

May 28 (Wed.)

- Ferroelectric Materials** **Chair: S. Okamura (Mitsubishi Mat. Co.)** **10:30--12:00**
- (28-F-1) Arrangement Control of B Site Cations in $A(B', B'')O_3$ Type Relaxor Ferroelectrics
Y. Hotta*, G. W. J Hassink***, T. Kawai* and H. Tabata*,** (*ISIR, Osaka Univ.,
PRESTO21, JST and *DAPU, Univ. of Twente)
- (28-F-2) Effects of substitution of Na^+ and K^+ ions for Ag^+ ion in $(Ag, Li)NbO_3$ Ceramics
T. Takeda, Y. Takahashi, N. Wada and Y. Sakabe (Murata Mfg.)
- (28-F-3) Preparation and Characterization of PLZT Composites (9/65/35-6/65/35)
K. Tsuzuki and T. Kobayashi (Nihon Univ.)
- (28-F-4) $Pb(A_{1/2}W_{1/2})O_3 - PbZrO_3$ (A=Cd, Mn) Solid Solution Oxides
M. Yokosuka and T. Miura (Iwaki-Meisei Univ.)
- (28-F-5) Electro-optical Properties of PLZT Films Prepared by Aerosol Deposition Method
M. Nakada, K. Ohashi, M. Lebedev* and J. Akedo* (Fundamental Res. Labs., NEC
Corp. and *A.I.S.T.)
- (28-F-6) Effects of Niobium Addition on the Relaxor Ferroelectric Properties and Ordering Structures of
Lead Iron Tantalates
B.-C. Woo and B.-K. Kim (KIST)

- Thin Films (I)** **Chair: K. Kato (NIMS)** **13:15--14:45**
- (28-T-1) D-E Measurements of Ferroelectric Gate Capacitors
T. Yoshimura and N. Fujimura (Osaka Pref. Univ.)
- (28-T-2) MOCVD Deposition of HfO_2 Thin Films Using $Hf[N(CH_3)_2]_4$ and $Hf[N(C_2H_5)_2]_4$
S. Hino, M. Nakayama, E. Tokunaga, T. Kenji and H. Funakubo (Tokyo Inst. of Tech.)
- (28-T-3) Thin-film Capacitors with a High Capacitance on a Polymer Film
T. Mori, A. Shibuya and S. Yamamichi (NEC)
- (28-T-4) Proposal of 1T/1C FeRAM with Multiple Storage
H. Kato and H. Nozawa (Kyoto Univ.)
- (28-T-5) Basic Characteristics of a Ferroelectric Memory with an Intermediate Electrode Fabricated on an
Si Substrate
S. Iemura, T. D. Khoa, K. Muranaka, S. Horita (JAIST)
- (28-T-6) Preparation of $(Y, Yb)MnO_3/Y_2O_3/Si(MFIS)$ Structure by CSD Method
K. Suzuki, D. Fu, K. Nishizawa, T. Miki, K. Kato (AIST)

- Piezoelectric Materials** **Chair: T. Tsurumi (Tokyo Inst. of Tech.)** **15:00--16:15**
- (28-P-1) Phase Diagram, Dielectric and Piezoelectric Properties in $PbZrO_3$ - $PbTiO_3$ System by
Phenomenological Thermodynamics
T. Yamamoto, H. Oka and H. Okino (National Defense Academy)

- (28-P-2) Comparison of Nonlinearity between a PMN Electrostrictive Ceramic and a PZT Piezoelectric Ceramic
S. Tashiro, K. Ishii and K. Nagata (The National Defense Academy)
- (28-P-3) Low-Temperature Sintering of LiBiO₂-Coated PMN-PZT Powders Prepared by Surface Modification Method and Their Piezoelectric Properties
T. Hasegawa, T. Hayashi, J. Tomizawa and Y. Akiyama* (Shonan Institute of Technology and *R&D Center, Ricoh Co., Ltd.)
- (28-P-4) Fabrication of Ceramic Composite Composed of Single Crystals and Ceramic Matrix using a Hybrid Sintering
H. Takahashi, S. Tukamoto, J. Qiu*, J. Tani* and T. Sukigara** (Fuji Ceramics Co., *Tohoku Univ. and **Honda R&D Co.)
- (28-P-5) Structural and Dielectric Behavior of Sc-substituted Pb(Yb_{1/2}Nb_{1/2})O₃ Ceramics
J.-H. Kim, H. Kim, K. S. Koh* and W. K. Choo (KAIST and *Chungang Univ.)

Thin Films (II)

Chair: H. Funakubo (Tokyo Inst. of Tech.)

16:30--18:00

- (28-T-7) Influence of Applied Electric Field During Annealing on Orientation of PZT Thin Films.
H. Nakayama, S. Miyahara, S. Suzuki* and H. Suzuki* (Shizuoka Ind. Res. I. And *Shizuoka Univ.)
- (28-T-8) Fabrication and Characterization of Self-assembled Nano PbTiO₃ Islands by MOCVD
H. Nonomura, H. Fujisawa, M. Shimizu, H. Niu and K. Honda* (Himeji Inst. of Tech., Fujitsu Laboratory Ltd.*)
- (28-T-9) TSC Measurement for Degraded and Damaged PZT Thin Film Capacitors Prepared by Sputtering
T. Nishida, M. Matsuoka, S. Okamura and T. Shiosaki (NAIST)
- (28-T-10) Effects of Seeding Layer and PZT Thickness on Reliability of FRAM Device with 0.25um D/R
K. S. Park, K. M. Lee, S. D. Nam, M. S. LEE, S. H. Joo, S. L. Cho, Y. H. Son, S. H. Choi, J. C. Shin, H. J. Kim, Y. J. Jung, M. S. Choi, J. E. Heo, H. G. An, S. O. Park, U. I. Chung, and J. T. Moon (Samsung Electronics Co.)
- (28-T-11) Dielectric and Electromechanical Properties of Highly Textured Pb(Zr,Ti)O₃ Thin Films for Piezo-MEMS Devices
S.-H. Kim, J.-S. Yang, C. Y. Koo, J.-H. Yeom, J.-S. Park*, E. Yoon**, S.-G. Kang*** and J. Ha (INOSTEK Inc., *Korea Elec. Tech. Inst., **Seoul National Univ. and ***Han Yang Univ.)
- (28-T-12) Characterizations of Sol-Gel Multi-Coated Thick PZT Films on Platinized Silicon Substrates for Micro Devices Applications
J.-S. Park*,***, S.-H. Kim**, H.-D. Park*, J. Ha** and S.-G. Kang*** (*Korea Elec. Tech. Inst., **Inostek Inc. and ***Han Yang Univ.)

May 29 (Thu.)

Thin Films (III)

Chair: M. Shimizu (Himeji Inst. of Tech.)

9:00--10:15

- (29-T-13) Composition Dependence on Electrical Properties of Pb(Zr,Ti)O₃ Thick Films Grown on Si Substrates by MOCVD
S. Yokoyama, Y. Honda, H. Morioka, G. Asano, T. Iijima*, H. Matsuda* and H. Funakubo (Dept. Innov. Eng. Mater. Tokyo Tech, *SSRC, AIST)
- (29-T-14) PZT Film Formation and Its Physical Properties with Use of Spray Coating Method
M. Ichiki, L. Zhang, Z. Yang, T. Ikehara and R. Maeda (National Institute of Advanced Industrial Science and Technology)

- (29-T-15) Preparation and Characterization of PZT Thin Films Derived by Hybrid Processing: Sol-Gel Method and Pulsed Laser Deposition
Z. J. Wang, L. J. Yan, H. Kokawa and R. Maeda* (Tohoku Univ. *National institute of Advanced Science and Technology)
- (29-T-16) Aerosol Deposition Method for Preparation of PZT Thick Film at Low Temperature -Improvement of Electrical Properties by Irradiation of Fast Atom Beam-
J. Akedo and M. Lebedev (AIST)
- (29-T-17) Comparison of Lead Source Material on the Microstructure and Ferroelectric Properties of Sputter Deposited PZT Films Using Lead and Lead Oxide for Compensation
W. L. Chang and J. L. He (Feng-Chia Univ.)

Thin Films (IV)

Chair: H. Tabata (Osaka Univ.)

10:30--12:00

- (29-T-18) Physical Properties of $0.24\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3 \cdot 0.384\text{PbZrO}_3 \cdot 0.376\text{PbTiO}_3$ Thin Films Crystallized by Hot Isostatic Pressing
M. Kobune, S. Kojima, A. Mineshige and T. Yazawa (Himeji Institute of Technology)
- (29-T-19) Temperature Dependence of the Electromechanical Properties of PZT Thin Films
H. Maiwa, S.-H. Kim* and N. Ichinose** (Shonan Inst. of Tech., *Inostek and **Waseda Univ.)
- (29-T-20) Influence on Electrode Structure of PZT Ferroelectric Thin Films
T. Nozaka, A. Baba and Y. Masuda (Hachinohe Inst. of Tech.)
- (29-T-21) Effect of Top Electrode in Dielectric Properties on Relaxor $\text{Pb}(\text{Sc}_{0.5}\text{Nb}_{0.5})\text{O}_3$ Thin Film Capacitors
B. J. Kuh, J.-H. Kim, W. K. Choo, K. Brinkman*, D. Damjanovic* and N. Setter* (KAIST and *EPFL)
- (29-T-22) Thickness Effect on the Pyroelectric Properties of Chemical Solution Derived PZT Thin Films for the PIR Sensor Devices
J.-S. Yang, S.-H. Kim, D.-Y. Park, E. Yoon*, J.-S. Park**, T.-S. Kim***, S.-G. Kang**** and J. Ha (INOSTEK Inc., *Seoul National Univ., **Korea Elec. Tech. Inst., ***KIST and ****Han Yang Univ.)
- (29-T-23) A Contribution of Mechanical Stresses into Self-Polarization in Thin PZT Films
I.P. Pronin, E.Yu. Kaptelov, A.V. Goltsev and V.P. Afanasjev* (A.F.Ioffe Physico-Technical Institute Russian Academy of Sciences, *St.-Petersburg State Electrotechnical Univ.)

Ferroelectric Materials

Chair: Y. Sakabe (Murata Mfg. Co.)

13:15--14:45

- (29-F-7) Excimer UV Processing of $(\text{Bi,Nd})_4\text{Ti}_3\text{O}_{12}$ Ferroelectric Thin Films by Chemical Solution Deposition Method
T. Hayashi, N. Iizawa, D. Togawa, M. Yamada**, W. Sakamoto*, K. Kikuta** and S. Hirano** (Shonan Inst. of Tech, CIRSE, Nagoya Univ.*, Graduate School and Engineering and Nagoya Univ.**)
- (29-F-8) Structural Analysis and its Dielectric Properties of Low Temperature Grown PLD- YMnO_3
H.Sakata, D.Ito, T.Yoshimura, N.Fujimura and T.Ito (Osaka Pref. Univ.)
- (29-F-9) Evaluation of a Novel Zr Precursor for PZT Thin Films by MOCVD
S. Okamura, Y. Takayama, N. Soyama and K. Ogi (Mitsubishi Materials Corporation)
- (29-F-10) A Study on the Residual Stress of Multilayer Ceramic Capacitors(MLCCs)
Y. Nakano, T. Nomura and T. Takenaka* (TDK Co. and *Tokyo Univ. of Sci.)

- (29-F-11) Stress, Thermal, and Electrical Field Response of X5R Type Ni-MLCC
K. Saito, H. Chazono and H. Kishi (Taiyo Yuden Co. Ltd., Material R&D dept.)
- (29-F-12) Characterization of KNbO_3 Crystal by TSFZ Method
K. Kudou, K. Kakiuchi, K. Mizutani* and T. Fukami* (Precision Tech. Res. Inst. of Nagano Pref. and *Shinshu Univ.)

Thin Films (V) Chair: T. Shiosaki (NAIST) 15:00--16:00

- (29-T-24) Effect of Carrier Gas of $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ Thin Film Prepared by MOCVD Method
M. Nakamura, T. Higuchi and T. Tsukamoto (Tokyo Univ. of Sci.)
- (29-T-25) Preparation of the Bismuth Titanate Thin Films by Alternately Supplying MOD Method and Its Properties
M. Yamaguchi and Y. Masuda* (Shibaura Inst. Of Tech, *Hachinohe Inst. Of Tech.)
- (29-T-26) Orientation behavior and ferro- and piezoelectric properties of $\text{Bi}_{4-x}\text{Pr}_x\text{Ti}_3\text{O}_{12}$ polycrystalline films
H. Matsuda, S. Ito, and T. Iijima (AIST)
- (29-T-27) Electrical Properties of $(\text{Ca,Sr})\text{Bi}_4\text{Ti}_4\text{O}_{15}$ Thin Films Fabricated Using a Chemical Solution Deposition Method
H. Uchida, K. Sakurai, I. Okada, H. Matsuda*, T. Iijima*, T. Kojima**, T. Watanabe** and H. Funakubo** (Sophia Univ., *AIST and **T.I.Tech.)

Invited Chair: Y. Ishibashi (Aichi Shukutoku Univ.) 16:15--16:45

- (29-I-1) N/A
N/A (N/A)

Special Lecture Chair: T. Shiosaki (NAIST) 16:45--17:45

- (29-S-1) Special Lecture
K. Sakata (Tokyo Sci. Univ.)

May 30 (Fri.) Parallel session (Room 202)

Piezoelectric Materials Chair: T. Yamamoto (National Defense 9:00--10:15)

- (30-P-6) Crystal Orientation Dependence and Bipolar Pulse Poling Characteristics in $\text{Pb}[(\text{Zn}_{1/3}\text{Nb}_{2/3})_{0.91}\text{Ti}_{0.09}]\text{O}_3$ Single Crystals with Giant Electromechanical Coupling Factor of k_{31} Mode
T. Ogawa and Y. Numanoto (Shizuoka Inst. of Sci. and Tech.)
- (30-P-7) Effect of Electric Field on Domain Structure and Dielectric Properties in $\text{Pb}(\text{In}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 Near Morphotropic Phase Boundary
N. Yasuda, M. Sakaguchi, H. Yamato, Y. Yamashita*, M. Iwata** and Y. Ishibashi*** (Gifu Univ., *Toshiba, **Nagoya Inst. of Tech. and ***Aichi-Syukutoku Univ.)
- (30-P-8) Crystal Growth of PIMNT and PSMNT Ternary System Using the Bridgman Method
Y. Hosono, Y. Yamashita, H. Sakamoto and N. Ichinose* (Toshiba and *Waseda Univ.)
- (30-P-9) Crystal Growth of PIN-PMN-PT Ternary System by the TSSG Method
M. Nakamoto, Y. Sumiyoshi, T. Karaki and M. Adachi (Toyama Prefectural Univ.)

- (30-P-10) Crystal Growth and Piezoelectric Properties of $\text{LaCa}_4\text{O}(\text{BO}_3)_3$
H. Takeda, H. Sako, T. Nishida, S. Okamura, H. Nakao*, M. Nishida*, T. Shikida*
and T. Shiosaki (NAIST and *Sakai Chemical Industry Co.)

Piezoelectric Materials Chair: Y. Yamashita (Toshiba) 10:30--12:00

- (30-P-11) Piezoelectric Properties of Lead-free Ceramics with Three Components System of $(\text{Bi}_{1/2}\text{Na}_{1/2})\text{TiO}_3$, $(\text{Bi}_{1/2}\text{K}_{1/2})\text{TiO}_3$ and BaTiO_3
Hajime Nagata, Masaki Yoshida, Yoichi Makiuchi and Tadashi Takenaka (Tokyo University of Science)
- (30-P-12) Fabrication of Ferroelectric NaNbO_3 Ceramics by Discharge Plasma Sintering (SPS)
T. Wada, K. Tsuji, T. Saito and Y. Matsuo (Ryukoku University)
- (30-P-13) Ferroelectric and Piezoelectric Properties of KNbO_3 Ceramics Containing Small Amounts of LaFeO_3
K. Kakimoto, I Masuda and H. Ohsato (Nagoya Inst. of Tech.)
- (30-P-14) Fabrication and Characterization of $\text{LnBi}_2\text{TiNbO}_9$ based Ceramics
Y.Sugaya, K.Shoji* and K.Sakata** (Toko Int., *Ashikaga Institute of Technology , **Tokyo University of Science)
- (30-P-15) $\text{Bi}_{3-x}\text{M}_x\text{TiTaO}_9$ (M=La, Nd) Ceramics with High Mechanical Quality Factor Q_m
M. Suzuki, J. Ohara, H. Nagata, H. Funakubo* and T. Takenaka (Tokyo University of Science and *Tokyo Institute of Technology)
- (30-P-16) Properties of the Elastic Anomaly in the $\text{SrBi}_2\text{Nb}_2\text{O}_9$ based Ceramics
T. Sawada, A. Ando, Y. Sakabe, D. Damjanovic* and N. Setter* (Murata Manufacturing Co., Ltd. and *EPFL)

Microwave Materials Chair: T. Tamura (Murata Mfg. Co.) 13:15--14:45

- (30-M-1) Low Temperature Sintering and Microwave Dielectric Properties of $\text{Mg}_4\text{Nb}_2\text{O}_9$ by V_2O_5 Addition
A. Kan, H. Ogawa, A. Yoshida, A. Yokoi and H. Ohsato* (Meijo Univ. and *Nagoya Inst. of Tech.)
- (30-M-2) Syntheses and Microwave Dielectric Properties of LnBO_3 (Ln=La, Nd, Sm, Dy, Ho, Y)
T. Takada, H. Yamamoto and K. Kageyama (Sumitomo Metal Industries)
- (30-M-3) Microwave Dielectric Spectra of BaTiO_3 Related Materials Measured by RF Impedance Analyzer
H. Kakimoto, J. Li, S.-M. Nam*, S. Wada and T. Tsurumi (Tokyo Inst. of Tech. and AIST*)
- (30-M-4) Grain-orientation Control and Microwave Dielectric Properties of $\text{Ba}_4\text{Sm}_{9.33}\text{Ti}_{18}\text{O}_{54}$ Ceramics
K. Wada, K. Kakimoto and H. Ohsato (Nagoya I. Tech.)
- (30-M-5) Low Temperature Sintering and Microwave Dielectric Properties of BiNbO_4 - ZnNb_2O_6 Ceramics with Addition of $\text{CuO-V}_2\text{O}_5$ Compounds
H. R. Lee, K. H. Yoon and E. S. Kim* (Yonsei Univ. and *Kyonggi Univ.)
- (30-M-6) Microwave Dielectric Properties of CaTiO_3 and MgTiO_3 Thin Films
B. D. Lee, K. H. Yoon and E. S. Kim* (Yonsei Univ. and *Kyonggi Univ.)

Thin Films (VI) Chair: E. Tokunaga (Tokyo Inst. of Tech.) 15:00--16:00

- (30-T-28) Piezoelectric Properties of $\text{CaBi}_4\text{Ti}_4\text{O}_{15}$ Ferroelectric Thin Films Investigated by Atomic Force Microscopy
D. Fu, K. Suzuki and K. Kato (AIST)
- (30-T-29) Real-time Observation of Reversing Poling Directions
T. Morita and Y. Cho (Tohoku University)
- (30-T-30) Influence of Trapped Injected Charge on the Capacitance and Leakage Characteristics of $(\text{Ba}_x\text{Sr}_{1-x})\text{Ti}_{1+y}\text{O}_{3+z}$ Thin Film Capacitors
J D. Baniecki, T. Shioga, K. Kurihara (Fujitsu Laboratories)
- (30-T-31) Imprint After Fatigue Characteristics of BLT-based FeRAMs
K. H. Noh, S.-S. Lee, H. J. Jeong, J. H. Son, J. G. Kim, J. Y. Seong, S. H. Oh, Y. H. Yang, S.-K. Hong and Y.-J. Park (Hynix Semiconductor Inc.)

Thin Films (VII) Chair: N. Fujimura (Osaka Pref. Univ.) 16:15--17:15

- (30-T-32) Observation of Initial Growth of $\text{SrBi}_2\text{Ta}_2\text{O}_9$ Thin Films
I. Kawayama, K. Kotani and M. Tonouchi (RCSP, Osaka Univ.)
- (30-T-33) Natural-superlattice-structured Ferroelectric $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ - $\text{SrBi}_4\text{Ti}_4\text{O}_{15}$ Thin Films Prepared by Pulsed Laser Deposition
A. Shibuya, M. Noda and M. Okuyama (Osaka Univ.)
- (30-T-34) Temperature Dependence of Dielectric properties for $\text{SrBi}_2\text{Ta}_2\text{O}_9$ Thin Films Observed with Interdigital Electrodes.
K. Kotani, I. Kawayama and M. Tonouchi (Res. Cent. for Superconductor Photonics, Osaka Univ.)
- (30-T-35) Preparation and Ferroelectric Characteristics of Barium-ion Doped Strontium Bismuth Tantalate Thin Films
C.-H. Lu, D.-P. Chang and W.-J. Hwang (Nat'l Taiwan Univ.)

May 30 (Fri.) Parallel session (Room 201)

Fundamentals (I) Chair: Y. Uesu (Waseda Univ.) 9:00--10:15

- (30-B-1) Domain Observation of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - PbTiO_3 Single Crystals using Contact Resonance Piezoresponse Force Microscopy
H. Okino and T. Yamamoto (National Defense Academy)
- (30-B-2) Domain Observation in $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - PbTiO_3 Mixed Crystals by Scanning Probe Microscopy
M.Iwata, K.Katsuraya, M.Maeda, S.Suzuki, N. Yasuda* and Y.Ishibashi** (NIT, *Gifu Univ. and **Aichi Shukutoku Univ.)
- (30-B-3) Ultra High-density Ferroelectric Data Storage Using Scanning Nonlinear Dielectric Microscopy
Y. Hiranaga, Y. Cho, K. Fujimoto, Y. Wagatsuma and A. Onoe* (RIEC. Tohoku Univ. and *Pioneer Co.)
- (30-B-4) Electrostatic Model for the Dielectric Permittivity of Ferroelectric Films with 90° Domain Structures
Y. Ishibashi, D. Ricinchi* and M. Okuyama* (Aichi Shukutoku Univ. and * Osaka Univ.)

- (30-B-5) Preparation of nm-sized Barium Titanate Fine Particles and Their Powder Dielectric Properties
S. Wada, H. Yasuno, T. Hoshina, S.-M. Nam, H. Kakemoto and T. Tsurumi (Tokyo Inst. Tech.)

Fundamentals (II) Chair: A. Onodera (Hokkaido Univ.) 10:30--12:00

- (30-B-6) What a Structure Model is Suitable for Lithium Niobate Family Ferroelectrics?
D. Xue and K. Kitamura (AML/NIMS)
- (30-B-7) Electronic Structures of $\text{Bi}_{4-x}\text{La}_x\text{Ti}_3\text{O}_{12}$ and $\text{Bi}_4\text{Zr}_x\text{Ti}_{3-x}\text{O}_{12}$ by Soft-X-Ray Spectroscopy
T. Higuchi, Y. Moriuchi, T. Tsukamoto, Y. Noguchi*, M. Miyayama* and S. Shin* (Tokyo Univ. of Sci. and *Univ. of Tokyo)
- (30-B-8) The Analysis of Electronic Structures for $(\text{Bi}, \text{M})_4\text{Ti}_3\text{O}_{12}$ Using ab initio Method
Y. Yutoh, S. Sugihara and T. Isobe (Shonan Inst. of Tech.)
- (30-B-9) Note on Quantum Effect and Oxygen Isotope Effect in SrTiO_3
E. Matsushita and S. Okumura (Gifu Univ.)
- (30-B-10) Dielectric Properties of LiTaO_3 Probed by Terahertz Time Domain Spectroscopy
S. Kojima, H. Kitahara*, S. Nishizawa* and M. Takeda* (Univ. of Tsukuba and *Shinshu Univ.)
- (30-B-11) Raman and OH^- Absorption Spectra of Zn-doped Lithium Niobate Crystals
M-L Sun, C-T Chia, M-L Hu*, J. Y. Chang*, W-S Tse**, Z. P. Yang*** and H. H. Cheng*** (Natl. Taiwan Normal Univ., *Natl. Central Univ. and **Academia Sinica, ***Natl. Taiwan Univ.)

Fundamentals and Chair: S. Kojima (Tsukuba Univ.) 13:15--14:45

- (30-E-1) Crystal Structure of Intermediate Phase in Layered Perovskite SBT Tantarate
A. Onodera, K. Yoshio and H. Yamashita* (Hokkaido Univ. and *Hokkai-Gakuen Univ.)
- (30-E-2) Electrical Conduction Properties of Vanadium Doped $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ Single Crystals
M. Takahashi, M. Soga, Y. Noguchi and M. Miyayama* (*IIS, The University of Tokyo)
- (30-E-3) Measurement of thermophysical properties of ferroelectric Ba (Ti, Zr) O_3 ceramics by thermal radiation calorimetry
K. Morimoto, S. Sawai, K. Hisano and T. Yamamoto (National Defense Academy)
- (30-E-4) New Preparation Film of Piezoelectric Polylactic Acid
Y. Tajitsu, M. Sukekawa*, M. Kikuchi, M. Kudo, T. Masuko, M. Date** and E. Fukada (Yamagata Univ., *Mitsui Chemical Co. and **Kobayashi Inst. of Phys. Res.)
- (30-E-5) Electric Field Induced Vibration in Freely Suspended Ferroelectric Liquid Crystal Film
K. Nakano, M. Ozaki and K. Yoshino (Osaka Univ.)
- (30-E-6) Polymer-Stabilized Antiferroelectric Liquid Crystals
H. Furue* and H. Yokoyama*,** (*JST, **AIST)

Piezoelectric Materials Chair: T. Takenaka (Tokyo Univ. of Sci.) 15:00--16:00

- (30-P-17) Preparation of Ba(Ti,Zr)O₃ Thick Films on Silicon Substrate by Screen Printing
T. Futakuchi, Y. Sakai, N. Fujita* and M. Adachi* (Toyama Ind. Tech. Ctr. And
*Toyama Pref. Univ.)
- (30-P-18) Fabrication of High Speed Micro Optical Scanner Using PZT Thick Film Formed by Aerosol
Deposition Method
N. Asai, J. Akedo*, M. Lebedev* and S. Yamada (Brother Industries, Ltd. and
*A.I.S.T)
- (30-P-19) A Study of Piezoelectric Dispensing Head with Aspiration Function
S.Takahashi*,** and Y. Tomikawa** (*Olympus Optical Co., Ltd and **Yamagata
Univ.)
- (30-P-20) Compact and Simple Apparatus for Measuring Direct Piezoelectricity
M. Fukunaga and Y. Uesu (Waseda Univ.)

Piezoelectric Chair: S. Takahashi (Waseda Univ.) 16:15--17:15

- (30-A-1) Fundamental Study on Layered Piezoelectric Transformers Using Higher Mode Resonance
S.Hirose and T. Endow (Yamagata Univ.)
- (30-A-2) Invention of Piezoelectric Angular Acceleration-Sensor
Y. Tomikawa, M. Itoh and S. Okada* (Yamagata Univ. and *Microstone Co.)
- (30-A-3) Fabrication and Characteristics of PDA CCFL Driving Circuits for Piezoelectric Transformer
Using PNW-PMN-PZT Ceramics
L. Hwang, E. Jang, W. Nam, J. Yoo, D. Oh, M. Cho*, I. Ahn* and J. Hong**
(Semyung University, *Daewon Science College and **Dongseoul College)
- (30-A-4) The Characteristics of Windmill Type Ultrasonic Motor with Modified Endcap
J. H. Lee, T. G. Park, H. H. Chong and K. Uchino* (Changwon University and
*Pennsylvania State Univ.)

Tutorial Chair: M. Okuyama (Osaka Univ.) 17:30--18:30

- (30-TU-1) Fundamental and Application of Microwave Dielectrics
T. Tamura (Murata)

May 31 (Sat.)

Piezoelectric Chair: Y. Tomikawa (Yamagata Univ.) 9:00--10:15

- (31-A-5) Micro-Displacement Measurement Using Liquid Delay Line Oscillator with Two Leaky Lamb
Wave Transducers
T. Fujita and K. Toda (National Defence Academy)
- (31-A-6) A Wireless SAW Temperature Sensor Using Langasite as Substrate Material for High
Temperature Applications
S.-Q. Wang, J. Harada and S. Uda (Mitsubishi Materials)
- (31-A-7) New ferroelectric phase in K₂O-Nb₂O₅ system : K₅Nb₉O₂₅
R. Komatsu, K. Nishikori, T. Okeya, K. Ikeda and Y. Akishige* (Yamaguchi Univ. and
*Shimane Univ.)

- (31-A-8) Fabrication of Cantilever and Bridge Type Piezoelectric Micro-Transducer for Mass Detecting Device
S. Shin, S. Song, J. Kim, D. Jung, H. Park*, J. Park* and J. Lee (Sung Kyun Kwan Univ. and *Korea Elec. Tech. Inst.)
- (31-A-9) Electrical Characteristics of 3rd Overtone Mode Energy-Trapped High Frequency Ceramic Filter Using PbTiO₃ System Ceramics
D. Oh, J. Yoo, C. Park, H. Yoon*, S. Lee**, J. Kim***, Y. Jeong****, S. Ryu***** and S. Lee***** (Semyung Univ., *Kyungmoon College, **Kyungpook National Univ., ***Samsung Electro-Mechanics Co., ****Korea electric power co. and *****Chungju Univ.)

Thin Films (VIII)

Chair: H. Takasu (Rohm Co.)

10:30--12:00

- (31-T-36) Crystallization of SrTiO₃ Thin Film by Millimeter Wave Radiation
T. Otsuka, K. Morimoto and K. Morita (Matsushita Electric Industrial Co., Ltd.)
- (31-T-37) Synthesis of SnTiO₃ thin films by Combinatorial PLD
Y. Konishi, M. Ohsawa, Y. Yonezawa, Y. Terao, T. Wakisaka*, T. Chikyow*, **, K. Sasata***, M. Kubo***, A. Miyamoto*** H. Koinuma*, ** (Fuji Electric Corporate Research and Development, Ltd. , Tokyo Institute of Technology *, NIMS-COMET **, Univ. Tohoku ***)
- (31-T-38) Growth of KNbO₃ Films by ECR-PLD
T. Arai, S. Ito, K. Ishikawa, K. Nakamura (Graduate School of Engineering, Tohoku Univ.)
- (31-T-39) Deposition of a KNbO₃ Thin Films by PLD Method Using High Density Ceramic Targets Produced by SPS Process
T. Saito, T. Wada , H. Adachi* and I. Kanno** (Ryukoku University, Matsushita Electric Ind. Co. Ltd.*, Kyoto University**)
- (31-T-40) Fabrication and Characterization of Rare Earth Ion-Substituted BaNb₂O₆ Thin Films by Chemical Solution Deposition Method
W. Sakamoto, M. Mizuno, T. Yamaguchi, K. Kikuta and S. Hirano (Nagoya Univ.)
- (31-T-41) Comparison of Strain Development between BaTiO₃/SrTiO₃ Artificial Lattice and Single Oxide Layer and its Effect on the Dielectric Properties
J. Kim, L. Kim, Y. S. Kim, D. Jung and J. Lee (Sung Kyun Kwan Univ.)