

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

Monday, November 14

**A - 1 Invited      A: Basic Science & Characterization of Structure and Properties      8:00 am - 10:15 am**

**Session Chairs: Hiroki Taniguchi and Elizabeth Dickey**

	8:00 – 8:15	<b>Introductory Remarks</b>	Susan Trolier–McKinstry and Yasushi Enokido
A.I.1	8:15 – 8:45	<b>Polar Antiphase Boundaries in <math>\text{PbZr}_{1-x}\text{Ti}_x\text{O}_3</math></b> - H. Yokota, K. Kurihara, Z. An, N. Zhang, M. Pasciak, M. Glazer	Hiroko Yokota
A.I.2	8:45 – 9:15	<b>Properties of Novel Ferroelectric van der Waals Crystals Revealed by Multi-modal Characterization Approaches</b> - N. Balke	Nina Balke
A.I.3	9:15 – 9:45	<b>Microstructural Analysis of the Degraded Areas and Reliability of Multi-Layer Ceramic Capacitors</b> - M. Nagayoshi, R. Sakata	Maiko Nagayoshi
A.I.4	9:45 – 10:15	<b>First-principles Modeling of Wurtzite Ferroelectrics</b> - C.G. Van de Walle	Chris G. Van de Walle

**10:15 – 10:30      Break**

**A - 2:      Poster Summaries & Poster Viewing - 10:30 am - 12:30 pm**

A.P.1	10:30 - 10:33	<b>DFT Study on <math>\text{BiFeO}_3</math>–<math>\text{BaTiO}_3</math> Superlattices</b> - Y. Noguchi	Yuji Noguchi
A.P.2	10:33 - 10:36	<b>Mask or Enhance: Data Curation for the Discovery of Piezoresponse Force Microscopy Contributors</b> - G.K. Ligonde, K.N. Williams, N. Bassiri-Gharb	Gardy Kevin Ligonde
A.P.3	10:36 - 10:39	<b>Theoretical Analysis of <math>\text{BaTiO}_3</math> and Metal Electrode Interface</b> - Y. Iwazaki, R. Suemasa, M. Araki, Y. Sakai	Yoshiki Iwazaki
A.P.4	10:39 - 10:42	<b>In-situ Observation of 90°-domain Switching for Piezoelectric <math>\text{Pb}(\text{Zr}, \text{Ti})\text{O}_3</math> Microcantilevers</b> - Y. Ehara, H. Morioka, T. Kobayashi, S. Yasui, K. Nishida, H. Funakubo	Yoshitaka Ehara
A.P.5	10:42 - 10:45	<b>In Situ Monitoring of Cold-Sintering Mechanisms Using a Custom Stage Designed for Small and Wide Angle X-Ray Scattering</b> - R.A. Maier, A. Allen, F. Zhang, I. Levin	Russell A. Maier
A.P.6	10:45 - 10:48	<b>Characterization of Point Defects in Mn- and (Mn, Nb)-doped Perovskite Titanates</b> - I. Levin, R.A. Maier, K.F. Garrity, V. Provenzano, B. Ravel	Igor Levin
A.P.7	10:48 - 10:51	<b>Advancing Solid State Reaction Science Through <i>in situ</i> X-ray Diffraction and Processing Control</b> - J.L. Jones, J. Corrado Harper, L. Bellcase, R. Broughton, J.S. Forrester	Jacob L. Jones
A.P.9	10:51 - 10:54	<b>Information Recovery in Low Signal-to-noise Piezoresponse Force Microscopy Data</b> - K.N. Williams, H.S. Yuchi, G.K. Ligonde, M.W. Repasky, Y. Xie, N. Bassiri-Gharb	Kerisha N. Williams
A.P.10	10:54 - 10:57	<b>Analysis of Crystals by pm-order Evaluation Technique Using STEM</b> - S. Otsuki, S. Calderon, S.D. Funni, E.C. Dickey	Shiro Otsuki
A.P.11	10:57 - 11:00	<b>Oxygen Vacancy Injection as a Pathway to Enhancing Electromechanical Response in Ferroelectrics</b> - K.P. Kelley, A.N. Morozovska, E.A. Eliseev, V. Sharma, D.E. Yilmaz, A.C.T. van Duin, P. Ganesh, A. Borisevich, S. Jesse, P. Maksymovych, N. Balke, S.V. Kalinin, R.K. Vasudevan	Kyle P. Kelley
A.P.12	11:00 - 11:03	<b>Ultra-Resolution Volumetric Properties of Piezoelectrics and Dielectrics via Tomographic AFM</b> - B.D Huey, K. Del Cid Ledezma, L. Ortiz, J. Kaszas, , R. Ramesh, D. Meier, T. Hosokur, K. Suzuki, Y. Zhu	Bryan D. Huey

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

A.P.13	11:03 - 11:06	<b>Direct Observation of Ferroelectricity in Two-Dimensional MoS<sub>2</sub></b> - A. Gruverman	Alexei Gruverman
A.P.14	11:06 - 11:09	<b>CRUX: Crowdsourced Materials Data Engine for Unpublished XRD Results</b> - A. Sehirlioglu	Alp Sehirlioglu
A.P.15	11:09 - 11:12	<b>Assessment of Flaws in Cold Sintered Electroceramics via Ultrasonic Wave Speed and Attenuation Measurements</b> - H.N. Jones, A.P. Argülles, S. Trolier-McKinstry	Haley N. Jones
A.P.16	11:12 - 11:15	<b>Ferrielectricity in the Archetypal Antiferroelectric, PbZrO<sub>3</sub></b> - N. Bassiri-Gharb, Y. Yao, Z. Beller, A. Naden, S. Lisenkov, I. Ponomareva, A. Kumar	Nazanin Bassiri-Gharb

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

Monday, November 14

**B - 1 Invited      B: MLCC High-Power Electric and High-Frequency Dielectrics      2:00 pm - 4:00 pm**

**Session Chairs: Clive Randall and Hiroko Yokota**

B.I.1	2:00 – 2:30	<b>Challenge to Develop DC-bias &amp; Temperature Dependence-free Dielectric Materials with Dielectric Constants Ranging from 500 to 10,000</b> - S. Wada, P. Sapkota, T. Miyazawa, G.P. Khanal, I. Fujii, S. Ueno	Satoshi Wada
B.I.2	2:30 – 3:00	<b>X7R Dielectric for EV Applications</b> - A. Ellmore	Angela Ellmore
B.I.3	3:00 – 3:30	<b>Development of Low-Loss Dielectric Materials in Multilayer Ceramic Capacitors for Automotive Applications</b> - S. Suzuki, T. Tateishi, K. Banno, T. Nakamura, H. Sano	Shoichiro Suzuki
B.I.4	3:30 – 4:00	<b>Electrical and Thermal Characterization of Class I Multilayer Ceramic Capacitors (MLCCs) in High Alternating Currents</b> - J. Bultitude, L. Jones, I.D. Kinnon, N.A. Reed, J.H. Hayes, A. Templeton	John Bultitude

**4:00 – 4:30      Break**

**B - 2:      Poster Summaries & Poster Viewing - 4:30 pm - 6:30 pm**

B.P.1	4:30 - 4:33	<b>Nano-grained (Bi<sub>1/2</sub>K<sub>1/2</sub>)TiO<sub>3</sub>-SrTiO<sub>3</sub> Ceramics for Capacitor Applications</b> - M. Kitamura, S. Fujihara, M. Hagiwara	Maho Kitamura
B.P.2	4:33 - 4:36	<b>Increasing Capacitor Lifetime with AC Electric Field Cycling</b> - L.M. Garten, J.A. Bock, E.A. Patterson, I. Graham, M.A. Blea, H.J. Brown-Shaklee	Lauren M. Garten
B.P.3	4:36 - 4:39	<b>Dielectric Stimulated Arc Breakdown Across a Spark Gap for Surge Protection</b> - P. Yang, J.K. Grey, D. Vreeland, J.D. Sorenson	Pin Yang
B.P.4	4:39 - 4:42	<b>Voltage Tunable Capacitor for Tunable Power Electronics</b> - C.W. Nies, A.P. Ritter, J. Hock, R. Vanalstine, S.M. Fuller	Craig W. Nies
B.P.5	4:42 - 4:45	<b>Moisture Incorporation and Effects on Electrical Conductivity in Dielectrics</b> - E.C. Dickey, J.F. McGarrahan	Elizabeth C. Dickey
B.P.6	4:45 - 4:48	<b>Solvothermal Synthesis of Perovskite Alkaline-Niobates Nanocubes from Tailored Precursors for High-Performance Composite Dielectrics</b> - S. Ueno, Y. Yamada, P. Sapkota, H. Nam, I. Fujii, S. Wada	Shintaro Ueno
B.P.7	4:48 - 4:51	<b>Microstructural Analysis of Novel Dielectric Composites Using Ultrasonic Nondestructive Evaluation</b> - C.S. Wheatley, J. Mena-Garcia, C.A. Randall, A.P. Argüelles	Christopher S. Wheatley
B.P.8	4:51 - 4:54	<b>Polymer Coated Ceramic Powders for Electronics Applications</b> - C.A. Grabowski, D. Bajaj	Christopher Grabowski
B.P.9	4:54 - 4:57	<b>Silver Niobate Capacitors: Cold Sintered Ceramics and Thin Films</b> - A. Safari, J.D. Leber, J. Zhang	Ahmad Safari
B.P.10	4:57 - 5:00	<b>Developing a Standard Reference Material for mmWave Dielectrics</b> - L.L. Enright, G.L. Brennecka, N.D. Orloff	Lucas L. Enright
B.P.12	5:00 - 5:03	<b>NRL Additive Manufacturing of Ceramics via Microwave Sintering</b> - E.P. Gorzkowski, E.A. Patterson, A.P. Iliopoulos, B. Graber, J.G. Michopoulos	Edward P. Gorzkowski
B.P.13	5:03 - 5:06	<b>The Role of Oxygen Vacancies on DC Lifetime and TSDC in Bi(Zn,Ti)O<sub>3</sub>-BaTiO<sub>3</sub> (BZT-BT)</b> - S. Bishop, M. Blea-Kirby, A. Peretti, W. Bachman, J. Bock	Sean Bishop

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

Tuesday November 15

**C - 1 Invited**      **C: New Materials, Synthesis and Properties for Energy and Environmental Issues**      **8:00 am - 10:00 am**

**Session Chairs:** **Manabu Hagiwara and Geoff Brennecke**

C.I.1	8:00 – 8:30	<b>Silicate and Aluminate-based Ferroelectrics and Antiferroelectrics</b> - H. Taniguchi	Hiroki Taniguchi
C.I.2	8:30 – 9:00	<b>From High-Entropy Ceramics (HECs) to Compositionally Complex Ceramics (CCCs)</b> - J. Luo	Jian Luo
C.I.3	9:00 – 9:30	<b>Melilite-type Silicate Single Crystals for High Temperature Piezoelectric Application</b> - H. Takeda	Hiroaki Takeda
C.I.4	9:30 – 10:00	<b>Multiferroic and Strain Responses in Dilutely Doped BaTiO<sub>3</sub></b> - M. Staruch, S. Mills, E.A. Patterson, P. Finkel	Margo Staruch

**10:00 – 10:30**

*Break*

**C - 2:**      **Poster Summaries and Poster Viewing - 10:30 am - 12:30 pm**

C.P.1	10:30 - 10:33	<b>Fabrication of La-doped Bismuth Silicate Bi<sub>2</sub>SiO<sub>5</sub> Ceramics</b> - Y. Yasumoto, H. Taniguchi, S. Fujihara, M. Hagiwara	Yoji Yasumoto
C.P.2	10:33 - 10:36	<b>Designing Novel Dielectric Composites with High Thermal Conductivity</b> - J. Mena-Garcia, A. Ndayishimiye, Z. Fan, B. Foley, C.A. Randall	Javier Mena-Garcia
C.P.3	10:36 - 10:39	<b>Barium Nickelate for Piezoelectric Catalysis</b> - I. Graham, L.M. Garten	Ian Graham
C.P.4	10:39 - 10:42	<b>Understanding Piezoelectric and Auxetic Response of Cellulose Nanocrystals</b> - F. Rubaiya, M.L. Shofner, L.M. Garten	Fariha Rubaiya
C.P.5	10:42 - 10:45	<b>Unique Polarization Switching System in Kappa-Al<sub>2</sub>O<sub>3</sub>-type Multiferroics</b> - S. Yasui, T. Katayama, Y. Hamasaki, M. Itoh	Shintaro Yasui
C.P.6	10:45 - 10:48	<b>New Materials for Three Dimensional Ferroelectric Microelectronics</b> - S. Trolier-McKinstry, W. Zhu, J. Hayden, K. Ferri, L. Jacques, F. He, J.I. Yang, J.P. Maria, T.N. Jackson	Susan Trolier-McKinstry
C.P.7	10:48 - 10:51	<b>Cold Sintering of Potassium Sodium Niobate, K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub></b> - K. Nakagawa, M. Iwasaki, C.A. Randall	Koki Nakagawa
C.P.8	10:51 - 10:54	<b>The Effect of BaTiO<sub>3</sub> Surface Modification on Cold Sintering</b> - T. Okazaki, Y. Fujioka, C.A. Randall	Toshiki Okazaki
C.P.9	10:54 - 10:57	<b>Novel Electroceramic Composites Under the Processing of Cold Sintering</b> - C.A. Randall	Clive A. Randall
C.P.10	10:57 - 11:00	<b>Cold Sintering Process of BaTiO<sub>3</sub> Composites with Fine PTFE Powder</b> - T. Nunokawa, C.A. Randall	Takashi Nunokawa
C.P.11	11:00 - 11:03	<b>Hybrid Organic-inorganic Perovskites: Piezoelectricity, Ferroelectricity and Rashba Effects</b> - I. Ponomareva, P.S. Ghosh, S. Lisenkov, R. Kashikar	Inna Ponomareva
C.P.12	11:03 - 11:06	<b>Stabilizing Polar Polymorphs of Scandium Ferrite for Photovoltaics</b> - M.B. Frye, A. Mock, L.M. Garten	Marshall B. Frye
C.P.13	11:06 - 11:09	<b>Fast Charge Transfer via Dielectric Interface in Rechargeable Batteries</b> - T. Teranishi, R. Yamanaka, T. Higuchi, K. Hamada, S. Kondo, A. Kishimoto	Takashi Teranishi
C.P.14	11:09 - 11:12	<b>Effect of Dopant Concentration and Processing Methods on the Ferroelectric Behavior of Doped BaTiO<sub>3</sub> Ceramics</b> - S.C. Mills, E.A. Patterson, M. Staruch	Sarah C. Mills
C.P.15	11:12 - 11:15	<b>Ionic Exchange of Aurivillius Phases for Protonation</b> - A. Sehirlioglu, B. Hirt	Ben Hirt
C.P.16	11:15 - 11:18	<b>Electrocaloric Effect of Perovskite High Entropy Oxide Films</b> - Y. Son, S. Trolier-McKinstry	Yeongwoo Son

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

C.P.17 11:18 - 11:21 **Aerosol Deposition and Characterization of Complex Oxide Systems** - E.A. Patterson, S.C. Mills,  
H. Ryou, J.A. Wollmershauser, E.P. Gorzkowski

Eric A. Patterson

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

Tuesday, November 15

**D - 1 Invited      D: Piezoelectric Materials and Their Applications**

**2:00 pm - 4:00 pm**

**Session Chairs: Eric Patterson and Hiroshi Funakubo**

D.I.1	2:00 – 2:30	<b>Domain Structure and Complex Nonlinear Elastic Constants of Lead-Free and Lead Based Piezoelectric Ceramics for Ultrasonic Applications</b> - H. Shimizu	Hiroyuki Shimizu
D.I.2	2:30 – 3:00	<b>Thin Ferroelectric Films &amp; piezoMEMS: A Perspective</b> - J. Evans, Jr.	Joe Evans, Jr.
D.I.3	3:00 – 3:30	<b>Development of (Bi<sub>0.5</sub>Na<sub>0.5</sub>)TiO<sub>3</sub>-based Lead-free Piezoelectric Ceramics by Quenching Treatment for Ultrasonic Applications</b> - H. Nagata, Y. Takagi	Hajime Nagata
D.I.4	3:30 – 4:00	<b>Ultrasonic Time-of-Flight Sensors Based on Piezoelectric MEMS Ultrasonic Transducers</b> - D.A. Horsley, R.J. Przybyla, S.E. Shelton, B.E. Eovino	David Horsley

**4:00 – 4:30              Break**

**D - 2:                      Poster Summaries and Poster Viewing - 4:30 pm - 6:30 pm**

D.P.1	4:30 - 4:33	<b>Ferroelectric Properties of Ag<sub>x</sub>K<sub>1-x</sub>NbSi<sub>2</sub>O<sub>7</sub> Single Crystals</b> - T. Hoshina, Y. Suga, S. Yasuhara, T. Tsurumi	Takuya Hoshina
D.P.2	4:33 - 4:36	<b>Performance and Stability of High T<sub>RT</sub> Relaxor PIN-PMN-PT Single Crystals</b> - A.A. Heitmann, I.M. Doyle, R. Pérez Moyet, N. Noda, K. Echizenya	Adam A. Heitmann
D.P.3	4:36 - 4:39	<b>Large Optical and Piezoelectric Effects Induced by Domain Reconfiguration Under Ferroelectric Phase Transitions</b> - P. Finkel, M. Staruch, T. Mion, M.G. Cain, J. Daniels	Peter Finkel
D.P.4	4:39 - 4:42	<b>Time-dependence and its Origin for Extraordinarily Large Piezoelectric Response in Polarization-inclined Pb(Zr, Ti)O<sub>3</sub> Nanorods</b> - Y. Yamada, K. Okamoto, M. Yoshino, T. Nagasaki, Y. Imai, O. Sakata	Tomoaki Yamada
D.P.5	4:42 - 4:25	<b>Ferrielectricity in the Archetypal Antiferroelectric, PbZrO<sub>3</sub></b> - N. Bassiri-Gharb, Y. Yao, Z. Beller, A. Naden, S. Lisenkov, I. Ponomareva, A. Kumar	Nazanin Bassi-Gharb
D.P.6	4:42 - 4:45	<b>Electromechanical Properties of K(Ta,Nb)O<sub>3</sub> Crystal</b> - H. Maiwa	Hiroshi Maiwa
D.P.8	4:45 - 4:48	<b>Relaxing in Weird Places</b> - A.M. Rappe, D. Behrendt, J. Zhang, Y. Qi, R. Wexler	Andrew M. Rappe
D.P.9	4:48 - 4:51	<b>Ti Doping and Low-temperature Sintering of BiFeO<sub>3</sub> Nanoparticles</b> - M. Hagiwara, Y. Shinjo, M. Mori, S. Fujihara	Manabu Hagiwara
D.P.10	4:51 - 4:54	<b>Bulk ScAlN Plate Ultrasonic Transducer in the 10 MHz Range</b> - S. Kuninobu, N. Ishi, T. Yanagitani	Sota Kuninobu

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

Wednesday, November 16

E - 1 Invited      E: Material Science, Integration and Application of Thin Films

Session Chairs: Tomoaki Yamada and Lauren Garten

- 8:00 – 8:05      **Bruce Tuttle Remembrance** - given by Geoff Brennecka
- E.I.1    8:05 – 8:35      **Effect of Li and Nb Co-doping on AlN Piezoelectric Films Prepared by RF Magnetron Sputtering**  
- T. Terada, J. Kimura, Y. Inoue
- E.I.2    8:35 – 9:05      **Ferroelectrics Everywhere** - J.P. Maria, J. Hayden, D. Goodling, R. Zu, S. Baksa, R. Taheri,  
N. Alem, I. Dabo, V. Gopalan, S. Trolier-McKinstry
- E.I.3    9:05 – 9:35      **GHz Frequency Switchable BAW Filter Applications of Ferroelectric ScAlN and MgZnO Thin  
Films** - T. Yanagitani
- E.I.4    9:35 – 10:05      **Material Synthesis and Device Structures for High Frequency Aluminum Scandium Nitride  
Electromechanical Resonators** - R.H. Olsson, R. Beaucejour, Z. Tang, X. Du
- 10:05 – 10:30      Break**

E - 2:              Poster Summaries and Poster Viewing - 10:30 am - 12:30 pm

- E.P.1    10:30 - 10:33      **Ferroelectricity of 20-nm Thick (Al<sub>0.8</sub>Sc<sub>0.2</sub>)N Thin Films with TiN Electrodes** - R. Ota, S. Yasuoka,  
R. Mizutani, T. Shiraishi, K. Kakushima, H. Funakubo
- E.P.2    10:33 - 10:36      **Wake-up in Al<sub>1-x</sub>B<sub>x</sub>N Ferroelectric Films** - W. Zhu, F. He, J. Hayden, J.I. Yang, J.P. Maria,  
S. Trolier-McKinstry
- E.P.3    10:36 - 10:39      **Ferroelectric Al<sub>0.7</sub>Sc<sub>0.3</sub>N for High Operating Temperature Non-volatile Memory** - D.E. Drury,  
K. Yazawa
- E.P.4    10:39 - 10:42      **Anomalous Switching Kinetics in Ferroelectric Wurtzite Thin Films** - K. Yazawa, J. Hayden,  
J.P. Maria,
- E.P.5    10:42 - 10:45      **Ferroelectric Zn<sub>2/3</sub>Mg<sub>1/3</sub>O Films** - L. Jacques, G. Ruy, S. Shetty, J.P. Maria, S. Trolier-McKinstry
- E.P.6    10:45 - 10:58      **Defining Properties via Material Microstructure: Defect and Strain Engineering Approaches for  
Developing Ferroelectric AlScN** - J.A. Wellington-Johnson, L.M. Garten
- E.P.7    10:48 - 10:51      **Stability of Piezoelectric Thin Film Tin Selenide** - J.R. Chin, S. Marini, L.M. Garten
- E.P.8    10:51 - 10:54      **Quantification of Stress During Field Cycling of Hafnium Zirconium Oxide Thin Films** -  
S.T. Jaszewski, S.S. Fields, J.F. Ihlefeld
- E.P.9    10:54 - 10:57      **A Landau Approach to the Thermodynamics of Ferroelectric Al<sub>1-x</sub>Sc<sub>x</sub>N** - G.L. Brennecka,  
K. Yazawa, A. Zakutayev
- E.P.10    10:57 - 11:00      **Quantifying the Electrode Clamping Effect in Ferroelectric Hafnium Zirconium Oxide Thin Films**  
- J.F. Ihlefeld, S.S. Fields, T. Cai, S.T. Jaszewski, M.D. Henry, B. Sheldon
- E.P.11    11:00 - 11:03      **Ferroelectricity of Polar-axis Oriented Epitaxial (Bi, K)TiO<sub>3</sub> Thin Films Grown by Hydrothermal  
Method** - H. Funakubo, R. Kubota, Y. Ito, A. Tateyama
- E.P.12    11:03 - 11:06      **Defect Chemistry, Charge Transport, Electrical Degradation, and Lifetime In KNN Films** -  
B. Akkopru-Akgun, S. Trolier-McKinstry

# 2022 U.S.-JAPAN SEMINAR ON DIELECTRIC AND PIEZOELECTRIC CERAMICS

- E.P.13 11:06 - 11:09 **Annealing Effects in BaTiO<sub>3</sub>/Ca(Mn,Nb)O<sub>3</sub>/SrTiO<sub>3</sub> Epitaxial Thin Films** - S. Yasuhara, T. Hoshina, T. Tsurumi
- E.P.14 11:09 - 11:12 **Effects of Over-Stoichiometric Lead Compensation on Antiferroelectric Performance and Structure of PbZrO<sub>3</sub> Thin Films** - Z. J. Beller, M.H. Haddad, N. Bassiri-Gharb
- E.P.15 11:12 - 11:15 **Electro-optic Effect in Single- and Multi-domain Pb(Zr, Ti)O<sub>3</sub> Thin Films** - S. Kondo, T. Teranshi, A. Kishimoto, T. Nagasaki, T. Yamada
- E.P.16 11:15 - 11:18 **Lead-Loss Compensation for Processing of Phase-Pure Perovskite PbZrO<sub>3</sub> Thin Films on Si Substrates** - M.H. Haddad, Z.J. Beller, N. Bassiri-Gharb
- E.P.17 11:18 - 11:21 **Mechanical Q Factor Extraction of Sputter-grown Pb(Zr<sub>x</sub>Ti<sub>1-x</sub>)O<sub>3</sub> Epitaxial Thin Films Without Removing Substrate** - Y. Shimizu, T. Yanagitani
- E.P.18 11:21 - 11:24 **Domain Wall Motion and its Contribution to PZT-based MEMS Actuators** - F. He, M. Hejazi, S. Lee, A. Ong, S. Trolier-McKinstry
- E.P.19 11:24 - 11:27 **Fingerprint Imaging Using GHz PbTiO<sub>3</sub> Epitaxial Thin Films Ultrasonic Transducer** - K. Nakamura, Y. Koike, Y. Sato, T. Yanagitani