2025 International Workshop on Acoustic Transduction Materials and Devices

Agenda

Tuesday May 13, 2025

Session I: **Plenary 1** **GENERAL SESSION**

Session Chair: **Susan Trolier-McKinstry** **President's Hall 1 & 2**

	8:15 - 8:25	**Introductory Remarks**	**Susan Trolier–McKinstry, Richard J. Meyer, Jr.**
I.1	8:25 - 8:40	**New Commercial Integrated Array for Acoustic Tweezing** - M. Dysko, I. Sutherland, M. Basij, H.S. Lay, M. Turvey, O. Trushkevych, R.S. Edwards, P. Reynolds, S. Cochran	Sandy Cochran
I.2	8:45 - 9:00	**Lead Free Sonar Transducers for Underwater Acoustics** - N.F. Josso, A. Borta-Boyon, I. Monot-Laffez	Nicolas François Josso
I.3	9:05 - 9:20	**Tailoring Piezoelectricity and Capacitance of Textured Ceramics for Advanced Hydrophone Sensors** - B.H. Watson, C.L. Zhang, S. Trolier-McKinstry, S. Brumbaugh, T.P. Cleckner, R.J. Meyer, Jr., M.A. Fanton	Beecher H. Watson
I.4	9:25 - 9:40	**Time-Resolved Investigation of Domain Dynamics in Direct Current and Alternating Current Poled Relazor-$PbTiO_3$ Single Crystals Through X-ray Photon Correlation Spectroscopy** - J.-W. Sun, A. Fluerasu, Z. Xu, S. Liu, S.-G. Lee, W. Jo, X. Jiang, J.E. Ryu	Jeong-Woo Sun
I.5	9:45 - 10:00	**Evaluation and Standardization of Mechanical Quality Factor Q_m for Piezocrystals** - H.C. Robinson, Z.-Y. Ye, D.C. Ponte	Harold C. Robinson
	10:05 - 10:45	**Morning Break**	
I.6	10:45 - 11:00	**Computational Design of New Organic and Hybrid Piezoelectrics** - R.E. Cohen	Ronald Cohen
I.7	11:05 - 11:20	**Ultra-High Piezoelectric Coupling in AlScN Thin Films Deposited by LAM Research Pulsed Laser Deposition Platform -** J.M. Dekkers, R. Stheins, D.M. Nguyen	Matthijn Dekkers
I.8	11:25 - 11:40	**Magnetoelectric Property in Electroplated Ni/PMN-PZT/Ni Tri-layer Composites** - D. Baek, D. Hur, B. Dursun, H. Song, R. Kim, K. Nakamura, S. Trolier-McKinstry, J. Ryu	Jungho Ryu
	11:45 - 11:51	**Three–Minute Summaries**	
I.9	11:45 - 11:48	**Smart Material Corp., Display of Products** - T. Daue, W. Esler	William Esler
I.10	11:48 - 11:51	**End-to-End Integration of Ultrasound Data Acquisition Devices –** A. Gubbini	Alessandro Gubbini
I.11	Poster Only	**Micromechatronics Inc.: Innovating Piezoelectric Solutions for a Smarter Future** - A. Vazquez	Alfredo Vazquez Carazo
I.12	Poster Only	**Flexible Large Area Piezoelectric PVDF Sensors and Test Instrument** - S. Zhang, H. Zhang	Shihai Zhang
I.13	Poster Only	**APC International, Ltd., Products and Services** - B. Park	Brian Park
I.14	Poster Only	**TRS Technologies, Inc.** - T. Baney	Todd Baney
I.15	Poster Only	**CTS Piezoelectric Products** - S. Hulick	Scott Hulick

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Session II: **Perovskite Piezoelectric MEMS** — **CONCURRENT SESSION**

Session Chair: **Hiroshi Funakubo** — **President's Hall 1**

II.1	2:00 - 2:15	**Development of Epitaxial (100) $BiFe_{1-x}Mn_xO_3$ Film for Non-resonant Piezoelectric MEMS Vibration Energy Harvester** - S. Aphayvong, K. Takaki, M. Takagi, Y. Fujibayashi, K. Fujihara, S. Murakami, H. Yamane, N. Fujimura, T. Yoshimura	Sengsavang Aphayvong
II.2	2:20 - 2:35	**PiezoMEMS Fabrication on Flexible Stainless-Steel Substrate** - K. Nakamura, T.N. Jackson, S. Trolier-McKinstry	Kae Nakamura
II.3	2:40 - 2:55	**The Past Meets the Future in Ferroelectric Test** - J.T. Evans	Joe Evans
II.4	3:00 - 3:15	**Electronic and Ionic Transport of KNN Films under Superimposed AC and DC Fields** - B. Akkopru-Akgun, T. Zhou, K. Shibata, S. Trolier-McKinstry	Betul Akkopru-Akgun
	3:20 - 4:00	**Afternoon Break**	
II.5	4:00 - 4:15	**Antiferroelectricity or Ferrielectricity in $PbZrO_3$ Thin Films** - N. Bassiri-Gharb	Nazanin Bassiri-Gharb
II.6	4:20 - 4:35	**Diaphragm-type Piezoelectric MEMS Accelerometers with Bulk Ferroelectric Crystals** - B. Dursun, S. Trolier-McKinstry, Y. Jeong, S.-G. Lee	Burcu Dursun
	4:40 - 5:07	**Three-Minute Summaries**	
II.7	4:40 - 4:43	**Effective Moisture Protection for Bulk and Thin Film Piezoelectric Actuators** - A. Diaz-Huemme, S. Trolier-McKinstry	Anthony Diaz-Huemme
II.8	4:43 - 4:46	**Antiferroelectricity in $PbZrO_3$ as a Function of Film Thickness** - M.H. Haddad, H. Gally, N. Bassiri-Gharb	Milan Haddad
II.9	4:46 - 4:49	**Polarization Stability and Effects in B-site Substituted Perovskite High Entropy Oxide Films** - M. Urban, Y. Son, S. Trolier-McKinstry	Maximillian Urban
II.10	4:49 - 4:52	**Morphotropic Phase Boundary-like Behavior Induced by Nano-Clustering in Lead Zirconate and Lead Titanate Composite Films** - H. Song, N. Kang, M. Kim, T.-K. Sung, Y.U. Wang, Y.M. Jin, H. Kim, J. Shim, Y. Kim, C.-L. Lee, S.-Y. Choi, S. Trolier-McKinstry, D.-Y. Jeong, J. Ryu	Hyunseok Song
II.11	4:52 - 4:55	**PZT-based Piezoelectric Micromachined Ultrasound Transducers on Polymeric Substrates for Neuromodulation** - V. Vasquez, P. Tipsawat, S. Trolier-McKinstry, T.N. Jackson	Victoria Vazquez
II.12	4:55 - 4:58	**Stress Compensation of Lead Zirconate Titanate Piezoelectric Stacks for Actuator Arrays in Adjustable X-ray Optics** - J.E. Goodman, K. Buffo, C. DeRoo, P. Reid, H. Liang, T. Jackson, S. Trolier-McKinstry	J. Goodman
II.13	4:58 - 5:01	**Thin-Film PZT Integration into Mixed-Transducer Folded Microstructures** - Y. Zhu, M. Hallaj, Y. Yang, A. Ghrayeb, E.T. Filipov, K.R. Oldham	Majeed Hallaj
II.14	5:01 - 5:04	**A Comparison of the Antiferroelectric Nature of $PbHfO_3$ and $PbZrO_3$ Thin Films** - S. Shin, N. Bassiri-Gharb	Seonkyu Shin
II.15	5:04 - 5:07	**Effects of Mn-doping on High-Field Properties of Silver Niobate Tantalate PLD Thin Films** - J. Leber, and A. Safari	Jack Leber

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Session III: **Poling Treatments and Other Transduction** — **CONCURRENT SESSION**

Session Chair: **Venkatraman Gopalan** — **President's Hall 2**

III.1	2:00 - 2:15	**Comparison of Single Crustal Growth Method on Temperature Stability of Piezoelectric Constants for $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ Single Crystals After AC Poling** - H. Maiwa, Y. Xiang, Y. Sun, L. Ke, Y. Sun, Y. Yamashita	Hiroshi Maiwa
III.2	2:20 - 2:35	**Domain Engineering by AC Poling in Relaxor-based $Pb(Mg_{1/3}Nb_{2/3})O_3$ - $PbTiO_3$ Single Crystals** - T. Nazari, A.A. Bokov, J. Tian, Z.-G. Ye	Zuo-Guang Ye
III.3	2:40 - 2:55	**Improved Piezoelectric Performance of Single Crystal and Textured Materials Using Pulse Poling** - M.W. Mervosh, C.A. Randall	Michael Mervosh
III.4	3:00 - 3:15	**Piezoelectric, Dielectric and Elastic Enhancement of Barium Titanate Ceramics by AC Poling Over T_C and their Domain Size Effects** - A. Tsige, I. Fujii, H. Nam, P. Sapkota, G.P. Khanal, Z. Wang, S. Ueno, S. Wada	Satoshi Wada
	3:20 - 4:00	**Afternoon Break**	
III.5	4:00 - 4:15	**Multiferroic Magnetoelectric Composites: From Simulation to Inkjet-Printed Advanced Electronics** - W.P. Flynn, S. Garnsey, A.S. Bhalla, R. Guo	William Paul Flynn
III.6	4:20 - 4:35	**Machine Learning Enabled Quantification of Ionic Movement in Lead Halide Perovskites via Electrochemical Strain Microscopy at the Limits of Signal-to-Noise Ratio** - C. Davel, J.-P. Correa-Baena, N. Bassiri-Gharb	Connor Davel
	4:40 - 4:58	**Three–Minute Summaries**	
III.7	4:40 - 4:43	**AC Poling Effects on the Piezoelectrical Properties of $Pb(Mg_{1/3}Nb_{2/3})O_3$-0.055 $PbTiO_3$ Single Crystals** - L.-C. Lim, Y. Yamashita, H. Maiwa, Z. Xu, S. Liu, X. Jiang	Leong-Chew Lim
III.8	4:43 - 4:46	**AC Poling of High Q_m and Low Acoustic Impedance $Pb(Mg_{1/3}Nb_{2/3})O_3$ - $Pb(Zr,Ti)O_3$ Single Crystals Produced by Solid-state Crystal Growth** - H. Maiwa, Y. Xiang, H.-Y. Lee, Y. Yamashita	Hiroshi Maiwa
III.9	4:46 - 4:49	**Flexoelectricity Induced from Interfacial Polarization in Silicon-based Barrier Layer Capacitors** - R. Hawks, A. Kazemi, G. Lavallee, R.J. Meyer, Jr., S. Roundy, S. Trolier-McKinstry	Ryan Hawks
III.10	4:49 - 4:52	**Dual-Functional High-Entropy Polymer Exhibiting Giant Cross-Energy Couplings at Low Fields** - G. Rui, W. Zhu, L. Li, Q.M. Zhang	Guanchun Rui
III.11	4:52 - 4:55	**Fabrication of Bismuth Nanowires for Piezoresistive Applications** - T. Anderson, Y. Karina, A. Gholampour, S. Kodambaka, V. Soghomonian, J.J. Heremans	Tristan Anderson
III.12	4:55 - 4:58	**Understanding Percolation Networks in Inkjet-Printed Metal Nanoparticle Films for Electronics** - L.A. Santillan, W.P. Flynn, S. Garnsey, A.S. Bhalla, R. Guo	Luis A. Santillan
III.13	Poster Only	**AC Poling and its Effectiveness in [001]-oriented Textured Ceramics** - A.A. Heitman, Y. Cardona-Quintero, R. Pérez Moyet	Adam A. Heitmann
III.14	Poster Only	**Advancing Hyrid 3D Deposition (H3D): Synthesis, Fabrication, and Integration of Transducer Nanomaterials** - S. Garnsey, W.P. Flynn, L. Santillan, C. Acosta, A. Cadena, D. Fears, E. Castro, A.S. Bhalla, R. Guo	Ruyan Guo
III.15	Poster Only	**Enhanced Magnetoelectric Effect Controlled by Magnetic Anisotropy in Ferromagnetic-Piezoelectric Heterostructure** - T. Mion, M. Staruch, P. Finkel	Peter Finkel

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Session IV:		**Piezoelectric Single Crystals and Transducers**	**GENERAL SESSION**
Session Chair:		**Mark Fanton**	**President's Hall 1 & 2**
IV.1	8:00 - 8:15	**Fabrication and Application of Gen III PMN-PZT Single Crystals Grown by Solid-state Crystal Growth (SSCG) Technique** - H.-T. Oh, M.-C. Kim, H.-J. Joo, D.-H. Kim, H.-Y. Lee	Ho-Yong Lee
IV.2	8:20 - 8:35	**Update on the Development of Piezoelectric Single Crystals** - J. Tian, W. Zhang, K. Grove, T. Vencill	Jian Tian
IV.3	8:40 - 8:55	**Piezoelectric Single Crystals - Will it Revolutionize Current Sonar Systems and What to Expect** - L.C. Lim, Y.X. Xia, F.C. Lim, J.H. Koh, L. Wang	Leong-Chew Lim
IV.4	9:00 - 9:15	**Characterizing Novel Ternary and Doped Piezoelectric Single Crystals** - K. Grove, J. Tian	Kyle M. Grove
	9:20 - 10:00	**Morning Break**	
IV.5	10:00 - 10:15	**Optimizing the Mechanical Quality Factor of Ultrasonic Transducers** - D.A. DeAngelis, G.W. Schulze, T.J. Palumbo	Dominick A. DeAngelis
IV.6	10:20 - 10:35	**Update on Relaxor-PT Crystal Development for Cost-effective Production** - S. Dynan, J. Luo, S. Dursun and H. Marshall	Jun Luo
IV.7	10:40 - 10:55	**Lead Free Materials for Both High and Low Temperature Ultrasonic Sensing** - T.P. Comyn, P.I. Cowin, A.J. Bell	Tim Comyn
IV.8	11:00 - 11:15	**Temperature Effects on Resonance Behaviors of a Flextensional Piezoelectric Transducer** - S. Naz, B. Zhao, T.-B. Xu	Tian-Bing Xu
IV.9	11:20 - 11:35	**Commercialization of High Temperature Piezoelectric Ceramics with High Electromechanical Properties**- S. Dursun, R. Tomcavage, S. Dynan	Sinan Dursun
	11:40 - 12:07	**Three-Minute Summaries**	
IV.10	11:40 - 11:43	**Giant Strain in Fe-Doped $BaTiO_3$ Single Crystal by AC Electric Field Activated Aging Effect** - R. Kim, C.-M. Baek, D.-Y. Jeong, H. Huang, S. Trolier-McKinstry, J. Ryu	Rokhyeon Kim
IV.11	11:43 - 11:46	**High-frequency Ultrasound Transducer Fabrication Incorporating Sm-PIN-PMN-PT Single Crystal / Epoxy Composite** - S. Cochran, Y. Wang, K.-H. Lam	Sandy Cochran
IV.12	11:46 - 11:49	**High T_c (>400 °C) Bi-based Relaxor-PT ($BiMeO_3$-$PbTiO_3$) Single Crystals Larger than 1": Solid-state Single Crystal Growth (SSCG) and High Temperature Applications** - M.-J. Yoon, M.-C. Kim, H.-T. Oh, S.-W. Ko, H.-Y. Lee	Myeong-Jae Yoon
IV.13	11:49 - 11:52	**Ultrahigh Strain SSCG Gen III PMN-PZT Single Crystal Multilayer Actuators** - H.-T. Oh, M.-G. Son, M.-C. Kim, H.-Y. Lee	Hyeon-Taek Oh
IV.14	11:52 - 11:55	**Evaluation of Textured Piezoceramics: Material Properties and Transducer Performance** - A. Alexandrou, G. Smillie, S. Cochran, R.L. O'Leary	Anna Alexandrou

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Session IV - continued — Piezoelectric Single Crystals and Transducers — Presidents Hall 1 & 2

IV.15	11:55 - 11:58	**Analytical Parametric Study of Transducer Design Optimization** - D.C. Ponte, J.A. Chace, W.A. Visser, I.M. Doyle, N. Fitzgerald, J.R. Torres	David C. Ponte
IV.16	11:58 - 12:01	**High-Temperature, Radiation-Endurance Ultrasonic Transducer (REUT) for Nuclear Harsh Environment Applications** - D. Xiang, X. Gong, D. Velicheti	Dan Xiang
IV.17	12:01 - 12:04	**Enhancing Piezoelectric Energy Harvesting Figure of Merit ($d_{33}xg_{33}$) by Rare Earth Elements Doping in (1-x-y)$PbZrO_3$ - x$PbTiO_3$ - y$Pb(Ni_{1/3}Nb_{2/3})O_3$** – N. Kang, D. Hur, D. Baek, H. Song, J. Ryu	Nayeon Kang
IV.18	12:04 - 12:07	**Charging Behaviors and Energy Transportation from a Piezoelectric Energy Harvester to a Super-Capacitor** - B.Zhao, T.-B. Xu	Tian-Bing Xu
IV.19	Poster Only	**High Power Reliability of Texture Ceramics** - Y. Cardona Quintero, R. Pérez Moyet, A.A. Heitman	Yenny Cardona Quintero
IV.20	Poster Only	**Dependence of <001> Textured PIN-PMN-PT Ceramics on the Amount of Template** - T. Hashimoto, R. Sasaki, K. Kumasaka, T. Sano, S. Kondo, M. Yamamoto	Takatoshi Hashimoto
IV:21	Poster Only	**High-Power Characteristics of Conventional Ceramics, Single Crystals and Textured Ceramics** - T. Sano, R. Abe, K. Hasebe, K. Ueda, S. Kondo, H. Ishimura, M. Yamamoto, T. Hashimoto, R. Sasaki, K. Kumasaka, S. Takahashi, M. Umeda	Takahiro Sano
IV:22	Poster Only	**Ultrasonic NDE Transducer Optimization Challenges for Lead-Cooled Fast Reactor Inspection in SMR Systems** - M. Budimir, I. Barac, P. Cvjeticanin, A. Bagnasco, S. Nardi, F. Ogheard	Marko Budimir
IV:23	Poster Only	**Birefringence Behavior During Over-poling of PMN-28PT Single Crystal** - R. Pérez Moyet, Y. Cardona-Quintero, W.A. Visser, A.A. Heitman	Richard Pérez Moyet

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Session V: **Wurtzite and Fluorite Films for Piezoelectrics and Memory** **CONCURRENT SESSION**

Session Chair: **Nazanin Bassiri-Gharb** **President's Hall 1**

V.1	2:00 - 2:15	**Effect of Co-doping of High and Low Valence Elements on the Constituent Phase and Ferroelectricity in HfO_2-based Epitaxial Films** - K. Shimonosono, K. Okamoto, W. Yamaoka, Y. Kawashima, Y. Inoue, H. Funakubo	Hiroshi Funakubo
V.2	2:20 - 2:35	**Intrinsic Quality Factor of Sc-doped Aluminum Nitride Diaphragms** - K. Kang, G. Esteves, H.M. Walwil, S. Choi, S. Trolier-McKinstry	Kyuhwe Kang
V.3	2:40 - 2:55	**Ferroelectric Switching in $Al_{1-x}B_xN$ Thin Films with Varying Nitrogen Concentration in Sputtering Gas** - Q.T. Tran, J. Hayden, J. Casamento, I. Mercer, J.P. Maria, T.N. Jackson	Quyen Tran
V.4	3:00 - 3:15	**Preparation of (Mg,Si)N-based Solid Solution Films by RF Magnetron Sputtering Method and their Dielectric and Piezoelectric Properties** - S. Kageyama, K. Okamoto, Y. Hiranaga, H. Funakubo	Sotaro Kageyama
	3:20 - 4:00	**Afternoon Break**	
V.5	4:00 - 4:15	**Rayleigh and Switching Kinetics Behavior of Pristine and Fatigued $Al_{0.93}B_{0.07}N$** - E.Z. Ozdemir, B. Akkopru-Akgun, L.C. Jacques, K. Yazawa, I. Mercer, C. Skidmore, J. Maria, C.A. Randall, S. Trolier-McKinstry	Erdem Ozdemir
V.6	4:20 - 4:35	**Switching Kinetics in Ferroelectric Zinc Magnesium Oxide Thin Films** - L.C. Jacques, E.Z. Ozdemir, P. Yousefian, R.J. Spurling, P. Tipsawat, D. Behrendt, B. Akkopru-Akgun, A.M. Rappe, J.P. Maria, K. Yazawa, S. Trolier-McKinstry	Susan Trolier-McKinstry
	4:40 - 4:46	**Three–Minute Summaries**	
V.7	4:40 - 4:43	**Electrical Properties of Al,ScN Thin Films Grown by Molecular Beam Epitaxy and Magnetron Sputtering** - A. Habib Akyhari, E.Z. Ozdemir, I. Mercer, S. Mondal, S. Yang, B. Akkopru-Akgun, Z. Mi, J.P. Maria, S. Trolier-McKinstry	Ali Habib Akhyari
V.8	4:43 - 4:46	**Possibility of Ferroelectricity in Gallium Ferrite Thin Films** - R. Ma, S. Trolier-McKinstry	Roger Ma

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Session VI: Processing and Characterization — **CONCURRENT SESSION**

Session Chair: Beecher Watson, III — **President's Hall 2**

VI.1	2:00 - 2:15	**Solubility Studies of PMN-PZT in Water** - C.A. Fellabaum, C.D. Edie, B.H. Watson, M.A. Fanton	Chloe Fellabaum
VI.2	2:20 - 2:35	**Exploring Domain Switching Dynamics and Phase Configuration in New Transduction Modality for Sound Projectors** – P. Finkel, M. Staruch, T. Mion	Peter Finkel
VI.3	2:40 - 2:55	**Perovskite Sodium Niobate Bismuth Ferrite Ceramics and PLD Thin Films** - A. Wynne, S. Pulipaka, A. Safari	Adam Wynne
VI.4	3:00 - 3:15	**Ultrasonic Attenuation Sensitivity to Oxygen Vacancy Migration in Electrically Degraded Multilayer Ceramic Capacitors** - H.N. Jones, A.P. Arguelles, S. Trolier-McKinstry	Haley Nicole Jones
	3:20 - 4:00	**Afternoon Break**	
VI.5	4:00 - 4:15	**Decoding THz-driven Dynamic Fingerprints of Ferroelectric Nanotwin Network** - X. Li, A. Ross, V. Stoica, S. Das, S. Hazra, M. Hoffman, T. Sato, D. Zhu, R. Ramesh, L. Martin, Y. Cao, J. Freeland, A. Lindenberg, H. Wen, L.-Q. Chen, and V. Gopalan	Venkatraman Gopalan
VI.6	4:20 - 4:35	**Quantitative Local Measurements of Domain Structure Evolution using Synchrotron Nanodiffraction** - S.A. Udovenko, R.B. Hawks, K. Peterson, S. Hruszkevycz, H. Yan, A. Pattammattel, D.C. Pagan, S. Trolier-McKinstry	Stanislav Udovenko
	4:40 - 4:46	**Three Minute Summaries**	
VI.7	4:40 - 4:43	**Nonlinear Contributions of Charged Species to the Signal in Piezoresponse Force Microscopy** - G.K. Ligonde, N. Bassiri-Gharb	Gardy Kevin Ligonde
VI.8	4:43 - 4:46	**Contract Ceramic Processing** - R. Petrucci, W. Coburn	Russell Petrucci

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Thursday May 15, 2025

Session VII: Textured Ceramics — **GENERAL SESSION**

Session Chair: Richard J. Meyer, Jr. — **President's Hall 1 & 2**

VII.1	8:00 - 8:15	**Recent Developments in QorTek's Textured Piezoceramics: Processing, Shape & Size Availability and Manufacturability** - S. Tuncdemir, A.E. Gurdal	Safakcan Tuncdemir
VII.2	8:20 - 8:35	**Dielectric and Electro-Mechanical Behavior of Textured Mn-doped PMN-PZT Ceramic at Electric Fields up to 4 kV/cm** - M.A. Fanton, B.H. Watson, J.J. Fox, C.L. Zhang, R.J. Meyer	Mark Fanton
VII.3	8:40 - 8:55	**Textured Piezoelectric Ceramics Printed with Baffled Nozzles** - C.D. Eadie, J. Lindau, B. Cowen, C.A. Fellabaum, B.H. Watson, III, M.A. Fanton	Christopher Eadie
VII.4	9:00 - 9:15	**The Compressive Preload-Stress Sensitivity of the Dielectric and Piezoelectric Response of PZT and Textured Ceramic Materials** - B.H. Watson, III, S.J. Brumbaugh, E.L. Herrold, J. Peters, J.J. Fox, B. Weiland, R. Gamble, E. Oslosky, T.P. Cleckner, R.J. Meyer, Jr., M.A. Fanton	Beecher H. Watson, III
VII.5	9:20 - 9:35	**Quantifying Local Piezoelectric Response in Textured PMN-PZT Ceramics using High-energy X-ray Diffraction Microscopy** - R.J. Knox, S. Udovenko, B. Akkopru-Akgun, A. Das, M.A. Fanton, S. Trolier-McKinstry, D.C. Pagan	Reilly J. Knox
	9:40 - 10:20	**Morning Break**	
VII.6	10:20 - 10:35	**Development of Textured Lead Zirconate Titanate (PZT) Ceramics for Passive Acoustic Sensing Applications** - C.L. Zhang, B.H. Watson III, M.A. Fanton	Casey Zhang
VII.7	10:40 - 10:55	**PMN-PZT Based Textured Ceramics and the Thickness Dependence** - Z.M. Fan, G. Stranford	Zhongming Fan
VII.8	11:00 - 11:15	**Textured Phases in PMN-PT Crystals and Grain-oriented Ceramics** - D. Viehland	Dwight Viehland
VII.9	11:20 - 11:35	**Sensitivity of Electromechanical Properties of Crystallographic Orientation in Textured PMN-PZT** - C.D. Eadie, B.H. Watson, III, M.A. Fanton	Christopher Eadie