, Japan
[3]Synchrotron X-ray Station at SPring-8 and Synchrotron X-ray Group, NIMS, Japan
[4]Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan

Oral session: Ferroelectric HfO_2 films (Electrical properties)
Room B 11:30 - 12:30
Session chair: Uwe Schroeder

11:30 **29am-B05** **Yury Matveyev** FMA

In Operando Synchrotron Studies of Ferroelectric-HfO_2 Based Memory Devices

Y. Matveyev[1], D. Negrov[1], R. Kirtaev[1], V. Mikheev[1], A. Hloskovsky[2] and A. Zenkevich[1*]
[1]Moscow Institute of Physics and Technology,Russia
[2]Deutsches Elektronen-Synchrotron, Germany

11:45 **29am-B06** **Takao Shimizu** FMA

Domain Structure and Electric Field Induced Domain Switching in HfO_2 Ferroelectrics

T. Shimizu[1*], T. Mimura[1], T. Kiguchi[2], A. Akama[2], T. J. Konno[2], Y. Katsuya[3], O. Sakata[3] and H. Funakubo[1,4]
[1]School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan
[2]Institute for Materials Research, Tohoku University, Japan
[3]Synchrotron X-ray Station at SPring-8 and Synchrotron X-ray Group, NIMS, Japan
[4]Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan

12:00 **29am-B07** **Shingo Yoneda** FMA

High Dielectric Permittivity of HfO_2-Based Films with Bi Substitution

S. Yoneda,* T. Hosokura, M. Kimura, A. Ando and K. Shiratsuyu
Murata Manufacturing Co., Ltd., Japan

12:15 **29am-B08** **Shigehisa Shibayama** FMA

Ferroelectric and Anti-Ferroelectric Phase Control of Un-Doped ZrO_2

S. Shibayama[1*], T. Nishimura[1], S. Migita[2] and A. Toriumi[1]
[1]Departments of Materials engineering, The University of Tokyo, Japan
[2]Advanced Industrial Science and Technology (AIST), Japan

Oral session: Ferroelectric HfO_2 films (Materials science)
Room B 14:00 - 15:30
Session chair: Hiroshi Funakubo

14:00 **29pm-B01** **Stephen Weeks** Invited Talk ISAF

Process-Property Relationships in Ferroelectric HfO_2 Based Materials

S. Weeks[1*], V. Narasimhan[1], D. Passarello[2], A. Mehta[2], K. Littau and T. Chiang[1]
[1]Intermolecular, Inc., United States
[2]SSRL at SLAC National Accelerator Laboratory, United States

14:30 **29pm-B02** **Christopher Knneth** FMA

Explaining the Ferroelectricity and Pyroelectricity in HfO_2 and ZrO_2 Thin Films From an Interface-Driven Size Effect with DFT

C. Kuenneth*, R. Materlik, M. Falkowski and A. Kersch
Department of Applied Sciences and Mechatronics, Munich University of Applied Sciences, Germany

14:45 **29pm-B03** **Hiroki Moriwake** FMA

Theoretical Calculations of Ferrolectricity in Thin-Film HfO_2 Using Comprehensive Soft-Mode Analysis

H. Moriwake[1,2], A. Konishi[1,2], A. Togo [3], T. Shimizu[4] and H. Funakubo[4]
[1]Nanostructures Research Laboratory, Japan Fine Ceramics Center, Japan
[2]Department Center for Materials research by Information Integration (CMI2) National Institute for Materials Science (NIMS), Japan
[3]Department of Materials Science and Engineering, Kyoto University, Japan
[4]Department of Innovative and Engineered Materials, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan

15:00 **29pm-B04** **Yohei Takeuchi** FMA

Fabrication of Nanowire Capacitors Including Ferroelectric (Hf,Zr)O_2

Y. Takeuchi, Y. Kotaka, H. Kanematsu, H. Fukushima, H. Fujisawa, M. Shimizu and S. Nakashima
Department of Electronics and Comp. Sci., University of Hyogo, Japan

15:15 **29pm-B05** **Takahisa Shiraishi** FMA

Fabrication of CeO_2-ZrO_2 Solid Solution Ultrathin Films with Polar Phase

T. Shiraishi[1*], S. Choi[1], T. Shimizu[2], T. Kiguchi[1], H. Funakubo[2] and T. J. Konno[1]
[1]Institute for Materials Research, Tohoku University, Japan
[2]Materials and Chemical Technology, Tokyo Institute of Technology, Japan

Oral session: Ferroelectric HfO_2 films (Evaluation)
Room B 15:45 - 16:45
Session chair: Stephen Weeks

15:45 **29pm-B06** **Alexei Gruverman** FMA

Investigation of Domain Switching Kinetics in Ferroelectric La:HfO_2 Capacitors

A. Gruverman[1], P. Buragohain[1], T. Schenk[2], C. Richter[2], H. Lu[1] and U. Schroeder[2]
[1]Department of Physics and Astronomy, University of Nebraska, USA
[2]NaMLab gGmbH, Germany

16:00 **29pm-B07** **Thomas Kämpfe** ISAF

Ferroelectric Grain Detection by Transmission Electron Diffraction Pattern Mapping in HfO_2 Thin Films

T. Kämpfe[1*], P. Polakowski[1], D. Utess[2], I. Richter[2], N. Vogel[2], T. Büttner[1] and K. Seidel[1]
[1]Center for Nanoelectronic Technologies, Fraunhofer IPMS, Germany
[2]GLOBALFOUNDRIES, Germany

16:15 **29pm-B08** **Igor Stolichnov** FMA

Coexistence of Different Phases and Quantified Piezoresponse in HfO_2-Based Capacitors from Sub-Picometer-Range PFM Measurements

I. Stolichnov[1], M. Cavalieri,[1], T. Mittmann[2], C. Richter[2], T. Schenk[2], T. Mikolajick[2,3], U. Schroeder[2] and A. Ionescu[1]
[1]Nanoelectronic Devices Laboratory, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
[2]Namlab gGmbH, Germany
[3]Chair of Nanoelectronic Materials, TU Dresden, Germany

16:30 **29pm-B09** **Takanori Kiguchi** FMA

Electron Microscopic Study on Domain Structure in HfO_2

T. Kiguchi[1*], T. Shiraishi[1], T. Shimizu[2], T. Mimura[2], H. Funakubo[2,3] and T. J. Konno[1]
[1]Institute for Materials Research, Tohoku University, Japan
[2]School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan
[3]Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan

Oral session: Novel processing of ceramics
Room C 10:00 - 11:30
Session chair: Shintaro Ueno

10:00 **29am-C01** **Jau-Ho Jean** Invited Talk AMF

Constrained Sintering of Low-Temperature Cofired Ceramics

C.-F. Wu and J.-H. Jean*
Department of Materials Science and EngineeringNational Tsing Hua University, Taiwan

10:30 **29am-C02** **Wisanu Pecharapa** Invited Talk IFAAI

Co- and Mn-Doped $ZnTiO_3$ Functional Material Synthesized by Sonochemical-Assisted Process

C. Wattanawikkam and W. Pecharapa
College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, Thailand

11:00 **29am-C03** **Clive A. Randall** Invited Talk IFAAI

Updates on the Progress of the Cold Sintering Process and Further Insight into the Design of New Composites

C. A. Randall
Materials Research Institute, The Pennsylvania State University, USA

Oral session: Novel processing of ceramics
Room C 11:45 - 12:30
Session chair: Yoshihiko Imanaka

11:45 **29am-C04** **Heli Jantunen** Invited Talk IFAAI

Electroceramic Composites with Room Temperature Fabrication Method

M. Väätäjä, M. Nelo, T. Siponkoski, H. Kähäri, J. Juuti and H. Jantunen*
Microelectronics Research Unit, Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland

12:15 **29am-C05** **Kui-Yi Lin** AMEC

Improvements of the Suspension Flame Spray for the 8YSZ Electrolyte Fabrication

K.-Y. Lin and Y.-C. Yang*
Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan

Oral session: Bi-based materials
Room C 14:00 - 15:15
Session chair: Hajime Nagata

14:00 **29pm-C01** **Xiaohui Wang** Invited Talk AMEC

High Performance of $BaTiO_3$-$Bi_{0.5}Na_{0.5}TiO_3$ Based Dielectric Ceramics for High Temperature MLCC Applications

X. H. Wang[1*], Z.B. Shen and L.T. Li
[1]School of Materials Science and Engineering, Tsinghua University, China

14:30 **29pm-C02** **Wei Li** AMEC

Enhanced Dielectric and Piezoelectric Properties in (100) Oriented Lead-Free BNT-BT-SFN Thin Films Times

W. Li*, J.G. Hao*, J. Du and P. Fu
College of Materials Science and Engineering, Liaocheng University, China

14:45 **29pm-C03** **Jae-Shin Lee** AMEC

Mechanism of Large Strain in BNT-Based Lead-Free Piezoelectric Ceramics

J.-S. Lee[1*], H.-S. Han[1], T. H. Dinh[1], C. W. Ahn[2] and I.-W. Kim[2]
[1]Materials Science and Engineering, University of Ulsan, South Korea
[2]Department of Physics, University of Ulsan, South Korea

15:00 **29pm-C04** **Elaheh Taghaddos** ISAF

The Effects of the Processing Conditions on the Properties of BNT-Based Piezoelectric Ceramic and Transducer for High Power Applications

E. Taghaddos*, G. Tagliaferro and A. Safari
[1]Department of Materials Science and Engineering Rutgers, The State University of New Jersey, USA

Oral session: Bi-based materials
Room C 15:30 - 16:30
Session chair: Xiaohui Wang

15:30 **29pm-C05** **Brady Gibbons** Invited Talk ISAF

In-situ Piezoelectric Response Measurements of Lead-free, Bismuth-based Piezoelectric Thin Films

A. Fox[1], H. Funakubo[2] and B. J. Gibbons[1*]
[1]Materials Science, Oregon State University, USA
[2]Department of Innovative and Engineered Materials, Tokyo Institute of Technology, Japan

16:00 **29pm-C06** **Jie Jian** ISAF

Enhanced Dielectric and Piezoelectric Properties of the $BiFeO_3$-$PbTiO_3$-$BaZrO_3$ ternary High Curie Temperature Ceramics

J. Jian, F. Luo, J. Chen and J. Cheng*
School of Materials Science and EngineeringShanghai University, PR China

16:15 **29pm-C07** **Lisha Liu** ISAF

Decoupling of Microscopic Piezoelectric Strain Mechanisms in Polycrystalline $BiFeO_3$

L. Liu[1], T. Rojac[2], D. Damjanovic[3] and J. Daniels[1]
[1]School of Materials Science and Engineering, UNSW, Australia
[2]Electronic Ceramics Department, Jozef Stefan Institute, Slovenia
[3]Ceramics Laboratory, Swiss Federal Institute of Technology, EPFL, Lausanne, Switzerland

Oral session: Ferroelectric ceramics
Room D 10:00 - 11:15
Session chair: Hong Wang

10:00 **29am-D01** **Supon Ananta** Invited Talk IFAAI

Phase Formation, Microstructure and Electrical Properties of Nanogold/Barium Titanate Ceramic Nanocomposites

S. Ananta[1*], J. Nonkumwong[2] and L. Srisombat[2]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand

10:30 **29am-D02** **Alp Sehirlioglu** Invited Talk IFAAI

Thermal Stability and Property Retention in High Temperature Ferroelectrics

B. A. Kowalski[1] and A. Sehirlioglu[2*]
[1]NASA Glenn Research Center, USA
[2]Department of Materials Science and Engineering, Case Western Reserve University, USA

11:00 **29am-D03** **Changzheng Hu** AMEC

Dielectric and Electronic Properties of Unfilled Tungsten Bronze Ceramics $Ba_{5-2x}Re_{2x}Fe_xNb_{10-x}O_{30}$

C.Z. Hu, Z. Guo, Z. Sun and Q.H. Zhu
College of Material Science and Engineering, Guilin University of Technology, China

Oral session: Ferroelectric ceramics
Room D 11:30 - 12:30
Session chair: Jon-Paul Maria

11:30 **29am-D04** **Mario Maglione** Invited Talk IFAAI

Universal Behavior of BCTZ Ceramics, Thin Films and Single Crystals

M. Maglione[*1], P. Veber[2], C. Xin[1], F. Benabdallah[1], G. Buse[1], C. Elissalde[1], Q. Simon[1], S. Payan[1], C. Daumont[3] and J. Wolfman[3]
[1]ICMCB-CNRS, Université de Bordeaux, France
[2]ILM, UMR 5306 CNRS, France
[3]GREMAN, UMR7347 CNRS, France

12:00 **29am-D05** **Julia Glaum** ISAF

Porous Barium-Titanate-Based Ceramics for Biomedical Applications

J. Glaum[1*], K. Skaar Fedje[1], K. Poon[1], M. Wurm[2], M.-A. Einarsrud[1] and R. Lutz[2]
[1] Department of Materials Science and Engineering, Norwegian University of Science and Technology, Norway
[2]Department of Oral and Maxillofacial Surgery, University Hospital Erlangen, FriedrichAlexander-Universität Erlangen-Nürnberg, Germany

12:15 **29am-D06** **Manabu Hagiwara** ISAF

Sol-Gel Preparation of Ferroelectric Bi_2SiO_5 Powders and Ceramics

M. Hagiwara[1*], H. Taniguchi[2] and S. Fujihara[1]
[1]Department of Applied Chemistry, Keio University, Japan
[2]Department of Physics, Nagoya University, Japan

Oral session: Ferroelectric ceramics
Room D 14:00 - 15:15
Session chair: Zuo-Guang Ye

14:00 **29pm-D01** **Ekaterina Politova** Invited Talk IFAAI

Structure, Ferroelectric and Piezoelectric Properties of KNN- and NBT-Based Perovskite Ceramics

E. D. Politova[1,*], N. B. Golubko[1], G. M. Kaleva[1], A. V. Mosunov[1], N. V. Sadovskaya[1], S. Yu. Stefanovich[1,2], D. A. Kiselev[3], A. M. Kislyuk[3] and P. K. Panda[4]
[1]L. Ya. Karpov Institute of Physical Chemistry, Russia
[2]Lomonosov Moscow State University, Russia
[3]National University of Science and Technology "MISiS", Russia
[4]National Aerospace Laboratories, India

14:30 **29pm-D02** **Canero Infante** ISAF

Investigation of the Polar, Structural, Optical and Electronic Properties of $Ba(Sn,Ti)O_3$ Ceramics

H. Volkova[1], P. Nukala[1], P. Gemeiner[1], J. Guillot[2], D. Lenoble[2], N. Chauvin[3], F. Karolak[1], C. Bogicevic[1], B. Dkhil[1] and I. C. Infante[3,*]
[1]SPMS lab CNRS-UMR8580 CentraleSupélec, Université Paris-Saclay, France
[2]Luxembourg Institute of Science and Technology, Materials Research and Technology Department, Luxembourg
[3]Institut des Nanotechnologies de Lyon CNRS-UMR5270 ECL INSA UCBL CPE, France

14:45 **29pm-D03** **Ichiro Fujii** ISAF

Fabrication of <110> Grain-Oriented 0.15$BaTiO_3$-0.85($Bi_{0.5}Na_{0.5}$)TiO_3 Ceramics by a Reactive Templated Grain Growth Meth

I. Fujii[1*], R. Itou[1], K. Kawachi[1], S. Ueno[1], T. S. Suzuki[2] and S. Wada[1]
[1]Graduate Faculty of Interdisciplinary Research, University of Yamanashi, Japan
[2]National Institute for Materials Science, Japan

15:00 **29pm-D04** **Yu Chen** AMEC

Interlayer Structure Mismatch and Oxygen Octahedron Distortion within W/Cr Co-Doped $Bi_4Ti_3O_{12}$ Ceramics Induced by Latti Stress

Y. Chen[1,2], J. Xu[3], S. Xie[4] and Q. Wang[1,4], J. Zhu[2]
[1]School of Mechanical Engineering, Chengdu University, China
[2]College of Materials Science and Engineering, Sichuan University, China
[3]School of Architecture and Civil Engineering, Chengdu University, China

Oral session: Dielectric materials
Room D 15:30 - 16:45
Session chair: Tomoaki Yamada

15:30 **29pm-D05** **Shintaro Ueno** FMA

Microstructures and Electrical Properties of Conductor/Insulator Nanocomposite Capacitors

S. Ueno[1*], Y. Hattori[1], I. Fujii[1], S. Wada[1], C. Moriyoshi[2] and Y. Kuroiwa[2]
[1]Graduate Faculty of Interdisciplinary Research, University of Yamanashi, Japan
[2]Department of Physical Science, Hiroshima University, Japan

15:45 **29pm-D06** **Rui Nie** AMEC

Microstructure, Resistivity and Electric Properties of W/Ta Co-Modified $Bi_4Ti_3O_{12}$ High-Temperature Ceramics

R. Nie[1], J. Yuan[1], Q. Chen[1] and J. Zhu[1*]
[1]College of Materials Science and Engineering, Sichuan University, China

16:00 **29pm-D07** **Ken-ichi Mimura** FMA

Temperature Dependence of Dielectric Properties of Ba(Zr, Ti)O_3 Nanocube 3D Assembly

K. Mimura[1*] and K. Kato[2]
[1]Inorganic functional materials institute, National Institute of Advanced Industrial Science and Technology, Japan
[2]National Institute of Advanced Industrial Science and Technology, Japan

16:15 **29pm-D08** **Ioanna Bakaimi** Invited Talk IFAAI

Combinatorial Material and Device Optimisation of Tunable Dielectrics for Smart Microwave and Millmeter-Wave Systems

B. E. Hayden[1,2], I. Bakaimi[1], K. D. Groot[3], X. He[3],I. Reaney[4] and S. Guerin[2]
[1]School of Chemistry, University of Southampton, UK
[2]Ilika Technologies, UK
[3]Electronics and Computing Center, University of Southampton, UK
[4]Department of Engineering Materials, University of Sheffield, UK

Oral session: Defect and doping in ferroelectrics
Room E 10:00 - 11:15
Session chair: Ekaterina Politova

10:00 **29am-E01** **David Cann** Invited Talk ISAF

Defect Chemistry of Bismuth Perovskite Solid Solutions

D. Cann[1*], N. Kumar[2], P. Mardilovich[1], E. A. Patterson[3,4], T. Frömling[4], E. Gorzkowski[4], P. Eschbach[1], I. Love[1,5], R. D. Souza[6], M. Müller[6], J. Tucker[1] and S. R. Reese[5]
[1]Materials Science, Oregon State University, USA
[2]Materials Science and Engineering, The University of New South Wales, Australia
[3]Institute of Materials Science, Technische Universitat Darmstadt, Germany
[4]Naval Research Laboratory, USA
[5]School of Nuclear Science and Engineering, Oregon State University, USA
[6]Rheinisch-Westfalische Technische Hochschule Aachen, Germany

10:30 **29am-E02** **Li Jin** ISAF

Charge Migration and Defect Dipoles Assisted Pinning Effect in Mn-doped 0.5$Ba(Zr_{0.2}Ti_{0.8})O_3$-0.5($Ba_{0.7}Ca_{0.3}$)TiO_3 Lead-Free Ferroelectrics

L. Jin[*], W. Luo, R. Huo and X. Wei
Electronic Materials Research Laboratory, Xi'an Jiaotong University, China

10:45 **29am-E03** **Khalid Muhammed** FMA

Electrical and Physical Properties of Iron-Doped Bismuth Sodium Titanate Ceramics

K. R. Muhammed*, A. Scrimshire, I. Sterianou and P. A. Bingham
Materials and Engineering Research Institute, Sheffield Hallam University, UK

11:00 **29am-E04** **Xiao Liu** ISAF

Vacancies Modification in Electrical Performance of Sodium Bismuth Titanate Ceramics

X. Liu[1*], H. Du[1*], J. Shi[2], H. Fan[3], T. Li[4] and X. Liu[1]
[1]College of Materials Science and Engineering, Xi'an University of Science and Technology, China
[2]Key Laboratory of Electronic Equipment Structure Design (Ministry of Education), School of Mechano-Electronic Engineering, Xidian University, China
[3]State Key Laboratory of Solidification Processing, School of Materials Science and Engineering, Northwestern Polytechnical University, China
[4]Frontier Institute of Science and Technology, Xi'an Jiaotong University, China

Oral session: Defect and doping in ferroelectrics
Room E 11:30 - 12:30
Session chair: David Cann

11:30 **29am-E05** **Yun Liu** Invited Talk AMF

Defect Design for Dielectric Polarization

Y. Liu
Research School of Chemistry, the Australian National University, Australia

12:00 **29am-E06** **Sebastian Steiner** ISAF

Ionic Conductivity of Acceptor Doped Sodium Bismuth Titanate (NBT): Influence of Dopants, Phase Transitions and Defect Associates

S. Steiner[1*], L. Koch[1], K.-C. Meyer[1], I.-T. Seo[1], K. Albe[1] and T. Frömling[1]
[1]Institute of Geo- and Materials Science, Technische Universität Darmstadt, Germany

12:15 **29am-E07** **Lucjan Kozielski** FMA

Enhancement of Ferroelectricity and Electromechanical Coefficients in Rare Earth Element Doped $Bi_4Ti_3O_{12}$

L. Kozielski[1], J. Polnar[2] and M. M. Bućko[2]
[1]Institute of Technology and Mechatronics, University of Silesia, Poland
[2]AGH - University of Science and Technology, Faculty of Materials Science and Ceramics, al., Poland

Oral session: Defect and doping in ferroelectrics
Room E 14:00 - 15:00
Session chair: Yun Liu

14:00 **29pm-E01** **Guorong Li** Invited Talk AMF

The Influence of Defect Dipoles on Dielectric and Piezoelectric Response in Mn Doped $Pb(Mg_{0.5}W_{0.5})O_3$-$Pb(Zr,Ti)O_3$ Ceramic

G. Li*, X. Huang, J. Zeng and L. Zheng
Key Laboratory of Inorganic Functional Material and Device, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

14:30 **29pm-E02** **Natthaphon Raengthon** ISAF

Influence of Cation Non-Stoichiometry on Electrical Properties of Titanate-Based Ceramics

Y. Kummanee[1,2] and N. Raengthon[1,2*]
[1]Department of Materials Science, Faculty of Science, Chulalongkorn University, Thailand
[2]Center of Excellent on Petrochemical and Materials Technology, Chulalongkorn University, Thailand

14:45 **29pm-E03** **Yingying Zhao** AMEC

Large Activation Energy and Enhanced Energy Storage Properties in Aged Mn-Doped $Sr_{0.4}Ba_{0.6}Nb_2O_6$ Ferroelectric Ceramics

Y. Zhao[1], J. Wang*, L. Zhang*, S. Liu[1], D. Zhang[1] and X. Wang[1]
[1]State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, China

Oral session: Defect and doping in ferroelectrics
Room E 15:15 - 16:45
Session chair: Guorong Li

15:15 **29pm-E04** **Gunnar Picht** Invited Talk ISAF

The Role of Domain Structure and Domain Switching on Properties of Small Grained Donor Doped PZT Ceramics

G. Picht[1*], M. Hinterstein[2], D. Damjanovic[3], A. Benčan[4], G. Dražić[5] and M. J. Hoffmann[2]
[1]Corporate Sector Research and Advance Engineering, Applied Research Materials, Robert Bosch GmbH, Germany
[2]Institute of Applied Materials (IAM-KWT), Karlsruhe Institute of Technology (KIT), Germany
[3]Ecole Polytechnique Fédérale de Lausanne-EPFL, Swizerland
[4]Jozef Stefan Institute, Slovenia
[5]Laboratory for Materials Chemistry, National Institute of Chemistry, Slovenia

15:45 **29pm-E05** **Nengneng Luo** ISAF

Defect Dipole Engineering in Mn-Doped Relaxor-$PbTiO_3$ Single Crystal

N.N. Luo[1,3*], S.J. Zhang[2], Q. Li[3] and T. R. Shrout[4]
[1]College of Resources, Environment and Materials, Guangxi University, P.R China
[2]Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong, Australia
[3]Department of Chemistry, Tsinghua University, P. R. China
[4]Materials Research Institute, Pennsylvania State University, USA

16:00 **29pm-E06** **Sea-Fue Wang** Invited Talk IFAAI

Effects of MnO Addition on the Stable Dielectric Properties of $0.9BaTiO_3$-$0.1(Bi_{0.5}Na_{0.5})TiO_3$-$0.04Ta_2O_5$ Ceramics

S.-F. Wang*, Y.-S. Chen, Y.-F. Hsu and Y.-X. Liu
Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan, R.O.C.

16:30 **29pm-E07** **Hongzhe Wang** AMEC

Dielectric Properties of Zinc and Magnesium Alternately Doped $Ba_{1-x}Sr_xTiO_3$ Film

H. Wang, Y. Dong, Q. Bai, Y. Xu and Z. Wang*
School of Materials Science and Engineering, Southeast University, China

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 10:00 - 11:15
Session chair: Neus Domingo

10:00 **29am-F01** **Leo McGilly** Invited Talk PFM

Nanoscale Defect Engineering to Modify Switching Characteristics in Ferroelectric Thin Films and Control Domain Wall Dynar

L. J. McGilly[1], P. Yudin[2], L. Feigl[3], C. S. Sandu[4], T. Sluka[4], D. Damjanovic[4], A. K. Tagantsev[4] and N. Setter[4,5]
[1]Department of Physics, Columbia University, USA
[2]Department of optical and biophysical systems, Institute of Physics of the Czech Academy of Sciences, Czech
[3]Institute of Photon Science and Synchrotron Radiation, Karlsruhe Institute of Technology, Germany
[4]Ceramics Laboratory, Swiss Institute of Technology Lausanne- EPFL, Switzerland
[5]Materials Science and Engineering Department, Tel Aviv University, Israel

10:30 **29am-F02** **Philippe Tückmantel** PFM

Local Probe Studies of Switching and Current Dynamics in $Pb(Zr_{0.2}Ti_{0.8})O_3$ Thin Films

P. Tückmantel[1*], I. Gaponenko[1], S. Gariglio[1], J. Agar[2], L.W. Martin[2] and P. Paruch[1]
[1]Department of Quantum Matter Physics, University of Geneva, Switzerland
[2]DMSE, University of California, USA

10:45 **29am-F03** **Albert Verdaguer** PFM

Water Adsorption and Reactivity on Ti-Based Ferroelectric Materials Studied by Ambient Pressure XPS and PFM

A. Verdaguer[1*], C. G. Stefani[2], E. Pach[2], K. Cordero-Edwards[2] and N. Domingo[2]
[1]Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and The Barcelona Institute of Science and Technology, Campus UAB, Spain
[2]Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Campus de la UAB, Spain

11:00 **29am-F04** **Christian Weymann** PFM

Controlling Defect Distribution and Intrinsic Polarization State in Ultrathin Ferroelectric Films

C. Weymann[1*], C. Lichtensteiger[1], S. Fernandez-Pena[1], L. Dedon[2], L. Martin[2], A. Naden[3], A. Kumar[3], J.-M. Triscone[1] and P. Paruch[1]
[1]Department of Quantum Matter Physics, University of Geneva, Switzerland
[2]Department of Materials Science and Engineering, University of California, USA
[3]School of Mathematics and Physics, Queen's University, Northern Ireland

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 11:30 - 12:30
Session chair: Leo McGilly

11:30 **29am-F05** **Zhuangqun Huang** PFM

Spectroscopy Based Nanoelectrical Imaging of Piezoelectric Materials using Fast Force Volume

P. D. Wolf*, Z. Huang and B. Pittenger
Bruker Nano Surfaces, USA

11:45 **29am-F06** **Stephen Jesse** PFM

Differentiating Electrostatic and Electromechanical Contributions to the Piezo-Response Force Microscopy Measurement for Reliable Assessment of Ferroelectric Properties at the Nanoscale

L. Collins, P. Maksymovych, N. Balke, S. V. Kalinin and S. Jesse*
Center for Nanophase Materials Sciences, USA

12:00 **29am-F07** **Neus Domingo** Invited Talk PFM

Gradient-Based Electro-mechanical Surface Properties by Force Microscopy: Mechanical Read and Write of Ferroelectricity and Converse Flexoelectricity

N. Domingo[1], K. Cordero[1], A. Abdollahi[1,2], J. Sort[3,4] and G. Catalan[1,4]
[1]Institut Català de Nanociencia i Nanotecnologia, CSIC and The Barcelona Institute of Science and Technology, Campus UAB, Spain
[2]Laboratori de Càlcul Numèric (LaCàN) Universitat Politècnica de Catalunya, Spain
[3]Departament de Física Universitat Autònoma de Barcelona (UAB), Spain
[4]Institució Catalana de Recerca i Estudis Avançats (ICREA), Spain

Oral session: Photonics
Room F 14:00 - 15:15
Session chair: Hiroki Taniguchi

14:00 **29pm-F01** **Paul Evans** Invited Talk ISAF

Photoinduced Transformations in Ferroelectric and Multiferroic Complex Oxides

Y. Ahn and P. G. Evans*
University of Wisconsin-Madison, USA

14:30 **29pm-F02** **Torsten Granzow** ISAF

Stress-Induced Increase of Bulk Photovoltaic Charge Carrier Mobility in $KNbO_3$

S. Nadupalli and T. Granzow*
Department of Materials Science & Technology, Luxembourg Institute of Science & Technology, Luxembourg

14:45 **29pm-F03** **Yuji Noguchi** FMA

Giant Photovoltaic Effect of Ferroelectric Domain Walls in Perovskite Ferroelectrics

Y. Noguchi* and M. Miyayama
Department of Applied Chemistry, The University of Tokyo, Japan

15:00 **29pm-F04** **Takayuki Nagai** AMEC

Unconventional Photo-Dielectric Effect in Wide-Gap Aluminates

T. Nagai[1*], A. Kuwabara[2], Y. Kumagai[3], Y. Yamada[4], K. Tanabe[1], I. Terasaki[1] and H. Taniguchi[1,3]
[1]Department of Physics, Nagoya University, Japan
[2]Nanostructures Research Laboratory, Japan Fine Ceramics Center, Japan
[3]Materials Research Center for Elemental Strategy, Tokyo Institute of Technology, Japan
[4]Structural Materials Research Institute, National Institute of Advanced Industrial Science and Technology, Japan

Oral session: Band structure and photovoltaic effects
Room F 15:30 - 16:45
Session chair: Paul Evans

15:30 **29pm-F05** **Marin Alexe** Invited Talk ISAF

Bulk Photovoltaic Effects and Strain-Related Photo-Effects in Non-Centrosymmetric Materials

M. Alexe
Department of Physics, University of Warwick, UK

16:00 **29pm-F06** **Lauren Garten** ISAF

Developing Narrow Band-Gap Ferroelectrics for Photovoltaics

L. M. Garten,[1,*] K. Hellier,[1,2] C. Xiao[1], J. Mangum[3], B. Gorman[3], S. Lany[1] and D. S. Ginley[1]
[1]Material Science Center, National Renewable Energy Laboratory, USA
[2]Physics Department, University of California - Santa Cruz, USA
[3]Department of Metallurgical and Materials Engineering, Colorado School of Mines, USA

16:15 **29pm-F07** **Xiaoyan Liu** ISAF

Applications of Ferroelectrics in Solar Cells for High Efficiency

X.Y. Liu[1*], K.Y. Feng[1,2] and X. Peng[2]
[1]College of Metallurgy and Materials Engineering, Chongqing University of Science and Technology, Chongqing Key Laboratory of Nano/Micro Composites and Devices China
[2]College of Physics, Chongqing University, China

16:30 **29pm-F08** **Zhiping Hu** ISAF

Two-Photon-Pumped Emission from in Situ Synthesized Non-Blinking $CsPbBr_3/SiO_2$ Nanocrystals with Enhanced Stability

Z. Hu[1], Z. Liu[2], J. Du[2] and X. Tang[1*]
[1]Key Laboratory of Optoelectronic Technology and Systems of the Education Ministry of China, College of Optoelectronic Engineering, Chongqing University, China.,
[2]State Key Laboratory of High Field Laser Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China.

Oral session: Ultrasonic transducers
Room G 10:00 - 11:15
Session chair: Keisuke Ishii

10:00 **29am-G01** **Shoko Yoshikawa** Invited Talk IFAAI

Recent Development of Sonar Transducers for Recreational and Small Commercial Fishing Applications

S. Yoshikawa* and J. Caspall
Navico, Inc., USA

10:30 **29am-G02** **Thibaut Meurisse** ISAF

Investigating the Effects of Losses of a Piezoelectric Transducer in Temperature Varying Environment through Finite Element Analysis

T. Meurisse* and D. Damjanovic
Laboratory for Ferroelectrics and Functional Oxides, Swiss Federal Institute of Technology in Lausanne – EPFL, Switzerland

10:45 **29am-G03** **Lin Zhang** AMF

Three-Dimensional Ultrasonic Imaging Using Stretchable Piezoelectric Transducer Arrays

H.J. Hu[1], C.H. Wang[2], L. Zhang[3,*] and S. Xu[1,2]
[1]Materials Science and Engineering Program, University of California San Diego, USA
[2]Department of Nanoengineering, University of California San Diego, USA
[3]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education and International Center for Dielectric Research, Xi'an Jiaotong University, China

11:00 **29am-G04** **Yohachi (John) Yamashita** Invited Talk (Short) IFAAI

Application of Multi-Frequencies & Pulse Repetition Frequencies of Low Intensity Pulse Ultrasound Stimulation Equipment for Living Cells

Y. Yamashita[1,3*], T. Karaki[1], X.G. Xu[2], P.F. Ni[2] and H. Y. Lee[3]
[1]Dep. Intelligent Systems Engineering, Toyama Prefect. Univ., Japan
[2]Zhejiang Jiakang Electronics Co., Ltd, P R. China
[3]Ceracomp Co. Ltd, South Korea

Oral session: Ultrasonic transducers
Room G 11:30 - 12:15
Session chair: Keisuke Ishii

11:30 **29am-G05** **Astri Haugen** ISAF

Textured Lead-Free Piezoelectrics for High-Frequency Ultrasound Imaging

A. B. Haugen[1*], K. B. Andersen[1], N. V. Nong[1], E. Ringgaard[2] and F. Levassort[3]
[1]Department of Energy Conversion and Storage, Technical University of Denmark, Denmark
[2]Meggitt A/S, Denmark
[3]GREMAN UMR 7347, Tours University, France

11:45 **29am-G06** **Kun Jia** ISAF

Synthesized Sound Field Based Micro-Particle Manipulation Using the Fewest Bulk Wave Transducers

K. Jia[1*], S. Deng[2] and K. Yang[2]
[1]School of Aerospace Engineering, Xian Jiaotong University, China
[2]School of Mechanical Engineering, Zhejiang University, China

12:00 **29am-G07** **Li Xiaobing** ISAF

High Performance Relaxor Ferroelectric Single Crystals and Their Applications in Medical Diagnostic Ultrasonic Transducers

X. Li and H. Luo
Key Laboratory of Inorganic Functional Material and Device, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

Oral session: Composite materials for capacitors
Room G 14:00 - 15:30
Session chair: Hitoshi Saita

14:00 **29pm-G01** **Fatih Dogan** Invited Talk IFAAI

Polymer-Ceramic Nanocomposites for High Energy Density Capacitors

F. Dogan
Department of Materials Science and Engineering, Missouri University of Science and Technology, USA

14:30 **29pm-G02** **Jie Zhang** ISAF

High Performance Electro-Active Polymer Composite Based on CNTs with Core-Shell Structure

J. Zhang[1*], Y. J. Zuo, W. Ren[1] and Z. G. Ye[1,2]
[1] Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China
[2]Department of Chemistry and 4D LABS, Simon Fraser University, Canada

14:45 **29pm-G03** **Dou Zhang** AMF

Ferroelectric Polymer-Based Nanocomposite Capacitors for Energy Storage

D. Zhang*, W. Liu, H. Luo, X. Zhou and K. Zhou
State Key Laboratory of Powder Metallurgy, Central South University, Chaina

15:00 **29pm-G04** **Hang Luo** AMF

Tunable Interfacial Layer on $BaTiO_3$ Nanostructures Using a Novel Liquid-Crystalline Polymer for High Performance Capacitor

H. Luo, K. Zhou, X. Zhou and D. Zhang*
State Key Laboratory of Powder Metallurgy, Central South University, China

15:15 **29pm-G05** **Jiawang Hong** ISAF

High Piezoelectricity in Organic-Inorganic Hybrid Materials

G. Tang, Y. Liu and J. Hong*
Department of Applied Mechanics, Beijing Institute of Technology, China

Oral session: Ferroelectric organic materials
Room G 15:45 - 16:45
Session chair: Michelle Dolgos

15:45 **29pm-G06** **Sascha Raufeisen** ISAF

Oxidation of Organic Compounds with Thermally Excited Pyroelectric Materials

S. Raufeisen[1*], M. Stelter[1,2] and P. Braeutigam[1]
[1]Center for Energy and Environmental Chemistry (CEEC Jena), Institute of Technical Chemistry and Environmental Chemistry, Friedrich Schiller University Jena, Germa
[2]Fraunhofer IKTS, Fraunhofer Institute for Ceramic Technologies and Systems, Germany

16:00 **29pm-G07** **Takeshi Yoshimura** FMA

Investigation of Ionic Polymer Gel Electrode for Energy Harvesters using Organic Ferroelectrics

T. Yoshimura*, R. Kakihara, D. Kiriya and N. Fujimura
Graduate School of Engineering, Osaka Prefecture University, Japan

16:15 **29pm-G08** **Bobo Tian** FMA

An Organic Ferroelectric Transistor as a Regulable Artificial Synapse for Neuromorphic Computing

B.B. Tian[1], L. Liu[1,2], M G. Yan[1], J.L. Wang[2], X.J. Meng[2], N. Zhong[1], J.H. Chu[1,2] and C. G. Duan[1*]
[1]Key Laboratory of Polar Materials and Devices, Ministry of Education, East China Normal University, China
[2]National Laboratory for Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China

16:30 **29pm-G09** **Yoshiro Tajitsu** FMA

Application of Piezoelectric Braided Cord to Dysphagia-Detecting System

Y. Tajitsu[1*], A. Suehiro[2], K. Tsunemine[2], K. Katsuya[1], Y. Kawaguchi[1], Y. Kuriwaki[1], Y. Sugino[1], H. Nishida[1], M. Kitamura[2] and K. Omori[2]
[1]Faculty of Science and Engineering, Kansai University, Japan
[2]Department of Otolaryngology-Head and Neck Surgery, Kyoto University, Japan

Oral session: Piezoelectric thin films
Room H 10:00 - 11:15
Session chair: Hisao Suzuki

10:00 **29am-H01** **Michelle Dolgos** Invited Talk ISAF

Piezoelectric Thin Films from Aqueous Solution Deposition of a Simple Hexaniobate Precursor

M. Dolgos
Department of Chemistry, Oregon State University, USA

10:30 **29am-H02** **Roger Whatmore** ISAF

Single Target Sputtering of Tetragonal Lead Zirconate Titanate

P. K. Petrov[1*], A. Berenov[1], R. W. Whatmore[1], L. Allers[2], J. Phair[3], V. A. Volpyas[4] and A. B. Kozyrev[4]
[1]Department of Materials, Imperial College London, UK
[2]Korvus Technology Ltd, UK
[3]Pyreos Ltd, UK
[4]St Petersburg Electrotechnical University "LETI", Russia

10:45 **29am-H03** **Naoki Wakiya** AMEC

Preparation and Electrical Properties of PZT Thin Film Deposited on Porous Si

N. Wakiya[1,2,3*], K. Takabayashi[3], K. Torii[3], T. Kawaguchi[3], N. Sakamoto[1,3], K. Shinozaki[4], N. Koshida[5] and H. Susuki[1,2,3]
[1]Research Institute of Electronics, Shizuoka University, Japan
[2]Graduate School of Science and Technology, Shizuoka University, Japan

[3]Department of Electronics and Materials Science, Shizuoka University, Japan
[4]Department of Metallurgy and Ceramics Science, Tokyo Tech., Japan
[5]Tokyo University of Agriculture and Technology, Japan

11:00 **29am-H04** **Daniel Potrepka** ISAF

Characterization of Sputtered Lead Zirconate Titanate Thin Films

D. M. Potrepka[1,*], G. R. Fox[2], C. Y. Cheng[3], R. R. Benoit[1], J. R. Mulcahy[4], R. G. Polcawich[1] and S. Trolier-McKinstry[3]
[1]Sensors and Electron Devices Directorate, U. S. Army Research Laboratory, USA
[2]Fox Materials Consulting LLC, USA
[3]Department of Materials Science and Engineering, Pennsylvania State University, Millennium Science Complex, USA
[4]General Technical Services, USA

Oral session: Pb-based thin films
Room H 11:30 - 12:30
Session chair: Brady Gibbons

11:30 **29am-H05** **Hisao Suzuki** ISAF

Enhanced Ferroelectricity and Pyroelectricity of CSD-Derived PZT Thin Films from Molecular-Designed Precursor Solution

H. Suzuki [1*], T. Yamada[2], T. Arai[3], T. Ohno[4], T. Kawaguchi[2], N. Sakamoto[1] and N. Wakiya[1]
[1]Research Institute of Electronics, Shizuoka University, Japan
[2]Graduate School of Integrated Science and Technology, Shizuoka University, Japan
[3]National Institute of Technology, Numazu College , Japan
[4]Department of Materials Science, Kitami Institute of Technology, Japan

11:45 **29am-H06** **Yulian Yao** ISAF

Direct Processing of $PbZr_xTi_{1-x}O_3$ Thin Films on Glass and Polymeric Substrates

Y. Yao[1*], C.Z. Deng[1], S.J. Brewer[5], F. Zhang[2], S. Neumayer[2], A. Naden[3], P. Joshi[4], B.J. Rodriguez[2], A. Kumar[3] and N. Bassiri-Gharb[1,5]
[1]School of Materials Science and Engineering, Georgia Institute of Technology, USA
[2]School of Physics, University College Dublin, College Green, Ireland
[3]School of Mathematics and Physics, Queen's University Belfast, UK
[4]Materials Science & Technology Division, Oak Ridge National Laboratory, USA
[5]Woodruff School of Mechanical Engeering, Georgia Institute of Technology, USA

12:00 **29am-H07** **Lyndsey Denis** ISAF

Scaling Effects in Declamped {001} $Pb(Zr_{0.3}Ti_{0.7})O_3$ Thin Films

L. M. Denis[1*], G. Esteves[2], J. Walker[1], J. L. Jones[2] and S. Trolier-McKinstry[1]
[1]Department of Materials Science and Engineering, Pennsylvania State University, Millennium Science Complex, USA
[2]Department of Materials Science and Engineering, North Carolina State University, USA

12:15 **29am-H08** **Iaroslav Gaponenko** ISAF

Local and Correlated Studies of Humidity-Mediated Ferroelectric Thin Film Surface Charge Dynamics

I. Gaponenko[1,2*], L. Musy[1], N. Domingo[3], N. Stucki[4] A. Verdaguer[3], N. Bassiri-Gharb[2,5] and P. Paruch[1]
[1]Department of Quantum Matter Physics, University of Geneva, Switzerland
[2]G.W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, U.S.A.
[3]Institut Català de Nanociència i Nanotecnologia (ICN2), Campus UAB, Spain
[4]University of Applied Sciences Western Switzerland in Geneva (HES-SO/hepia), Switzerland
[5]School of Materials Science and Engineering, Georgia Institute of Technology, U.S.A.

Oral session: Ferroelectric thin films
Room H 14:00 - 15:15
Session chair: Hironori Fujisawa

14:00 **29pm-H01** **Xiuliang Ma** ISAF

Atomic Mapping of Domains and Interfacial Structures in Ferroelectric Thin Films

Y. L. Tang, Y. L. Zhu, Y. Liu, S. R. Zhang, Y. J. Wang and X. L. Ma
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

14:15 **29pm-H02** **Goon Tan** FMA

Direct Observation of Inverse Piezoelectric Effect of $Pb(Zr,Ti)O_3$ Thin Films Using Synchrotron X-ray Diffraction

G. Tan[1*], K. Maruyama[1], Y. Kanamitsu[1], S. Nishioka[1], H. Osaka[1], T. Koganezawa[2], T. Umegaki[1] and I. Kanno[1]
[1]Kobe University, Japan
[2]Japan Synchrotron Radiation Research Institute (JASRI), Japan

14:30 **29pm-H03** **Evgeniya Khomyakova** ISAF

Lead-Free $Ba_{0.85}Ca_{0.15}Zr_{0.1}Ti_{0.9}O_3$ Thin Films Fabricated by Aqueous Chemical Solution Deposition

E. Khomyakova*, T. Grande, J. Glaum and M.-A. Einarsrud
Department of Materials Science and Engineering, NTNU Norwegian University of Science and Technology, Norway

14:45 **29pm-H04** **Leonard von Helden** ISAF

Formation of Ferroelectric Monoclinic Domains in $K_{0.7}Na_{0.3}NbO_3$ Thin Films under Different Strain Conditions

L. von Helden[1*], M. Schmidbauer[1], M. Hanke[2] and J. Schwarzkopf[1]
[1]Leibniz Institute for Crystal Growth, Germany
[2]Paul-Drude-Institute for Solid State Electronics, Germany

15:00 **29pm-H05** **Muneyasu Suzuki** FMA

Polarization Properties of Bismuth Potassium Titanate Self-Supported Thick Films Prepared by Using AD Method

M. Suzuki,* T. Tsuchiya and J. Akedo
Advanced Coating Technology Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Oral session: Nanostructure derived properties
Room H 15:45 - 16:45
Session chair: Hiroshi Uchida

15:45 **29pm-H07** **Yukio Watanabe** Invited Talk IFAAI

Polarization-Discontinuity Conductions at Domain Boundaries, Interfaces & Surfaces
Unification and Implications for Domain, Size Effects & Hyper-ferroelectricity

Y. Watanabe*, D. Matsumoto, Y. Urakami and M. Okano
Kyushu Univ., Japan

16:15 **29pm-H08** **Weiwei Chen** ISAF

Highly Stable Silica-Wrapped Manganese-Doped Cesium Lead Halide Perovskite Quantum Dots and Their Application on Brigl White Light Emitting Devices

W. Chen, X. Tang*, Z. Zang and W. Hu
College of Optoelectronic Engineering, Chongqing University, China

16:30 **29pm-H09** **Myung-Yeon Cho** FMA

Fabrication of TiO_2/Cu Hybrid Composite Films with Near Zero TCR and High Adhesive Strength via Aerosol Deposition

M.-Y. Cho[1*], D.-W. Lee[2], S.-H. Lee[2], Y.-N. Kim[2], S.-M. Koo[1*] and J.-M. Oh[1*]
[1]Department of Electronic Materials Engineering, Kwangwoon University, Republic of Korea
[2]Material Technology Center, Korea Testing Laboratory, Republic of Korea

Oral session: Local structure in Ferroelectrics
Room I 10:00 - 11:15
Session chair: Yoshihiro Kuroiwa

10:00 **29am-I01** **Rattikorn Yimnirun** Invited Talk ISAF

Local Structure in Fe-doped $BaTiO_3$ Materials Studied by Synchrotron X-Ray Absorption Spectroscopy

J. Jutimoosik[1], S. Tongsaeng[1], A. Bootchanont[2], P. Kidkhunthod[3], S. Rujirawat[1] and R. Yimnirun[1,4,*]
[1]School of Physics, Institute of Science, and NANOTEC-SUT Center of Excellence on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailan
[2]Division of Physics, Faculty of Science and Technology, Rajamangala University of Technology Thanyaburi(RMUTT), Thailand
[3]Synchrotron Light Research Institute (Public Organization), Thailand,
[4]School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Thailand

10:30 **29am-I02** **Yoneda Yasuhiro** FMA

Local Structure Analysis of $KNbO_3$ in Wide Temperature Ranges

Y. Yoneda[1*], K. Ohara[2] and H. Nagata[3]
[1]Materials Research Center, Japan Atomic Energy Agency, Japan
[2]Japan Synchrotron Radiation Research Institute, Japan
[3]Department of Electrical Engineering, Tokyo University of Science, Japan

10:45 **29am-I03** **Anton Goetzee-Barral** ISAF

Local and Average Structure Study of $(1-x)(Na_{0.5}, Bi_{0.5})TiO_3$-$xPbTiO_3$

A. J. Goetzee-Barral[1*], A. Johnson[2], M. Dolgos[2] and A. J. Bell[1]
[1]School of Chemical and Process Engineering, University of Leeds, England
[2]Department of Chemistry, Oregon State University, U.S.

11:00 **29am-I04** **Sem Gorfman** ISAF

Electric-Field Induced Monoclinic Distortion and Polarization Rotation in $Na_{0.5}Bi_{0.5}TiO_3$

S. Gorfman[1*], H. Choe[2], N. Zhang[3], A. M. Glazer[4] and P. A. Thomas[4]
[1]Department of Materials Science and Engineering, Tel Aviv University, Israel
[2]Department of Physics, University of Siegen, Germany
[3]Electronic Materials Research Laboratory, Xi'an Jiaotong University, China
[4]Department of Physics, University of Warwick, UK

Oral session: Quantum beam science
Room I 11:30 - 12:30
Session chair: Rattikorn Yimnirun

11:30 **29am-I05** **Chikako Moriyoshi** FMA

Structure Fluctuation and Soft Phonon Modes in Improper Ferroelectric $BaAl_2O_4$ by Single Crystal X-ray Diffraction

Y. Nakahira[1], C. Moriyoshi[1*], Y. Kuroiwa[1], H. Moriwake[2], Y. Ishii[3] and S. Mori[3]
[1]Department of Physical Science, Hiroshima University, Japan
[2]Japan Fine Ceramics Center, Japan
[3]Department of Materials Science, Osaka Prefecture University, Japan

11:45 **29am-I06** **Pierre-Eymeric Janolin** ISAF

Experimental and First Principles Investigation of Ordered-PSN

P. E. Janolin[1], C. Cochard[2], S. Grenier[3], A. Bataille[4], P. Nukala[1], T. Roisnel[5], L. Bellaiche[6], X. Hongjun[7], Y. Yang[6,8], E. Suard[9], W. Ren[8], X. Long[10,11], J. M. Kiat[1*] and Z Ye[10]
[1]1Lab. S.P.M.S. CentraleSupélec 8 rue Joliot-Curie 91190 Gif-Sur-Yvette, France
[2]School of Maths and Physics, Queen's University Belfast, United Kingdom
[3]Institut Néel, Univ. Grenoble Alpes, France
[4]Lab. Léon Brillouin CEA Saclay, 91191 Gif sur Yvette Cedex, France
[5]Institut des Sciences Chimiques de Rennes, Université de Rennes 1, France
[6]Physics Department, University of Arkansas, USA
[7]Department of Physics, Fudan University, China,
[8]Intl. Centre for Quantum and Molecular Structures, Shanghai University, China
[9]Institut Laue-Langevin, France
[10]Fujian Institue of Reseach on Structure of Matters, China
[11]Dept. of Chemistry, Simon Fraser Univ., Canada

12:00 **29am-I07** **Marios Hadjimichael** ISAF

Ferroelectric Domain Orientations Probed with Synchrotron X-ray Nanodiffraction

M. Hadjimichael[1,*], E. Zatterin[1,2], S. J. Leake[2] and P. Zubko[1]
[1]London Centre for Nanotechnology and Department of Physics and Astronomy, University College London, United Kingdom
[2]ESRF – The European Synchrotron, France

12:15 **29am-I08** **Solveig Aamlid** ISAF

Cation Disordering in Tetragonal Tungsten Bronzes

S. S. Aamlid[1*], S. M. Selbach[1] and T. Grande[1]
[1]Department of Materials Science and Engineering, NTNU Norwegian University of Science and Technology, Norway

Oral session: Fundamentals of multiferroics
Room I 14:00 - 15:15
Session chair: Brahim Dkhil

14:00 **29pm-I01** **Vincent Garcia** Invited Talk ISAF

Real-Space Imaging of the Spin Cycloid in $BiFeO_3$

V. Garcia[1*], I. Gross[2,3], W. Ahtar[2], L. J. Martinez[2], S. Chouaieb[2], K. Garcia[1], C. Carrétéro[1], A. Barthélémy[1], P. Appel[4], P. Maletinsky[4], J.-V. Kim[5], J.-Y. Chauleau[6], N. Jaa M. Viret[6], M. Bibes[1], S. Fusil[1] and V. Jacques[2]
[1]Unité Mixte de Physique, CNRS, Thales, Univ. Paris Sud, Université Paris-Saclay, France
[2]Lavoratoire Charles Coulomb, Université de Montpellier and CNRS, France
[3]Laboratoire Aimé Cotton, CNRS, Université Paris-Sud, ENS Cachan, Université Paris-Saclay, France
[4]Department of Physics, University of Basel, Switzerland
[5]Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris- Saclay, France
[6]SPEC, CEA, CNRS, Université Paris-Saclay, France
[7]Synchrotron SOLEIL, France

14:30 **29pm-I02** **Jiri Hlinka** Invited Talk ISAF

Ferroelectric Skyrmions and Bloch Walls: Tuning the Cubic Paraelectric Phase Anisotropy

J. Hlinka
Institute of Physics of the Czech Academy of Sciences, Czech Republic

15:00 **29pm-I03** **Stuart Burns** ISAF

Scaling Behavior of the Spin Cycloid in $BiFeO_3$ Films

S. R. Burns[1], D. Sando[1*], B. Xu[2,3], L. Russell[4], G. Deng[5], J. Seidel[1], L. Bellaiche[2,3], N. Valanoor[1] and C. Ulrich[4]
[1]School of Materials Science and Engineering, The University of New South Wales, Australia
[2]Department of Physics, University of Arkansas, USA
[3]Institute for Nanoscience and Engineering, University of Arkansas, USA
[4]School of Physics, The University of New South Wales, Australia
[5]5Australian Centre for Neutron Scattering, Australian Nuclear Science and Technology Organisation, Australia

Oral session: Fundamentals of multiferroics
Room I 15:30 - 16:45
Session chair: Vincent Garcia

15:30 **29pm-I04** **Brahim Dkhil** Invited Talk IFAAI

Photo-Deformation in the $BiFeO_3$ Multiferroic Compound

B. Dkhil
Department, Laboratoire Structures, Propriétés et odélisation des Solides, CentraleSupélec, CNRS-UMR8580, Université Paris-Saclay, France

16:00 **29pm-I05** **Chi-Shun Tu** FMA

Photovoltaic Conversion in Perovskite Multiferroic Ceramics

C.-S. Tu[1*], P.-Y. Chen[2], C.-S. Chen[3], R. R. Chien[4], V. H. Schmidt[4] and C.-Y. Lin[1]
[1]Department of Physics, Fu Jen Catholic University, Taiwan
[2]Department of Mechanical Engineering, Ming Chi University of Technology, Taiwan
[3]Department of Mechanical Engineering, Hwa Hsia University of Technology, Taiwan
[4]Department of Physics, Montana State University, USA

16:15 **29pm-I06** **Tae Won Noh** Invited Talk AMEC

Selective Control of Ferroelectric Polarization in Multiferroic $BiFeO_3$ Thin Films Using Trailing Flexoelectric Field

S. M. Park[1,2], B. Wang[3], S. Das[1,2], L. Q. Chen[3], S. M. Yang[4] and T. W. Noh[1,2,*]
[1]Center for Correlated Electron Systems, Institute for Basic Science (IBS), Republic of Korea
[2]Department of Physics and Astronomy, Seoul National University (SNU), Republic of Korea
[3]Department of Materials Science and Engineering, The Pennsylvania State University, USA
[4] Department of Physics, Sookmyung Women宴泹 University, Korea

Oral session: Optics and phase transition
Room J 10:00 - 11:15
Session chair: Tor Grande

10:00 **29am-J01** **Elena Mishina** Invited Talk IFAAI

Polarization Switching in Ferroelectrics and Multiferroics by a Single-Period Terahertz Pulse

E. D. Mishina[1*], N. E. Sherstyuk[1], V. R. Bilyk[2], K. A. Grishunin[1] and A. V. Kimel[1,2]
[1]Institute of Physics and Technology, Moscow Technological University, Russia
[2]Institute for Molecules and Materials, Radboud University, The Netherlands

10:30 **29am-J02** **Salia Cherifi-Hertel** Invited Talk ISAF

Experimental Evidence of Non-Ising Domain Walls in Ferroelectrics

S. Cherifi-Hertel
Université de Strasbourg, CNRS, IPCMS, France

11:00 **29am-J03** **Hamit Yurtseven** AMF

Order-Disorder Transition in the Ferroelectric $LiTaO_3$

A. Kiraci[1] and H. Yurtseven[2,*]
[1]Inter-Curricular Courses Department, Cankaya University, Turkey
[2]Department of Physics, Middle East Technical University, Turkey

Oral session: Optics and phase transition
Room J 11:30 - 12:30
Session chair: Elena Mishina

11:30 **29am-J04** **Bertrand Vilquin** ISAF

Infrared Absorption Studies on Tetragonal Barium Titanate ($BaTiO_3$) Thin Film

B. Wagué[1], J.-B. Brubach[2], G. Niu[3], G. Dong[3], L. Dai[3], P. Roy[2], G. Saint-Girons[1], P. Rojo-Romeo[1], Y. Robach[1], B. Vilquin[1*]
[1]Universite de Lyon, Ecole Centrale de Lyon, Institut des Nanotechnologies de Lyon, CNRS UMR5270, France
[2]Synchrotron SOLEIL, ligne AILES, France
[3]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China

11:45 **29am-J05** **Peng Tan** ISAF

Field-Driven Electro-Optic Dynamics of Polar Nanoregions in Nanodisordered KTN Crystal

P. Tan*, H. Tian, and X. Meng
Department of Physics, Harbin Institute of Technology, China

12:00 **29am-J06** **Peter Mackwitz** ISAF

Vibrational Fingerprints of Lithium Niobateon Insulator and Technological Aspects for Domain Inversion in Ion-Sliced $LiNbO_3$

P. Mackwitz[1*], J. Brockmeier[1], M. Rsing[1], M. Zhai[2], H. Hu[2,3] G. Berth[1] and A. Zrenner[1]
[1]DepartmentPhysik, Universität Paderborn, Germany
[2]NanoLN, China
[3]School of Physics, Shandong University, China

12:15 **29am-J07** **Sergey Lushnikov** AMF

Low-temperature Phonon and Relaxation Dynamics of $PbMg_{1/3}Nb_{2/3}O_3$ Under Electric Field Applied Along [111] Direction

S. G. Lushnikov[1*], A. I. Fedoseev[1] and S. Kojima[2]
[1]Ioffe Institute, Russia,
[2]Institute of Materials Science, University of Tsukuba, Japan

Oral session: Fundamentals and theory
Room J 14:00 - 15:15
Session chair: Chun-gang Duan

14:00 **29pm-J01** **Tor Grande** Invited Talk ISAF

Polarization in Ferroelectric Tungsten Bronzes

G. H. Olsen, S. S. Aamlid, C. S.M Selbach and T. Grande*
Department of Materials Science and Engineering, NTNU Norwegian University of Science and Technology, Norway

14:30 **29pm-J02** **Daesu Lee** Invited Talk AMF

Measuring Robust Flexoelectricity at Reduced Dimensions

D. Lee[1,2]
[1]Center for Correlated Electron Systems, Institute for Basic Science, Korea
[2]Department of Physics and Astronomy, Seoul National University, Korea

15:00 **29pm-J03** **Sittichain Pramchu** AMEC

First-Principle Calculation of Ferroelectricity and Structural Stability in Bi- and Alkali-Metal-Modified $BaTiO_3$ for PTC Thermi Application

S. Pramchu, A. P. Jaroenjittichai and Y. Laosiritaworn*
Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand

Oral session: Fundamentals and theory
Room J 15:30 - 16:45
Session chair: Daesu Lee

15:30 **29pm-J04** **Max Falkowski** FMA

Doping Screening of ZrO_2 to Promote the Ferroelectric Phase from First-Principles

M. Falkowski*, C. Knneth, R. Materlik and A. Kersch
Department of Applied Sciences and Mechatronics, Munich University of Applied Sciences, Germany

15:45 **29pm-J05** **Muhammad Yaseen** AMF

Electronic and Optical Properties of $SnTiO_3$ by First Principle Method

M. Yaseen[1*], M. Waqas,[1] and Q. Mehmood[2]
[1]Department of Physics, University of Agriculture University, Pakistan
[2]Materials Growth and Simulation Laboratory, Department of Physics, University of the Punjab,Quaid-i-Azam Campus, Pakistan

16:00 **29pm-J06** **Chun-Gang Duan** FMA

Ferroelectricity Induced Valley Polarization in 2D Materials

C.-G. Duan
Key Laboratory of Polar Materials and Devices, Ministry of Education, Department of Electronic Engineering, East China Normal University, Chaina

16:15 **29pm-J07** **Leonie Koch** ISAF

Ionic Conductivity and Defect Chemistry in Sodium Bismuth Titanate: a Study on the Electronic Structure

L. Koch[1*], S. Steiner[2], K.-C. Meyer[1], I. Seo[2], K. Albe[1] and T. Frömling[2]
[1]Institute of Geo- and Materials Science, Technische Universität Darmstadt, Germany
[2]Institute of Geo- and Materials Science, Technische Universität Darmstadt, Germany

16:30 **29pm-J08** **Serges Mkam Tchouobiap** ISAF

An Analytical Model for Ferroelectric Instability in H-Bonded KH_2PO_4 and KD_2PO_4 Crystals: Pressure and Quantum Effects

S. E. Mkam Tchouobiap[1,3*], H. Mashiyama[2] and M. Maaza[3,4]
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Poster session
Hall P 17:00 - 18:30

29pm-P001 **Kainan Xiong** FMA

Growth and Piezoelectric Properties of $Ca_3Ta(Al_{0.5}Ga_{0.5})_3Si_2O_{14}$ Crystals with Langasite Structure

K. Xiong, X. Tu, Y. Zheng, S. Wang, E. Shi
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29pm-P002 **Christoph Reuther** ISAF

Growth and Structural Aspects of RCOB Crystals

C. Reuther,[1,*], M. Hengst[1], J. Götze[1], E. Mehner[2], H. Stöcker,[2] D. C. Meyer[2], J. Schreuer[3] and M. Münchhalfen[3]
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29pm-P003 **Zibo Jiang** ISAF

Application of VGF-grown PMN-PT Crystal Composite in Abdominal and Transvaginal Ultrasound Transducers

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29pm-P004 **Jurij Koruza** ISAF

High-Performance (K,Na)NbO_3-Based Piezoelectric Single Crystals

H. Liu[1,2], P. Veber[2,3,4], D. Rytz[5], P. B. Fabritchnyi[6], M. I. Afanasov[6], E. A. Patterson[7], T. FröUmling[1], M. Maglione[2,3], J. RöUdel[1], J. Koruza[1,*]
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[7]Materials Science and Techonology Division, Naval Research Lab., USA

29pm-P005 **Chao He** ISAF

Domain Pattern in Bulk Ferroelectric Single Crystals with High Self-Polarization

C. He*, X. Yang, Z. Wang, X. Li, Y. Liu, X. Long*
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29pm-P006A **Tu Xiaoniu** AMEC

Growth and Properties of YCOB High Temperature Piezoelectric Crystal

X. Tu,[1,2] Y. Zheng,[1,*] K. Xiong,[1] S. Wang,[1] and E. Shi[1]
[1]Shanghai Institute of Ceramics, China
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29pm-P007A **Sven Jachalke** ISAF

Pyroelectricity of Silicon-Doped Hafnium Oxide Thin Films

S. Jachalke[1,*], T. Schenk[2], M. H. Park[2], U. Schroeder[2], T. Mikolajick[2,3], H. Stöcker[1], E. Mehner[1], and D. C. Meyer[1]
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[3]Institute for Semiconductors and Microsystems, TU Dresden, Germny

29pm-P008A **Alex Hsain** ISAF

Piezoresponse force microscopy of Ferroelectric Thin Film Hafnia-zirconia on Inorganic Flexible and Rigid Substrates

A. Hsain,[1,*] H. Yu,[1] P. Sharma,[2] J. L. Jones,[1] F. So,[1] and J. Seidel[2]
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29pm-P009A **Shuhei Nakayama** FMA

Crystallization Behavior and Ferroelectric Property of HfO_2-ZrO_2 Films Fabricated by Chemical Solution Deposition

S. Nakayama[1], H. Funakubo[2] and H. Uchida[1,*]
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29pm-P010A **JunYoung Lee** AMF

Non-Centrosymmetric and Ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ Thin Films Fabricated Using Sol-Gel Method

J. Y. Lee[1*], G. Anoop[1], O. Kwon[2], C. J. Roh[3], W.-S. Jang[4], J. G. Choi[3], Y. Kim[2], J. S. Lee[3], Y.-M. Kim[4] and J. Y. Jo[1]
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[2]Sungkyunkwan University Advanced Institute of Nano Technology, Suwon, Republic of Korea
[3]Department of Physics and Photon Science, Gwangju Institute of Science and Technology, Republic of Korea
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29pm-P011A **Min Gee Kim** FMA

Electrical Characteristics of Ferroelectric HfO_2 Directly Deposited on Si Substrates

M. G. Kim[1] and S. Ohmi[1,*]
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29pm-P012 **Uwe Schroeder** ISAF

Comparison of Ferroelectric Properties in ALD vs. PVD Deposited $Hf_{1-x}Zr_xO_2$ Films

T. Mittmann,[1] M.H. Park,[1] C. Richter[1], T. Mikolajick[1,2] and U. Schroeder[1,*]
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29pm-P013 **Seung Dam Hyun** ISAF

Dispersion in Ferroelectric Switching Performance of Polycrystalline $Hf_{0.5}Zr_{0.5}O_2$ Thin Films

S.D. Hyun*, H.W. Park, Y.J. Kim, M.H. Park, Y.H. Lee, H.J. Kim, Y.J. Kwon, T. Moon, K D. Kim, Y.B. Lee, B.S. Kim and C.S. Hwang
Department of Materials Science and Engineering, Seoul National University, Korea

29pm-P014 **Xinman Chen** AMEC

Resistive Switching Characteristics Between Memory Switching and Threshold Switching in Ag/HfO_x/Pt Devices

D. L. Wang, Y. Li, X. N. Zhang, Y. Zhang and X. M. Chen*
Guangdong Engineering Research Center of Optoelectronic Functional Materials and Devices, Institute of Opto-electronic Materials and Technology, South China Normal University, China

29pm-P015 **Xinman Chen** AMEC

Dependence of Threshold Switching Characteristics of Au/HfO_x/Pt devices on Asymmetric Two-Step Electroforming Process

D. L. Wang, Y. Li, X. N. Zhang, Y. Zhang and X. M. Chen*
Guangdong Engineering Research Center of Optoelectronic Functional Materials and Devices, Institute of Opto-electronic Materials and Technology, South China Normal University, China

29pm-P016 **Wuttichai Sinornate** AMEC

Preparation and Characterization of M-Doped ZnO (M=Sb, Ag) Thin Film Deposited by Sol-Gel-Based Coating Method

W. Sinornate* and W. Pecharapa
College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, Thailand

29pm-P017 **Wei Hu** AMEC

Insights to the Influences of Electroforming Process on Resistive Switching Types in Pt/InGaZnO/W Memory Device

W. Hu
Key Laboratory of Optoelectronic Technology and System of Ministry of Education, College of Optoelectronic Engineering, Chongqing University, China

29pm-P018 **Yin She** AMEC

Bipolar Resistive Switching Effects with Multi-Level Storage Characteristics in Ag/MgZnO/Si Structures

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29pm-P019 **Takeshi Ohgaki** AMEC

Molecular Beam Epitaxy Growth of ScN Films on R-face Sapphire Substrates

T. Ohgaki*, I. Sakaguchi, N. Ohashi and H. Haneda
National Institute for Materials Science, Japan

29pm-P020 **Hongfen Ji** ISAF

Structural, Optical, and Electric Properties of Er : $Bi_{0.5}Na_{0.5}TiO_3$-ZnO Films Prepared by Sol-Gel Method

H. Ji[1*], W. Ren[2], W. Liu[1], C. Cai[1], L. Wang[2] and P. Shi[2]
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29pm-P021 **Liqiang Liu** AMEC

Preparation of $BaZrO_3$-$(K_{0.45}Na_{0.5}Li_{0.05})NbO_3$-$(La_{0.5}Na_{0.5})TiO_3$ Piezoelectric Thin Films from Precursor Solution by Pechini Method

L. Liu[1], T. Karaki[1], T. Fujii[1] and Y. Sakai[2]
[1]Department of Intelligent Systems Design Engineering, Faculty of Engineering, Toyama Prefectural University, Japan
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29pm-P022 **Andrei Tumarkin** FMA

Structural and Microwave Characterization of the $BaSrTiO_3$ Thin Films Deposited on Semi-Insulating Silicon Carbide

A. V. Tumarkin*, A. G. Gagarin, A. A. Odinets, M. V. Zlygostov and E. N. Sapego
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29pm-P023 **Andrei Tumarkin** FMA

$BaSnTiO_3$ and $BaZrTiO_3$ Thin Films for Microwave Applications

A.V. Tumarkin*, A.G. Gagarin, A.A. Odinets, M.V. Zlygostov and E.N. Sapego
Department of physical electronics and technology, Electrotechnical University, Russia

29pm-P024 **Zhenhua Wang** AMEC

The Strong Dielectric Constant-Magnetic Field Nonlinearity in the $BiFeO_3$ Thin Film

Z.H. Wang[1,2], X.L. Deng,[1,2*], R.L. Gao[1,2], G. Chen[1,2], W. Cai[1,2] and C L. Fu,[1,2]
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[2]Chongqing Key Laboratory of Nano/Micro Composite Materials and Devices, China

29pm-P025 **Houssny Bouyanfif** ISAF

Structural, Electronic and Magnetic Investigations of $(BiFeO_3)/(SrRuO_3)$ Superlattices

H. Bouyanfif[1*], J. Belhadi[1], M. E. Marssi[1], I. A. Luk'yanchuk[1] and Y. Kopelevich[2]
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29pm-P026 **Yijun Zhang** ISAF

Solid-State Reactions formed Super Paramagnetic Ferrites Thin Films Prepared by Atomic Layer Deposition

Y.J. Zhang*[1], M. Liu[1], C.Y. Wang[2], Z.-D. Jiang[2], W. Ren[1] and Z.-G. Ye [3,1]
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29pm-P027 **Susu Wang Wang** ISAF

Enhancement of Electrical Properties in Compositionally Graded $xBiFeO_3$-$(1-x)PbTiO_3$ Thin Films on Stainless Steel Substrates

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School of Materials Science and Engineering Shanghai University, PR China

29pm-P028 **Bertrand Vilquin** ISAF

2D Growth Mode of SRO and PZT Films

Q. Liu[1], A. Bemarouche[1], Y. Robach[1], N. Baboux[2] and B. Vilquin[1*]
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29pm-P029 **Peng Feng** AMEC

All-Inorganic Perovskite $CsPbBr_3$ Film for Low-Dose X-ray Detection in Computed Tomography

P. He[1,2], P. Feng[1,2*], Z.P. Hu[1], W. Hu[1], K. An[2], B. Wei[1,2], X.S. Tang[1]
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29pm-P030 **Jong-Min Oh** FMA

Formation of Silver Films for Advanced Electrical Properties by Using Aerosol Deposition Process

M.-Y. Cho[1], D.-W. Lee[2], S.-H. Lee[2], Y.-N. Kim[2], D.S. Lee[1] and J.-M. Oh[1*]
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29pm-P031 **Xiaogang Lin** AMEC

Thin Film Pt Interdigital Sensors for Detection of Nitrite in Water

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29pm-P032 **Zhenghao Li** AMEC

Training and Operation of Multi-Layer Convolution Neural Network Using Electronic Synapses

J. Liu[1], Z. Li,[1,2*] W. Hu,[1] Y. Tang[1] and J. Wu[2]
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29pm-P033 **Shintaro Yasui** FMA

Thin Film Modeling of Colossal Permittivity Material

T. Fujita*, S. Yasui, T. Taniyama and M. Itoh
Laboratory for Materials and Structures, Tokyo Institute of Technology, Japan

29pm-P034 **Guodong Zhu** ISAF

Thickness Modulated Quad-State Organic Ferroelectric Memory Device

Q. Chen[1], Y. Yang[1], X. Qiu[2] and G. Zhu[1*]
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29pm-P035 **Minghua Tang** ISAF

Ferroelectric FET for Nonvolatile Memory Application with Two-Dimensional $MoSe_2$ Channels

X. Wang[1,2], M. Tang[1], P. Zhou[3] and J. Wang[2]
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29pm-P036A **Trygve Raeder** ISAF

Columnar Nano-Composite $BaTiO_3$-Based Films from Aqueous Chemical Solution Deposition

T. M. Rader[1*], E. Khomyakova[1], J. Glaum[1], M. A. Einarsrud[1] and T. Grande[1]
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29pm-P037A **Jingying Wu** AMEC

Flexible Lead-Free $BaTiO_3$-Based Ferroelectric Heterostructure with High Performance

J. Wu[1,2], Z. Liang[1,2], L. Shen[1,2], G. Hu[1,2], Y. Zhang[1,2], C. Ma[2*] and M. Liu[1]
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29pm-P038A **Katsuhiro Murase** FMA

Fabrication of Orientation-Controlled $BaTiO_3$ Thick Films by Chemical Solution Deposition Using Nanosheet Interface Layer

K. Murase[1], T. Shiraishi[2], T. Kiguchi[2], A. Akama[2], T. J. Konno[2], H. Funakubo[3] and H. Uchida[1*]
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29pm-P039A **Yuta Oshima** ISAF

Fabrication of $BaTiO_3$ Nanowire Arrays by a Two-step Hydrothermal Reaction

Y. Oshima, M. Hagiwara* and S. Fujihara
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29pm-P040A **Jun-Ge Liang** FMA

$BaTiO_3$-Based Humidity-Sensing Films with High Performance Using Aerosol Deposition and Thermal Treatment Process

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29pm-P042A **Jun-Ge Liang** AMEC

Inter-Digital Capacitors with Aerosol Deposited $BaTiO_3$ Film for Humidity and Gas Sensing Application

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29pm-P043A **Sam Yeon Cho** AMF

Flexible Piezoelectric Nanogenerators Using a Composite Structure Including Lead Free $(Bi_{0.5}Na_{0.5})TiO_3$-$(Bi_{0.5}K_{0.5})TiO_3$ Nanotubes for Energy Harvesting

S.Y. Cho*, S.Y. Kim, E.Y. Kim, and S.D. Bu
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29pm-P044A **Xiao Di** ISAF

Growth and PFM Study of PMN-PT Thin Films

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29pm-P045A **Huifeng Zhao** AMEC

Preparation and Characterization of Lead Zirconate Titanate thin Films Grown by RF Magnetron Sputtering for Pyroelectric infr Detector Array

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29pm-P046A **Kazuki Okamoto** AMEC

Bottom-up Growth of $Pb(Zr,Ti)O_3$ Nanorods by Pulsed Laser Deposition at Elevated Oxygen Pressure

K. Okamoto[1], T. Yamada[1,2*], J. Yasumoto[1], K. Nakamura[1], M. Yoshino[1] and T. Nagasaki[1]
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29pm-P047A **Jing Zhang** AMF

Microstructural Regulation and Optical Performance of Bismuth Ferrite Nanotubes by La Doping

J. Zhang[1], Q. Zhu[1], S.L. Wu[1], C.L. Fu[1,2*], H.F. He[1], F.Q. Wang[1] and J.Y. Ma[3]
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29pm-P048A **Wenlong Liu** ISAF

Mechanical Strain-Tunable Microwave Magnetism in Flexible $CuFe_2O_4$ Epitaxial Thin Film for Wearable Sensors

W. Liu[1*], M. Liu[1], H. Wang[1,2]
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29pm-P049A **Yi Lin** AMEC

Transfer of Delafossite Thin Films to Poly Methyl Methacrylate Substrate via Boron Nitride Layer

Y. H. Lin and T. W. Chiu
Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan

29pm-P050A **Yong-Jin Kim** AMF

Local Conduction of Distinct Orbital-Ordered Domains in $LaMnO_3$ Thin Films

Y.-J. Kim[1*], J.H. Lee[1], S.-W. Kim[2], T.Y. Koo[2] and C.-H. Yang[1,3]
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29pm-P051A **Yong Zhang** AMEC

Flexible Quasi-Two-Dimensional $CoFe_2O_4$ Epitaxial Thin Films for Continuous Strain Tuning of Magnetic Properties

Y. Zhang[1,2*], L. Shen[1,2], M. Liu[1,2], X. Li[3], X. Lu[3], L. Lu[1], C. Ma[2], C. You[4], A. Chen[5], C. Huang[6], L. Chen[7], M. Alexe[8], C.-L. Jia[1,2,9]
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29pm-P052A **Guohua Lan** AMEC

Tunable Magnetic Properties of Epitaxial $LiFe_5O_8$ Nanopillar Film

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29pm-P053A **GaeHun Jo** AMEC

Enhanced Electrical and Optical Properties of Ga Doped ZnO Thin Films Depending on Annealing Methods

G.H. Jo[1*], J. H. Ji[1], Y. Y. Oh[1] and J. H. Koh[1]
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29pm-P054A **Warintorn Chatarat** ISAF

Characterization of DLC ta-C Films Prepared by Pulsed Filtered Cathodic Arc Using Raman Spectroscopy and XPS

W. Chatarata[1*], S. Rujirawata[1], R. Yimniruna[2] and N. Chanlekb[3]
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29pm-P055A **Thanun Chunjaemsri** AMEC

Combination of Raman Spectroscopy, XPS, Synchrotron-Based NEXAFS Analysis of Diamond-Like Carbon Films

T. Chunjaemsri[1*], P. Kidkhunthod[2], N. Chanlek[2], U. Sukkha[2], S. Rujirawat[1] and R. Yimnirun[3]
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29pm-P056A **Izuru Kanagawa** FMA

The Growth of $ASnO_3$ (A = Sr, Ba) Epitaxial Films by RF Magnetron Sputtering and the Electrical Properties

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Department of Engineering, Osaka Prefecture University, Japan

29pm-P057A **Sheng-Siang Wang** AMEC

Preparation of $CuAl_2O_4$ Submicron Tube from Electrospun Al_2O_3 Fiber

S.Y. Su, S.S. Wang and T.W. Chiu*
Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan

29pm-P058A **Shin Wu** AMF

Fabrication and Characteristic of CuO Microtubes by Electrospinning

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29pm-P059A **Tzu Chao** AMEC

Fabrication and Characteristic of Delafossite-Type $CuFeO_2$ Nanofibers by Electrospinning

T. C. Chao* and T. W. Chiu
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29pm-P060A **Teerayut Prada** AMEC

Triboelectric Nanogenerator from 3D Printed Materials for Mechanical Energy Harvesting

T. Prada* and V. Harnchana
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29pm-P061A **Guangliang Hu** AMEC

Self-Organization of Ions at the Interface between Graphene and Ionic Liquid DEME-TFSI

G. Hu[1,2,3*], G.P. Pandey[4], Q. Liu[3], R.S. Anaredy[5], C. Ma[1], M. Liu[2], J. Li[4], S.K. Shaw[5] and J. Wu[3]
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[5] Department of Chemistry, University of Iowa, USA

29pm-P062A **Kyohei Izumi** FMA

Piezoelectric Energy Harvester for AC Power Line

K. Izumi[1*], M. Aramaki[1], T. Yoshimura[1], S. Murakami[2], Y. Kanaoka[2], K. Satoh[2] and N. Fujimura[1]
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[2]Osaka Research Institute of Industrial Science and Technology, Japan

29pm-P063A **Shuai Han** AMEC

Resistive Switching Characteristics of AgInZnS Nanoparticles

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29pm-P064A **TaeYeon Kim** ISAF

Improved On/Off Ratio and Stability of Nonvolatile Resistive Memories Based on Ferroelectric Nanocomposites

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29pm-P065A **Tana Tansoonton** AMEC

Dye-Sensitized Solar Cells Based on Molybdenum Disulfide/Carbon Nanotube Composite Counter Electrodes

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29pm-P066A **Likkhasit Wannasen** AMEC

Fabrication and Electrochemical Properties of Porous $Co_{2-x}Ni_xP_2O_7$ Micro-Nanopaticles for Pseudocapacitor Electrode

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29pm-P067A **Thanawut Duangchuen** AMEC

Synthesis, Characterization and Electrochemical Properties of SnS_2/rGO Nanocomposites Prepared by Hydrothermal Method fo Supercapacitors Application.

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29pm-P068A **Somchai Sonsupap** AMF

Carbon Nanofibers-CeO_2 Composite as an Effective Supercapacitor Electrode

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29pm-P069A **Hau Chen** FMA

Silicon Dioxide and Titanium Dioxide Multilayer Coat Notch Filter to Color Blindness

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29pm-P070A **Yusuke Kataoka** FMA

High Energy Density Dual-Carbon Capacitor by Cold Sintering Process

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29pm-P071A **Zhongbin Pan** ISAF

$NaNbO_3$Two-Dimensional Platelets Induced Highly Energy Storage Density in Trilayered Architecture Composites

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29pm-P072A **Tianyuan Zhang** AMEC

Effect of Sintering Temperature on the Energy Storage Properties of PLZT 3/92/8 Antiferroelectric Ceramics

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29pm-P073A **Vitoria Mussi Toschi** AMF

$Na_{0.5}Bi_{0.5}TiO_3$ – $BaTiO_3$ Lead-Free Dielectric for High Temperature MLCC

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29pm-P074A **Masaya Karube** FMA

Dielectric Breakdown Strength of (Ba,Sr,Ca)TiO_3 Ceramics for High-Temperature Ceramics Capacitor

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29pm-P075A **Wan Li Ma** AMEC

Microstructural Influence on the Dielectric Properties of $BaTiO_3$ Matrix Core-Shell Composites: Experiment and Modeling

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29pm-P076A **Wenbo Li** AMEC

Novel $BaTiO_3$-Based Capacitors with High Energy Density and Fast Discharge Performance

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29pm-P077 **Cuiying Ma** AMF

Multilayer Coating Structure of $BaTiO_3$ with Enhanced Temperature Stability and Energy Storage Capability

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29pm-P078 **Qiuxiang Liu** AMEC

The Diffuse Phase Transition and Dielectric analysis of $(Ba_{0.8}Sr_{0.2})_{1-1.5x}Bi_xTiO_3$ Ceramics

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29pm-P079 **YongPing Pu** AMEC

Improved Energy Storage Properties of $0.55Bi_{0.5}Na_{0.5}TiO_3$-$0.45Ba_{0.85}Ca_{0.15}Ti_{0.85}Zr_{0.1}Sn_{0.05}O_3$-xwt%MgO Ceramics by Microwave Sintering

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29pm-P080 **Yujia Xiao** AMEC

Multiferroic Properties and Energy Storage Density of Filled Tungsten Bronze $Ba_{6-x}Sm_xFe_{1+x}Nb_{9-x}O_{30}$ Ceramics

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29pm-P081 **Nami Nakamori** ISAF

Dielectric Behaviour of Phosphate Eulytite Systems: $B_3^{II}M^{III}(PO_4)_3$ (B = Ca, Sr, Ba; M = Y, Bi, Ln)

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29pm-P082 **Haonan Chen** AMEC

The Effect of Second Phase on Dielectric Behavior of Nd Plus Nb Co-Doped Rutile TiO_2 Ceramics

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29pm-P083 **Jutapol Jumpatam** AMEC

Giant Dielectric Permittivity Behaviors, Non-Ohmic Properties and Electrical Responses of $Na_{1/3}Ca_{1/3}Dy_{1/3}Cu_3Ti_4O_{12}$ Ceramic

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29pm-P084 **Jianwen Chen** AMEC

High Dielectric Constant and Low Dielectric Loss in Poly(vinylidene fluoride) Nanocomposites via a Small Loading of Au@Al Nanoparticles

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29pm-P085 **Tingting Luo** AMF

Colossal Permittivity and the Polarization Mechanism of Co-doped $LaGaO_3$ Ceramics

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29pm-P086 **Tian Wang** AMEC

High Energy Storage Density of Poly(vinylidene fiuoride) Bulk Nanocomposites at Low Electric Field Induced by Giant Dielect Constant Ceramic Nanopowders

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29pm-P087 **Wenwen Nian** AMEC

High Energy Density Induced by DA@NBT Powders in PVDF Flexible and Transparent Composite Films

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29pm-P088 **Chao Chen** ISAF

Dielectric Properties of Boron Nitride Coated Poly(vinylidene fluoride-co-chlorotrifluoroethylene) Composite

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29pm-P089 **Yinbo Li** AMEC

Enhancing the Dielectric and Energy Density of Poly(vinylidene fiuoride) Matrix by Low Filler of $BiFeO_3$ Ceramic

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29pm-P090 **Kun Yu** AMEC

Correlation between Ionic Conduction and Colossal Permittivity of Solid Electrolyte $Li_7La_3Zr_2O_{12}$ Ceramics

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29pm-P091 **Xiaoying Wang** AMEC

Highly Enhanced Energy Density Induced by Five-Story Gradient Structure Polymer Nanocomposites

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29pm-P092 **Liuqin Lai** AMEC

Wrinkled Flower-Like Graphene for High Performance Supercapacitors

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29pm-P093 **Xuefeng Chen** FMA

Energy Storage Characteristics of Lead Zirconate Stannum Titanate Antiferroelectric Ceramics Antiferroelectric Ceramics

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29pm-P094 **Suphawi Chaisit** FMA

Synthesis and Study Electrochemical Properties of Activated Carbon Electrode from Cassava for Supercapacitor Applications

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29pm-P095 **Ouksaphea Pech** FMA

Fabrication and Electrochemical Properties of Carbon Nanofibers by Core-Shell Electrospinning Technique

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29pm-P096 **Attaphol Karaphun** AMEC

Effect of Annealing on Structural, Morphological and Electrochemical Properties of $Ni_2P_2O_7$ Samples

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29pm-P097 **Unchista Wongpratat** FMA

Improving the Energy Density of FeOOH/AC Electrode Material by Polymer Gel Electrolyte for Supercapacior Application

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29pm-P098 **Shuwen Jiang** ISAF

A Widely Electrically Tunable Cavity Filter Using Thin-Film Barium-Strontium-Titanate Varactors

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29pm-P099 **Zhifu Liu** AMEC

Synthesis and Microwave Dielectric Properties of CuB_2O_4 Ceramic for LTCC Application

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29pm-P100 **Hiromi Shima** FMA

Optimization of Deposition Conditions of Dielectric $Ba(Zr,Ti)O_3$ Films for the Development of Phase Shifter in Microwave and Millimeter Wave Band

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29pm-P101 **Eung Soo Kim** AMEC

Effect of Isovalent Substitution for Nb-site on the Microwave Dielectric Properties of $Mg_4Nb_2O_9$ Ceramics

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29pm-P102 **Prasit Thongbai** AMEC

Significantly Enhanced Dielectric Permittivity and Suppressed Dielectric Loss in $Na_{1/2}Bi_{1/2}Cu_3Ti_4O_{12}$/Poly(vinylidene fluoride Nanocomposites

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29pm-P103 **Moontragoon Pairot** AMEC

Giant Dielectric Permittivity and Dielectric Relaxation Behavior in $(Fe_{1/2}Nb_{1/2})_xTi_{1-x}O_2$ Ceramics

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29pm-P104 **Lingmin Yao** AMF

High-Energy-Density with $(BaSr)TiO_3$ Array/Al_2O_3/PVDF Sandwich-Structured Composite Films for Capacitors Application

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29pm-P105 **Wipada Senanon** AMEC

Comparison between Incorporation and Conventional Fabrication Techniques of Diopside Glass-ceramics

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29pm-P106 **Myung-Yeon Cho** FMA

Reliability and Durability of $Mo_xW_{1-x}Si_2$ Haters Prepared by Self-Propagating High-Temperature Synthesis Process

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29pm-P107 **Aekkasit Suthapintu** AMF

Preparation and Characterization of Magnesium Zinc Ferrite Barium Strontium Titanate Composite Materials Using Two Stage Sintering

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29pm-P108 **Aurawan Rittidech** AMEC

Effect of Two Stage Sintering on Alumina-Zirconia-Yittia Ceramic Composites

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29pm-P111 **Kiyoshi Uchiyama** FMA

Epitaxial Growth of (101)Pd on (111)$SrTiO_3$ Substrate as a Buffer Layer for Perovskite-Type Oxide Thin Films

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29pm-P112 **Tomoaki Karaki** FMA

Preparation and Characterization of (Bi,Na)TiO_3-$BaTiO_3$ Thick Films on Various Substrates by Screen Printing Method

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29pm-P113 **Sang Mo Koo** FMA

GZO/4H-SiC Isotype Heterojunction Diodes

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29pm-P114 **Tadashi Fujii** ISAF

Fabrication of Ferroelectric Micropatterns by Electron-Beam-Induced Reaction Process

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29pm-P115 **Lvkang Shen** AMEC

Enhanced Bending-Tuned Magnetic Properties in Epitaxial Cobalt Ferrite Nanopillar Arrays on Flexible Substrates

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29pm-P116 **Hue Min Wu** AMEC

Investigation of Aluminum Nitrite Nanowires Synthesized by the Method of Electrostatic Spinning

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29pm-P117 **Roger Whatmore** ISAF

Fabrication and Exfoliation of 3, 4 and 5 Layer Aurivillius Oxides in the $Bi_{(4+y)}Fe_yTi_3O_{(12+3y)}$ (y=0,1,2) System

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29pm-P118 **Te-Wei Chiu** AMF

Fabrication of $CuAlO_2$ Nanopowder by Glycine-Nitrate Process

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29pm-P119 **Jia Wu** AMEC

Synthesis of $CuCrO_2$-TiO_2 Composite Nanopowder by a Self-Combustion Glycine Nitrate Process

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29pm-P120 **Anocha Munpakdee** AMEC

Effect of Gold Nanoparticles on Striking Process of Gold Ruby Glass

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29pm-P121 **Nikita Emelianov** ISAF

Ferromagnetism in $BaTiO_3$ Nanoparticles. Effect of Annealing in H_2 Atmosphere on Magnetic Properties

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29pm-P122 **Yuan Yuan** AMEC

N, S Co-doped Carbon Materials Derived From Starch for Supercapacitor

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29pm-P123 **Phattranit Dumrongrojthanath** AMEC

One-Pot Microwave-Hydrothermal Synthesis of BiOBr/Bi_2WO_6 Nanocomposites for Enhanced Photocatalytic Performance

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29pm-P124 **Krisana Chongsri** AMEC

TiO_2 Hybridized with Natural Ilmenite Nanocomposites for Enhanced Electrochemical Capacitor and Visible Light Photocatalyt Activity

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29pm-P125 **Kornkamon Meesombad** AMEC

Effects of Zn Concentrations on Microstructure and Electrocatalytic Activity of Nanoparticulate Zn-doped TiO_2 Synthesized by Solution Combustion Technique

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29pm-P127 **Orawan Wiranwetchayan** AMEC

Characterization of Perovskite $LaFeO_3$ Synthesized by Microwave Plasma Method for Photocatalytic Applications

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29pm-P128 **Suparut Narksitipan** AMEC

Characterization and Properties of TiO_2-Graphene Oxide Nanocomposites Prepared by Microwave Technique

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29pm-P129 **Dawei Wang** ISAF

Cold-Sintered Temperature Stable $Na_{0.5}Bi_{0.5}MoO_4$-Li_2MoO_4 Microwave Composite Ceramics

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29pm-P130 **Yang Zhang** AMF

Phase Transition and Temperature Stability of KNN-Based Lead-Free Piezoceramics

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29pm-P131 **Niti Yongvanich** AMEC

Stability and Optical Properties of Zircon Ceramic Pigment from Amorphous Precursors in Silicate Glasses

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29pm-P132 **Seongwoo Cho** AMF

Lamellae Alignment of Ferroelectric Polymers by Fabrication on Patterned Substrate

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29pm-P133 **Zhongyang Cheng** PFM

Methodology to Optimize the Usage of the Coupling Agent in Composites

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Materials Research and Education Center, Auburn University, USA

29pm-P134A **Yi Zhu** AMEC

Study on the Fabrication of $(Ba_{0.6}Sr_{0.4})TiO_3$ Single Crystal by Inducedabnormal Grain Growth without Liquid-Phase-Assistant

H. Zhang[1*], Y. Zhu[2], T. Karaki[2], D. Shi[3], K.-H. Lam[3] and C.-L. Mak[4]
[1]Department of Physics, Suzhou University of Science and Technology, China
[2]Toyama Prefectural University, Japan,
[3]Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong
[4]Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

29pm-P135A **Panudda Patiphatpanya** AMEC

Effect of pH on the Formation of $BiOIO_3$ and Bi_2O_3 and Their Photocatalytic Activities

P. Patiphatpanya[1,2*], S. Thongtem[3,4], S. Kungwankunakorn[1] and T. Thongtem[1,4]
[1]Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand
[2]The Graduate School, Chiang Mai University, Thailand
[3]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[4]Materials Science Research Center, Faculty of Science, Chiang Mai University, Thailand

29pm-P136A **Shiqi Li** ISAF

Nanocrystals of $CsPbBr_3$/CdS Core/Shell Perovskite

S. Li[1*], W. Chen[1], Z. Hu[1], Z. Zhigang[1] and X. Tang[1]
[1]Key Laboratory of Optoelectronic Technology & Systems (Ministry of Education), College of Optoeletronic Engineering, Chongqing University, China

29pm-P137A **Masae Mori** ISAF

Size-Controlled Liquid-Phase Synthesis and Sintering of $BiFeO_3$ Particles

M. Mori, M. Hagiwara* and S. Fujihara
Department of Applied Chemistry, Keio University, Japan

29pm-P138A **Feng Luo** ISAF

The Microstructure and Electrical Properties of Low Temperature Sintered $0.57(Bi_{0.8}La_{0.2})(Fe_{0.95}Ga_{0.05})$-$0.43PbTiO_3$ Ceramics

F. Luo*, S. Shen, J. Chen and J. Cheng
School of Materials Science and Engineering, Shanghai University, PR China

29pm-P139A **Yuto Kumazawa** FMA

Fabrication of Lithium Lanthanum Zirconate Ceramics by Cold Sintering Process

Y. Kumazawa*, Y. Fujii, Y. Kataoka, T. Hoshina, H. Takeda and T. Tsurumi
School of Materials and Chemical Engineering, Tokyo Institute of Technology, Japan

29pm-P140A **Weimin Xia** ISAF

The Ag Decorated P(VDF-CTFE)/BT@HBP@PDA Nanocomposites with Double-Shell Core Structure for High Dielectric Performance

W.M. Xia[1*], Y.J. Gu[1], J.H. Xing[1], N. Zhang[1] and Z. Xu[2]
[1]Faculty of Printing, Packaging, and Digital Media Technology, Xi'an University of Technology, China
[2]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education, Xi'an Jiaotong University, China

29pm-P141A **Misbah** FMA

Synthesis and Characterization of Aromatic Isocyanate Based Polyurethanes Using Castor Oil/Natural Polyol

Misbah[1*], I. A. Bhatti[1] and Z. Akram[1]
[1]Department of Chemistry, University of Agriculture, Pakistan

29pm-P142A **Zhi-Gang Zhang** FMA

Electron Charge Density Studies on Isomorphic $LiNbO_3$ and $LiTaO_3$

Z.-G. Zhang[1*], C. Moriyoshi[1], H. Tanaka[2] and Y. Kuroiwa[1]
[1]Dept. of Physical Science, Hiroshima University, Japan
[2]Dept. of Materials Science, Shimane University, Japan

29pm-P143A **Shinsaku Maeda** PFM

Defect Charge Behavior in the Vicinity of Domain Walls

S. Maeda[1*], H. Nishiyama[1,2] and K. Kakimoto[1,2]
[1]Department of Life Science and Applied Chemistry, Nagoya Institute of Technology, Japan
[2]Fronteir Research Institute for Materials Science, Nagoya Institute of Technology, Japan

29pm-P144A **Stuart Burns** ISAF

Scanning Microwave Impedance Microscopy (sMIM) of Ferroelectric Thin Films: Searching for Tunability and Identifying Conductance

S. R. Burns[1], N. Borodinov[2], A. Tselev[3], L. Collins[4], R. Vasudevan[4], J. C. Agar[5], L. W. Martin[5,6], S. V. Kalinin[4], N. Valanoor[1] and P. Maksymovych[4,*]
[1]School of Materials Science & Engineering, The University of New South Wales, Australia
[2]Department of Materials Science & Engineering, Clemson University, USA
[3]CICECO-Aveiro Institute of Materials and Department of Physics, University of Aveiro, Portugal
[4]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA
[5]Department of Materials Science & Engineering, University of California, USA
[6]Materials Science Division, Lawrence Berkeley National Laboratory, USA

29pm-P145A **Soo Han Oh** AMF

Acoustic Properties of $BaTiO_3$ Single Crystals Grown by Solid-State Single Crystal Growth Method Studied by Brillouin Spectroscopy

S. H. Oh[1], J.-H. Ko[1], H.-Y. Lee[2] and K. Roleder[3]
[1]Dept. Physics, Hallym University, Korea
[2]Dept. Materials Science and Engineering, Sunmoon University, Korea
[3]Institute of Physics, University of Silesia, Poland

29pm-P146A **Na Cao** ISAF

Enhanced Electrochemical Performance of PDA-PPy/Co-BDC Composite as the Anode Material for Lithium-Ion Batteries

N. Cao*, H. L. Du, J. L. Wang, W. X. Ma, W. L. Ma
College of Materials Science and Engineering, Xi'an University of Science and Technology, China

29pm-P147A **Piyaporn Thangdee** AMEC

Effect of N-doped Carbon Nanotube on an Improvement Electrochemical Performance of Hybrid Li-Ion Super-Capacitor

P. Thangdee[1*], C. Poochai[2], S. Nathabumroong[1], A. Tuantranont[2], S. Rujirawat[1] and R. Yimnirun[3]
[1]School of Physics, Institute of Science, and NANOTEC-SUT COE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand
[2]National Electronics and Computer Technology Center (NECTEC), Thailand
[3]School of Energy Science and Engineering,Vidyasirimedhi Instituteof Science and Technology, Thailand

29pm-P148A **Sarawudh Nathabumroong** AMEC

High Performance of Hybrid Li-Ion Supercapacitors Using N-doped Reduce Graphene Oxide as Cathode Active Material

S. Nathabumroong[1], C. Poochai[2], P. Thangdee[1], A. Tuantranont[2],S. Rujirawat[1], and R. Yimnirun[3]
[1]School of Physics, Institute of Science, and NANOTEC-SUT COE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand
[2]National Electronics and Computer Technology Center (NECTEC), Thailand
[3]School of Energy Science and Engineering, Vidyasirimedhi Instituteof Science and Technology, Thailand

29pm-P149A **Awadol Khejonrak** AMEC

Analysis of XPS Spectra on Effect of Thermal Annealing on Composition and Oxidation State of $LiCoO_2$ Powders

A. Khejonrak[1,*], N. Chanlek[2], M. Suttapun[3], N. Vittayakorn[3], S. Rujirawat[1] and R. Yimnirun[4]
[1]School of Physics, Institute of Science, and NANOTEC-SUT COE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand
[2]Synchrotron Light Research Institete (Public Organization), Thailand
[3]Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology, Thailnad
[4]School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC), Thailand

29pm-P150A **Phitsamai Kamonpha** AMEC

Synthesis Crystal Structure and Properties of a Hybrid Perovskite $CH_3NH_3PbI_{3-x}Cl_x$ Solar Cell Materials

P. Kamonpha[1,*], U. Sukkha[2], P. Kidkhunthod[2], N. Chanlek[2], S. Rujirawat[1] and R. Yimnirun [3]
[1]School of Physics, Institute of Science, and NANOTEC-SUT COE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand
[2]Synchrotron Light Research Institute (Public Organization), Thailand
[3]School of Energy Science and Engineering, Vidyasirimedhi Instituteof Science and Technology, Thailand

29pm-P151A **Oscar Solis-Canto** PFM

Influence of the Cantilever Stiffness in Switching Spectroscopy Piezoresponse Force Microscopy Characterization of Ferroelectr Ceramics

O. Solis-Canto[1, 2*], G. Herrera-Pérez[3] and J. J. Gervacio-Arciniega[4]
[1]Facultad de Ciencias FíEico Matemáticas, Benemérita Universidad Autónoma de Puebla, México,
[2]Laboratorio Nacional de Nanotecnología, Centro de Investigación en Materiales Avanzados, México,
[3]Cátedra CONACYT, Departamento de Física de Materiales, Centro de Investigación en Materiales Avanzados, México,
[4]CONACyT-Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, México.

29pm-P152A **Jiseok Im** ISAF

Oxygen Stoichiometry Controlled Sharp Insulator-Metal Transition in Highly Oriented VO_2/TiO_2 Films

J. Im[1*], G. Anoop[1], M.K. Sohn[2], D.J. Kang[2], S.Y. Jeong[1], S. Lee[1] and J. Y. Jo[1]
[1]School of Materials Science and Engineering, Gwangju Institute of Science and Technology, South Korea
[2]Department of Physics, Sungkyunkwan University, South Korea

18:30 - 20:30 **Young-Aged Mixer** Room B & C
19:00 - 21:00 **Dinner Cruise**

Wednesday, May 30, 2018

A B C D E F G H I J P

Plenary session
Hall A 09:00 - 09:45
Session chair: Yong Xiang Li

09:00 **Plenary4** **Chan-Ho Yang** Plenary Talk AMF

Configurable Topological Textures in Strain Graded Ferroelectric Nanoplates

C.-H. Yang [1,2,3,*]
[1]Center for Lattice Defectronics, KAIST, South Korea
[2]Department of Physics, KAIST, South Korea
[3]KAIST Institute for NanoCentury, KAIST, South Korea

Oral session: Ferroelectric materials
Hall A 10:00 - 11:15
Session chair: Jacob Jones

10:00 **30am-A01** **Kenji Uchino** Invited Talk ISAF

Design Principle of Multi-Functional Materials

K. Uchino*
International Center for Actuators & Transducers, The Pennsylvania State University, USA

10:30 **30am-A02** **Hiroki Taniguchi** Invited Talk IFAAI

Ferroelectricity in Oxides with Tetrahedrally Coordinated Si and Al

H. Taniguchi*
Department of Physics, Nagoya University, Japan

11:00 **30am-A03** **Jun Harada** FMA

Development of Plastic/Ferroelectric Ionic Molecular Crystals

J. Harada*
Department of Chemistry, Hokkaido University, Japan

Oral session: Nanostructure Designs and applications
Hall A 11:30 - 12:30
Session chair: Shinobu Fujihara

11:30 **30am-A04** **Catherine Elissalde** Invited Talk IFAAI

Interface Issues in Designing Bulk Nanostructured Ferroelectrics: Moving Towards Low Temperature Processing Strategies

C. Elissalde[1*], G. Philippot[1], S. Basov[1,2], T. Hérisson de Beauvoir[1], A. Ndayishimiye[1], U. C. Chung[1], G. Chevalier[3], A. Artemenko[1], L. Piraux[2], F. Mauvy[1], C. Aymonier Mornet[1], G. Goglio[1], M. Josse[1], C. Estournés[3] and M. Maglione[1]
[1]CNRS, Univ. Bordeaux, France
[2]BSMA-IMCN, Univ. Catholique de Louvain, Belgium
[3]Univ. de Toulouse, CIRIMAT, CNRS INPT UPS, Univ. Paul-Sabatier,France

12:00 **30am-A05** **Dinghua Bao** Invited Talk AMEC

Ultrasound Induced Piezocatalytic Effect of $BaTiO_3$ Nanowires

D. Bao,* J. Wu and N. Qin
State Key Laboratory of Optoelectronic Materials and Technologies, School of Materials Science and Engineering, Sun Yat-Sen University, China

Oral session: Ferroelectric domains
Hall A 14:00 - 15:00
Session chair: Manabu Hagiwara

14:00 **30pm-A01** **Vladimir Shur** Invited Talk AMF

Regular, Irregular and Dendrite Shapes of Micro- and Nanodomains in Uniaxial Ferroelectrics

V. Ya. Shur
School of Natural Sciences and Mathematics, Ural Federal University, Russia

14:30 **30pm-A02** **Kenji Ohwada** Invited Talk IFAAI

Dynamics of Domain Walls in $BaTiO_3$

K. Ohwada[1*], M. Matsuura[2], S. Tsukada[3], K. Deno[4], J. Mizuki[4] and M. Iwata[5]
[1]Synchrotron Radiation Research Center, Japan
[2]Research Center for Neutron Sci. and Tech., CROSS, Japan
[3]Faculty of Education, Shimane University, Japan
[4]School of Sci. and Tech., Kwansei Gakuin University, Japan
[5]Graduate School of Engineering, Nagoya Institute of Technology, Japan

Oral session: Domain/nanostructure of ferroelectric materials
Hall A 15:15 - 16:45
Session chair: Hiroshi Funakubo

15:15 **30pm-A03** **Jon Ihlefeld** Invited Talk IFAAI

New Functionality from Reconfigurable Ferroelastic Domains in Ferroelectric Thin Films

J. F. Ihlefeld[1*], B. M. Foley[2], J. T. Gaskins[2], M. Wallace[3], M. B. Sinclair[4], M. Goldflam[4], E. A. Paisley[4], J. R. Michael[4], B. B. McKenzie[4], P. Ryan[5], A. Kitahara[4], D. Dru Trolier- McKinstry[3], P. E. Hopkins[2] and T. E. Beechem[4]
[1]Department of Materials Science and Engineering, University of Virginia, United States
[2]Department of Mechanical and Aerospace Engineering, University of Virginia, United States
[3]Department of Materials Science and Engineering, Pennsylvania State University, United States
[4]Sandia National Laboratories, United States
[5]Advanced Photon Source, Argonne National Laboratory, United States

15:45 **30pm-A04** **Nagarajan Valanoor** Invited Talk IFAAI

Nanoscale Bubble Domains in Ultrathin Ferroelectric Films

Q. Zhang[1], L. Xie[2,3], G. Liu[1], S. Prokhorenko[4,5], Y. Nahas[4], X. Pan[6], L. Bellaiche[4], A. Gruverman[7] and N. Valanoor[1*]
[1]School of Materials Science and Engineering, University of New South Wales, Australia
[2]National Laboratory of Solid State Microstructures and Department of Materials Science and Engineering, Nanjing University, China
[3]Department of Chemical Engineering and Materials Science, University of California, USA
[4]Physics Department and Institute for Nanoscience and Engineering, University of Arkansas, USA
[5]Theoretical Materials Physics, Q-MAT CESAM, University of Liege, Belgium
[6]Department of Physics and Astronomy, University of California, USA
[7]Department of Physics and Astronomy, University of Nebraska, USA

16:15 **30pm-A05** **Alexei Gruverman** Invited Talk IFAAI

Polarization-Enabled Electronic Properties of Hybrid 2D-Ferroelectric Structures

A. Gruverman*
Department of Physics and Astronomy, University of Nebraska-Lincoln, USA

Oral session: Ferroelectric HfO_2 films (Devices)
Room B 10:00 - 11:15
Session chair: Eisuke Tokumitsu

10:00 **30am-B01** **Shosuke Fujii** Invited Talk FMA

Performance and Reliability of Ferroelectric HfO_2 Tunnel Junction Memory

S. Fujii,* M. Yamaguchi and M. Saitoh
Memory Technology R&D Center, Toshiba Memory Corporation, Japan

10:30 **30am-B02** **Shinji Migita** FMA

Application of Ion Implantation Technique for Formation of Si-Doped HfO_2 Ferroelectric Thin Films

S. Migita[1*], H. Ota[1], H. Yamada[1], K. Shibuya[1], A. Sawa[1], T. Matsukawa[1] and A. Toriumi[2]
[1]Nanoelectronics Research Institute, AIST, Japan
[2]Material Engineering, The Univ. of Tokyo, Japan

10:45 **30am-B03** **Andreas Ruediger** Invited Talk FMA

CMOS-Compatible Ferroelectric Tunnel Junctions Based on $Hf_{0.5}Zr_{0.5}O_2$

A. Ruediger[1*], F. Ambriz Vargas[1], G. Kolhatkar[1], A. H. Youssef[1], A. Sarkissian[2], D. Drouin[3], S. Urquhart[4] and R. Thomas[5]
[1]Nanoelectronics/Nanophotonics, INRS-EMT, Canada
[2]Plasmionique Inc., Canada
[3]Dept. of Electrical engineering, Sherbrooke University, Canada
[4]Dept. of Chemistry, University of Saskatchewan, Canada
[3]Lovely Professional University, India

Oral session: Ferroelectric HfO_2 films (Negative capacitance)
Room B 11:15 - 12:30
Session chair: Norifumi Fujimura

11:15 **30am-B04** **Masaharu Kobayashi** Invited Talk FAM

Design Considerations for Negative Capacitance FET with Ferroelectric HfO_2

M. Kobayashi*
Institute of Industrial Science, The University of Tokyo, Japan

11:45 **30am-B05** **Kenshi Takada** FMA

Emergence of the Negative Capacitance in Ferroelectric-Gate FETs

K. Takada[1*], D. Kiriya[1], T. Yoshimura[1], A. Ashida[1] and N. Fujimura[1,*]
[1]Graduate School of Engineering, Osaka Prefecture University, Japan

12:00 **30am-B06** **Keum Do Kim** ISAF

Negative Capacitance Effect in the Atomic-Layer-Deposited Al_2O_3 / $Hf_{0.3}Zr_{0.7}O_2$ Bilayer Thin Film

K.D. Kim[1*], Y.J. Kim[1], H.W. Park[1], H.J. Kim[1], T. Moon[1], Y.H. Lee[1], S. D. Hyun[1], Y.B. Lee[1], M.H. Park[2] and C.S. Hwang[1]
[1]Department of Material Science and Engineering, and Inter-university Semiconductor Research Center, Seoul National University, Korea
[2]NaMLab gGmbH, Germany

12:15 **30am-B07** **Nava Setter** Invited Talk (Short) ISAF

Negative Capacitor Based on a Ferroelectric Nano-Dot

T. Sluka[1,2] and N. Setter[1,2,3*]
[1]Faculty of Engineering, EPFL - Swiss Federal Institute of Technology, Switzerland
[2]S2M Electronics Ltd, Israel
[3]3Department of Materials Science and Engineering, Tel-Aviv University, Israel

Oral session: Fundamentals and theory
Room B 14:00 - 15:30
Session chair: Andrew Rappe

14:00 **30pm-B01** **Turab Lookman** Invited Talk ISAF

Accelerated Discovery of Ferroelectrics Using Active Learning

T. Lookman*
Los Alamos National Laboratory, USA

14:30 **30pm-B02** **Dragan Damjanovic** Invited Talk IFAAI

Dynamics of Polar Regions and Ferroelectric Domain Walls: a Study of Nonlinear Dielectric, Piezoelectric and Anelastic Proper

D. Damjanovic*
Swiss Federal Institute of Technology in Lausanne - EPFL,Group for Ferroelectrics and Functional Oxides, Institute of Materials, Switzerland

15:00 **30pm-B03** **Andrew Bell** Invited Talk IFAAI

Low Temperature Properties of Ferroelectrics and Relaxors

A. J. Bell*, P. M. Shepley Y. Li and L. Stoica
School of Chemical and Process Engineering, University of Leeds, UK

Oral session: Fundamentals and theory
Room B 15:45 - 16:45
Session chair: Andrew Bell

15:45 **30pm-B04** **Yuri Genenko** ISAF

Sequential Polarization Switching in Ferroelectrics: Statistical Description of Experiment

Y. A. Genenko[1*], R. Khachaturyan[1], J. Schultheiß[2], A. Ossipov[3], J. E. Daniels[4] and J. Koruza[2]
[1]Institute of Materials Science, Technische Universität Darmstadt, Germany
[2]Institute of Materials Science, Technische Universität Darmstadt, Germany
[3]School of Mathematical Sciences, University of Nottingham, UK
[4]School of Materials Science and Engineering, University of New South Wales, Australia

16:00 **30pm-B05** **Thomas Hooper** ISAF

Thermodynamic Theory of $BiFeO_3$-$PbTiO_3$

T. E. Hooper* and A. J. Bell
School of Chemical and Process Engineering, University of Leeds, UK

16:15 **30pm-B06** **Limei Zheng** ISAF

Origin of Mechanical Quality Factor Improvement in Acceptor Doped Relaxor-Based Ferroelectric Single Crystals

L. Zheng[1*], L. Yang[1] and W. Cao[1,2]
[1]Condensed Matter Science and Technology Institute, Harbin Institute of Technology, China
[2]Department of Mathematics & Materials Research Institute, The Pennsylvania State University, USA

16:30 **30pm-B07** **Kyohei Takae** FMA

A Simple Molecular Model of Antiferroelectric Phase Transition: Interplay between Steric and Dipolar Interactions

K. Takae[1] and H. Tanaka
Department of Fundamental Engineering, Institute of Industrial Science, University of Tokyo, Japan

Oral session: MPB-based piezoelectric materials
Room C 10:00 - 11:15
Session chair: Doru Lupascu

10:00 **30am-C01** **Jun Chen** Invited Talk IFAAI

Origin of High Performance Piezoelectrics of Pb-Based Perovskites

H. Liu[1], L. Fan[1], Y. Ren[2], X. Xing[1] and J. Chen[1*]
[1]Department of Physical Chemistry, University of Science and Technology Beijing, China
[2]X-Ray Science Division, Advanced Photon Source, Argonne National Laboratory, USA

10:30 **30am-C02** **Martin Safar** ISAF

Improving Mechanical Properties and Reliability of Hard PZT Ceramics

M. Safar[1*], I. Steinfeldova[2] and T. W. Button[1]
[1]School of Metallurgy and Materials, University of Birmingham, United Kingdom
[2]Noliac Ceramics s.r.o., a part of CTS Corporation, Czech Republic

10:45 **30am-C03** **Xiaoqin Ke** ISAF

Mechanisms Responsible for the Large Piezoelectricity at the Tetragonal-Orthorhombic Phase Boundary of (1-x)$BaZr_{0.2}Ti_{0.8}O_3$-x$Ba_{0.7}Ca_{0.3}TiO_3$ System

T. Yang[1], X.Q. Ke[1*] and Y. Wang[1,2]
[1]Frontier Institute of Science and Technology, Xi'an Jiaotong Univesity, China
[2]Department of materials science and enginerring, The Ohio State University, US

11:00 **30am-C04** **Chao Zhou** AMF

Design of Highly Piezoelectric Materials: Evolution from Successive Phase Transitions to Morphotropic Phase Boundary in BaTi Based Ferroelectrics

C. Zhou[1*] L. Zhang[1], S. Yang[1] and X. Ren[2]
[1]MOE Key Laboratory for Nonequilibrium Synthesis and Modulation of Condensed Matter, Frontier Institute of Science and Technology, State Key Laboratory for Mecha Behavior of Materials, School of Science, Xi'an Jiaotong University, China
[2]National Institute for Materials Science, Japan

Oral session:
Room C 11:30 - 12:30
Session chair: Jun Chen

11:30 **30am-C05** **Eric Patterson** Invited Talk IFAAI

Unique Processing Routes for Lead-Free Piezoelectrics

E. A. Patterson[1*], M. Baczkowski[2], S. D. Johnson[3] and E. P. Gorzkowski[3]
[1]ASEE Postdoc, U.S. Naval Research Lab, USA
[2]Department, University of Connecticut, Street Address, City, Country
[3]Multifunctional Materials Branch, U.S. Naval Research Lab, USA

12:00 **30am-C06** **Yunfei Chang** AMEC

Exceptionally High Piezoelectricity and Low Strain Hysteresis in [001]-Textured Lead-Free Piezoceramics

Y.F. Chang[1*], Y.C. Liu[1], F. Li[2], Y. Sun[1], J. Wu[1], B. Yang[1] and W. W. Cao[2,*]
[1]Condensed Matter Science and Technology Institute and Department of Physics, Harbin Institute of Technology, China
[2]Materials Research Institute, The Pennsylvania State University, USA

12:15 **30am-C07** **Jian Yu** ISAF

Data-Mining Driven Design for Novel Perovskite-Type Piezoceramics

J. Yu[*]
Institute of Functional Materials, Donghua University, China

Oral session: Lead-free piezoelectric materuals
Room C 14:00 - 15:15
Session chair: Jiwei Zhai

14:00 **30pm-C01** **Jianguo Zhu** Invited Talk AMEC

Enhanced Piezoelectric Properties of KNN-Based Ceramics: from Imperfection Chemistry to the Multiphase Boundary

J. Wu, D. Xiao and J. Zhu*
College of Materials Science and Engineering, Sichuan University, China

14:30 **30pm-C02** **Hiroshi Nishiyama** Invited Talk (Short) FMA

Ferroics and Electromechanical Coupling Property for NKN-Based Materials

H. Nishiyama[1], K. Kakimoto[1*], K. Hatano[2], Y. Konishi[2], A. Martin[3] and K. G. Webber[3]
[1]Fronteir Research Institute for Materials Science, Nagoya Institute of Technology, Japan
[2]TAIYO YUDEN CO., LTD., Japan
[3]Depertment Material Science and Engineering, University of Erlangen-Nuremberg, Germany

14:45 **30pm-C03** **Ke Wang** ISAF

Distinctive Role of Manganese in (K, Na)NbO_3-Based Lead-Free Piezoceramics

F.-Z. Yao[1], K. Wang[1*], M.-H. Zhang[1], G. Li[1], X.-W. Zhang[1] and J.-F. Li[1]
[1]State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China

15:00 **30pm-C04** **Rintaro Aoyagi** FMA

Electrical Properties of Mn and Cu Added $NaNbO_3$-$BaTiO_3$ Lead-Free Piezoelectric Ceramics

R. Aoyagi[1*]
Advanced Coating Technology Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Oral session: Lead-free piezoelectric materuals
Room C 15:30 - 16:45
Session chair: Jianguo Zhu

15:30 **30pm-C05** **Jiwei Zhai** Invited Talk AMEC

High Piezoelectric Properties in Textured (K,Na)NbO_3-Based Lead-Free Ceramics

J. Zhai*, P. Li and B. Shen
Key Laboratory of Advanced Civil Engineering Materials of Ministry of Education, School of Materials Science and Engineering, Tongji University, China

16:00 **30pm-C06** **Haibo Zhang** ISAF

Enhanced Electrical Properties of < 001 > Textured KNN-Based Lead-Free Piezoceramics

H. Zhang*
Collage of Materials Science and Engineering, State Key Laboratory of Material Processing and Die & Mould Technology, Huazhong University of Science and Technolo
China

16:15 **30pm-C07** **Yichi Zhang** ISAF

Low-Temperature Sintering of KNN Based Lead-Free Piezoelectric Ceramics

Y. Zhang*, S. Guo, Q. Liu and J.-F. Li
School of Materials Science and Engineering, Tsinghua University, Haidian, Beijing, China

16:30 **30pm-C08** **Hao Cheng Thong** ISAF

Abnormal Grain Growth in (K, Na)NbO_3-Based Piezoceramic Powder

H.-C. Thong*, Z.-T. Li, M.-H. Zhang, J.-F. Li and K. Wang
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China

Oral session: Piezoelectric devices
Room D 10:00 - 11:15
Session chair: Isaku Kanno

10:00 **30am-D01** **Ronald Polcawich** Invited Talk IFAAI

Processing, Design, and Performance of PZT Based PiezoMEMS Devices

R. G. Polcawich[1*], J. S. Pulskamp[1], S. Bedair[1], R. Benoit[1], R. Rudy[1], D. Potrepka[1] and G. Fox[2]
[1]US Army Research Laboratory, Mill Road, Adelphi, MD, USA
[2]Fox Materials Consulting, USA

10:30 **30am-D02** **Manuel Rivas** ISAF

Fabrication-Induced Defects in PZT-Based Devices

M. Rivas[1,2*], R. Q. Rudy[1], B. Hanrahan[1], B. D. Huey[2] and R. G. Polcawich[1]
[1]US Army Research Laboratory, USA
[2]Department of Materials Science and Engineering, University of Connecticut, USA

10:45 **30am-D03** **Ryohei Takei** FMA

Low-Power Vibration Sensor with a Piezoelectric MEMS Cantilever

R. Takei[1*], A. Ouchi[1], D. Noda[2], R. Ohta[2], T. Itoh[1,3] and T. Kobayashi[1]
[1]Research Center for Ubiquitous MEMS and Micro Engineering, National Institute of Advanced Industrial Science and Technology, Japan
[2]MicroNano Open Innovation Center, Micrimachine Center, Japan
[3]Graduate School of Frontier Sciences, The University of Tokyo, Japan

11:00 **30am-D04** **Toshihiro Takeshita**

Characteristics and flexibility of an ultrathin PZT MEMS mirror device mounted on flexible substrate

T. Takeshita*, T. Yamashita and T. Kobayashi
Research Center for Ubiquitous MEMS and Micro Engineering, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Oral session: Sensors and sensor networks
Room D 11:30 - 12:30
Session chair: Takeshi Kobayashi

11:30 **30am-D05** **Kui Yao** Invited Talk AMF

Ferroelectric Materials for Intelligent Structural and Condition Monitoring

K. Yao*, S. Chen, S. Guo, Z. Z. Wong, L. Zhang, Y. Chen and C. Y. Tan
Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore

12:00 **30am-D06** **Haosu Luo** Invited Talk IFAAI

Heterostructural ME Composite PMNT/Metglas and Magnetic Sensor

H. Luo*, W. Di, C. Fang, M. Yao, B. Xu and L. Lu
Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

Oral session: Piezoelectric actuators
Room D 14:00 - 15:15
Session chair: Jun Akedo

14:00 **30pm-D01** **Jing-Feng Li** Invited Talk AMEC

Pushing (K,Na)NbO_3-based Lead-Free Piezoceramics Towards Applications

J.-F. Li* and K. Wang
School of Materials Science and Engineering, Tsinghua University, China

14:30 **30pm-D02** **Yingxiang Liu** AMEC

Development of Piezoelectric Actuator with Multiple Operating Principles and Output Ability of Long Stroke and Nanometer Resolution

Y. Liu*, D. Xu, L. Wang and J. Deng
State Key Laboratory of Robotics and System, Harbin Institute of Technology, P. R. China

14:45 **30pm-D03** **Faxin Li** ISAF

Giant Actuation Strain over 0.5% in Periodically Orthogonal Poled PZT Ceramics and Multilayer Actuators via Reversible Dom Switching

F.X. Li*, Q. Z. Wang and H. C. Miao
College of Engineering, Peking University, China

15:00 **30pm-D04** **Liang Wang** AMEC

Design and Fabrication of a High-speed Linear Piezoelectric Actuator with Nanometer Resolution Using a Cantilever Transduce

L. Wang*, J. Liu, Y. Liu and H. Yu
State Key Laboratory of Robotics and System, Harbin Institute of Technology, P. R. China

Oral session: Piezoelectric devices
Room D 15:30 - 16:45
Session chair: Haosu Luo

15:30 **30pm-D05** **Jie Deng** AMEC

A Novel Planar Piezoelectric Actuator with Nano-Positioning Ability Operating in Bending-Bending Hybrid Modes

J. Deng, Y. Liu*, Q. Su and H. Yu
State Key Laboratory of Robotics and System, Harbin Institute of Technology, P. R. China

15:45 **30pm-D06** **Xinqi Tian** AMEC

A H-Shaped Linear Stepping Piezoelectric Actuator Operated in Stick-Slip and Slip-Slip Modes

X. Tian, Y. Liu*, W. Chen, J. Deng and J. Liu
State Key Laboratory of Robotics and System, Harbin Institute of Technology, P. R. China

16:00 **30pm-D07** **Xiangzhong Chen** ISAF

Microdevices Based on Piezoelectric Polymers for Wireless Cell Stimulation

X.-Z. Chen[1*], M. Hoop[1], F. Mushtaq[1], H. Torlakcik[1], J.-H. Liu[2], Q.-D. Shen[2], B. J. Nelson[1] and S. Pane[1]
[1]Multi-Scale Robotics Lab (MSRL), Institute of Robotics and Intelligent Systems (IRIS), ETH Zurich, Switzerland
[2]Department of Polymer Science & Engineering and Key Laboratory of Mesoscopic Chemistry of MOE, School of Chemistry & Chemical Engineering, Nanjing Universit
China

16:15 **30pm-D08** **Jun Akedo** FMA

Optical Scanner with Lamb Wave Resonance (LWR) Driven by Piezoelectric Thick Layer for Laser LIDAR

J. Akedo[1*] and J.-H. Park[1]
National Institute of Advanced Industrial Science and Technology (AIST), Japan

16:30 **30pm-D09** **Tai-Ho Yu** PFM

Vibration Mode Analyses for Circular Wedge Acoustic Waveguides

T.-H. Yu[*]
Department of Electronic Engineering, National United University, Taiwan

Oral session: Domains, interfaces, and nanostructures
Room E 10:00 - 11:00
Session chair: Marin Alexe

10:00 **30am-E01** **Jin Wang** Invited Talk AMF

Negative-Pressure Induced Enhancements in Freestanding Nanoferroelectrics

J. Wang [1*], B. W. Eerd[2], T. Sluka[3], C. Sandu[3], B. Dkhil[4], A. Tagantsev[1], J. Trodahl[2] and N. Setter[3]
[1]Division of Energy and Environment in Graduate School at Shenzhen, Tsinghua University, China
[2]MacDiarmid Institute for Advanced Materials and Nanotechnology, Victoria University of Wellington, New Zealand
[3]Ceramics Laboratory, Swiss Federal Institute of Technology (EPFL), Switzerland
[4]4Laboratoire Structures, Propriétés et Modélisation des Solides, CNRS-UMR8580, Ecole Centrale Paris, France

10:30 **30am-E02** **Hiromi Nakano** Invited Talk (Short) FMA

Nanoscale Phenomena of Electroceramics by High-Temperature Transmission Electron Microscopy

H. Nakano[*]
CRFC Center, Toyohashi University of Technology, Japan

11:00 **30am-E03** **Maohua Zhang** ISAF

Domain Identification and Local Switching Behavior of (001)-Oriented (K, Na)NbO_3 Lead-Free Single Crystal

M.-H. Zhang[1*], K. Wang[1], H. Tian[2] and J.-F. Li[1]
[1]State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China
[2]Department of Physics, Harbin Institute of Technology, China

Oral session: Domains, interfaces, and nanostructures
Room E 11:30 - 12:30
Session chair: Jin Wang

11:30 **30am-E05** **Wei-Yi Chang** ISAF

Fine Domain Patterns of 0.7Pb($Mg_{1/3}Nb_{2/3}$)O_3-0.3$PbTiO_3$ Single Crystal Poled using Alternating Current

W.-Y. Chang[1], C. Luo[1], C.-C. Chung[2], Y. Yamashita[1], J. L. Jones[2] and X. Jiang[1*]
[1]Department of Mechanical and Aerospace EngineeringNorth Carolina State University, USA
[2]Department of Materials Science and Engineering North Carolina State University, USA

11:45 **30am-E06** **Jan Schultheiß** ISAF

Broad Switching Behavior in Polycrystalline Ferroelectric/Ferroelastic Ceramic Materials

J. Schultheiß[1*], H. Uršič[2], B.Malič[2] and J. Koruza[1]
[1]Institute of Materials Science, Technische Universität Darmstadt, Germany
[2]Electronic Ceramics Department, Jožef Stefan Institute, Slovenia

12:00 **30am-E07** **Ningtao Liu** AMEC

Tailoring Domain Structure through Manganese to Modify the Ferroelectricity, Strain and Magnetic Properties of Lead-Free BiF Based Multiferroic Ceramics

N. Liu [1,2], R. Liang [1,*], X. Zhao [1,2], Y. Zhang [3], Z. Zhou [1], X. Tang[3] and X. Dong [1,*]
[1]Key Laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
[2]University of Chinese Academy of Sciences, China
[3]East China Normal University, China

12:15 **30am-E08** **Jinbin Wang** FMA

Creating Crystallographically Engineered Hierarchical Polydomain Nanostructures in Perovskite Ferroelectric Films with Impro Electrical Performance

J B. Wang[1], C.B. Tan[2] and X.L. Zhong[1]
[1]School of Materials Science and Engineering, Xiangtan University, China
[2]Department of Physics and Electronic Science, Hunan University of Science and Technology, China

Oral session: Phase transitions
Room E 14:00 - 15:15
Session chair: Shinya Tsukada

14:00 **30pm-E01** **Andrei Kholkin** Invited Talk IFAAI

Can the Water Be Piezoelectric/Pyroelectric: Evidence from Self-Assembled Peptides

A. L. Kholkin[1,2*], F. Salehli[3], S. Kopyl[1], S. Vasilev[2], P. Zelenovskiy[2], V. Y. Shur[2], D. Chovan[4] and S. A. M. Tofail[4]
[1]Physics Department & CICECO-Aveiro Institute of Materials, University of Aveiro, Portugal
[2]School of Natural Sciences and Mathematics, Ural Federal University, Russia
[3]Department of Physics Engineering, Istanbul Technical University, Turkey
[4]Department of Physics and Energy and Materials and Surface Science Institute, University of Limerick, Ireland

14:30 **30pm-E02** **David Ehre** ISAF

Study Order-Disorder Transitions of Single Crystal Halide Perovskites Using Impedance Spectroscopy

D. Ehre[1*], Y. Rakita[1], O. Yaffe[1], I. Lubomirsky[1] and D. Cahen[1]
[1]Department of Materials and Interfaces, Weizmann Institute of Science, Israel

14:45 **30pm-E03** **Adam Sieradzki** FMA

Ferroelectric Phase Transitions in Perovskite-Like Metal Formate Frameworks Templated by Ethylammonium Cations

A. Sieradzki[1*], S. Pawlus[2], M. Ptak[3], A. Gągor[3] and M. Mączka[3]
[1]Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland
[2]Institute of Physics, Silesian University, Poland
[3]Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Poland

15:00 **30pm-E04** **Pierre-Eymeric Janolin** ISAF

Polar Order Competition from Chemical Order in Functional Perovskites

C. Cochard[1,2], M. Audoin[1], X. Bril[1], P. Nukala[1], O. Guedes[2] and P.-E. Janolin[1*]
[1]Laboratoire SPMS, UMR CNRS-CentraleSupélec, Université Paris-Saclay, France
[2]Etudes et Production Schlumberger, France

Oral session: Phase transitions
Room E 15:30 - 16:45
Session chair: Pierre-Eymeric Janolin

15:30 **30pm-E05** **Lukas Riemer** ISAF

Nonlinear Polarization Dynamics of PMN-PT Single Crystals and Ceramics at Cryogenic Temperatures

L. M. Riemer* and D. Damjanovic
Group of Ferroelectrics and Functional Oxides, École polytechnique fédérale de Lausanne, Switzerland

15:45 **30pm-E06** **Sangwook Kim** AMEC

Coherence between Material Softening and Crystallographic Structural Parameter in $BiFeO_3$-$BaTiO_3$ Lead-Free Piezoelectric Ceramics

S. W. Kim,[1*] G. P. Khanal,[1] N.-W. Nam,[1] I. Fujii,[1] S. Ueno,[1] C. Moriyoshi, [2] Y. Kuroiwa[2] and S. Wada[1]
[1]Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi, Japan
[2]Department of Physical Science, Hiroshima University, Japan

16:00 **30pm-E07** **Tomoki Murata** ISAF

Electric Field Induced Phase Transition in Titanite $CaTiSiO_5$

T. Murata[1*], H. Taniguchi[2] and S. Hirose[1]
[1]Murata Manufacturing Co., Ltd., Japan
[2]Department of Physics, Nagoya University, Japan

16:15 **30pm-E08** **Xiao Li Zhu** AMF

Electric-Field Induced Phase Transition and Pinched P-E Hysteresis Loops in Pb-Free Ferroelectrics with Tungsten Bronze Struc

K. Li[1], X. L. Zhu[1*], X. Q. Liu[1], X. Ma[2], M. S. Fu[2], J. Kroupa[3], S. Kamba[3] and X. M. Chen[1*]
[1]Laboratory of Dielectric Materials, School of Materials Science and Engineering, Zhejiang University, China
[2]Shanxi Materials Analysis and Research Center, School of Materials Science and Engineering, Northwestern Polytechnic University, China
[3]Institute of Physics, Czech Academy of Sciences, Czech

16:30 **30pm-E09** **Shujuan Liu** AMEC

Rapid Stability of Ferroelectric Polarization in the Ca, Ce Hybrid Doped $BaTiO_3$ Ceramics

S. Liu[1*], L. Zhang[1], J. Wang[1], X. Shi[1], Y. Zhao[1] and D. Zhang[1]
[1]State key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, China

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 10:00 - 11:15
Session chair: Yunseok Kim

10:00 **30am-F01** **Dennis Meier** Invited Talk PFM

Novel Concepts for All-Domain-Wall Nanoelectronics

D. Meier*
Department of Materials Science and Engineering, Norwegian University of Science and Technology (NTNU), Norway

10:30 **30am-F02** **Rui Liu** PFM

Role of Ferroelectric Polarization during Growth of Highly Strained Ferroelectrics Revealed by in-situ X-ray Diffraction

R. Liu[1], J. G. Ulbrandt[2], H.-C. Hsing[1], A. Gura[1], B. Bein[1], A. Sun[1], C. Pan[1], G. Bertino[1], J.-W. Lai[1], K. Cheng[1], E. Doyle[1], R. L. Headrick[2] and M. Dawber[1]
[1]Department of Physics and Astronomy, Stony Brook University, USA
[2]Department of Physics, University of Vermont, USA

10:45 **30am-F03** **Anna Gura** PFM

Local Modulation of Carrier Density in Graphene-Ferroelectric Field Effect Transistors through Flexoelectric Switching

A. Gura[1*], M. H. Yusuf[1], G. Hsing[1], X. Du[1] and M. Dawber[1]
[1]Department of Physics and Astronomy, Stony Brook University, USA

11:00 **30am-F04** **Pao-Wen Shao** PFM

Domain Switching Kinetics and Relaxation of Transparent and Flexible Ferroelectric Heterostructures

P.-W. Shao[1*], C.-H. Ma[1], M.-F. Tsai[1], J. Jiang[4] and Y.-H. Chu[1,2,3]
[1]Department of Materials Science and Engineering, National Chiao Tung University, Taiwan
[2]Department of Electrophysics, National ChiaoTung University, Taiwan
[3]Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taiwan
[4]Key laboratory of Low Dimensional Materials and Application Technology of Ministry of Education, China

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 11:30 - 12:30
Session chair: Dennis Meier

11:30 **30am-F05** **Weijin Hu** AMEC

Colossal Persistent Photoconductivity in Ferroelectric/Semiconductor Junctions

W. J. Hu[1,2*], T. R. Paudel[3], S. Lopatin[4], Z. Wang[5], H. Ma[6], K. Wu[1], A. Bera[1], G. Yuan[6], A. Gruverman[3], E. Y. Tsymbal[*3] and T. Wu[*]
[1]Materials Science and Engineering, King Abdullah University of Science and Technology, Saudi Arabia
[2]Shenyang National Laboratory for Materials Science, Institute of Metal Research (IMR), Chinese Academy of Sciences (CAS), China
[3]Department of Physics and and Astronomy, and Nebraska Center for Materials and Nanoscience, University of Nebraska, USA
[4]Imagining and characterization Core Lab, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
[5]Advanced Nanofabrication Core Lab, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
[6]School of Materials Science and Engineering, Nanjing University of Science and Technology, P. R. China

11:45 **30am-F06** **Anyang Cui** PFM

Imaging Electromechanical Coupling on Reloxor Ferroelectrics on the Nanoscale in Highly Conductive Electrolytes by Piezoresponse Force Microscopy

A. Cui*, J. Wang, Z. Hu and J. Chu
Technical Center for Multifunctional Magneto-Optical Spectroscopy (Shanghai) Department of Electronic Engineering, East China Normal University, China

12:00 **30am-F07** **Yunseok Kim** Invited Talk PFM

Direct Probing of Ferroelectric Polarization Charge Using Atomic Force Microscopy

Y. Kim*
School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU), Republic of Korea

Oral session: Electrocaloric effect
Room F 14:00 - 15:15
Session chair: Sylvia Gebhardt

14:00 **30pm-F01** **Barbara Malič** Invited Talk AMF

Relaxor Ferroelectric Ceramics for Electrocaloric Cooling

B. Malič[1,2*], L. Fulanović[1,2], M. Vrabelj[1], H. Uršič[1], M. Otoničar[1], S. Drnovšek[1], V. Bobnar[1,2] and Z. Kutnjak[1,2]
[1]Jožef Stefan Institute, Slovenia
[2]Jožef Stefan International Postgraduate School, Slovenia

14:30 **30pm-F02** **Yangbin Ma** ISAF

Impact of Thermal and Polarization Hysteresis on Electrocaloric Effect

Y.-B. Ma*, C. Kalcher, K.-C. Meyer, K. Albe and B.-X. Xu
Institute of Materials Science, Technische Universität Darmstadt, Germany

14:45 **30pm-F03** **Yang Bai** AMEC

Effect of Microstructure on Electrocaloric Effect in $BaTiO_3$ Based Ceramics

Y. Bai*, S. Qin, J. Li, J. Li, F. Han, S. Xie and L. Qiao
Key Laboratory of Environmental Fracture (Ministry of Education), University of Science and Technology Beijing, China

15:00 **30pm-F04** **Florian Le Goupil** ISAF

Electrocaloric Effect in Fluorinated Polymer Nanocomposites with Various Lead-Free Inorganic Nanoparticles

F. L. Goupil[1*], A. Noel[1], T. Nicolini[1], G. Hadziioannou[1] and N. Stingelin[1,2]
[1]Laboratoire de Chimie des Polymères Organiques (LCPO), Université de Bordeaux, France
[2]School of Materials Science and Engineering and School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, USA

Oral session: Electrocaloric effect, Energy storage
Room F 15:30 - 16:45
Session chair: Barbara Malič

15:30 **30pm-F05** **Qiang Li** Invited Talk IFAAI

Anisotropic Pyroelectric Energy Harvesting and Electrocaloric Properties of PLZST Antiferroelectric Single Crystal

Q. Li*, F. Zhuo and Y. Ji
Department of Chemistry, Tsinghua University, China

16:00 **30pm-F06** **Daesu Kim** AMEC

Abnormal Electro-Caloric Effect in $(Bi_{1/2}Na_{1/2})TiO_3$-Based Relaxor Ferroelectric Ceramics

D. S. Kim[1,2*], B. C. Kim[1], J. S. Kim[1], S. H. Han[2], H. W. Kang[2], H. G. Lee[2] and C. I. Cheon[1]
[1] Department of Materials Science and Engineering, Hoseo Universiy, Korea
[2] Elecronic Materials and Device Research Center, Korea electronics Technology Institute, Korea

16:15 **30pm-F07** **Hong Wang** Invited Talk IFAAI

Layer-Structured Dielectric Nanocomposites for Energy Storage

H. Wang[1,2]
[1]State Key Laboratory for Mechanical Behavior of Materials & School of Microelectronics, Xi'an Jiaotong University, China,
[2]Department of Materials Science and Engineering, Southern University of Science and Technology, China

Oral session: Special session: Single crystal growth & applications
Room G 10:00 - 11:15
Session chair: Satoshi Wada

10:00 **30am-G01** **Hao Tian** ISAF

Lead Free KTN Crystals: From Composition Regulation and Domain Engineering to Multi-Performance Application

H. Tian*, P. Tan, X. Meng and F. Huang
Department of Physics, Harbin Institute of Technology, China

10:15 **30am-G02** **Yuji Noguchi** Invited Talk (Short) FMA

Polarization Twist in Perovskite Ferrielectrics Enhanced Piezoresponse in $(Bi,Na)TiO_3$-Based Single Crystals

Y. Noguchi*, Y. Kitanaka and M. Miyayama
Department of Applied Chemistry, The University of Tokyo, Japan

10:30 **30am-G03** **Linghang Wang** ISAF

Crystal Growth and Crystallinity Characterization of PIN-PMN-PT Ferroelectrics

L. Wang[1*], A. A. Khan[1], W. Zhao[1] and F. Li[1]
[1]Electronic Materials Research Lab, Key Laboratory of Ministry of Education and International Center for Dielectric Research, Xi'an Jiaotong University, P. R. China

10:45 **30am-G04** **Fei Li** Invited Talk (Short) FMA

Modified Relaxor Ferroelectrics with Enhanced Polar State Heterogeneity

F. Li[1*], S. Zhang[2], D. Lin[1], J. Luo[3] and T. R. Shrout[1]
[1]Materials Research Institute, The Pennsylvania State University, USA
[2]University of Wollongong, Australia
[3]TRS Technologies, Inc., USA

11:00 **30am-G05** **Raphael Haumont** ISAF

Ferro-Domains Engineering by Crystalline Growth under High Electric Field

R. Haumont[1,2*] M. Pellen[1] and P. Hicher[1]
[1]ICMMO-SP2M, Paris-Saclay university, France
[2]SPMS, CentraleSupelec, France

Oral session: Special session: Single crystal growth & applications
Room G 11:30 - 12:30
Session chair: Satoshi Uda

11:30 **30am-G06** **Hideo Kimura** Invited Talk (Short) FMA

Aurivillius Phase $Bi_4Ti_3O_{12}$-n$BiFeO_3$ (n = 1-5) Single Crystals

H. Kimura[1*], T. T. JIa[1], R. Tanahashi[1] and H. Y. Zhao[2]
[1]National Institute for Materials Science, Japan
[2]Department of Materials Science and Engineering, Wuhan Institute of Technology, China

11:45 **30am-G07** **Fapeng Yu** Invited Talk (Short) FMA

High Performance Piezoelectric Single Crystal BIBO for Photoacoustic Detection Application

F.P. Yu,[1*], F.F. Chen[1], L. Xiong[2], W.Y. Bai[2], G.J. Diebold[2] and X. Zhao[1]
[1]Institute of Crystal Materials, Shandong University, P. R. China
[2]Department of Chemistry, Brown University, USA

12:00 **30am-G08** **Jun Kondoh** Invited Talk (Short) FMA

Liquid-Phase Sensor Using Shear Horizontal Surface Acoustic Wave Device

J. Kondoh[1,2*] and S. Kobayashi[2]
[1]Graduate School of Science and Technology, Shizuoka University, Japan
[2]Graduate School of Integrated Science and Technology, Shizuoka University, Japan

12:15 **30am-G09** **Siarhei Barsukou** FMA

Surface Acoustic Wave Device with the Electroinduced Domain Structure

S. Barsukou[1,2*], J. Kondoh[1] and S. Khakhomov[2]
[1]Department of Optoelectronics and nanomaterial science, Shizuoka University, Japan
[2]Department of Optics, Gomel State University, Belarus

Oral session: Special session: Single crystal growth & applications
Room G 14:00 - 15:15
Session chair: Hiroaki Takeda

14:00 **30pm-G01** **Oleg Buzanov** Invited Talk (Short) FMA

Crystal Growth and Optical Properties of $Ca_3TaGa_3Si_2O_{14}$ Single Crystals

A. O. Buzanov,[1,*] N. S. Kozlova,[2] A. P. Kozlova,[2] and E. V. Zabelina[2]
[1]JSC Fomos-Materials, Russia,
[2]National University of Science and Technology (MISiS), Russia

14:15 **30pm-G02** **Tomoaki Karaki** Invited Talk (Short) FMA

High-Temperature Electrical Resistivity of Langasite $Ca_3Nb(Ga,Al)_3Si_2O_{14}$ Single Crystals

T. Karaki[1*], Y. Kiyohara[1], K. Ito[1], T. Fujii[1], M. Adachi[1], Y. Ohashi[2], J. Kushibiki[2] and A. Yoshikawa[2]
[1]Toyama Prefectural University, Japan,
[2]Tohoku University, Japan

14:30 **30pm-G03** **Akira Yoshikawa** Invited Talk (Short) FMA

Crystal Growth of 2 inch $Ca_3Ta(Ga,Al)_3Si_2O_{14}$ Single Crystals from the Melt for Piezoelectric Applications

A. Yoshikawa[1,2,3,4*], Y. Shoji[1,3,4], Y. Ohashi[2,4], Y. Yokota[2], K. Inoue[4], V. I. Chani[1], K. Kamada[2,3,4], S. Kurosawa[2] and V. Kochurikhin[3,5]
[1]Institute for Materials Research (IMR), Tohoku University, Japan
[2]New Industry Creation Hatchery Center (NICHe), Tohoku University, Japan
[3]C&A Corporation, Japan
[4]Piezo Studio Inc., Japan

14:45 **30pm-G04** **Kheirreddine Lebbou** Invited Talk (Short) FMA

Large LGT Crystal Growth Design for SAW Application

K. Lebbou*
Institut Lumière Matière, ILM UMR 5306 CNRS, Claude Bernard Lyon1 University, France

15:00 **30pm-G05** **Jun Luo** ISAF

Recent Progress in the Growth of High Performance Piezoelectric Crystals

J. Luo[1*], S. Taylor[1], W. Hackenberger[1], F. Lei,[2] T. R. Shrout[2] and S. J. Zhang[3]
[1]TRS Technologies, Inc, USA
[2]Material Research Lab, Pennsylvania State University, USA
[3]Australian Institute of Innovative Materials, University of Wollongong, Australia

Oral session: Special session: Single crystal growth & applications
Room G 15:30 - 16:45
Session chair: Fapeng Yu

15:30 **30pm-G06** **Yanqing Zheng** Invited Talk (Short) FMA

Growth and Characterization of Crystals of Langasite Family and ReCOB Family for Piezoelectric and Nonlinear Optical Applications

Y. Zheng*, S. Wang, K. Xiong, X. Tu and E. Shi
Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

15:45 **30pm-G07** **Hiroaki Takeda** FMA

Growth, Electrical and Mechanical Properties of $(Ca,Sr)_2Al_2SiO_7$ Piezoelectric Single Crystals

H. Takeda[1*], H. Usui[1], T. Oshima[1], T. Hoshina[1], K. Lebbou[2], N. Kodama[3], Y. Ohashi[4], A. Yoshikawa[4] and T. Tsurumi[1]
[1]Tokyo Institute of Technology, Japan
[2]Institut Lumière Matière, UMR5306 CNRS, Universite de Lyon 1, France
[3]Akita University, Japan
[4]IMR, Tohoku University, Japan

16:00 **30pm-G08** **Satoshi Uda** Invited Talk (Short) FMA

Growth of Mg-Doped Lithium Niobate Crystal with Stoichiometric Composition Coincident with Congruent Point

S. Uda[1*] and H. Kimura[1,2]
[1]Institute for Materials Research, Tohoku University, Japan
[2]R&D Center, Mitsubishi Chemical Corporation, Japan

16:15 **30pm-G09** **Yanlu Li** Invited Talk (Short) FMA

Theoretical Perspective of Doping Modification of Stoichiometric and Congruent $LiNbO_3$

Y.L. Li* and X. Zhao
State Key Lab of Crystal Materials, Shandong University, P.R.China

16:30 **30pm-G10** **Jun Nozawa** FMA

Step Kinetics Dependent on the Kink Generation Mode in Colloidal Crystal Growth

J. Nozawa[1*], S. Guo[1], N. Ihara[1], J. Okada[1] and S. Uda[1]
[1]Institute for Materials Research, Tohoku University, Japan

Oral session: P(VDF-TrFE)
Room H 10:00 - 11:00
Session chair: Yoshiro Tajitsu

10:00 **30am-H01** **Bernd Ploss** AMF

Polarisation Profiles in Ferroelectric VDF-TrFE Copolymer Bilayers

B. Ploss* and D. Smykalla
Department of SciTec, University of Applied Sciences Jena, Germany

10:15 **30am-H02** **Danny von Nordheim** AMF

Impact of a Constant Electric Field on the Polarisation of P(VDF-TrFE) Thin Films

D. von Nordheim* and B. Ploss
Department of SciTec, University of Applied Sciences Jena, Germany

10:30 **30am-H03** **Yuji Matsushita** FMA

Fabrication of μm-thick P (VDF-TrFE) Films and the Electrical Properties

Y. Matsushita*, T. Yoshimura and N. Fujimura
Graduate School of Engineering, Osaka Prefecture University, Japan

10:45 **30am-H04** **Erik Mehner** ISAF

Ferroelectricity in the High-Temperature Phase of $P(VDF_{70}\text{-}TrFE_{30})$

E. Mehner*, S. Jachalke, J. Hanzig, T. Leisegang, H. Stöcker and D. C. Meyer
Institute of Experimental Physics, TU Bergakademie Freiberg, Germany

Oral session: Organic materials
Room H 11:15 - 12:15
Session chair: Takeshi Nakajima

11:15 **30am-H05** **Vincenzo Buscaglia** ISAF

Effective Dielectric Properties and 3D FEM Modelling of Field Distribution in Ferroelectric PVDF Composites Containing $BaTiO_3@AO_2$ (A = Ti, Si) Inclusions

V. Buscaglia[1,*] E. Brunengo,[2] M. T. Buscaglia,[1] G. Canu,[1] L. Conzatti,[2] C. Costa,[1] L. Curecheriu,[3] L. Mitoseriu,[3] L. Padurariu,[3] I. Schizzi[2] and P. Stagnaro[2]
[1]Institute of Condensed Matter Chemistry and Technologies for Energy, National Research Council, Italy
[2]Institute for Studies of Macromolecules, National Research Council, Italy
[3]Department of Physics, Alexandru Ioan Cuza University, Romania

11:30 **30am-H06** **Qiusong Chen** AMF

Removable PTFE Template-Based Epitaxy of Ferroelectric Copolymer Films and Its Application in Ferroelectric Devices

W. Xia[1], C. Peter[2], Q. Chen[1], J. Yang[1], H. Kliem[2], X. Qiu[3] and G. Zhu[1*]
[1]Department of Materials Science, Fudan University, Shanghai, China
[2]Institute of Electrical Engineering Physics, Saarland University, Germany
[3]Institute for Print and Media Technology, Technische Universität Chemnitz, Chemnitz, Germany

11:45 **30am-H07** **Doru Lupascu** Invited Talk ISAF

Dielectric and Ultrasonic studies of the Methylammonium Lead Halide Solar Cell Absorbers

I. Anusca[1], S. Balciunas[2], P. Gemeiner[3], S. Svirskas[2], M. Sanlialp[1], G. Lackner[1], C. Fettkenhauer[1], J. Belovickis[2], V. Samulionis[2], M. Simenas[2], E. Tornau[4], M. Ivanov[2], I Dkhil[3], J. Banys[2], V. V. Shvartsman[1] and D. C. Lupascu[1*]
[1]Institute for Materials Science and Center for Nanointegration Duisburg-Essen (CENIDE)University of Duisburg-Essen, Germany
[2]Vilnius University, Lithuania
[3]CentraleSupelec CNRS-UMR8580 Université Paris-Saclay, France
[4]Center for Physical Sciences and Technology, Lithuania

Oral session: Photocatalysts
Room H 14:00 - 14:45
Session chair: Wisanu Pecharapa

14:00 **30pm-H01** **Yoshihiko Imanaka** AMEC

An Artificial Photosynthesis Anode Electrode Composed of Nanoparticulated Photocatalyst Film

Y. Imanaka*, T. Anazawa, T. Manabe, H. Amada, F. Kumasaka and N. Awaji
Fujitsu Laboratories Ltd., Japan

14:15 **30pm-H02** **Thanaphon Kansaard** AMEC

Photocatalytic, Hydrophobic and Durability Properties of Synthetic Rutile Derived from Leucoxene Mineral Coated on Ceramic Roof Tile

T. Kansaard[1*], W. Phoohinkong[1], W. Mekprasart[1], S. Sanguanpak[2], A. Wannagon[2] and W. Pecharapa[1]
[1]College of Nanotechnology, King Mongkut's Institute of Technoloby Ladkrabang, Thailand
[2]Materials Technology Center, National Science and Technology Development Agency, Thailand

14:30 **30pm-H03** **Yaowapa Howold** AMEC

Modified TiO_2 Semiconductive Photocatalyst for Water Splitting Application

Y. Howold[1,2*], M. Schieda[3], D. Lehmann[4], M. V. Vidaller[3,4] and T. Klassen[3,4]
[1]Department of Physics, Khon Kaen University, Thailand
[2]Integrated Nanotechnology Research Center, Khon Kaen University, Thailand
[3]Helmholtz Zentrum Geesthacht, Germany
[4]Helmut-Schmidt-Universität, Germany

Oral session: Triboelectric generator
Room H 14:45 - 15:15
Session chair: Susan Trolier-McKinstry

14:45 **30pm-H04** **Viyada Harnchana** AMEC

Polydimethylsiloxane Modified with Graphene Oxide for Triboelectric Nanogenerator

V. Harnchana[1*], V. Amornkitbamrung[1] and D.J. Kang[2]
[1]Department of Physics, Khon Kaen University, Thailand
[2]Department of Physics, Sungkyunkwan University, Republic of Korea

15:00 **30pm-H05** **Saichon Sriphan** AMEC

Facile Surface Roughness Fabrication for Voltage Enhancement of Triboelectric Generator

S. Sriphan[1*] and N. Vittayakorn[1,2,3]
[1]1Advanced Material Research Laboratory, Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[2]Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[3]Nano-KMITL Center of Excellence on Nanoelectronic Devices, King Mongkut's Institute of Technology Ladkrabang, Thailand

Oral session: Energy storage
Room H 15:30 - 16:30
Session chair: Takashi Teranishi

15:30 **30pm-H06** **Yang Zhou** AMEC

High Capacity and Stable Cyclability of Pristine Amorphous Vanadium Oxide Thin Films as Cathodes for Lithium and Sodium I Batteries

Y. Zhou*, S. Petnikota and M. Srinivasan
School of Materials Science and Engineering, Nanyang Technological University, Singapore

15:45 **30pm-H07** **Yi-Hung Wang** AMEC

The Application of the Heat-treatment and Fenton's Reagent-Treatment Graphite Felt on the Vanadium Redox Flow Battery

Y.-H. Wang[1*], I.-M. Hung[1] and C.-Y. Wu[2]
[1]Department of Chemical Engineering and Materials Science, Yuan Ze University, Taiwan
[2]Taipower Research Institute, Taiwan Power Company, Taiwan

16:00 **30pm-H08** **Yuan Yuan** AMEC

Effects of Fe Substitution on the Microstructure and Energy Storage Performance of Urchin-Like $NiCo_2O_4$

Y. Yuan*, Z. Li, X. Zhu, J. Zhu, D. Xiao and J. Zhu
[1]College of Materials Science and Engineering, Sichuan University, China

16:15 **30pm-H09** **Weiwei Liu** AMF

High Discharged Energy Density at Low Electric Field Using Aligned TiO_2@PZT Nanowire Array

W. Liu, K. Zhou and D. Zhang*
State Key Laboratory of Powder Metallurgy, Central South University, China

Oral session: Fundamentals in ferroelectric thin films
Room I 10:00 - 11:15
Session chair: Masaru Shimizu

10:00 **30am-I01** **Bryan D. Huey** Invited Talk ISAF

Nanoscale Cross-Sections of Functional Properties for Ferroelectric Thin Films

J. Steffes[1], R. Cordier[1], S. Matonis[1], K. Suzuki[2], T. Hosokura[2],K. Murayama[2], N. Tanaka[2] and B. D. Huey[1*]
[1]University of Connecticut, Department of Materials Science and Engineering, USA
[2] Murata Manufacturing Co., Ltd., Yasu Division, Japan

10:30 **30am-I02** **Yinlian Zhu** ISAF

Giant Polarization Sustainability in Ultrathin Ferroelectric Films

Y.L. Zhu,* S.R. Zhang and X. L. Ma
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

10:45 **30am-I03** **Antoine Ruyter** ISAF

Interface Chemical Modulation and Band Structure Tuning

A. Ruyter[1*], J. Wolfman[1], B. Negulescu[1], P. Andreazza[2], C. Autret[1], J. Sakai[1] and X. Wallart[3]
[1]GREMAN, UMR7347 CNRS, France
[2]ICMN, UMR 7374 CNRS, France
[3]IEMN, UMR CNRS 8520, France

11:00 **30am-I04** **Wei Zhang** FMA

Interface Charge States of Epitaxial $BaTiO_3$ Films Grown on Variously Oriented $SrTiO_3$ Substrates

W. Zhang[1,3*], F. Hu[1,3], H. Cheng[1,3] and J. Ouyang[2]
[1]College of Electronic and Optical Engineering, Nanjing University of Posts andTelecommunications, China
[2]Key Laboratory for Liquid-Solid Structure Evolution and Processing of Materials, School ofMaterials Science and Engineering, Shandong University, China
[3]Peter Grunberg Research Center, Nanjing University of Posts and Telecommunications, China

Oral session: Fundamentals in ferroelectric thin films
Room I 11:30 - 12:30

Session chair: Paul Muralt

11:30 **30am-I05** **Ruijuan Xu** ISAF

Effects of Film Orientation on Coercive-Field Scaling in Ferroelectric Thin Films

R. Xu[1], R. Gao[1], S. E. Reyes-Lillo[2], S. Saremi[1], Y. Dong[3], H. Lu[1], Y. Qi[4], Z. H. Chen[1], X. Lu[5], S.-L. Hsu[1], J. B. Neaton[6,7,8], L. W. Martin[1,9]
[1]Department of Materials Science and Engineering, University of California, USA
[2]Department of Physical Sciences, Universidad Andres Bello, Chile
[3]National Synchrotron Radiation Laboratory and CAS Key Laboratory of Materials for Energy Conversion, University of Science and Technology of China, China
[4]Department of Materials Science and Engineering, Hubei University, China
[5]School of Civil Engineering, Harbin Institute of Technology, China
[6]Molecular Foundry, Lawrence Berkeley National Laboratory, USA
[7]Department of Physics, University of California, USA
[8]Kavli Energy NanoSciences Institute at Berkeley, USA
[9]Materials Sciences Division, Lawrence Berkeley National Laboratory, USA

11:45 **30am-I06** **Fanmao Liu** ISAF

Structural Characterization of Depth-Dependent Ferroelectric Phase Transitions in $BaTiO_3$ Films

F. Liu[1,2*], C. Frontera[1*], I. Fina[1] F. Sánchez[1], J. Fontcuberta[1]
[1]Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Spain
[2]Department of Hypertension & Vascular Disease, The First Affiliated Hospital, Sun Yat-Sen University, China

12:00 **30am-I07** **Yohei Uemura** FMA

Temperature Dependent Domain Dynamics in Organic Ferroelectric Thin Films Observed by Field Modulation Imaging Technic

Y. Uemura[1*], S. Arai[1], J. Tsutsumi[2], S. Matsuoka[2], S. Horiuchi[2] and T. Hasegawa[1,2]
[1]Department of Applied Physics, The University of Tokyo, Japan
[2]Flexible Electronics Research Center (FLEC), National Institute of Advanced Industrial Science and Technology (AIST), Japan

12:15 **30am-I08** **Jun-Ge Liang** FMA

Effects of Thermal Treatment and Scanning Number on Microstructure of Aerosol Deposited $BaTiO_3$ Film for High-Performanc Capacitive Application

E.S. Kim[1], J.G. Liang[1*], C. Wang[1,2], J M. Oh[3], H.K. Kim,[3] and N.Y. Kim[1,*]
[1]RFIC Center, Kwangwoon University, S. Korea
[2]School of Electronics and Information Engineering, Harbin Institute of Technology, China
[3]Dept. of Electronic Materials Engineering, Kwangwoon University, S. Korea

Oral session: Novel processing
Room I 14:00 - 15:15
Session chair: Shintaro Yasui

14:00 **30pm-I01** **Jon-Paul Maria** Invited Talk ISAF

Entropy-Stabilized Oxides: An Opportunity for New Electroceramic Materials

J.-P. Maria[1*], G. N. Kotsonis[1], C. M. Rost[2] and P. E. Hopkins[2]
[1]Materials Science and Engineering, Penn State University, U.S.A.
[2]Mechanical Engineering, University of Virginia, U.S.A.

14:30 **30pm-I02** **Patrick Turner** ISAF

Quantitative Hall Effect and Electrical Diode Characteristics of Naturally Occurring p-n Junctions in Erbium Manganite

P. W. Turner, S. McCartan, M. P. Campbell, J. P. V. McConville, A. Kumar and J. M. Gregg
Centre for Nanostructured Media, School of Mathematics and Physics, Queen's University Belfast, United Kingdom

14:45 **30pm-I03** **Saya Bordelet** AMEC

Niobium Doped Vanadium Oxide Crystal Growth, a Comparative Study between Thermal and Excimer-Laser-Assisted Metal-Organic-Deposition (MOD) Processes

G. S. Bordelet[*], I. Yamaguchi, T. Manabe and T. Tsuchiya
AIST, ACT, Central 5, Japan

15:00 **30pm-I04** **Rong Ma** AMEC

The Room Temperature Deposition of High-Quality Epitaxial Yttrium Iron Garnet Thin Film via RF Sputtering

R. Ma[1,2*], M. Liu[1], J. Wang[2] and H. Wang[1]
[1]School of Electronic and Information Engineering & State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, PR China
[2]Department of Physics, The Hong Kong University of Science and Technology, China

Oral session: Dielectric materials
Room I 15:30 - 16:45
Session chair: Seiji Kojima

15:30 **30pm-I05** **Zhifu Liu** Invited Talk AMF

Dielectric Performance and Their Polarization Mechanism of Rutile Structure $Ti_{1-x}(Cu_{1/3}Nb_{2/3})_xO_2$ Ceramics

T. Luo[1,3], Z. Liu[1,*], H. Shao[1], Y. Liu[2] and Y. Li[1]
[1]CAS Key Lab of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
[2]College of Science, the Australian National University, Australia
[3]The University of Chinese Academy of Sciences, China

16:00 **30pm-I06** **Till Frömling** ISAF

Optimization of NBT-Based High Temperature Capacitor Materials

M. Höfling[1], S. Steiner[1], A.-P. Hoang[1], I.-T. Seo[1] and T. Frömling[1*]
[1]Materials Science, Technische Universität Darmstadt, Germany

16:15 **30pm-I07** **Juhyun Yoo** ISAF

Dielectric Properties of $(Ba_{0.86}Ca_{0.14})(Ti_{0.85}Zr_{0.12}Sn_{0.03})O_3$ Ceramics with the Variations of Bi_2O_3

S.-J. Cho[1], Y.-H. Kwon[1], J.-H. Yoo[1*], J.-I. Hong[2] and D.-W. Park[3]
[1]Department of Electrical Engineering, Semyung University, Korea
[2]Department of Electrical Information Control Engineering, Dong Seoul University, Korea
[3]Department of Computer Science, Semyung University, Korea

16:30 **30pm-I08** **Yan Zhang** AMEC

Effect of Porosity on the Polarisation-Field Response of Ferroelectric Materials

Y. Zhang[1], J. Roscow[1], R. Lewis[2], H. Khanbareh[1], V. Y. Topolov[3], M. Xie[1] and C. R. Bowen[1]
[1]Materials and Structures Centre, Department of Mechanical Engineering, University of Bath, United Kingdom
[2]Renishaw Plc., United Kingdom
[3]Department of Physics, Southern Federal University, Russia

Oral session: Phonons and light scattering
Room J 10:00 - 11:15
Session chair: Jae-Hyeon Ko

10:00 **30am-J01** **Patrick Hopkins** Invited Talk ISAF

Emergent Phonon Thermal Transport Properties in Ferroelectric Materials

P. E. Hopkins[1*]
Department of Mechanical and Aerospace Engineering, Department of Materials Science and Engineering, Department of Physics, University of Virginia, USA

10:30 **30am-J02** **Shinya Tsukada** Invited Talk IFAAI

Static and Dynamic Properties of $Pb(In_{1/2}Nb_{1/2})O_3$ by Changing In/Nb-Arrangement

S. Tsukada[1*], K. Ohwada[2], H. Ohwa[3], S. Mori[4], S. Kojima[5], N. Yasuda[3], H. Terauchi[6] and Y. Akishige[7]
[1]Faculty of Education, Shimane University, Japan
[2]Synchrotron Radiation Research Center, KPSI, QST, Japan
[3]School of Engineering, Gifu University, Japan
[4]Department of Materials Science, Osaka Prefecture University, Japan
[5]Pure and Applied Sciences, University of Tsukuba, Japan
[6]School of Science, Kwansei Gakuin University, Japan
[7]Office of the Vice President for Research, Shimane University, Japan

11:00 **30am-J03** **Marc Fontana** ISAF

Phase Transitions in $BaTiO_3$ Revisited by Raman Spectroscopy

M. D. Fontana[1,*], N. Kokanyan[1], T. Kaufmann[1], I. Bejaoui [2], D. Chapron[1] and H. Aroui[2]
[1]Laboratoire Matériaux Optiques, Photonique et Systèmes, Université de Lorraine and CentraleSupélec, France
[2]Laboratoire de Dynamique Moléculaire et Matériaux Photoniques, ENSIT, Université de Tunis, Tunisia

Oral session: Phonons and light scattering
Room J 11:30 - 12:30
Session chair: Hiroki Taniguchi

11:30 **30am-J04** **Seiji Kojima** FMA

Vibrational Dynamics of Ferroelectric $K(Ta_{1-x}Nb_x)O_3$ Studied by Far-Infrared Spectroscopic Ellipsometry and Raman Scatterin

S. Kojima[1*], M. M. Rahaman[1,2], R. Sase[3], T. Hoshina[3] and T. Tsurumi[3]
[1]Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan
[2]Department of Materials Science and Engineering, University of Rajshahi, Bangladesh
[3]Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan

11:45 **30am-J05** **Jung Taek Hong** AMF

Acoustic Mode Behaviors of $PbHf_{0.7}Sn_{0.3}O_3$ Single Crystals Studied by Brillouin Light Scattering

B. W. Lee[1], J.-H. Ko[1], J. T. Hong[1*], I. Jankowska-Sumara[2], M. Pódgrna[2] and A. Majchrowski[3]
[1]Department of Physics, Hallym University, Korea
[2]Institue of Physics, Pedagogical University, Poland
[3]Institute of Applied Physics, Military University of Technology, Poland

12:00 **30am-J06** **Vignaswaran Kaliyaperumal Veerapandiyan** ISAF

Raman Spectroscopy on Ba-Based Relaxor-Ferroelectrics

V. K. Veerapandiyan[1*], V. Buscaglia[2], S. Tidrow[3] and M. Deluca[1]
[1]Materials Center Leoben Forschung GmbH, Austria
[2]CNR-ICMATE, Italy
[3]New York State College of Ceramics, Alfred University, USA

12:15 **30am-J07** **Julian Brockmeier** ISAF

Vibrational Signatures from Ferroelectric Domain Structures in Potassium Titanyl Phosphate

J. Brockmeier[1*], C. Eigner[1], L. Padberg[1], P. Mackwitz[1], C. Silberhorn[1], A. Zrenner[1] and G Berth[1]
[1]Department Physik, University Paderborn, Germany

Oral session: Microwave materials
Room J 14:00 - 15:15
Session chair: Akinori Kan

14:00 **30pm-J01** **Eung Soo Kim** Invited Talk AMEC

Affecting Factors on the Dielectric Properties of $MgTiO_3$-Based Ceramics at Microwave Frequencies

E. S. Kim*
Department of Materials Engineering, Kyonggi University, Korea

14:30 **30pm-J02** **Di Zhou** Invited Talk AMEC

$BiVO_4$ Based Microwave Dielectric Ceramics

D. Zhou[1,2*] and I. M. Reaney[2]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China
[2]Department of Materials Science and Engineering, University of Sheffield, UK

15:00 **30pm-J03** **Mingzhao Dang** AMEC

Investigation of Phase Composition and Microwave Dielectric Properties of MgO-Ta_2O_5 Ceramics with Ultra-High Qf Value

M. Dang [1,2], H. Peng[1,2], X. Yao[1], H. Ren[1] and H. Lin [1]
[1]Key Laboratory of Inorganic Functional Material and Device, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
[2]University of Chinese Academy of Sciences, China

Oral session: Microwave materials
Room J 15:30 - 16:45
Session chair: Eung Soo Kim

15:30 **30pm-J04** **Ryo Sakamaki** Invited Talk (Short) FMA

Development of Novel in-situ Dielectric Measurement Method Using Precision Probing Technique at Millimeter-Wave Frequen

R. Sakamaki[1*] and M. Horibe[1]
[1]Research Institute of Physical Measurement, National Institute of Advanced Industrial Science and Technology, Japan

15:45 **30pm-J05** **Akinori Kan** FMA

Microwave Dielectric Properties of Spinel-Structured $Mg_{0.4}Al_{2.4-x}Ga_xO_4$ Ceramics with Cation Defect

A. Kan[1*], H. Okazaki[1], S. Takahashi[1] and H. Ogawa[1]
[1]Guraduate School of Science and Technology, Meijo University, Japan

16:00 **30pm-J06** **Jae Min Kim** AMEC

Effect of Electronegativity on Microwave Dielectric Properties of $MgTi_{1-x}(A_{1/3}Sb_{2/3})_xO_3$ ($A = Mg^{2+}, Zn^{2+}$) Ceramics

J. M. Kim[1] and E. S. Kim[1*]
[1]Department of Materials Engineering, Kyonggi University, South Korea

16:15 **30pm-J07** **Yu-Cheng You** AMEC

Improving Microwave Dielectric Properties of $La(Mg_{0.5}Sn_{0.5})O_3$ Ceramics by Removing Moisture Content from Starting Raw Materials

Y.-C. Chen and Y.-C. You*
Department of Electrical Engineering, Lunghwa University of Science and Technology, Taiwan

16:30 **30pm-J08** **Hitoshi Ohsato** FMA

Glass Casting and Crystallization: A Novel Approach for Next Generation Ultra-Low Dielectric Loss Micro/Millimeter Wave Substrates

H. Ohsato[1*], J. Varghese[2], H. Jantunen[2] and M. Iwata[3]
[1]Department of Research, Nagoya Industrial Science Research Institute, Japan
[2]Microelectronics Research Unit, Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland
[3]Department of Physical Science and Engineering, Nagoya Institute of Technology, Japan

Poster session
Hall P 17:00 - 18:30

30pm-P001 **José Juan Gervacio Arciniega** PFM

Effects of Cantilever Spring Constant in Piezoresponse Force Microscopy Imaging

J. J. Gervacio-Arciniega[1,2], E. A. Murillo-Bracamontes[2*], Gerson Torres M[3], E. Cruz-Valeriano[4], Y. H. Chu[5], M. Toledo-Solano[1], M. A. Palomino-Ovando[6], C. I. Enrique Flores[4], E. Sánchez-Mora[7], M. E. Mendoza[7], J. M. Siqueiros[2] and M. P. Cruz[2]
[1]CONACYT-Facultad de Ciencias Físico-Matemáticas, BUAP, Puebla, México
[2]Centro de Nanociencias y Nanotecnología (CNyN), UNAM, Ensenada, México
[3]Facultad de Ingeniería, Arquitectura y Diseño. UABC, Ensenada, México
[4]CINVESTAV Unidad Querétaro, Querétaro, México
[5]Department of Materials Sci. & Eng. and Department of Electrophysics, National Chiao Tung University, Taiwan
[6]Facultad de Ciencias Físico-Matemáticas, BUAP, Puebla, México
[7]Instituto de Física, BUAP, Puebla, México

30pm-P002 **Yooun Heo** AMF

Oxidation Induced Electrical Conduction of $SrFeO_{2.5}$

Y. Heo[1*], D. Kan[1] and Y. Shimakawa[1]
[1]Institute for Chemical Research, Kyoto University, Japan

30pm-P003 **Shenglan Wu** AMEC

Microzone Performances of $BiFeO_3$ Nanowires by Scanning Probe Microscopy

S. L. Wu, J. Zhang, C. L. Fu, X. Y. Liu and S. Y. Lv
School of Metallurgy and Materials Engineering, Chongqing University of Science and Technology, China

30pm-P004 **Stephen Jesse** PFM

AFM Based Spectroscopy Technique for Ultrafast Polarization Switching in Ferroelectrics

S. Somnath, A. Belianinov, S.V. Kalinin and S. Jesse
Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA

30pm-P005 **Bertrand Vilquin** ISAF

Room-Temperature Ferroelectricity in Strained $SrTiO_3$ Ultrathin Films: Infrared and ab Initio Study

W.-W. Peng[1], R. Ttot[2], G. Niu[3], E. Amzallag[2], B. Vilquin[4*], J.-B. Brubach[1] and P. Roy[1]
[1]Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin, France
[2]CNRS-Université Paris-Sud, France
[3]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, China
[4]Ecole Centrale de Lyon, Institut des Nanotechnologies de Lyon (INL), Universite de Lyon, France

30pm-P006 **Jose Garcia** ISAF

Revealing Domains Structure Changes in Ferroelectric Crystals by High-Resolution X-Ray Diffraction

D. A. Ochoa[1], F. Rubio-Marcos[2], A. Del Campo[2], J. F. Fernndez[2] and J. E. García[1*]
[1]Department of Physics, Universitat Politècnica de Catalunya, Spain
[2]Department of Electroceramics, Instituto de Cerámica y Vidrio - CSIC, Spain

30pm-P007 **Brice Gautier** ISAF

Accurate Multi-Scale Measurement of Ferroelectric Remnant Polarization

S. Martin, N. Baboux, D. Albertini and B. Gautier*
Institut des Nanotechnologies de Lyon, Institut National des Sciences Appliquées de Lyon, Université de Lyon, France

30pm-P008 **Alexis Borowiak** PFM

Nanosize Effect in BFO-FZO Co-Deposited Nanostructured Thin Films

A. S. Borowiak[1], B. Gautier[2] and H. Tanaka[1]
[1]Institute of Scientific and Industrial Research, Osaka University, Japan
[2]Université de Lyon, INSA de Lyon, Institut des Nanotechnologies de Lyon, France

30pm-P009 **Andrei Kholkin** PFM

Quantitative Characterization of the Ionic Mobility and Concentrationin Li-Battery Cathodes via Low Frequency Electrochemica Strain Microscopy

D. O. Alikin[1,2], K. N. Romanyuk[1,2], B. N. Slautin[1], D. Rosato[3], V. Ya. Shur[1] and A. L. Kholkin[1,2]
[1]School of Natural Sciences and Mathematics, Ural Federal University, Russia
[2]Department of Physics & CICECO - Aveiro Institute of Materials, University of Aveiro, Portugal

30pm-P010 **Sujitra Unruan** AMEC

Structure-Property Relationships of PZT-PNN Ceramics Revealed by XAS Technique

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30pm-P011 **Zibo Jiang** ISAF

Evaluation of VGF-Grown Mn-Doped PIN-PMN-PT Crystals

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30pm-P012 **Juhyun Yoo** ISAF

High Piezoelectric Properties of Low Temperature Sintering PNN- PMN-PZT Ceramics for Ultrasonic Transducer Application

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30pm-P013 **Ming Ma** ISAF

Shear Piezoelectric Properties of Relaxor-$PbTiO_3$ Single Crystals

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30pm-P014 **Orawan Khamman** AMEC

The Relationships between Electrical Properties and Microstructure of PNN-PZT Ceramic Nanocomposites

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30pm-P015 **Ilona Zamaraite** ISAF

Effects of Sulfur and Lead Dopants on Physical Properties of $(Pb_ySn_{1-y})_2P_2(Se_xS_{1-x})_6$ Solid Solutions

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30pm-P016 **Zibo Jiang** ISAF

Evaluation of Mn-Doped PIN-PMN-PT Crystals Grown by Vertical Gradient Freeze Method

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30pm-P017 **Raphael Haumont** ISAF

Ab Initio Study of Inorganic Perovskites: towards the Prediction of $PbZr_{1-x}Ti_xO_3$ (PZT) IR Spectrum

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30pm-P018 **Yunsang Lee** AMEC

Optical Study on Oxygen Defect States in $SrTiO_3$ Compounds

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30pm-P019 **Junlei Qi** AMEC

Effect of Sintering Conditions on the Defects Regulation of Ce Doped $SrTiO_3$ Colossal Dielectric Permittivity Ceramics

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30pm-P020 **Narit Triamnak** AMEC

Thermal Annealing Effect on the $BaTiO_3$-$BiFeO_3$-$LaFeO_3$ Ceramic Dielectric Properties

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30pm-P021 **Wanghua Wu** AMF

Thermally Stimulated Depolarization Current of $BaTiO_3$ Single Crystals

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30pm-P022 **Yan-Ping Jiang** FMA

Influence of Mn-Doping on the Ferroelectric and Diffusion Phase Transition Behavior of $(Ba_{0.85}Ca_{0.15})(Zr_{0.1}Ti_{0.9})O_3$ Ceramics

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30pm-P023 **Bo-Ping Zhang** AMEC

Phase Structure and Electrical Properties of Sn and Zr Modified $BaTiO_3$ Lead Free Ceramics

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30pm-P024 **Vincenzo Buscaglia** ISAF

Structure-Property Relationships in $BaCe_xTi_{1-x}O_3$ (x = 0.02 - 0.30) Ceramics

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30pm-P025 **Piyi Du** AMF

Tunable Dielectric Property Controlled by Electron Pair Dipoles in Zr Ion Doped Barium Ferrite Ceramics

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30pm-P026 **Xian Du** AMF

Study on Preparation and Dielectric Properties of BST/BZT- SBN Composite Ceramics

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30pm-P027 **Gobwute Rujijanagul** AMEC

Large Electric Field-Induced Strain Response of $Ba(Fe_{0.5}Ta_{0.5})O_3$-Modified BNKT-Based Lead-Free Piezoelectric Ceramics

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30pm-P028 **Cheng-Sao Chen** AMEC

Top-Seeded Solution Growth and Characterization of $Bi_{0.5}Na_{0.5}TiO_3$-$BaTiO_3$ Crystals Co-doped with Zirconium and Manganes

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30pm-P029 **Gobwute Rujijanagul** AMEC

Giant Ferroelectric Response of ZnO Nanoparticles Modified $Bi_{0.5}(Na_{0.84}K_{0.16})_{0.5}TiO_3$ Lead-Free Piezoelectric Ceramics

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30pm-P030 **Kentaro Araki** FMA

Compositional Dependence of Piezoelectric Properties of $Bi_{0.5-x}(Na_{0.8-y}K_{0.2+y})TiO_3$ Ceramics

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30pm-P031 **Navavan Thongmee** AMEC

Improving Properties of BNT Ceramics by Adding $Bi_{3.25}La_{0.75}Ti_3O_{12}$

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30pm-P032 **Rattiphorn Sumang** AMEC

Structure Evolution and Large Strain Response in New Lead-Free (1-x-y)BNT-xBT-yBZT Ceramics

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30pm-P033 **Suchittra Inthong** FMA

Electromechanical and Dielectric Properties of BNKT Ceramic Modified by $KNbO_3$

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30pm-P034 **Changrong Zhou** AMEC

Dual Relaxation Behaviors and Large Electrostrictive Properties of $Bi_{0.5}Na_{0.5}TiO_3$-$Sr_{0.85}Bi_{0.1}TiO_3$ Ceramics

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30pm-P035 **Chittakorn Kornphom** AMEC

Composition Design, Phase Structural and Electrical Propertiesof (1-x)BNT-xBCTS Piezo Ceramics

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30pm-P036 **Nuttapon Pisitpipathsin** AMEC

Relationship in Dielectric, Ferroelectric Behaviors and Large Strain Response of $(1-x)(Bi_{0.4871}Na_{0.4871})La_{0.0172}TiO_3$-$xBaTiO_3$ Ceramics

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30pm-P037 **Wilaiwan Leenakul** AMF

Dielectric and ferroelectric of Niobium and Lithium Co-Doped Bismuth Sodium Potassium Titanate Ceramics

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30pm-P038 **Arnon Chaipanich** AMEC

Dielectric and Piezoelectric Properties of 2-2 Connectivity Lead-Free Piezoelectric Ceramic $Bi_{0.5}Na_{0.5}TiO_3$/Portland Cement Composites

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30pm-P039 **Rattiyakorn Rianyoi** AMEC

Mechanical, Dielectric and Piezoelectric Properties of 0-3 Connectivity Lead-Free Piezoelectric Ceramic $0.94Bi_{0.5}Na_{0.5}TiO_3$-$0.06BaTiO_3$/Portland Cement Composites

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30pm-P040 **Surapong Panyata** AMEC

Crystallization Kinetic of Er^{3+}-Dope $BiO_{1.5}$-GeO_2-$BO_{1.5}$ Glass-Ceramics

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30pm-P041 **Kwangeun Kim** AMF

Controlling Topological Defects in $BiFeO_3$ Nanoplates

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30pm-P042 **Xin Peng** AMEC

Interface Polarization, Breakdown Strength, and Energy-Storage in Niobate-Based Glass-Ceramics

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30pm-P043 **Ploypailin Yongsiri** AMEC

The Electrical Properties of Er_2O_3 Doped Potassium Sodium Lithium Niobate Based Glass-Ceramics

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30pm-P044 **Ploypailin Yongsiri** AMEC

The Optical and Microstructural Studies of Lanthanide Doped Potassium Sodium Lithium Niobate Based Glass-Ceramics

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30pm-P045 **Ruike Shi** AMEC

Enhanced Dielectric Properties of Sr-Doped $NaBa_2Nb_5O_{15}$ Ceramics for Energy Storage Devices

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30pm-P046 **Keisuke Ishii** FMA

Effects of Ultrasonic Treatment on Reduction of $NaNbO_3$ Template Content Required for Orientation Control

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30pm-P047 **Wen Wang** AMEC

Lead-Free Bi-Doped $AgNb_{0.85}Ta_{0.15}O_3$ Ceramics with Enhanced Energy Storage Performance

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30pm-P048 **Mengdie Yang** AMEC

Effect of Hydrothermal Synthesis on the Photocatalytic Properties of Silver Niobate Powders with Different Morphologies

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30pm-P049 **Ana Borta Boyon** ISAF

Influence of K/Na Ratio on Piezoelectric Properties of $(K_{0.38}Na_{0.52}Li_{0.04}Nb_{0.86}Ta_{0.1}Sb_{0.04})O_{2.97}$ Lead-Free Piezoelectric Cera

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30pm-P050 **Meng Meng** AMEC

Growth of $0.96(K_{0.48}Na_{0.52})(Nb_{0.95}Sb_{0.05})O_3$-$0.04Bi_{0.5}(Na_{0.82}K_{0.18})_{0.5}ZrO_3$ Lead-Free Piezoelectric Single Crystals by Solid S Single Crystal Growth

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30pm-P051 **Min-Soo Kim** AMEC

Electromechanical Properties and Microstructures of Textured NKLNT Ceramics

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30pm-P052 **Qiang Chen** AMF

Enhanced Piezoelectric Properties of KNN-Based Ceramics by Using Fe_2O_3 as Sintering Aid

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30pm-P053 **Jinda Khemprasit** AMEC

Structural and Dielectric Properties of $(Ba_{1-x}Sr_x)(Fe_{0.5}Nb_{0.5})O_3$ Materials Prepared by Sol-Gel Method

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30pm-P054 **Wuxiang Ma** AMEC

Structure and Electrical Properties of Intergrowth Bismuth Layer-Structured $Bi_4Ti_3O_{12}$-$SrBi_4Ti_4O_{15}$ Ceramics

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30pm-P055 **Vittaya Amornkitbamrung** AMEC

Enhanced Dielectric and Nonlinear Electrical Properties of Portland Cement-$CaCu_3Ti_4O_{12}$ Composites

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30pm-P056 **Nath Saowadee** AMEC

Microstructure Evolution and Dielectric Properties of Sn-Doped $CaCu_3Ti_4O_{12}$ Ceramics

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30pm-P057 **Jakkree Boonlakhorn** AMEC

Enhanced Dielectric Permittivity, Reduced Loss Tangent, and Nonlinear Electrical Response of Ni^{2+} Doped $CaCu_3Ti_4O_{12}$ Cerar

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30pm-P058 **Krissana Prompa** AMEC

Very Low Loss Tangent, Dielectric Properties and Greatly Enhanced Nonlinearelectrical Properties of $CaCu_{2.95}Cr_{0.05}Ti_{4.1}O_{12}$ Ceramics

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30pm-P059 **Ekaphan Swatsitang** AMEC

Very High Performance Dielectric and Non-Ohmics Properties of Ni Doped $CaCu_3Ti_{4.2}O_{12}$ Ceramics for X9R Capacitors

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30pm-P060 **Thanin Putjuso** AMEC

Very Low Loss Tangent with High Thermal Stability Dielectric and Non-Ohmics Properties of $Ca_{1-x}Sr_xCu_3Ti_{4.5}O_{12}$ Ceramics

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30pm-P061 **Teerasak Kamwanna** AMEC

Synthesis and Physical Properties of Delafossite $CuBO_2$ p-Type Transparent Conducting Oxide

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30pm-P062 **Ya Zhang** AMF

Regulating Dielectric and Ferroelectric Properties of Poly(vinylidene fluoride-trifluoroethylene) with Inner CH=CH Bonds

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30pm-P063 **Bo Wang** AMEC

Fabrication and Dielectric Performances of CCTO with Insulating SiO_2 Additive-PVDF Composites

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30pm-P064 **Jiahao Fan** AMEC

High-Dielectric-Permittivity Sandwich-Structured Composites Obtained by Introducing a Negative-k Layer

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30pm-P065 **Sang Mo Koo** FMA

Fabrication and Characterization of AlN/SiC Heterojunction Structure by Aerosol Deposition

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30pm-P066 **Sang Mo Koo** FMA

Effects of Thermal Annealing on the Properties of ZrO_2/4H-SiC Structures

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30pm-P067 **Zhiyong Zhou** AMF

Grain Size Effect on Piezoelectric Properties of $Sr_2Nb_2O_7$ Ceramics with Super High Curie Point

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30pm-P068 **Yi Wu** AMEC

Synthesis, Crystal Structure, and Characterization of Three Novel Compounds with Ruddlesden-Popper Structure

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30pm-P069 **Nittaya Jaitanong** AMEC

Influence of Graphene Oxide on Morphological and Electrical Properties of Pozzolan Cement Based-Piezoelectric Ceramic Composite

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30pm-P070 **Yang Yang** AMF

A New Approach to Maximizing Electrostrain: the Coupling of Morphotropic Phase Boundary and Intrinsic Aging Effect

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30pm-P071 **Soonil Lee** ISAF

Grain Boundary Schottky Barrier Engineering in Ferroelectric Materials

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30pm-P072 **Pornjuk Srepusharawoot** AMEC

Electronic Structure of Colossal Permittivity $(Mg_{1/3}Nb_{2/3})_{0.05}Ti_{0.95}O_2$ Ceramics

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30pm-P073 **Marie Mnchhalfen** ISAF

Electromechanical Properties and Structural Instabilities in Rare-Earth Oxoborates $RX_2Z_2O(BO_3)_3$

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30pm-P074 **Erik Mehner** ISAF

Ferroelectricity in the High-Temperature Phase of P(VDF_{70}-$TrFE_{30}$)

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30pm-P075 **David Ehre** ISAF

Are Halide-Perovskites Ferroelectric?

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30pm-P076 **Wei Cai** AMEC

Influences of Microwave Sintering Temperature on Microstructure, Electric and Magnetic Properties of $Bi_{0.9}La_{0.1}FeO_3$ Ceramic

W. Cai[1,2*], L.W. Yao[1], R. L. Gao[1,2], G. Chen[1,2], X. L. Deng[1,2], Z. H. Wang[1,2] and C. L. Fu[1,2]
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30pm-P077 **Yu Shi** AMEC

Dielectric, Multiferroic and Magnetodielectric Properties of Co/Fe Co-Doped $Bi_4Ti_3O_{12}$ Ceramics

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30pm-P078 **Ting Wang** AMEC

Multiferroic Properties of Zr/Nb Doped $BiFeO_3$ Ceramics Prepared by Spark Plasma Sintering

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30pm-P079 **Tao Yang** ISAF

The Effects of Fluorine Substitution on the Structure and Photocatalytic Properties of $BiFeO_3$ Crystallites

Y. Tao, C. Zhang, J. Chen and J. Cheng*
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30pm-P080 **Zijing Dong** AMEC

Large Magnetodielectric Effect of $BaTiO_3$-$BaFe_{12}O_{19}$ Composites in Low Magnetic Field

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30pm-P081 **Laongnuan Srisombat** AMEC

Facile Preparation of Multiferroic $BaTiO_3$/$MgFe_2O_4$ Composites by Using Co-precipitation Method

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30pm-P082 **Jingwei Li** AMEC

Electronic and Magnetic Properties of $BaTiO_3$/Sr_2CoMoO_6 Heterostructures Ceramics

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30pm-P083 **Rongli Gao** AMEC

The Magneto-Electric Properties of $Ni_xZn_{1-x}Fe_2O_4$-$BaTiO_3$ Composite Ceramics

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30pm-P084 **Rongli Gao** FMA

Effect of Volume Fraction on the Magnetoelectric Coupling Effect in Magnetoelectric Mixed Multiferroic Fluids

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30pm-P085 **Daniel Sando** ISAF

Strain- and Thickness-Dependent Magnetic Order in $BiFeO_3$ Films

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30pm-P086 **Peter Finkel** ISAF

Control of Magnetism in Magnetoelectric Heterostructural Composites Using Large Phase Transformational Strain

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30pm-P087 **Pin-Yi Chen** AMF

Macro-to-Micro Study in Electric-Field-Induced Giant Strain of Textured Mn-Doped $(Bi_{0.5}Na_{0.5})TiO_3$-$BaTiO_3$ Relaxor Ferroele Ceramics

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30pm-P088 **Lei Zhang** AMEC

Anti-Ferroelectric & Ferroelectric Transitions in MgO-Modified $0.775Na_{0.5}Bi_{0.5}TiO_3$-$0.225BaSnO_3$ Ceramics for High Power Energy Storage

L. Zhang[1], X. Pu[2], Y. Pu[1,*], M. Chen[1], Y. Shi[1] and X. Peng[1]
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30pm-P089 **Dziugas Jablonskas** ISAF

Non-Linear Susceptometry of $Pb(B'_{1/3}B''_{2/3})O_3$-PT Based Relaxor Ferroelectrics

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30pm-P090 **Yosuke Iida** FMA

Fabrication of $NaNbO_3$-$CaZrO_3$ Antiferroelectric Thin Films by Pulsed Laser Deposition

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30pm-P091 **Takayuki Shimasaki** FMA

Fabrication of $NaNbO_3$-$SrZrO_3$ Antiferroelectric Thin Films by Pulsed Laser Deposition

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30pm-P092 **Yoshinori Takikawa** FMA

Dielectric Dispersion in Dual Frequency Nematic Liquid Crystal EK11650

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30pm-P093 **Takashi Nakajima** FMA

Composition Dependence of Energy Storage Properties of Antiferroelectric $(Pb,Y)(Sn,Zr)O_3$ Thin Film Capacitors

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30pm-P095 **Andrei Kholkin** ISAF

Polarization Reversal in Relaxor SBN Single Crystals and PLZT Ceramics via PFM, Chemical Etching and Electron Beam Irradiation

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30pm-P096 **Emmanuel Defay** ISAF

Electrocaloric Properties of Strongly Ordered $Pb(Sc_{0.5},Ta_{0.5})O_3$ Ceramics

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30pm-P097 **Hana Ursic** ISAF

$Pb(Fe_{0.5}Nb_{0.5})O_3$-Based Multicaloric Materials as a Link between Electrocaloric and Magnetocaloric Refrigeration

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30pm-P099 **Vincenzo Buscaglia** ISAF

Photoluminescence and Evolution of Polar Order in Eu:$BaZr_xTi_{1-x}O_3$ Ceramics

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30pm-P100 **Alena Kaiser** FMA

Single Crystals for Pyroelectric Detectors

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30pm-P101 **Xiaojuan Zhu** AMEC

White Emitting $SrZnO_2$ and $Sr_{1-x}Ca_xZnO_2$: Eu^{3+}, Dy^{3+} Phosphors: Optimization of Synthesis parameters, Characterization, Ene Transfer and Photoluminescence

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30pm-P102 **Longhai Yang** FMA

The Investigation on Dielectric Relaxation and X-ray Diffraction at Various Temperatures of $Pb(Sc_{1/2}Ta_{1/2})O_3$ Ceramics

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30pm-P103 **Le Kang** AMF

A New Electroconductive Carbon Black/Solid-Waste-Based Cementitious Composite and Its Photocatalytic Performance

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30pm-P104 **Tingting Wang** FMA

Structure and Properties of Ternary PIN-PZN-PT Piezoelectric Ceramics with High Curie Temperature

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30pm-P105 **Rui-Xue Wang** FMA

Local Twin Domains and Domain Switching of Monoclinic Mc Phase in $Pb(Mg_{1/3}Nb_{2/3})O_3$-0.34$PbTiO_3$ Single Crystal

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30pm-P106 **Jinxing Zhang** FMA

A Ferroelastic Nanoelectronic Device

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30pm-P107 **Hua Yao** FMA

Research on Piezoelectric Linear Motor with Large Contact Surface

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30pm-P108 **Sascha Raufeisen** ISAF

Sonoelectrochemical Degradation of Micopollutants
- How the Ultrasound Parameters Influence the Electrochemical Degradation -

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30pm-P109 **Lingfeng Wu** AMEC

Enhanced Ability of Defect Detection Using High Voltage Time Domain Resonance Analysis and Impedance Spectrum

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30pm-P110 **Qiang Huan** FMA

A Variable-Frequency Structural Health Monitoring System Based on Omni-Directional SH Wave Piezoelectric Transducers

Q. Huan and F. X. Li
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30pm-P111 **Jung-Sub Wi** ISAF

Physically-Synthesized Plasmonic Nanoparticles for Optoacoustic Imaging

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30pm-P112 **Ho-Yong Lee** ISAF

Piezoelectric PMN-PZT Single Crystal-Polymer Composites with Wide Usage Range of Temperature and Driving Electric Field

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30pm-P113 **Kenji Inoue** FMA

Development of Langasite-type Crystal Resonator with Excellent Temperature Characteristics and Fast Start-Up Times

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30pm-P114 **Kenji Inoue** FMA

Development and Evaluation of Ultrasound-Facilitated Drug Delivery Device

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30pm-P115 **Sang Mo Koo** FMA

Electrical and Structural Properties of Al/TiO_2/Al_2O_3/SiC Stacked Structures

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30pm-P116 **Sang Mo Koo** FMA

Structural, Optical and Electrical Properties of NiO Thin Films Grown on SiC Substrate by Using a Solution Process

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30pm-P117 **Ivan Vorotiahin** ISAF

Flexoelectrochemical Coupling in Thin Ferroelectric Films

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30pm-P118 **Hugo Mercier** ISAF

Sintering and Functional Properties of Sodium-Potassium Niobate-Based Thick Films

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30pm-P119 **Barbara Malic** ISAF

Lead-Free Piezoelectric Thick Films: Optimizing the Properties by Composition and Processing

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30pm-P120 **Hiroshi Maiwa** ISAF

Polarization Reversal and Memory Effects in Anti-Ferroelectric $PbZrO_3$ Thin Films

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30pm-P122 **Ji Soo Lim** AMF

Optical Visualization of Fast Collective Oxygen Vacancy Flow in Calcium Doped Bismuth Ferrite Films

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30pm-P123 **Chesta Ruttanapun** AMEC

Effect of Cu-Doped $Ca_{12}Al_{14-x}O_{33}$ Cement on Thermal and Electronic Properties

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30pm-P124 **Yu-Wen Chen** AMEC

Doped Bismuth Oxide Based Electrolytes Honeycomb Oxygen-Generator with Ag Electrode Additives of Glass-Ceramic and Si

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30pm-P125 **Robertas Grigalaitis** AMEC

Dielectric Properties of ZIF-90 and UiO-66 Metal-Organic Frameworks

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30pm-P126 **Zhongkai Zhang** AMEC

Mechanical Property of Tungsten-Rhenium Thin Film Thermocouples

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30pm-P127 **Zhongkai Zhang** AMEC

Research on the Influence of Substrate to Tungsten-Rhenium Thin Film Thermocouples

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30pm-P128 **Zhongkai Zhang** AMEC

Process Analysis of Thin Film Thermocouple with Ceramic Substrate

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30pm-P129 **Lin Lin** AMEC

Wireless Passive Pressure Sensors Based on LTCC Technology

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30pm-P130 **Liaoying Zheng** AMEC

Regulation and Controlling of the Nonlinear Coefficient of ZnO Varistor Ceramics

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30pm-P131 **Ruiqing Chu** AMEC

Effects of Nb_2O_5-Doping on the Nonlinear Electrical Behaviors and Dielectric Properties of TiO_2 Varistor Ceramics

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30pm-P132 **Xuxin Cheng** AMEC

The Influence of Sintering Aid on the PTCR Effect and Microstructures of $Ba_{1.022-x}Sm_xTiO_3$ Based Ceramics Sintered by the Reduction Sintering-Reoxidation Method

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30pm-P133 **Xiaoming Chen** AMEC

Influence of the Sintering Process on the PTCR Effect of $Ba_{1.005-x}La_xTiO_3$ Ceramics Sintered in a Reducing Atmosphere

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30pm-P134 **Xiaoxia Li** AMEC

Influence of Firing Method on the PTCR characteristics and the Ni Internal Electrode of the laminated $Ba_{1.005}(Ti_{1-x}Nb_x)O_3$ Ceramics

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30pm-P135 **Guichu Chen** AMEC

Investigation on the PTCR Effect and Electrical Properties of the Multilayer Chip-Type Y_2O_3-Doped $BaTiO_3$ Based Ceramics

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30pm-P136 **Shihua Ding** AMEC

Structure and Dielectric Properties of Ru Doped $Bi_{1.5}ZnNb_{1.5}O_7$ Ceramics

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30pm-P137 **Xiaojing Yang** AMEC

Struture and Dielectric Properties of Ca Doped $BaAl_2Si_2O_8$

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30pm-P138 **Bing Liu** AMEC

Microwave Dielectric Properties of temperature stable (1-x)$SrLaAlO_{4-x}TiO_2$ Composite Ceramics

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30pm-P139 **Yongxiang Li** AMEC

Li-Al-B-Si-O Glass and β-Al_2O_3 Composite Materials for LTCC-Silicon Heterogeneous Integration Applications

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30pm-P140 **Bin Tang** AMEC

Improvement of Microwave Dielectric Characteristics in $Li_2Zn_3Ti_4O_{12}$ Ceramics by Ca-Substitution

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30pm-P141 **Bin Tang** AMEC

Dependence of Microwave Dielectric Properties on Cr Substitution in $Ba_{3.75}Nd_{9.5}Ti_{18}O_{54}$ Ceramic

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30pm-P142 **Bin Tang** AMEC

Relationships between Sn Substitution for Ti and Microwave Dielectric Properties of $(Co_{0.3}Zn_{0.7})(Ti_{1-x}Sn_x)Nb_2O_8$ Ceramics Sy

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30pm-P143 **Bin Tang** AMEC

Microwave Dielectric Properties of $Ca_{0.35}Li_{0.25}Nd_{0.35}Ti_{1-x}(Zn_{1/3}Ta_{2/3})_xO_3$ Ceramics

B. Tang[1*], Y. Ying[1], C. W. Zhong[1] and S. R. Zhang[1]
[1]State Key Laboratory of Electronic Thin Films and Integrated Devices, University of electronic Science and Technology of China, China

30pm-P144 **Jie Zhang** AMEC

Defect-Property Correlation of Typical Ti-Containing Microwave Dielectrics: a Case Study of Thermally Stimulated Depolarizat Current

J. Zhang*, Z. Yue and L. Li
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, P. R. China

30pm-P145 **Sudarat Sitthichai** AMEC

Synthesis, Characterization and Photocatalysis of Fe_2NiO_4 Magnetic Nanoparticles

S. Sitthichai[1*], S. Thongtem[1,3] and T. Thongtem[2,3]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand
[3]Materials Science Research Center, Faculty of Science, Chiang Mai University, Thailand

30pm-P146 **Congkang Hu** AMEC

The Luminescent Behavior of the Nitrided $Ba_9Y_2Si_6O_{24}$: Eu^{2+} Phosphors

C. Hu[1*], B. Peng[1], B. Liu[1] and K. Song[1]
[1]College of electronic information and engineering, Hangzhou Dianzi University, China

30pm-P147 **Xiao Yang Chen** AMEC

Thickness Dependence of Intrinsic Dielectric Response and Apparent Interfacial Capacitance in Multilayer Ferroelectric Thin Fi

X. Y. Chen, Y. Zhang, K. Huang, Z. Wang and P. Yu*
College of Materials Science and Engineering, Sichuan University, China

30pm-P148 **Ming Wang** AMEC

Size Effect of Fracture Behaviour of Nano-Al/Si_3N_4 Multilayer Under Three Points Bending

M. Wang[1*], D. Wang[2] and P. Schaaf[2]
[1]School of Materials Science and Engineering, Liaoning Technical University, China
[2]Materials for Electronics, Institute of Materials Engineering and Institute of Micro-and Nanotechnologies MacroNanos, TU Ilmenau, Germany

30pm-P149 **Xin-Gui Tang** AMEC

Effect of Grain Size on the Dielectric Relaxation and Tunabilities of $(Ba,Sr)(Zr,Ti)O_3$ Relaxor Ferroelectric Ceramics

X.-G. Tang[1*], L.-L. Jiang[2], H.-F. Xiong[1] and Q.-X. Liu[1]
[1]School of Physics and Optoelectric Engineering, Guangdong University of Technology, China
[2]Laboratory Teaching Center, Guangdong University of Technology, China

30pm-P151 **Yu-Chuan Wu** AMEC

Effect of Grain Size on the Electrical Conductivity and AC Impedance of $La_{0.85}Sr_{0.15}Ga_{0.8}Mg_{0.2}O_{3-\delta}$-YSZ Solid Electrolytes

Y.-C. Wu* and I-T. Heish
Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan

30pm-P152 **Yu-Cheng Chang** AMEC

Complex ZnO and Graphene Nanocomposites with High Performance Photocatalysts under UV and Visible Light Irradiation

Y.-C. Chang*, C.-C. Hsu and Y.-C. Liu
Department of Materials Science and Engineering, Feng Chia University, Taiwan

30pm-P153 **Uraiwan Intatha** AMEC

The Electrochemical Performance of $SnPO_4$ with Yolk-shell and Core-shell of $LiNi_{0.75}Mn_{0.15}Co_{0.1}O_2$ for Lithium-Ion Battery Application

J. Kanthachan[1], S. Eitssayeam[2] and U. Intatha[1,3*]
[1]School of Science, Mae Fah Luang University, Thailand,
[2]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand,
[3]Materials for Energy and Environment Research Group, Mae Fah Luang University, Thailand,

30pm-P154 **Weerachon Phoohinkong** AMEC

Manganese Oxide Embedded Carbon Nanocomposite Synthesized by Direct Carbonization for Supercapacitor Electrodes

W. Phoohinkong[1], T. Sukonket[1] and W. Pecharapa[2]
[1]Faculty of Science and Technology, Suan Dusit University, Thailand,
[2]College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, Thailand,

30pm-P155 **Jirapan Sintusiri** AMEC

Cement-Based Nanogenerator for Mechanical Energy Harvesting

J. Sintusiri [1] and V. Harnchana[1*]
[1]Department of Physics, Faculty of Science, Khon Kaen University, Thailand

30pm-P156 **Xiucai Wang** AMEC

Dielectric and Energy-Storage Performance of PLZST Antiferroelectric Ceramics

X. Wang[1,3], T. Yang[3], J. Chen[1], X. Yu[1], Y. Jiang[1], W. Zhu[2], Y. Fan[1], Z. Duan[1] and F. Yang[1]
[1]School of Electronic and Information Engineering, Foshan University, China
[2]School of Automation, Foshan University, China
[3]College of Materials Science and Engineering, Tongji university, China

30pm-P157 **Narumon Lertcumfu** AMEC

Properties of Graphene/ Kaolin-Based Geopolymer Ceramic Composites for Adsorption Material Applications

N. Lertcumfu[1], P. Jaita[1], C. Randorn[2], T. Tunkasiri[1] and G. Rajijanagul[1*]
[1]Department of Physics and Materials science, Faculty of Science, Chiang Mai University, Thailand
[2]Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand

30pm-P158 **Tian Tian** AMEC

Defect Engineering for a Markedly Increased Electrical Conductivityand Power Factor in Doped ZnO Ceramic

T. Tian[1], L. H. Cheng[1], L. Y. Zheng,[1], J. J. Xing,[2*], H. Gu[2], S. Bernik[3], H. R. Zeng,[1], W. Ruan[1] K. Zhao[1] and G.R. Li,[1*]
[1]Key Laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
[2]School of Materials Science and Engineering, Materials Genome Institute, Shanghai University, China
[3]Department for Nanostructured Materials, Jozef Stefan Institute, Slovenia

30pm-P159 **Po-Chun Chen** AMEC

Preparation and Characterization of CZTS Thin Film Using Pulsed Laser Deposition

C.-Y. Su[1*], T.-W. Kuo[1], P.-C. Lin[2] and P.-C. Chen[2,3]
[1]Institute of Mechatronic Engineering, University of Taipei University of Technology, Taiwan
[2]Institute of Materials Science and Engineering, University of Taipei University of Technology, Taiwan
[3]Department of Materials and Mineral Resources Engineering, University of Taipei University of Technology, Taiwan

30pm-P160 **Shintaro Yasui** AMEC

Super High-Speed Chargeable Lithium Ion Thin Film Battery

S. Yasuhara[1*], S. Yasui[1], Y. Yoshikawa[2], T. Teranishi[2], T. Taniyama,[1]and M. Itoh[1]
[1]Laboratory for Materials and Structures, Tokyo Institute of Technology, Japan
[2]Graduate School of Natural Science and Technology, Okayama University, Japan

30pm-P161 **Yung-Chin Yang** AMEC

Graphene Modified Microtube Array Membrane as Anode Application in the Microbial Fuel Cell

N.Y. Lee[1], C.C. Chen[2], K.S. Chen[3] and Y.C. Yang,[1,*]
[1]Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan
[2]School of Biomedical Engineering, College of Biomedicial Engineeing, Taipei Medical University, Taiwan
[3]Department of Materials Engineering, Tatung University, Taiwan

30pm-P162 **Suchittra Inthong** AMEC

The Physical, Mechanical and Bioactivity Properties of HA-CZ nanocomposites

S. Inthong[1], U. Intatha[2], T. Tunkasiri[1], K. Pengpat[1] and S. Eitssayeam[1*]
[1]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[2]School of Science Mae Fah Luang University, Thailand

30pm-P163 **Wilaiwan Leenakul** AMEC

Crystallization Kinetic and Phase Formation Studies of Ferro/ferrimagnetic Nano-Crystals in Bioactive Glasses by Modified Incorporation Method

W. Leenakul
Division of Industrial Materials Science, Faculty of Science and Technology, Rajamangala University of Technology Phra Nakhon, Thailand

30pm-P164 **Nicha Sato** AMEC

Effects of Solid Loadings and Silica Addition on Microstructure and Ccompressive Strength of Hydroxyapatite Specimens Fabricated by Freeze Casting Technique

O. Jongprateep[1*], N. Wattana[1], N. Sato[1] and P.T. Kien[2]
[1]Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand.
[2]Faculty of Materials Technology, Ho Chi Minh City University of Technology, Vietnam

30pm-P165 **Chenglong Li** AMEC

Preparation and Properties of Porous Sr Doped Hydroxyapatite/Barium Titanate Nanocomposite Materials

C. Li, Y. Pu*, B. Wang and G. Shen
School of Materials Science and Engineering, Shaanxi University of Science and Technology, China

30pm-P166 **Nuttapon Pisitpipathsin** AMEC

Calcium-Phosphate Formation on the Polarized Surface of Hydroxyapatite: $Ba_{0.97}Ca_{0.03}Zr_{0.04}Ti_{0.96}$ Composites

P. Kantha[1], P. Jaiban[2], K. Pengpat[3], M. Unruan[4], T. Tunkasiri[3], R. Guo[5], A.S. Bhalla[5], J. Ruangsuriya[6] and N. Pisitpipathsin[4,*]
[1]Division of Physics, Faculty of Science and Technology, Rajamangala University of Technology Thanyaburi, Thailand
[2]Faculty of Science, Energy and Environment, King Mongkut's University of Technology North Bangkok, Thailand
[3]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Thailand
[4]Department of Applied Physics, Faculty of Sciences and Liberal Arts, Rajamangala University of Technology Isan, Thailand
[5]Department of Electrical and Computer Engineering, College of Engineering, University of Texas at San Antonio (UTSA), USA
[6]Department of Biochemistry, Faculty of Medicine, Chiang Mai University, Thailand

19:30 - 21:30 **Banquet Party** Grand Prince Hotel

Thursday, May 31, 2018

A B C D E F G H I J

Plenary session
Hall A 09:00 - 09:45
Session chair: Sea-Fue Wang

09:00 **Plenary5** **Yanfeng Chen** Plenary Talk AMEC

Engineering Ferroelectrics with Artificial Microstructures to Realize Sound Effects

Y.-F. Chen[1,2*], S. Zhang[1,2], M.-H. Lu and S. Yu[1]
[1]National Laboratory of Solid State Microstructures & Deprtment of Materials Science and Engineering, Nanjing University, China
[2]Collaborative Innovation Center of Advnced Microstructures, Nanjing University, China

Oral session: New research direction of piezoelectrics
Hall A 10:00 - 11:15
Session chair: Jürgen Rödel

10:00 **31am-A01** **Otmar Deubzer** Invited Talk FMA

RoHS: Exemptions for Lead in Ceramics - Status and Prospects

O. Deubzer
Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (IZM), Abt. Environmental and Reliability Engineering, Germany

10:30 **31am-A02** **Geoff Brennecka** Invited Talk ISAF

Computationally-Guided Development of Improved Nitride Piezoelectrics

K. R. Talley[1,2], S. Manna[3], Y. Chen[1], S. R. Likith[3], A. Zakutayev[2,1], V. Stevanovic[1,2], C. Packard[1,2], C. Ciobanu[3] and G. L. Brennecka[1*]
[1]Metallurgical & Materials Eng., Colorado School of Mines, USA
[2]National Renewable Energy Laboratory, USA
[3]Mechanical Engineering, Colorado School of Mines, USA

11:00 **31am-A03** **Wataru Sakamoto** FMA

Processing and Properties of Lead-Free Piezoelectric $(Ba,Ca)(Ti,Sn)O_3$ Ceramics Under Controlled Low Oxygen Partial Pressur

W. Sakamoto[1*], K. Noritake[2], I. Yuitoo[3], T. Takeuchi[3], K. Hayashi[2] and T. Yogo[2]
[1]Department of Applied Chemistry, College of Engineering, Chubu University, Japan
[2]Institute of Materials and Systems for Sustainability, Nagoya University, Japan,
[3]Research Organization for Nano and Life Innovation, Waseda University, Japan

Oral session: Energy harvesters
Hall A 11:30 - 12:30
Session chair: Takeshi Yoshimura

11:30 **31am-A04** **Shashank Priya** Invited Talk IFAAI

Ubiquitous Power Source for IoT

S. Priya and J. Ryu
Functional Ceramics Group and §Materials Modeling and Characterization Department, Korea Institute of Materials Science (KIMS), Korea

12:00 **31am-A05** **Matthias Radecker** Invited Talk ISAF

Energy Harvesting and Conversion Applications of Piezoelectric Transformer and Transducer MEMS

M. Radecker
Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration, Germany

Oral session: Domains, interfaces, and nanostructures
Hall A 14:00 - 16:00
Session chair:

14:00 **31pm-A01** **Hugh Simons** Invited Talk ISAF

Quantitative Real-Time Imaging of Phase Transformations and Domain Dynamics

H. Simons*
Department of Physics, Technical University of Denmark, Denmark

14:30 **31pm-A02** **Nicholas Barrett** Invited Talk ISAF

Domain and Domain Wall Imaging at Ferroic Surfaces Using Photoemission and Low Energy Electron Microscopy

N. Barrett
SPEC, CEA, CNRS, Université Paris-Saclay, France

15:00 **31pm-A03** **Olle Heinonen** Invited Talk ISAF

Ferroelectric Polarization Textures in Nanostructured Systems

O. Heinonen[1*], J.Mangeri[2] and S. Nakhmanson[3]
[1]Materials Science Division, Argonne National Laboratory, USA,
[2]Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic,
[3]Department of Materials Science and Engineering, University of Connecticut, USA

15:30 **31pm-A04** **Andrew Rappe** Invited Talk ISAF

New Opportunities at Ferroelectric Surfaces and Interfaces

A. M. Rappe
[1]Department of Chemistry, University of Pennsylvania, USA

Oral session: Thin film applications
Room B 10:00 - 11:00
Session chair: Minoru Noda

10:00 **31am-B01** **Jianhua Hao** Invited Talk AMEC

Application of Ferroelectric Materials to Graphene Heterostructures for High Performance Electronic Devices

J. Hao
Department of Applied Physics, The Hong Kong Polytechnic University, Chaina

10:30 **31am-B02** **Wei Zhang** ISAF

Direct Observations of Grains with Crystal Orientations of Ferroelectric Films in Pt/CSBT/HAO/Si FeFETs

W. Zhang[1,2], M. Takahashi[1*] and S. Sakai[1]
[1]National Institute of Advanced Industrial Science and Technology, Japan
[2]WACOM R&D Corporation, Japan

10:45 **31am-B03** **Kiyoshi Uchiyama** FMA

Fabrication of High-k $SrTa_2O_6$ Thin Films by RF Magnetron Sputtering for Low Voltage Operating Thin-Film Transistor Applications

T. Takahashi[1,2], T. Hoga[1], R. Miyanaga[2], M. N. Fujii[2], Y. Ishikawa[2], Y. Uraoka[2] and K. Uchiyama[1]
[1]National Institute of Technology, Tsuruoka College, Japan,
[2]Nara Institute of Science and Technology (NAIST), Japan

Oral session: Thin film applications
Room B 11:15 - 12:30
Session chair: Jiyan Dai

11:15 **31am-B04** **Meng-Fu Tsai** FMA

Flexible Nonvolatile Transistor Based on Aluminum-Doped ZnO/ $Pb(Zr_{0.7}Ti_{0.3})O_3$ Heteroepitaxial Structure

M.-F. Tsai[1*], J. Jiang[2],Y.-H. Chu[1,3,4]
[1]Department of Materials Science and Engineering, National Chiao Tung University, Taiwan
[2]Key Laboratory of Low Dimensional Materials and Application Technology of Ministry of Education, China
[3]Department of Electrophysics, National Chiao Tung University, Taiwan

11:30 **31am-B05** **Reshan Abeysinghe** FMA

HDD Type High Speed Data Readout Demonstrations in Ferroelectric Data Storage Using $Pb(Zr,Ti)O_3$ Recording Medium

R. M. Abeysinghe*, Y. Hiranaga and Y. Cho
Research Institute of Electrical Communication (RIEC), Tohoku University, Japan

11:45 **31am-B06** **Ahmed Elamir** AMEC

Optimization and Reliability of Schottky and Ohmic Contacts for Mg_2Si-Based Photodetectors

A. El-Amir[1,2,4*], T. Ohsawa[1], A. Ohi[1], K. Shimamura[1,2] and N. Ohashi[1,3]
[1]National Institute for Materials Science, Japan
[2]Waseda University, Japan
[3]Tokyo Institute of Technology, Japan
[4]Central Metallurgical R&D Institute, Egypt

12:00 **31am-B07** **Jakrapong Kaewkhao** Invited Talk IFAAI

Ln^{3+} Doped Glass for Radiation Detection Material

J. Kaewkhao
Center of Excellence in Glass Technology and Materials Science (CEGM), Nakhon Pathom Rajabhat University, Thailand

Oral session: Energy storage capacitors
Room B 14:30 - 16:00
Session chair: Roger Whatmore & Kazumi Kaneda

14:30 **31pm-B02** **Balu Balachandran** Invited Talk IFAAI

Development of PLZT-Based Capacitors for Electric Vehicle Inverters

U. (Balu) Balachandran*, B. Ma, T.H. Lee and S.E. Dorris*
Energy Systems Division, Argonne National Laboratory, U.S.A.

15:00 **31pm-B03** **Min Zeng** AMF

Internal-Stress Release and Remarkably Enhanced Energy Storage Performance in Antiferroelectric-Paraelectric Multilayers

M. Zeng[1*], C. Liu[1], A.H. Zhang[1], X.S. Gao[1] and J.-M. Liu[1,2]
[1]Institute for Advanced Materials, South China Academy of Advanced Optoelectronics, South China Normal University, China,
[2]Laboratory of Solid State Microstructures and Innovation Center of Advanced Microstructures, Nanjing University, China

15:15 **31pm-B04** **Ajeet Kumar** ISAF

Confirmation of Diffuse Phase Transition and Ultra High Electrical Properties in PLZT Ceramics Suitable for Device Applicatio

A. Kumar[1*], A. R. James[2] and K. C. James Raju[1]
[1]School of Physics, University of Hyderabad, India
[2]Ceramics and Composites Group, Defence Metallurgical Research Laboratory, India

15:30 **31pm-B05** **Ye Tian** ISAF

Phase Transitions in Silver Niobate Ceramics Based for High Power Energy Storage

Y. Tian[1,2], L. Jin[1], H. Zhang[2], Z. Xu[1], X. Wei[1], G. Viola[2,4], I. Abrahams[3] and H. Yan[2]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China.
[2]School of Engineering and Materials Science, Queen Mary University of London, UK
[3]School of Biological and Chemical Sciences, Queen Mary University of London, UK
[4]Department of Applied Science and Technology, Institute of Materials Physics and Engineering, Italy

15:45 **31pm-B06** **Zhongna Yan** AMF

Silver Niobate Based Lead-Free Antiferroelectric Ceramics with High Electrical Energy Storage Performance

Z.Yan, K. Zhao and D. Zhang*
State Key Laboratory of Powder Metallurgy, Central South University, China

Oral session: Domains, interfaces, and nanostructures
Room C 10:00 - 11:00
Session chair: Olle Heinonen

10:00 **31am-C01** **Tatyana Volk** Invited Talk IFAAI

Electron-Beam Domain Engineering in $LiNbO_3$ and Related Crystals

T. R. Volk,[1*], L. S. Kokhanchik[2], R. V. Gainutdinov[1], Y. V. Bodnarchuk[1] and S. D. Lavrov[3]
[1]Shubnikov Institute of Crystallography of FSRC "Crystallography and Photonics" of RussianAcademy of Sciences, Russia
[2]Institute of Microelectronics Technology and High Purity Materials of the Russian Academy of Sciences, Russia
[3]Moscow State University of Information Technologies, Radioengineering and Electronics(MIREA), Russia

10:30 **31am-C02** **Yoshiomi Hiranaga** FMA

Local Permittivity Measurement Using ∂C/∂z-Mode Scanning Nonlinear Dielectric Microscopy

Y. Hiranaga and Y. Cho
Research Institute of Electrical Communication, Tohoku University, Japan

10:45 **31am-C03** **Cheng Hongbo** FMA

Domain-Engineered Ferroelectric Films for High Performance Energy Storage

H. Cheng[1,2*], F. Hu[1,3], W. Zhang[1,3] and J. Ouyang[2]
[1]College of Electronic and Optical Engineering, Nanjing University of Posts and Telecommunications, China
[2]Key Laboratory for Liquid-Solid Structure Evolution and Processing of Materials, School of Materials Science and Engineering, Shandong University, China
[3]Peter Grunberg Research Center, Nanjing University of Posts and Telecommunications, China

Oral session: Domains, interfaces, and nanostructures
Room C 11:15 - 12:30
Session chair: Tatyana Volk

11:15 **31am-C04** **Lukas M. Eng** Invited Talk ISAF

Nanoscale Topologies in Ferroics - Domains & Domain Walls

L. M. Eng[1,2]
[1]1TU Dresden, Faculty of Physics, Institute of Applied Physics, Germany
[2]cfaed - Center for Advancing Electronics Dresden, TU Dresden, Germany

11:45 **31am-C05** **Vladimir Shur** ISAF

Domain Structure Evolution and Wall Classification in KTP Single Crystals

V.Y. Shur[1*], E.M. Vaskina[1], M.A. Chuvakova[1], E.V. Pelegova[1], A.A. Esin[1], M.A. Alam[1,2], E.A. Gachegova[1] and A.R. Akhmatkhanov[1]
[1]School of Natural Sciences and Mathematics, Ural Federal University, Russia,
[2]Center for Nanoscience & Nanotechnology, Jamia Millia Islamia University, India

12:00 **31am-C06** **Yu-Jia Wang** AMF

Large Scale 2D Flux-Closure Domain Arrays in Oxide Multilayers and Their Controlled Growth

Y. Liu[1], Y.-J. Wang[1], Y.-L. Zhu[1*], C.-H. Lei[2], Y.-L. Tang[1], S. Li[1], S.-R. Zhang[1], J. Li[3,4] and X.-L. Ma[1,5*]
[1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China
[2]Department of Aerospace and Mechanical Engineering, Saint Louis University, USA
[3]Shenzhen Key Laboratory of Nanobiomechanics, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China
[4]Department of Mechanical Engineering, University of Washington, USA,
[5]School of Materials Science and Engineering, Lanzhou University of Technology, China

12:15 **31am-C07** **Hiroko Yokota** ISAF

Observations of Polar Domain Boundary in Ferroelastics

H. Yokota* and S. Matsumoto
Physics Department, Chiba University, Japan

Oral session: Energy harvesting
Room C 14:00 - 16:00
Session chair: Shashank Priya

14:00 **31pm-C01** **Jari Juuti** Invited Talk ISAF

Where We Are Heading: Recent Advances in Kinetic Energy Harvesters

J. Juuti, Y. Bai, J. Palosaari, M. Leinonen, J. Hannu and H. Jantunen
Microelectronics Research Unit, University of Oulu, Finland

14:30 **31pm-C02** **Susan Trolier-McKinstry** Invited Talk IFAAI

PZT-Based Piezoelectric Energy Harvesters on Metal Foils

H. G. Yeo[1], D. Wang[1], T. Xue[2], S. Roundy[2] and S. Trolier-McKinstry[1]
[1]Department of Materials Science and Engineering, The Pennsylvania State University, USA
[2]Department of Mechanical Engineering, University of Utah, USA

15:00 **31pm-C03** **Shuichi Murakami** FMA

Characterization of Piezoelectric MEMS Vibration Energy Harvesters Using Random Vibration

S. Murakami[1*], T. Yoshimura[2], Y. Kanaoka[1], K. Tsuda[1], K. Satoh[1], K. Kanda[3] and N. Fujimura [2]
[1]Osaka Research Institute of Industrial Science and Technology, Japan
[2]Graduate School of Engineering, Osaka Prefecture University, Japan
[3]Graduate School of Engineering, University of Hyogo, Japan

15:15 **31pm-C04** **Toshihito Umegaki** FMA

Numerical Designs of Thin-Film-Formed Piezoelectric Vibration Energy Harvesters

T. Umegaki,* T. Ito, T. Nishi, G. Tan and I. Kanno
Mechanical Engineering, Kobe University, Japan

15:30 **31pm-C05** **Paul Muralt** Invited Talk ISAF

Properties of Interdigitated Electrodes Capacitors with Ferroelectric PZT Thin Films in View of Applications for Energy Harves

R. Nigon[1], C.H. Nguyen[2], T.M. Raeder[1], U. Hanke[2], E. Halverson[2] and P. Muralt[1]
[1]Electroceramic Thin Films Group, EPFL SCI-STI-PM, Switzerland,
[2]Department of Microsystems, University College of Southeast Norway, Norway.

Oral session: Relaxor ferroelectrics
Room D 10:00 - 11:15
Session chair: Hiroaki Takeda

10:00 **31am-D01** **Thomas R. Shrout** Invited Talk ISAF

Recent Developments in Relaxor-PT Piezoelectric Ceramics and Crystals

T. R. Shrout[1], F. Li[1], S. Zhang[2], D. Lin[1] and J. Luo[3]
[1]Materials Research Institute, The Pennsylvania State University, USA
[2]University of Wollongong, Australia
[3]TRS Technologies, Inc., USA

10:30 **31am-D02** **Kyle Webber** Invited Talk IFAAI

Rate-Dependence of the Stress-Induced Relaxor-Ferroelectric Transition in Lead-Free Ferroelectrics

K.G. Webber[1*], A. Martin[1], A. Ayrikyan[1], D. Chen[2] and M. Kamlah [2]
[1]Department of Materials Science and Engineering, Friedrich-Alexander-Universität Erlangen- Nürnberg, Germany
[2]Institute for Applied Materials, Karlsruhe Institute of Technology, Germany

11:00 **31am-D03** **Hyoung-Su Han** ISAF

Stabilization of the Relaxor Phase by Adding CuO in Lead-Free $(Bi_{1/2}Na_{1/2})TiO_3$-$SrTiO_3$-$BiFeO_3$ Ceramics

H.-S. Han[1*], T. A. Duong[1], T. H. Dinh[1], C. W. Ahn[2] and J.-S. Lee[1]
[1]Materials Science and Engineering, University of Ulsan, South Korea
[2]Department of Physics, University of Ulsan, South Korea

Oral session: Relaxor ferroelectrics
Room D 11:30 - 12:30
Session chair: Thomas R. Shrout

11:30 **31am-D04** **Elena Buixaderas** Invited Talk IFAAI

Beauty and the Beast: Ferroelectricity and Relaxor Behaviour in Uniaxial Tungsten-Bronzes

E. Buixaderas[1,*], J. Dec[2] and J. Hlinka[1]
[1]Department of Dielectrics, Institute of Physics, Czech Academy of Sciences, Czech Republic
[2]University of Silesia, Institute of Materials Sciences, Poland

12:00 **31am-D05** **Nitish Kumar** ISAF

Fatigue Mechanisms in Bismuth-based Relaxor Ceramics

N. Kumar[1*], X. Shi[1] and M. Hoffman[1]
[1]Materials Science and Engineering, University of New South Wales, Australia

12:15 **31am-D06** **Xuefan Zhou** AMF

Electrical Properties and Relaxor Phase Evolution of Nb Modified $Bi_{0.5}Na_{0.5}TiO_3$-$Bi_{0.5}K_{0.5}TiO_3$-$SrTiO_3$ Lead-Free Ceramics

X. Zhou*, Z. Yan, H. Luo and D. Zhang
State key Laboratory of Powder Metallurgy, Central South University, China

Oral session: Resistive switching, ReRAM, memristors
Room D 14:00 - 16:00
Session chair: Kiyoshi Uchiyama

14:00 **31pm-D01** **Jiyan Dai** Invited Talk AMEC

Strain-Taunable Electroresistance in Ferroelectric Tunnel Junction

H.-M. Yau, X. Chen and J.-Y. Dai
Department of Applied Physics, The Hong Kong Polytechnic University, China

14:30 **31pm-D02** **Tseung-Yuen Tseng** Invited Talk AMEC

Fabrication, Properties, and Switching Mechanism of Conducting-Bridge Random Access Memory

T.-Y. Tseng
Department of Electronic Engineeering, National Chiao Tung University, Taiwan

15:00 **31pm-D03** **Chuljun Lee** FMA

Resistive Switching Characteristic of Aerosol Deposition Method Based Conductive Bridge Random Access Memory

C. Lee*, M.-Y. Cho, J.-M. Oh, S.-M. Koo and D. Lee
Department of Electronic Materials Engineering, Kwangwoon University, Republic of Korea

15:15 **31pm-D04** **Minoru Noda** ISAF

Control of Leakage Current through $BaTiO_3$ Film by Cumulative Cycle of Applied Voltage Scanning for ReRAM or Neuromorp Application

S. Maejima, M. Uchida and M. Noda*
Electronics, Kyoto Institute of Technology, Japan

15:30 **31pm-D05** **Ni Zhong** ISAF

Implementation of Synaptic Functions in Ferroelectric Memristors Based on Nickelate Electrodes

N. Zhong*, P. H. Xiang, B. B. Tian and C. G. Duan
Key Laboratory of Polar Materials and Devices, Ministry of Education, Department of Electronic Engineering, East China Normal University, China

15:45 **31pm-D06** **Hui Zhu** ISAF

A Current Transient Method for Trap Analysis in Resistive Switching Effect of $BiFeO_3$ Thin Films

H. Zhu*, Y. Yang, X. Meng, X. Zheng, L. Jin, S. Feng, Y. Zhang and C. Guo
Faculty of Information Technology, School of Microelectronics, Beijing University of Technology, People's Republic of China

Oral session: PMN-PT and MPB related characteristics
Room E 10:00 - 11:15
Session chair: Shujun Zhang

10:00 **31am-E01** **Changhao Zhao** ISAF

Intrinsic and Extrinsic Contributions to the Electrostrain of $PbZr_xTi_{1-x}O_3$ across the Morphotropic Phase Boundary

C. Zhao[1*], D. Hou[2], C. C. Chung[2], H. Zhou[2], A. Kynast[3], E. Hennig[3], W. Liu[1], J. L. Jones[2] and S. Li[1,*]
[1]State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, P. R. China
[2]Department of Materials Science and Engineering, North Carolina State University, USA
[3]PI Ceramic GmbH, Lindenstraße, Germany

10:15 **31am-E02** **Luo Zhao** AMF

Electrostrain Enhancement at an "invisible Boundary" in a Single Ferroelectric Phase

L. Zhao[1,2*], X. Ke[1] and X. Ren[1,2]
[1]Multidisciplinary Materials Center, Frontier Institute of Science and Technology, Xi'an Jiaotong University, China
[2]National Institute for Materials Science, Japan

10:30 **31am-E03** **Juras Banys** ISAF

Dielectric Investigation of $0.83PbMg_{1/3}Nb_{2/3}O_3$-$0.17PbTiO_3$ Single Crystals

Š. Svirskas[1], D. Jablonskas[1], J. Banys[1*] and S. Kojima[2]
[1]Faculty of Physics, Vilnius University, Lithuania,
[2]Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan

10:45 **31am-E04** **Maksim Ivanov** ISAF

Broadband Dielectric Properties of PMN-10PT Ceramics: Relaxations, Non-Linearities and Domains

R. Katiliūte[1], M. Ivanov[1*], M. Vrabelj[2], L. Fulanovic[2,3], A. Bradeško[2,3], Z. Kutnjak[2,3], J. Banys[1] and B. Malič[2,3]
[1]Faculty of Physics, Vilnius University, Lithuania
[2]Jožef Stefan Institute, Slovenia
[3]Jožef Stefan International Postgraduate School, Slovenia

11:00 **31am-E05** **Yasuhiro Fujii** FMA

Polarization-Angle-Dependent Raman Spectroscopy on PMN-PT

Y. Fujii*, K. Abe and A. Koreeda
Dept. of Phys. Sci., Ritsumeikan Univ., Japan

Oral session: Material design for novel ferroelectric properties
Room E 11:30 - 12:00
Session chair: Rintaro Aoyagi

11:30 **31am-E06** **Alexander Martin** ISAF

Stress-Induced Tetragonal-to-Orthorhombic Phase Transition in Lead-Free NKN-Based Materials and the Implications for Futur Material Design

A. Martin[1*], H. Nishiyama[2], K. Kakimoto[2], K. Hatano[3], Y. Doshida[3] and K. G. Webber[1]
[1]Department of Materials Science and Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
[2]Frontier Research Institute for Materials Science, Nagoya Institute of Technology, Japan
[3]Materials R&D Department, R&D Laboratory, TAIYO YUDEN CO., LTD., Japan

11:45 **31am-E07** **Per Martin Rorvik** ISAF

Electrospinning of $Ba_{0.85}Ca_{0.15}Zr_{0.10}Ti_{0.90}O_3$ Nanofibers for Flexible Nanogenerators

M. Grandcolas, C. Denonville, T. O. Sunde and P. M. Rørvik*
SINTEF, Norway

Oral session: Novel synthesis, textured, hetero-structured materials
Room E 14:00 - 15:00

Session chair: Wataru Sakamoto

14:00 **31pm-E01** **Sarawut Thountom** AMEC

Synthesis and Characterization of $Bi_{0.5}(Na_{1-x}K_x)_{0.5}TiO_3$ Powders by Sol-Gel Combustion Method with Glycine Fuel

M. Sriondee[1,2,3*], W. Dungsuwan[1,2] and S. Thountom[1,2]
[1]Department of Physics, Naresuan University, Thailand
[2]Research Center for Acadamic Excellence in Applied Physics, Naresuan University, Thailand
[3]Nanoscience and nanotechnology graduated program, Faculty of Science, King Mongkut's University of Technology Thonburi, Thailand

14:15 **31pm-E02** **Weixing Zhao** AMF

Synthesis of 2D $Ba_{1-x}(Bi_{0.5}Na_{0.5})_xTiO_3$ Mesocrystals via Solvothermal Soft Chemical Processes

W. Zhao[1,2*], W. Zhang[1], D. Hu[2] and Q. Feng[1]
[1]Department of Advanced Materials Science, Faculty of Engineering, Kagawa University, Japan
[2]College of Chemistry and Chemical Engineering, Baoji University of Arts and Science, PR China

14:30 **31pm-E03** **Zhaohui Ren**

Polarization Screening and Thermal Expansion of Mesoporous Single-Crystal Ferroelectric Nanofibers

Z. Ren*, R. Zhao and G. Han
State Key Laboratory of Silicon Materials and School of Materials Science & Engineering, Zhejiang University, China

14:45 **31pm-E04** **Kongjun Zhu** FMA

Preparation and Properties of the $BaTiO_3$ Nanofibers/ P(VDF-HFP) Polymer Composites Film

K. Zhu[1*], X. Nie[1,2], J. Wang[1], J. Liu[2], K. Yan[1] and J. Qiu[1]
[1]State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics and Astronautics, China
[2]College of Materials Science and Engineering , Nanjing University of Aeronautics and Astronautics, China

Oral session: Electrostrictive materials
Room E 15:00 - 16:00
Session chair: Hana Ursic

15:00 **31pm-E05** **Jinrong Cheng** Invited Talk IFAAI

Investigation of Ferroelectric and Ferromagnetic MPBs of Modified $BiFeO_3$-$PbTiO_3$ Solid Solutions

J. Cheng, S. Shen, F. Luo and J. Chen*
School of Materials Science and Engineering, Shanghai University, China

15:30 **31pm-E06** **Hiroshi Maiwa** FMA

Polarization Reversal and Memory Effects in Anti-Ferroelectric $PbZrO_3$ Thin Films

H. Maiwa
Department of Materials and Human Environmental Sciences, Shonan Institute of Technology, Japan

15:45 **31pm-E07** **Juan Muñoz-Saldaña** ISAF

Relationship between Composition and Ferro/Piezoelectric Effects of BNT-BKT-BT System Design of Mixtures in the Transitio Zone

D.A. Fernandez-Benavides, A.I. Guitierrez-Pérez and J. Muñoz-Saldaña*
>Centro de Investigación y de Estudios Avanzados del IPN, México

Oral session: Fundamentals and thin films
Room F 10:00 - 11:15
Session chair: Bryan D. Huey

10:00 **31am-F01** **Ji Young Jo** Invited Talk AMF

In Situ Observation of Atomic Movement in Ferroelectric Film Under External Electric Field and Stress

H. J. Lee[1], E.-J. Guo[2,3], T. Min[4], S. H. Hwang[1], S. Y. Lee[5], K. Dörr[3], J. Lee[4] and J. Y. Jo[1*]
[1]School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Korea
[2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, USA
[3]Institute for Physics, Martin-Luther-University, Germany

10:30 **31am-F02** **Wei Ren** Invited Talk IFAAI

Domain Investigation in Lead-free $Bi_{0.5}Na_{0.5}TiO_3$ Based Thin Films and Ceramics by Piezoresponse Force Microscope

W. Ren[1*], J. Zhao[1,2], G. Niu[1], N. Zhang[1], L. Wang[1], P. Shi[1], M. Liu[1] and Z.-G. Ye[1,2]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, China
[2]Department of Chemistry and 4D LABS, Simon Fraser University, Canada

11:00 **31am-F03** **Anirban Ghosh** ISAF

Non-Ergodic and Dipole-Glass-Like Behaviour in $PbTiO_3/SrTiO_3$ Superlattices: A Jamming Phase Transition in Ferroelectrics?

A. Ghosh[1*], S. Das[1], H. Zhou[3], F. Kargar[4], D. A. Tenne[5], D. Fong[3], S. L. Hsu[1], Y. L. Tang[2], M. R. McCarter[6], A. Balandin[4], R. Ramesh[1,2] and L. W. Martin[1,2]
[1]Department of Materials Science and Engineering, University of California, USA
[2]Materials Sciences Division, Lawrence Berkeley National Laboratory, USA
[3]Materials Science Division, Argonne National Laboratory, USA
[4]Department of Electrical and Computer Engineering, Phonon Optimized Engineered Materials (POEM) Center and Nano-Device Laboratory (NDL), University of Califo
USA
[5]Department of Physics, Boise State University, USA
[6]Department Physics, University of California, USA

Oral session: Fundamentals and thin films
Room F 11:30 - 12:30
Session chair: Shinya Yoshida

11:15 **31am-F04** **Kok-Geng Lim** AMF

The Hysteretic Behaviors of Polarization and Internal Electric Field in $BaTiO_3/Ba_{0.65}Sr_{0.35}TiO_3$ Superlattices

K.-G. Lim[1*] and K.-H. Chew[2]
[1]University of Southampton Malaysia Campus, Malaysia
[2]Center for Theoretical Physics, Department of Physics, University of Malaya, Malaysia

11:30 **31am-F05** **Lee Griffin** ISAF

Microscale Electromechanical Response of Relaxor-Ferroelectric Solid Solutions

L. A. Griffin[1], S. Brewer[2], I. Gaponenko[2,3], K. Williams[2], S. Zhang[4] and N. Bassiri-Gharb[2,5]
[1]School of Electrical Engineering, Georgia Institute of Technology, USA
[2]Woodruff School of Mechanical Engineering, Georgia Institute of Technology, USA
[3]Department of Condensed Matter Physics, University of Geneva, Switzerland
[4]Institute for Superconducting & Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong, Australia
[5]School of Materials Science and Engineering, Georgia Institute of Technology, USA

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 14:00 - 15:00
Session chair: Amit Kumar

14:00 **31pm-F01** **Jinxing Zhang** Invited Talk PFM

Towards the Characterization and Control of Nanoscale Functionalities in Ferroic Materials

J. Zhang
Beijing Normal University, China

14:30 **31pm-F02** **Huizhong Zeng** PFM

Detecting In-plane Ferroelectric Polarization by Optical Fiber Interferometric Piezoresponse Force Microscopy

H. Zeng*, J. Zhang, W. Ge, W.Zhang and W. Zhang
State Key Laboratory of Electronic Thin Films and Devices, University of Electronic Science and Technology of China, China

14:45 **31pm-F03** **Ruijian Zhu** PFM

Self-poled Ferroelectric Fibers Based on the Flexoelectric Effect for Poling-free Energy Harvester

R. Zhu[1], Z. Wang[1*], H. Ma[2], G. Yuan[2], F. Wang[3], Z. Cheng[4*] and H. Kimura[5]
[1]School of Materials Science and Engineering, Jiangsu Key lab. of Construction Materials, China,
[2]School of Materials Science and Engineering, Nanjing University of Science and Technology, China
[3]Department of Mechanical and Industrial Engineering, Southern Illinois University, USA
[4]Institute for Superconductiviting and Electronics Materials, University of Wollongong, Australia
[5]National Institute for Materials Science, Japan

Oral session: Workshop: Piezoresponse force microscopy (PFM)
Room F 15:15 - 16:00
Session chair: Jinxing Zhang

15:15 **31pm-F04** **Arseniy Kalinin** PFM

Hybrid Piezoresponse Force Microscopy in its Applications

A. S. Kalinin[1*], A. L. Kholkin[2,3], S. I. Leesment[1], A. L. Tolstikhina[4] and V. V. Polyakov[1]
[1]NT-MDT Spectrum Instruments, Russia
[2]CICECO-Aveiro Institute of Materials and Department of Physics, University of Aveiro, Portugal
[3]School of Natural Sciences and Mathematics, Ural Federal University, Russia
[4]Shubnikov Institute of Crystallography, Federal Scientific Research Centre "Crystallography and Photonics", Russian Academy of Science, Russia

15:30 **31pm-F05** **Amit Kumar** Invited Talk PFM

Conducting Domain Wall in Ferroelectrics : From Transport Behaviour to Precise Control for Domain-Wall Based Electronics

A. Kumar
Queens University Belfast, School of Mathematics and Physics, UK

Oral session: Dielectric materials
Room G 10:00 - 11:15
Session chair: Koichiro Morita

10:00 **31am-G01** **Seok-Hyun Yoon** Invited Talk AMEC

Dielectric Nonlinearity of $BaTiO_3$-Based Multi-Layer Ceramic Capacitors

S.-H. Yoon* and M.-Y. Kim
LCR Materials Group, Corporate R&D Institute, Samsung Electro-Mechanics Co. Ltd., South Korea

10:30 **31am-G02** **Deng Li Ko** ISAF

Mechanically Tunable Nonlinear Dielectrics

D.-L. Ko[1*], J. Jiang[2], H. J. Wei[1] and Y.-H. Chu[1,3,4]
[1]Department of Materials Science and Engineering, National Chiao Tung University, Taiwan
[2]Key Laboratory of Low Dimensional Materials and Application Technology of Ministry of Education, China
[3]Department of Electrophysics, National Chiao Tung University, Taiwan
[4]Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taiwan

10:45 **31am-G03** **Zichen He** ISAF

Anomalous Dielectric Nonlinearity in $Sr(Nb_{0.5}Al_{0.5})_xTi_{1-x}O_3$ Ceramic

Z. He, M. Cao*, L. Zhou, H. Hao, Z. Yao, Z. Yu and H. Liu
State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, PRChina

11:00 **31am-G04** **Xiaogang Yao** AMEC

Fabrication and Properties of Composites from High Performance $Ca_{1-x}R_{2x/3}TiO_3$-Based (R=La, Sm) Ceramics and Polytetrafluoroethylene (PTFE)

X. Yao*, H. Peng, M. Dang, H. Ren and H. Lin
Key Laboratory of Inorganic Functional Material and Device, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

Oral session: Ferrite and other oxide films
Room G 11:30 - 12:30
Session chair: Zhenxing & Yue Ming Liu

11:30 **31am-G05** **Yao Zhang** AMEC

Preparation and Characterization of BaM Nanodot Arrays Deposited on Low Damping C-axis Oriented BaM Films

Y. Zhang, J. Zhang, X. Zhang, Y. Luo and Z. Yue*
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China

11:45 **31am-G06** **Zhenxing Yue** AMEC

Epitaxial-like BaM Hexaferrite Films Deposied by Direct Current Magnetron Sputtering

Z. Yue*, X. Zhang and Y. Zhang
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China

12:00 **31am-G07** **Ming Liu** AMEC

Epitaxial Lift-Off of Centimeter-Scaled Spinel Ferrite Oxide Thin Films for Flexible Electronics

M. Liu[1], L. Shen[1], C. Ma[2] and C. Jia[1,3]
[1]School of Microelectronics, Xi'an Jiaotong University, China
[2]State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, China
[3]Ernst Ruska Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Germany

12:15 **31am-G08** **Siriporn Tigunta** AMEC

Determination of Temperature Effect on MgO Film Dissolution

S. Tigunta[1,4], N. Chanlek[2], L. Supadee[3] and S. Pojprapai[4]
[1]School of Materials Engineering, Suranaree University of Technology, Thailand
[2]Synchrotron Light Research Institute, Thailand
[3]Western Digital (Thailand) co., ltd., Thailand
[4]School of Ceramics Engineering, Institute of Engineering, Suranaree University of Technology, Thailand

Oral session: Materials processing
Room G 14:00 - 16:00
Session chair: Shinobu Fujihara & Kuei-Chih Feng

14:00 **31pm-G01** **Wan-Chien Wu** AMEC

Developments of Calcium Sulfate Coating on Ti6Al4V Substrate by Flame Spray

W.-C. Wu* and Y.-C. Yang
Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan

14:15 **31pm-G02** **Chih-Ning Huang** AMEC

Fabrication of Co-Electrodeposition of Plasma Protein/ Iridium Oxide Hybrid Film

C.-N. Huang[1], P.-C. Lin[1] and P.-C. Chen[1,2*]
[1]Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan
[2]Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taiwan

14:30 **31pm-G03** **Shinobu Fujihara** AMEC

Size-Controlled Synthesis of Zn-Based Metal-Organic Frameworks and Their Conversion into Mesoporous ZnO Particles for DS Applications

S. Fujihara[1], M. Maekawa[1], T. Enomoto[1], M. Hagiwara[1], S. Ueno[2] and E. Hosono[3]
[1]Department of Applied Chemistry, Keio University, Japan,
[2]Graduate School Department of Interdisciplinary Research, University of Yamanashi, Japan,
[3]National Institute of Advanced Industrial Science and Technology, Japan

14:45 **31pm-G04** **Shuichi Funahashi** AMEC

Low Temperature Crystallized Interface in Cold Sintered Semiconductor Ceramics

S. Funahashi[1] and C. A. Randall[2]
[1]Murata Manufacturing Co., Ltd., Japan
[2]Material Research Institute, The Pennsylvania State University, USA

15:00 **31pm-G05** **Thitirat Charoonsuk** AMEC

Enhancing the Densification of Ceria Ceramic at Low Temperature via the Cold Sintering Process

T. Charoonsuk[1,2*], P. Krudsupat[3], W. Bowonsomsarit[3], S. Soonthorn[3], T. Kolodiazhnyi[4] and N. Vittayakorn[1,2,3,5]
[1]Electroceramic Research Laboratory, College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, Thailand
[2]Advanced Material Research Unit, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[3]Department of Chemistry, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang, Thailand
[4]National Institute for Materials Science, Japan
[5]Nano-KMITL Center of Excellence on Nanoelectronic Devices, King Mongkut's Institute of Technology Ladkrabang, Thailand

15:15 **31pm-G06** **Jorg Töpfer** AMEC

Ferrite Multilayer Components Integrated in LTCC for High Frequency or High Temperature Applications

J. Töpfer[1], C. Bohlender[1], T. Reimann[1], S. Bierlich[1], B. Capraro[2], H. Bartsch[3], F. Gellersen[4] and A. Jacob[4]
[1]Dept. SciTec, Univ. Applied Sciences Jena, Germany
[2]Fraunhofer IKTS, Germany
[3]Inst. Micro-Nano Technology, Techn. Univ., Germany
[4]Inst. High Frequency Technology, Techn. Univ. Hamburg-Harburg, Germany

15:30 **31pm-G07** **Kuei-Chih Feng** AMEC

Silver Diffusion and Microstructures of $CaMgSi_2O_6$ Glass-Ceramic Co-Fired with Silver Electrode

K.-C. Feng[1*], P.-Y. Chen[1], Y. Iizuka[2], C.-S. Chen[3], H.-W. Lee[1] and C.-S. Tu[4]
[1]Department of Mechanical Engineering, Ming Chi University of Technology, Taiwan
[2]Institute of Earth Sciences, Academia Sinica, Taiwan
[3]Department of Mechanical Engineering, Hwa Hsia University of Technology, Taiwan
[4]Department of Physics, Fu Jen Catholic University, Taiwan

15:45 **31pm-G08** **Wei Hao Huang** AMEC

Developments of Acoustic Absorption and Anti-Corrosion Coating by the Thermal Spraying Technique

W.-H. Huang* and Y.-C. Yang
Institute of Materials Science and Engineering, National Taipei University of Technology, Taiwan

Oral session: Ferroelectric fundamentals
Room H 10:00 - 11:15
Session chair: John Wang

10:00 **31am-H01** **Naratip Vittayakorn** Invited Talk IFAAI

Direct Synthesis Methods for Perovskite Nanoparticles

T. Charoonsuk[1,2], W. Vittayakorn[1], R. Muanghua[3] and N. Vittayakorn[1,2,4*]
[1]1Electroceramic Research Laboratory, College of Nanotechnology, King Mongkut's Institute ofTechnology Ladkrabang, Thailand,
[2]Advanced Material Research Unit, Faculty of Science, King Mongkut's Institute of TechnologyLadkrabang, Thailand,
[3]Department of Electronics Engineering, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand,
[4]Nano-KMITL Center of Excellence on Nanoelectronic Devices, King Mongkut's Institute of Technology Ladkrabang, Thailand

10:30 **31am-H02** **Yoon Seok Oh** Invited Talk AMF

Investigation of Improper Ferroelectricity in Magnetic or Non-Magnetic Ruddlesden-Popper $A_3B_2O_7$

Y. S. Oh
Department of Physics, Ulsan National Institute of Science & Technology, South Korea

11:00 **31am-H03** **Jason McNulty** ISAF

Improper Ferroelectricity in Hexagonal Tungsten Bronzes

J. A. McNulty[1], P. W. Turner[2], F. Y. J. Lim[2], J. M. Gregg[2], P. Lightfoot[1] and F. D. Morrison[1,*]
[1]School of Chemistry, University of St Andrews, UK
[2]School of Mathematics and Physics, Queen's University Belfast, UK

Oral session: Ferroelectric fundamentals
Room H 11:30 - 12:30
Session chair: Kenji Tsuda

11:30 **31am-H04** **Xiaoli Tan** Invited Talk IFAAI

In-Situ TEM Study on the Polarization Fatigue in a $BaTiO_3$-Based Ceramic

Z. Fan[1], C. Zhou[2], X. Ren[2], J. Koruza[3], J. Rödel[3] and X. Tan[1*]
[1]Department of Materials Science and Engineering, Iowa State University, Ames, USA,
[2]Frontier Institute of Science and Technology, Xi'an Jiaotong University, China
[3]Institute of Materials Science, Technische Universität Darmstadt, Germany

12:00 **31am-H05** **Wei-Lin Tan** ISAF

In Situ Observations of Electric Field Frequency-Dependent Viscoelastic Property Evolution During Electrical Fatigue of PZT

W. L. Tan[1*], K. T. Faber[1] and D. M. Kochmann[2]
[1]Division of Engineering and Applied Science, California Institute of Technology, USA
[2]Mechanics and Materials, Department of Mechanical and Process Engineering, Swizerland

12:15 **31am-H06** **Hiroyuki Mashiyama** FMA

Dielectric Susceptibility of Quantum ANNNI Model - Simulated Monoclinic A_2BX_4-Type Ferroelectrics -

H. Mashiyama[1*], H. Shigematsu[2] and T. Asahi[3]
[1]Yamaguchi University, Japan,
[2]Faculty of Education, Yamaguchi University, Japan,
[3]Graduate School of Sciences and Technology for Innovation, Yamaguchi University, Japan

Oral session: Ferroelectric fundamentals
Room H 14:00 - 14:45
Session chair: Dragan Damjanovic

14:00 **31pm-H01** **John Wang** Invited Talk AMEC

Lead-Free Multiferroics and Piezoelectrics: What We Know and What Don't Know

H. Wu, S. J. Pennycook and J. Wang
Department of Materials Science and Engineering, National University of Singapore, Singapore

14:30 **31pm-H02** **Ruben Khachaturyan** ISAF

3D Self-Consistent Mesoscopic Model of Polarization Switching: Statistical Field Distribution and Correlations.

R. Khachaturyan and Y. A. Genenko
Institute of Materials Science, Technische Universität Darmstadt, Germany

Oral session: Ferroelectric fundamentals
Room H 15:00 - 16:15

Session chair: Xiaoli Tan

15:00 **31pm-H03** **Nan Zhang** ISAF

Temperature-Driven Polarization Rotation in Zr-Rich Lead Zirconate Titanate

N. Zhang[1*], Z. Wang[1], H. Yokota[2], A. M. Glazer[3] and Y. Yoneda[4]
[1]Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, People' Republic of China
[2]Department of Physics, Chiba University, Japan
[3]Department of Physics, University of Oxford, England
[4]Reaction Dynamics Research Division, Japan Atomic Energy Agency (JAEA), Japan

15:15 **31pm-H04** **Sukriti Mantri** ISAF

Ferroelectric Domain Continuity over Grain Boundaries

S. Mantri[1], D. Damjanovic[2] and J.E. Daniels [1,*]
[1]School of Materials Science and Engineering, UNSW Sydney, Australia
[2]Ceramics Laboratory, Swiss Federal Institute of Technology in Lausanne-EPFL, Switzerland

15:30 **31pm-H05** **Kaustuv Datta** ISAF

Atomistic Modelling of Ferroelectric Solid-Solutions at Their Morphotropic Phase Boundaries

K. Datta[1], R.B. Neder[2], J. Chen[3], J.C. Neuefeind[4] and B. Mihailova[1]
[1]Department of Earth Sciences, University of Hamburg, Germany,
[2]Department of Crystallography and Structural Physics, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
[3]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing, China
[4]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, USA

15:45 **31pm-H06** **Sergei V. Kalinin** Invited Talk IFAAI

Coupling Between Ferroelectricity and Chemistry on Mesoscopic and Atomic Scales

Sergei V. Kalinin
Oak Ridge National Laboratory, USA

Oral session: Thin film applications
Room I 10:00 - 11:15
Session chair: Yoshikazu Akiyama

10:00 **31am-I01** **Brendan Hanrahan** ISAF

Tuning the Electric Field for Maximum Pyroelectric Energy: Antiferroelectric Case Study

B. Hanrahan[1*], Y. Espinal[1,2], C. Neville[1], A. Smith[3] and P. Alpay[2]
[1]US Army Research Laboratory, USA
[2]Department of Materials Science and Engineering, University of Connecticut, USA
[3]Mechanical Engineering Department, U.S. Naval Academy, USA

10:15 **31am-I02** **Ying-Hao Chu** Invited Talk AMEC

Development of Flexible and Transparent Ferroelectric Elements Based on Oxide Heteroepitaxy

Y.-H. Chu
[1]Department of Materials Science and Engineering, National Chiao Tung university, Taiwan
[2]Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taiwan

10:45 **31am-I03** **Chun-Hao Ma** FMA

Transparent Flexible Ferroelectric Heterostructure Based on Van der Waals Epitaxy

C.-H. Ma[1*], P.-W. Chiu[1] and Y.-H. Chu[2,3,4]
[1]Department of Electrical Engineering, National Tsing Hua University, Taiwan
[2]Department of Materials Science and Engineering, National Chiao Tung University, Taiwan
[3]Department of Electrophysics, National Chiao Tung University, Taiwan
[4]Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taiwan

11:00 **31am-I04** **Haydn Chen** AMF

High Energy Density and Fast Discharge Ability in the Novel Design of $BaTiO_3$-Based Nanocomposite Capacitors

L.M. Yao [1], J.W. Zhai[2] and H. Chen[3*]
[1]School of Physics and Electronic Engineering, Guangzhou University, China
[2]School of Materials Science & Engineering, Tongji University, China
[3]International College of Semiconductor Technology, National Chiao Tung University, Taiwan

Oral session: Energy storages and energy conversions
Room I 11:30 - 12:30
Session chair: Hiroshi Maiwa

11:30 **31am-I05** **Chunrui Ma** AMEC

Interface Engineered Lead-Free Oxide Multilayer Film Capacitors

C.Ma[1*], Z. Sun[2], M. Liu[2], J. Cui[2], L. Lu[2], J. Lu[2], X. Lou[3], H. Wang[1,2] and C. Jia[1,2,4]
[1]State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, China
[2]School of Electromic and Information Engineering, Xi'an Jiaotong University, China
[3]Frontier Institute of Science and Technology, Xi'an Jiaotong University, China
[4]Peter Grünberg Institute and Ernst Ruska Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Germany

11:45 **31am-I06** **Juan Xie** ISAF

Bismuth Magnesium Titanate Thin Films for Energy Storage

J.Xie[1], H. Hao[1] and H. Liu[1,2*]
[1]State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, School of Material Science and Engineering, Wuhan University of Technology, Cl
[2]State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, International School of Material Science and Engineering, Wuhan University of Technology, China

12:00 **31am-I07** **Hengchang Nie** AMF

BNT-Based Lead-Free Ferroelectric Materials for Energy Conversion Applications

H. Nie[1], W. Peng[1], P. Peng[1,2], Z. Liu[1], G. Wang[1] and X. Dong[1,*]
[1]Shanghai Institute of Ceramics, Key laboratory of Inorganic Functional Materials and Devices, Chinese Academy of Sciences, China
[2]University of Chinese Academy of Sciences, China

12:15 **31am-I08** **Peter Finkel** ISAF

Harnessing Inter-ferroelectric Phase Transformations: Path to Large Transduction and Giant Energy Conversion

P. Finkel, M. Staruch and K. Bussmann
U.S. Naval Research Laboratory, Materials Science & Technology Division, US

Oral session: Piezoelectric single crystals
Room I 14:00 - 16:00
Session chair: Hiroaki Takeda & Fei Li

14:00 **31pm-I01** **Ho-Yong Lee** Invited Talk IFAAI

Lead-Based and Lead-Free Piezoelectric "SSCG" Single Crystals and Their Composites

H.-T. Oh[1], D-.H. Kim[1], M.C. Kim,[1] and H.-Y. Lee[1,2*]
[1]R&D Division, Ceracomp Co., Ltd., South Korea
[2]Department of Advanced Materials Engineering, Sunmoon University, South Korea

14:30 **31pm-I02** **Minhong Jiang** AMEC

A Seed-Free Solid-State Crystal Growth Method for Lead-Free Piezoelectric KNN System

M. H. Jiang
Department of Materials Science and Engineering, Guangxi Key Laboratory of Information Materials, Guilin University of Electronic Technology, P. R. China

14:45 **31pm-I03** **Chengpeng Hu** ISAF

High Piezoelectric Properties and Pressure Effect on Piezoelectric Pesponse in Pure KNN Crystals

C. Hu and H. Tian*
Department of Physics, Harbin Institute of Technology, China

15:00 **31pm-I04** **Philippa Shepley** ISAF

Low Temperature Properties of Single Crystal and Polycrystalline Piezoelectric Materials

P. M. Shepley[1*], L. A. Stoica[1], Y. Li[1], G. Burnell[2] and A. J. Bell[1]
[1]School of Chemical and Process Engineering, University of Leeds, UK,
[2]School of Physics and Astronomy, University of Leeds, UK

15:15 **31pm-I05** **Li Li** FMA

Theoretical Study of Bi Doping in Stoichiometric and Congruent $LiNbO_3$

L. Li, Y. Li and X. Zhao
State Key Lab of Crystal Materials, Shandong University, China

15:30 **31pm-I06** **Xiuwei Fu** AMEC

Growth of New Langasite $(Sr_xCa_{1-x})_3TaAl_3Si_2O_{14}$ Single Crystal with Enhanced Piezoelectricity by Sr-Substitution

X. Fu[1*], E. G. Vllora[1], Y. Kitanaka[2], Y. Noguchi[2], M. Miyayam,[2], K. Shimamura[1,3] and N. Ohashi[1,4]
[1]National Institute for Materials Science, Japan
[2]The University of Tokyo, Japan
[3]Waseda University, Japan
[4]Tokyo Institute of Technology, Japan

15:45 **31pm-I07** **Yuui Yokota** FMA

Relationship between Piezoelectric Properties and Crystal Structure of $Ca_3Ta(Ga,Al)_3Si_2O_{14}$ Piezoelectric Single Crystals

Y. Yokota[1*], Y. Ohashi[1,2], K. Inoue[2], M. Yoshino[3], A. Yamaji[3], S. Kurosawa[1,4], K. Kamada[1,5] and A. Yoshikawa[1,3,5]
[1]New Industry Creation Hatchery Center (NICHe), Tohoku University, Japan
[2]Piezo Studio Inc., Japan
[3]Institute for Materials Research, Japan
[4]Department of Physics, Yamagata University, Japan
[5]C&A Corporation, Japan

Oral session: Materials Processing
Room J 10:00 - 11:00
Session chair: Teruaki Fuchigami & Naohiro Horiuchi

10:00 **31am-J01** **Suwei Zhang** ISAF

Highly Stable Copper Nanoparticles Dispersed Amorphous $BaTiO_3$ as Hole-Trapping Centers with Improved Photocatalytic Act

S.W. Zhang[1,2], S. Li[1,3], B.-P. Zhanga[1*] and J.-F. Li[2]
[1]The Beijing Municipal Key Laboratory of New Energy Materials and Technologies, School of Materials Science and Engineering, University of Science and Technology Beijing, China
[2]State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, China
[3]School of Environmental Science and Engineering, Southern University of Science and Technology of China, China

10:15 **31am-J02** **Teruaki Fuchigami** AMEC

Hydrothermal Synthesis of Complex-shaped Niobium Oxide Nanoparticles

T. Fuchigami[1*], R. Kimata[2] and K. Kakimoto[1,3]
[1]Department of Life Science and Applied Chemistry, Nagoya Institute of technology, Japan
[2]Department of Environmental and Materials Engineering, Nagoya Institute of technology, Japan
[3]Frontier Research Institute for Materials Science, Nagoya Institute of Technology, Japan

10:30 **31am-J03** **Chaturon Nettonglang** FMA

A Simple Electrospinning System for Fabrication of Core-Shell Nanofibers

C. Nettonglang[1*] and S. Maensiri[1,2,3]
[1]School of Physics, Institute of Science, Suranaree University of Technology, Thailand
[2]SUT CoE on Advances Functional Materials (SUT-AFM), Suranaree University of Techonology, Thailand
[3]3SUT-NANOTEC CoE on Advanced Functional Nanomaterials, Suranaree University of Technology, Thailand

10:45 **31am-J04** **Naohiro Horiuchi** AMEC

High Performance Electret Preparation Using Proton Conduction

N. Horiuchi*, K. Otsuka[1] and K. Yamashita[1]
[1]Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Japan

Oral session: Piezoelectric materials
Room J 11:30 - 12:30
Session chair: Masahiko Kimura

11:30 **31am-J05** **Jing Yuan** AMEC

Effect of A-Site Substitution Piezoelectricity and Electrical Conduction of Bi_3TiNbO_9 Ceramics

J. Yuan[1*], R. Nie[1], Q. Chen[1] and J. Zhu[1]
[1]College of Materials Science and Engineering, Sichuan University, China

11:45 **31am-J06** **David Fernandez-Benavides** ISAF

A Novel Lead-Free Piezoelectric Immunosensor for Carbaryl Detection with BNT – BKT – BT Ceramic as Transducer

D.A. Fernandez-Benavides[1], L. Cervera-Chiner[2], Y. Jiménez[2,3], O.L. Arias-de Fuentes[4], J. Muñoz-Saldaña[1*] and A. Montoya[2]
[1]Centro de Investigación y de Estudios Avanzados del IPN, Lib. Norponiente No.2000, Fracc. Real de Juriquilla, Qro. México
[2]Centro de Investigación e Innovación en Bioingeniería (Ci[2]B), Universitat Politècnica de València, Camino de Vera s/n, España
[3]Advanced Wave Sensors S.L., España
[4]Instituto de ciencia y tecnología de materiales, Universidad de la Habana, Cuba

12:00 **31am-J07** **Jiangtao Zeng** AMEC

Domain Pinning Effect and Intrinsic Piezoelectric Properties for $(Pb,Sr)(Zr,Ti)O_3$ Ceramics

J. Zeng*, X. Shi, L. Zheng, X. Ruan and G. Li
Key Lab of Inorganic Functional Ceramics and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

12:15 **31am-J08** **Aleksander Matavž** ISAF

Strong Enhancement of the Electromechanical Response in Porous $Pb(Zr,Ti)O_3$ Thin Films

A. Matavž*, A. Bradeško, T. Rojac, B. Malič and V. Bobnar
Jožef Stefan Institute, Slovenia
Jožef Stefan International Postgraduate School, Slovenia

Oral session: Multiferroic materials
Room J 14:00 - 16:00
Session chair: Mario Maglione & Masaki Azuma

14:00 **31pm-J01** **Masaki Azuma** Invited Talk IFAAI

Magnetization Reversal by Electric Field at Room Temperature in Co Substituted $BiFeO_3$ Thin Film

M. Azuma[1*], K. Shimizu[1], H. Hojo[2], R. Kawabe[1], H. Yamamoto[1], K. Shigematsu[1] and K. Mibu[3]
[1]Laboratory for Materials and Structures, Tokyo Institute of Technology, Japan
[2]Department of Energy and Material Science, Kyushu University, Japan
[3]Nagoya Institute of Technology, Japan

14:30 **31pm-J02** **Jesuraj Anthoniappen** ISAF

Local Polarization Dynamics Across the Phase Transition Temperature in $Bi_{0.88}Sm_{0.12}FeO_3$ Multiferroic Ceramics

J. Anthoniappen[1*], F.M. Ruiz[1], P. Vashan[2], W.S. Chang[2], C.S. Tu[3], A.K. Soh[2], P.-Y. Chen[4] and C.S. Chen[5]
[1]Department of Physics, University of San Carlos, Philippines
[2]School of Engineering, Monash University, Malaysia
[3]Department of Physics, Fu Jen Catholic University, Taiwan
[4]Department of Mechanical Engineering, Ming Chi University of Technology, Taiwan
[5]Department of Mechanical Engineering, Hwa Hsia University of Technology, Taiwan

14:45 **31pm-J03** **Ying Chen** AMEC

Enhanced Magneto-Capacitance Effect in $Pb_{0.6}Sr_{0.4}TiO_3/La_{0.7}Sr_{0.3}MnO_3/La_{0.7}Ca_{0.3}MnO_3$ Composite Thin Films

Y. Chen[1,2,3*], F. Xue[1], X.L. Dong[1] and G.S. Wang[1]
[1]Key Laboratory of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences, People's Republic of China
[2]University of Chinese Academy of Sciences, People's Republic of China
[3]3 State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, and Peop Republic of China

15:00 **31pm-J04** **Heng Wu** AMEC

Synthesis, Microstructural Characterization and Magnetic Properties of Ba-Doped Bismuth Ferrite Nanoparticles

H. Wu* and X. Zhu
School of Physics, Nanjing University, China

15:15 **31pm-J05** **Nobuo Nakajima** FMA

Local Structure and Electronic States of $BiFeO_3$-$BaTiO_3$ Solid Solutions

N. Nakajima*, S. Kato and D. Fan
Graduate School of Science, Hiroshima University, Japan

15:30 **31pm-J06** **Tingting Jia** FMA

Ferroelectric and Magentic Properties of Bi-Based Multiferroic Thin Films

T. T. Jia[1,4*], H. Kimura[1], Z. X. Cheng[2], H. Y. Zhao[3] and J. Y. Li[4]
[1]National Institute for Materials Science, Japan
[2]Institute for Superconducting & Electronic Materials, University of Wollongong, Australia
[3]Department of Materials Science and Engineering, Wuhan Institute of Technology, China
[4]Shenzhen Key Laboratory of Nanobiomechanics, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

15:45 **31pm-J07** **Yooun Heo** AMF

Impact of Isovalent and Aliovalent Doping on Mechanical Properties of Mixed Phase $BiFeO_3$

Y. Heo[1], S. Hu[1], P. Sharma[1], K. E. Kim[3], B. K. Jang[3], C. Cazorla[1,2], C. H. Yang[3,4] and J. Seidel[1]
[1]School of Materials Science and Engineering, UNSW Australia, Australia
[2]Integrated Materials Design Centre, UNSW Australia, Australia
[3]Department of Physics, Korea Advanced Institute of Science and Technology, South Korea
[4]Institute for NanoCentury, KAIST, South Korea

Plenary session
Hall A 16:15 - 17:00
Session chair: Akira Ando

16:15 **Plenary6** **Jacob Jones** Plenary Talk IFAAI

New Ways to Determine and Describe Ferroelectric Structures from Diffraction and Scattering

J. L. Jones
Department of Materials Science and Engineering, North Carolina State University, USA

17:00 - Closing Hall A