2021 International Workshop on New Domain Technology of Ferroelectric Materials and Their Applications

(FULL VIRTUAL)

PROGRAM (final)

Jan. 23, 2021 (Japan/Korea Standard Time)

8:00 Opening address, Tomoaki Karaki (Zhiming Chen)

8:05- 8:59 Session I, Chair: Haosu Luo

8:05 I-1

Domain engineering effect of alternating current poling with different frequency on PMN-0.3PT single crystals

Chengtao Luo, Haotian Wan, Wei-Yi Chang, Yohachi Yamashita, Alisa R. Paterson, Jacob Jones, and Xiaoning Jiang

North Carolina State University, USA

8:23 O-1

Factors influencing piezoelectric properties of relaxor-based ferroelectric crystals using AC poling

Junjie Xiong, Canhuang Hong, Lin Guo, Xifa Long, and Chao He

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

8:35 O-2

Unravel the mystery of a.c. poling on relaxor-$PbTiO_3$ crystals

Chaorui Qiu, Bo Wang, Nan Zhang, Shujun Zhang, Jinfeng Liu, T. R. Shrout, Long-Qing Chen, Zhuo Xu, and Fei Li

Xi'an Jiaotong University, China

8:47 O-3

Analysis of domain structure for PMN-0.28PT single crystal

Jinhui Fan, Xiaoyan Lu, and Wenwu Cao

Harbin Institute of Technology, China.

9:00-9:54 Session II, Chair: Xiaoning Jiang

9:00 I-2

Effects of multiple steps AC poling on electrical properties of $(1-x)Pb(Mg_{1/3}Nb_{2/3})O_3$-$xPbTiO_3$ single crystal

Tsubasa Sato, Yu Sakano, and Shinichi Abe

Tayca. Corp., Japan

9:18 O-4

The influence of oxygen vacancies on piezoelectricity in samarium-doped $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ ceramics

Yang Li, Marcell Borbely, and Andrew Bell

University of Leeds, U.K.

9:30 O-5
Unusual piezoelectric properties caused by AC poling using square wave for $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ single crystals transducer
Yiqin Sun, Tomoaki Karaki, John Yamashita, and Tadashi Fujii
Toyama Prefectural University, Japan

9:42 O-6
High temperature and low voltage AC poling for $0.24Pb(In_{1/2}Nb_{1/2})O_3$-$0.46Pb(Mg_{1/3}Nb_{2/3})O_3$-$0.30PbTiO_3$ single crystals manufactured by continuous-feeding Bridgman method
Cong Luo, Tomoaki Karaki, Yohachi Yamashita, and Jiayue Xu
Shanghai Institute of Technology, China

10:00-10:54 Session III, Chair: Yohachi (John) Yamashita
10:00 I-3
Impact of alternating current poling on the piezoelectric and dielectric properties of Mn-doped $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ single crystals grown by a solid-state crystal growth (SSCG) technique
Hwang-Pill Kim, Geon-Ju Lee, Sang-Goo Lee, Ho-Yong Lee, and Wook Jo
Ulsan National Institute of Science and Technology, Korea

10:18 O-7
Superior piezoelectric performance in relaxor ferroelectric single crystals under AC polarization and its application in transducers
Jialin Xu, Zhang Zhang, Sixing Liu, Junjie Xiao, Xian Wang, Di Lin , Jie Jiao, and Haosu Luo
Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

10:30 O-8
Characterization of ultrasound transducers consisting of alternating current poled PMN-PT single crystals
Haotian Wan, Howuk Kim, Huaiyu Wu, Chengtao Luo, and Xiaoning Jiang
North Carolina State University, USA

10:42 O-9
Poling effect on the electrostrictive and piezoelectric response in $CH_3NH_3PbI_3$ single crystals
Weiwei Li, Zhenyong Man, Jiangtao Zeng, Liaoying Zheng, Guorong Li1, and Abdelhadi Kassiba
Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

11:00-11:54 Session IV, Chair: Jianguo Zhu
11:00 I-4
Ultrafast structural dynamics of polar vortices in ferroelectric superlattices
Qian Li
Tsinghua University, China

11:18 O-10
Toward van der Waals growth of flexible ferroelectric $BaTiO_3$ thin films on graphene
Liyan Dai, Jinyan Zhao, Huifeng Zhao, Yiwei Liu, Yankun Wang, Yijun Zhang, Heping Wu, Lingyan Wang, Daniel Pfützenreuter, Jutta Schwarzkopf, Catherine Dubourdieu, Thomas Schroeder, Zuo-Guang Ye, Ya-Hong Xie, Wei Ren, and Gang Niu
Xi'an Jiaotong University, China

11:30 O-11
Simultaneously achieved high energy storage density and efficiency in sol-gel-processed (K,Na)NbO_3-based lead-free ferroelectric films
Yu Huang, Liang Shu, Suwei Zhang, Zhen Zhou, Yue-Yu-Shan Cheng, Biaolin Peng, Lisha Liu1, and Jing Feng Li
Tsinghua University, China

11:42 O-12
Large piezoelectric strain with superior thermal stability of lead-free potassium sodium niobate-based grain orientation-controlled ceramics for high frequency ultrasonic transducer application
Yi Quan, Wei Ren, Chunlong Fei, Lingyan Wang, Gang Niu, Jinyan Zhao, Jian Zhuang, Junshan Zhang, Zuo-Guang Ye, and Tomoaki Karaki
Xi'an Jiaotong University, China

12:00-12:54 Session V, Chair: Wei Ren
12:00 I-5
Ferroelectric domain and its signature on structural phase transition in van der Waals $CuInP_2S_6$
Xueyun Wang, Jianming Deng, and Jiawang Hong
Beijing Institute of Technology, China

12:18 O-13
Large piezoelectriclike response from inhomogeneously deformed silicon crystals
Dongxia Tian, Yu Hou, Qi Pan, and Baojin Chu
University of Science and Technology of China, China

12:30 O-14
Giant domain wall conductivity in self-assembled $BiFeO_3$ nanocrystals
Lisha Liu, Kun Xu, Qian Li, John Daniels, Hua Zhou, Jiangyu Li, Jing Zhu, Jan Seidel, Jing-Feng Li
Tsinghua University, China

12:42 O-15
Mesoscale origin of dielectric relaxation with superior electrostrictive strain in bismuth ferrite-based ceramics
Ting Zheng and Jiagang Wu
Sichuan University, China

13:00-13:54 Session VI, Chair: Shujun Zhang
13:00 I-6
Evolution of mesoscopic domain structure and macroscopic properties in lead-free $Bi_{0.5}Na_{0.5}TiO_3$-$BaTiO_3$ ferroelectric ceramics
Jinyan Zhao, Nan Zhang, Yi Quan, Gang Niu, Wei Ren, Zhe Wang, Kun Zheng, and Zuo-Guang Ye
Xi’an Jiaotong University, China

13:18 O-16
Solvothermal reaction and piezoelectric response of oriented $KNbO_3$ polycrystal
Dandan Yang, Yan Wang, Lijie Li, Minggang Yao, Wenxiong Zhang, Hongxi Gu, Sheng Zhang, Mingjin Fan, Galhenage Asha Sewvandi, and Dengwei Hu
Baoji University of Arts and Sciences, China

13:30 O-17
High energy density and excellent thermal stability in $Bi_{0.5}Na_{0.5}TiO_3$-$NaTaO_3$ lead-free ceramic capacitors
X. F. Zhou, H. Qi, Z. N. Yan, G. L. Xue, H. Luo, and D. Zhang
Central South University, China

13:42 O-18
Synergic modulation of the multi-scale structures on the energy storage properties of silver niobate-based ceramics
Jing Wang, Yu Rao, Xuhui Fan, Jin Zhang, Lei Zhao, Kongjun Zhu
Nanjing University of Aeronautics and Astronautics, China

14:00 Closing remarks, Guorong Li

Short-presentation sessions (no Q & A), 14:20-16:10

14:20-14:50
SP-1
Achieving high piezoelectric performances with enhanced domain-wall contributions in <001>-textured Sm-modified PMN-29PT ceramics
Kun Zheng, Yi Quan, Jian Zhuang, Jinyan Zhao, Wei Ren, Lingyan Wang, Zhe Wang, Gang Niu, Chunlong Fei, Zhishui Jiang, and Li Wen
Xi'an Jiaotong University, China

SP-2
Effect of AC and DC poling on aging rate of (1-x)$Pb(Mg_{1/3}Nb_{2/3})O_3$-x$PbTiO_3$ single crystal
Zhuangkai Wang, Yiqin Sun, Tomoaki Karaki, John Yamashita, and Tadashi Fujii
Toyama Prefectural University, Japan

SP-3
Temperature dependence and formation mechanism of irreversible domains for relaxor ferroelectric PZNT single crystals
Jiayue Xu, Cong Luo, Xuxiang Li, Jun Qian, Tian Tian, and Hui Shen
Shanghai Institute of Technology, China

SP-4
Multiscale domain structures and ferroic properties of Dy-modified $BiFeO_3$-$PbTiO_3$ single crystal
Zhuohua Tang, Jian Zhuang, Alexei A. Bokov, Zeng Luo, and Stanislav P.
Xi'an Jiaotong University, China

SP-5
Investigation on triple hysteresis loop and volatile domain in $PbZrO_3$ thin film by piezoresponse force microscopy
Huimin Qiao, Fangping Zhuo, Yunseok Kim
Sungkyunkwan University, Korea

SP-6
A statistical modeling for describing dielectric response of ferroelectric relaxors
Laijun Liu and Dawei Wang
Guilin Univeristy of Techonology, China

15:00-15:30

SP-7

Organic-inorganic homogeneous coupling nanocomposite films with high energy storage density

Yao Su, Bo Zhao, Cheng Chen, Yan Wang, Minggang Yao, Dengwei Hu

Baoji University of Arts and Sciences, China

SP-8

Giant strain in $Bi_{0.5}Na_{0.5}TiO_3$-$BaTiO_3$-$NaNbO_3$ lead-free piezoelectric ceramics

Zhe Wang, Jinyan Zhao, Kun Zheng, Wei Ren, Jian Zhuang, Lingyan Wang, and Yi Quan

Xi'an Jiaotong University, China

SP-9

3D printing of $BaTiO_3$-based piezoelectric ceramic materials

Cheng Chen, Xi Wang, Yan Wang, Dandan Yang, Fei Jing, Lijie Li, Minggang Yao, Lei Miao, and Dengwei Hu

Baoji University of Arts and Sciences, China

SP-10

Controllable preparation of two-dimensional oriented $BaTiO_3$ polycrystals from $K_{0.8}Ti_{1.73}Li_{0.27}O_4$ crystals by one-step solvothermal process

Lijie Li, Minggang Yao, Fei Jing, Lei Miao, and Dengwei Hu

Baoji University of Arts and Sciences, China

SP-11

$BaTiO_3$ thin films prepared by magnetron sputtering process

Xi Wang, Cheng Chen, Dandan Yang, Lijie Li, Lei Miao, and Dengwei Hu

Baoji University of Arts and Sciences, China

SP-12

High-performance flexible piezoelectric nanogenerator based on 2D mesocrystals

Minggang Yao, Lijie Li, and Dengwei Hu

Baoji University of Arts and Sciences, China

15:40-16:10

SP-13

Preparation and structural characterization of $Na_2Ti_4O_9$ nanowires via solvothermal process

Fei Jing, Lijie Li, Minggang Yao, Lei Miao, and Dengwei Hu

Baoji University of Arts and Sciences, China

SP-14

Ferroelectric $SrTiO_3$/$CaTiO_3$ nanocomposite via topochemical mesocrystal conversion

Lei Miao, Fang Kang, Zhen Zhang, and Dengwei Hu

Baoji University of Arts and Sciences, China

SP-15

Piezo- and pyroelectric energy harvesting for chemical applications

Yan Zhang, James Roscow, Hamideh Khanbareh, Pham Thi Thuy Phuong, Steve Dunn, Dou Zhang, Kechao Zhou, and Chris Bowen

Central South University, China

SP-16
PVDF-based flexible nanocomposite piezoelectric sensors
Bo Zhao, Yao Su, Xi Wang, Dandan Yang, Lijie Li, and Dengwei Hu
Baoji University of Arts and Sciences, China

SP-17
Relaxor-like dielectric behavior and its effect on energy storage performance in P(TFE-HFP-VDF) terpolymers
KeWang Yi, Jie Liu, Yang Zhou, XinPing Hu, ShiHai Zhang, and BaoJin Chu
University of Science and Technology of China, China

SP-18
Interface-engineered reliable single-layer HfO_2-based RRAM electronic synapse
Qiang Wang, Gang Niu, Yankun Wang, Ren Luo, Heping Wu, Shijie Zhai, Wei Bai, and Wei Ren
Xi'an Jiaotong University, China

SP-19 (withdrawal)
Bismuth Titanate Oriented Polycrystal Nanocomposites with Discontinuous-zone-axis Conversion
Yan Wang, Dandan Yang, Minggang Yao, Lijie Li, Zhuonan Huang, Wenxiong Zhang, Yinfeng Han, Galhenage Asha Sewvandi, Qi Feng, and Dengwei Hu
Baoji University of Arts and Sciences, China

Short-presentation sessions will be opened for Random access from Japan/Korea Standard Time 20:00 of Jan. 20 to 20:00 of Jan. 23 (72 hours, no Q & A)

For example, access point of SP-18 is
https://www.pu-toyama.ac.jp/EM-NANO2021/NDTFMA2021/SP/SP-18.mp4

All presentations will be played again (no Q&A) through **Tencent Meeting** with the schedule below:
Japan/Korea Standard Time Jan. 23(Sat.), 2021

Session 1: 14:30-15:15	Session 2: 15:15-16:00
Session 3: 16:00-16:45	Session 4: 16:45-17:30
Session 5: 17:30-18:15	Session 6: 18:15-19:00

Short Presentation Session: 19:00-20:30

If you wish to watch the play, please send an email to chen@pu-toyama.ac.jp on Jan. 23(Sat.) 2021.
You will receive a Tencent Meeting link.