

8:15	POLAR OXIDES IN THE WORLD OF NANOELECTRONICS (PLENARY TALK) R. Waser FZJ Research Center Jülich and RWTH Aachen University, Germany
	<i>Multi-layer Structures</i> <i>Session Chair: C.S. Hwang</i>
9:00	THE EMERGENCE OF MULTI-LAYER CERAMICS AS A MEMS/MST PLATFORM M. Oliver* Motorola Labs, Tempe, Arizona, USA
9:30	THE TECHNICAL TRENDS IN MLCC J.H. Kim*, E.S. Na Samsung electro-mechanics co., Ltd, Suwon, Gyunggi-Do, South Korea 442-743
10:00	DIELECTRIC MATERIALS DEVELOPMENT FOR HIGH-TEMPERATURE CAPACITORS E. Furman* ¹ , M. Lanagan ¹ , S.Y. Young ¹ , B. Jones ¹ , and S. Kwon ² ¹ Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA ² TRS Ceramics
10:20	DEVELOPMENT OF X7R TYPE BASE-METAL-ELECTRODED BaTiO₃ CAPACITOR MATERIALS BY CO-DOPING OF MgO/Y₂O₃ ADDITIVES I-N. Lin* ¹ , W-C. Yang ² , C-T. Hu ² and H-F. Cheng ³ ¹ Materials Science Center, National Tsing-Hua University, Hsin-Chu, Taiwan 300 ² Dept. of Materials Science and Engineering, National Tsing-Hua University, Hsin-Chu, Taiwan 300 ³ Dept. of Physics, National Taiwan Normal University, Taipei 106, Taiwan R.O.C.
10:40-11:00	Break
	<i>Multi-layer Structures - continued</i> <i>Session Chair: L. Gauckler</i>
11:00	FUTURE CHALLENGES IN ELECTROCERAMIC MATERIALS AND DEVICES C.A. Randall Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA
11:30	MICROWAVE CO-FIRING OF BASE-METAL-ELECTRODE MULTILAYER CAPACITORS Y. Fang* ¹ , H. Peng ¹ , D. Agrawal ¹ , M. Lanagan ¹ , C. Randall ¹ , M. Randall ² ¹ Materials Research Institute, Pennsylvania State University, University Park, PA 16802, USA ² Kemet Electronics, Inc., 201 Fairview St., Fountain Inn, SC 29644, USA
11:50	DIELECTRIC PROPERTIES OF (Sr,Ba)Bi₄Ti₄O₁₅ CERAMICS C.C. Chan ¹ , M.A. Feng* ² , C.F. Yang ³ and H.L. Wang ⁴ ¹ Dept. Chemical Eng., K.Y.I.T., Kaohsiung, Taiwan R.O.C. ² Dept. Electronic Eng., S.T.U.T., Yung-Kang City, Tainan, Taiwan R.O.C. ³ Dept. Electronic Eng., C.A.F.A., Kangshan, Kaohsiung, Taiwan R.O.C. ⁴ Dept. Electronic Eng., K.Y.I.T., Kaohsiung, Taiwan R.O.C.
12:10-13:50	Lunch

	<p><i>Piezoelectric Materials</i> <i>Session Chair: K. Uchino</i></p>
13:50	<p>LEAD FREE PIEZOELECTRIC MATERIALS M. Demartin-Maeder and D. Damjanovic Ceramics Laboratory, Swiss Federal Institute of Technology – EPFL, 1015 Lausanne, Switzerland</p>
14:20	<p>NOVEL HIGH TEMPERATURE FERROELECTRICS BASED ON BiMe⁺³O₃–PbTiO₃ PEROVSKITE SOLID SOLUTIONS C.A. Randall, R. Eitel, C. Stringer, T. Song, and T.R. Shrout Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA</p>
14:50	<p>GIANT PIEZOELECTRIC RESPONSE IN EPITAXIAL 67Pb(Mg_{1/3}Nb_{2/3})O₃-33PbTiO₃ HETEROSTRUCTURE ON SILICON FOR HIGH PERFORMANCE ELECTROMECHANICAL SYSTEMS C.B. Eom^{*1}, D.M. Kim¹, S.D. Bu¹, J. Lettieri², T. Yoshimura², S. Trolier-McKinstry², D.G. Schlom², V. Nagarajan³, A. Stanishevsky³, B. Liu³ and R. Ramesh³, W. Tian⁴ and X.Q. Pan⁴, S.K. Streiffer⁵ ¹Dept. of Materials Science and Engineering, University of Wisconsin-Madison, Madison, Wisconsin 53706, USA ²Dept. of Materials Science and Engineering, The Pennsylvania State University, University Park, PA 16803, USA ³Dept. of Materials Science and Engineering, University of Maryland, College Park, MD 20742, USA ⁴Dept. of Materials Science and Engineering, The University of Michigan, Ann Arbor, Michigan 48109, USA ⁵Argonne National Laboratory, Argonne, IL, USA</p>
	<p><i>Combinatorial Exploration of Oxide Semiconductors</i> <i>Session Chair: V. Venkatesan</i></p>
15:20	<p>COMBINATORIAL APPROACH FOR THE CHALLENGES AND EXPLORATION OF OXIDE SEMICONDUCTORS M. Kawasaki Institute for Materials Research (IMR), Tohoku University, Sendai 980-9577, Japan and Combinatorial Materials Exploration and Technology (COMET), National Institute for Materials Science (NIMS), Tsukuba, 305-0047, Japan</p>
	<p><i>Magnetic Materials</i> <i>Session Chair: X. Pan</i></p>
16:00	<p>NOVEL ABOVE-ROOM TEMPERATURE FERROMAGNETIC SEMICONDUCTING OXIDES T. Venkatesan*, S.B. Ogale and S.R. Shinde NSF MRSEC on Oxides and Surfaces, Center for Superconductivity Research, University of Maryland, College Park, MD 20742, USA</p>

8:00	A MATERIALS ROADMAP FOR MICROPHOTONICS (PLENARY TALK) L.C. Kimerling Dept. of Materials Science and Engineering and Materials Processing Center, MIT, Cambridge, MA 02139, USA
	<i>Piezoelectric Devices and Processing</i> <i>Session Chair: G. Messing</i>
8:50	MICRO PIEZOELECTRIC ULTRASONIC MOTORS K. Uchino ¹ , B. Koc ¹ , S. Cagatay ¹ , P. Bouchilloux ² and S. Dong ³ ¹ International Center for Actuators and Transducers, Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA ² Adaptronics, Troy, NY 12180, USA ³ Virginia Polytech Institute, Blacksburg, VA 24061, USA
9:20	30 W CLASS PIEZOELECTRIC CERAMIC TRANSFORMER FOR AC-DC CONVERTERS A. Ochi, M. Yamamoto*, T. Inoue, Y. Sasaki 4-1-1 Miyazaki, Miyamae, Functional Materials Res. Labs., NEC Corp., Atsushi Ochi, Kawasaki 216-8555, Japan
9:50	LOSS MECHANISMS AND HIGH POWER PIEZOELECTRICS K. Uchino*, Y. Gao and J. Ryu International Center for Actuators and Transducers, Materials Research Institute, The Pennsylvania State University, PA 16802, USA
10:10	SIZE AND MATERIAL EFFECTS ON CYMBAL TRANSDUCER FOR ACTUATOR APPLICATIONS E. Uzgur* ¹ , A. Dogan ¹ , R.E. Newnham ² ¹ Anadolu University, Eskisehir, Turkey ² The Pennsylvania State University, Materials Research Institute, University Park, PA 16802, USA
10:30- 11:00	Break
	<i>Piezoelectric Devices and Processing - continued</i> <i>Session Chair: S. Trolier-McKinstry</i>
11:00	LAYERED MANUFACTURING FOR PROTOTYPING OF NOVEL TRANSDUCERS A. Safari* and M. Allahverdi Dept. of Ceramic and Materials Engineering, Rutgers University, Piscataway, New Jersey 08854-8065, USA
11:30	LINEAR ULTRASONIC MOTOR USING SHAKING BEAM FOR NANO- POSITIONING SYSTEM S-J. Yoon* ¹ , S. Bordinas ¹ , S. Nahm ² , H-J. Kim ¹ ¹ Thin Film Materials Research Center, KIST, Seoul, South Korea ² Dept. of Material Science and Engineering, Korea University, Seoul, South Korea
11:50	NOVEL LOW VOLTAGE PIEZOACTUATORS FOR HIGH DISPLACEMENTS R. Höppener* ¹ , H. Oostra ¹ , M. De Moya ² , M. Wagner ³ , A. Roosen ³ ¹ Haikutech Europe BV, Dorpsstraat 100A, 6274 NN Reijmerstok, The Netherlands ² Haiku Tech Inc., 825 S.W. 8 th Court, Miami, FL 33130, USA ³ University of Erlangen-Nuremberg, Dept. of Material Science, Glass and Ceramics, Martensstr. 5, 91058 Erlangen, Germany
12:10- 14:00	Lunch

	<i>Free-form and Graded Processing</i> <i>Session Chair: A. Safari</i>
14:00	FREE-FORM FABRICATION PROCESSES FOR FUNCTIONAL CERAMIC APPLICATIONS M. Cima Dept. of Materials Science and Engineering, MIT, Cambridge, MA 02139, USA
14:40	SOLID FREEFORM FABRICATION OF PIEZOELECTRIC ACTUATORS BY A MICRO-CASTING METHOD B. Bos*, H. Gorter and L.J.M.G. Dortmans TNO TPD Materials Technology, PO Box 595, 5600 AN Eindhoven, The Netherlands
15:00	FABRICATION AND ASSESSMENT OF FUNCTIONALLY GRADED LEAD ZIRCONATE TITANATE (PZT) CERAMICS MADE BY AQUEOUS TAPE CASTING A. Navarro* ¹ , R.W. Whatmore ² and J.R. Alcock ³ ¹ Advanced Materials Dept., Building 70, School of Industrial and Manufacturing Science, Cranfield University, Bedfordshire, MK43 0AL, United Kingdom ² Nanotechnology Dept., School of Industrial and Manufacturing Science, Cranfield University, Bedfordshire, MK43 0AL, United Kingdom ³ Advanced Materials Dept., Building 61, School of Industrial and Manufacturing Science, Cranfield University, Bedfordshire, MK43 0AL, United Kingdom
15:20	SYNTHESIS, PROCESSING AND CHARACTERIZATION OF NANOCRYSTALLINE BaTiO₃-CERAMICS C. Pithan* ¹ , J. Dornseiffer ² , F-H. Haegel ² and R. Waser ¹ ¹ Institute for Electroceramic Materials, Dept. of Solid-State Research ² Institute of Chemistry and Dynamics of the Geosphere, Forschungszentrum Jülich GmbH, D-52428 Jülich, Germany
15:40	FUNDAMENTAL LIMITS OF ORGANIC PACKAGES AND BOARDS AND THE NEED FOR NOVEL CERAMIC BOARDS FOR NEXT GENERATION ELECTRONIC PACKAGING P. Markondeya Raj* ¹ , S. Atmur ² , V. Sundaram ¹ , F. Liu ¹ , I. Abothu ¹ , S. Bhattacharya ¹ , R.R. Tummala ¹ ¹ Packaging Research Center, Georgia Institute of Technology, Atlanta, GA 30332-0405, USA ² Starfire Systems Inc., 10 Hermes Road, Suite 100, Malta, NY 12020
16:00-16:30	Break
	<i>Microwave Ceramics</i> <i>Session Chair: I-D. Kim</i>
16:30	ELECTROCERAMICS IN RF-MEMS AND MICROWAVE ELECTRONICS (Combined with Session 1) N. Setter*, P. Muralt, R. Lanz, C. Astafiev, V. Janakiraman, V. Cherman, A.K. Tagantsev Ceramics Laboratory, Materials Institute, Faculty of Engineering, EPFL, Swiss Federal Institute of Technology, 1015 Lausanne, Switzerland
17:00	CERAMIC MATERIALS BASED ON (Ba, Sr) TiO₃ SOLID SOLUTIONS FOR TUNABLE MICROWAVE DEVICES E.A. Nenasheva* ¹ , A.D. Kanareykin ² , N.F. Kartenko ³ , S.F. Karmanenko ⁴ ¹ GIRICOND Research Institute, 10 Kurchatova St., 94223, St. Petersburg, Russia ² Euclid Concepts LLC, 5900 Harper Rd., Solon, OH 44139, USA ³ A.F. Ioffe Physicotechnical Institute, 26 Politechnicheskaya St., 194021, St. Petersburg, Russia. ⁴ Electrotechnical University, Prof. Popov St., 197376, St. Petersburg, Russia
17:20	MICROWAVE PROPERTIES OF TUNABLE THICK FILMS W. Menesklo*, F. Zimmermann, M. Voigts, E. Ivers-Tiffée Institut für Werkstoffe der Elektrotechnik, Universität Karlsruhe (TH), 76131 Karlsruhe, Germany

	<i>Von Hippel Lecture</i> <i>Session Chair: W. Menesklou</i>
9:00	MOLECULAR ENGINEERING: FUNDAMENTAL CONTRIBUTIONS OF ARTHUR VON HIPPEL TO ELECTROCERAMICS M. Zahn MIT, Department of Electrical Engineering and Computer Science Laboratory for Electromagnetic and Electronic Systems, Cambridge, MA 02139
	<i>Dielectric Devices</i> <i>Session Chair: W. Menesklou</i>
9:30	BaTiO₃ FILMS BY LOW TEMPERATURE HYDROTHERMAL TECHNIQUES FOR NEXT GENERATION PACKAGING APPLICATIONS D. Balaraman*, P.M. Raj, S. Bhattacharya, I. Abothu, S. Dalmia, L. Wan, M. Swaminathan and R. Tummala Packaging Research Center, Georgia Institute of Technology, Atlanta, GA 30332-0560, USA
9:50	MICROSTRUCTURAL AND ELECTRICAL CHARACTERIZATION OF NEWLY DEVELOPED NIOBIUM CAPACITORS WITH NANOSCALE DIELECTRIC LAYERS H. Störmer* ¹ , V. Fischer ² , E. Ivers-Tiffée ² , M. Stenzel ³ , H. Zillgen ³ , D. Gerthsen ¹ ¹ Laboratory for Electron Microscopy, University of Karlsruhe ² Institute of Materials for Electrical Engineering, University of Karlsruhe, Kaiserstrasse 12, D-76131 Karlsruhe, Germany ³ EPCOS AG, In den Seewiesen 26, D-89520 Heidenheim, Germany
10:10	FREQUENCY AGILE MICROWAVE DEVICES BASED ON PIEZO-TUNABLE DIELECTRIC RESONATORS E. Furman* ¹ , M. Lanagan ¹ , Y. Poplavko ² and Y. Prokopenko ² ¹ Materials Research Institute, The Pennsylvania State University, PA, USA ² National Technical University of Ukraine, Kiev 03056, Ukraine
10:30-11:00	Break
	<i>Piezoelectrics/MEMS</i> <i>Session Chair: M. Maeder-Demartin</i>
11:10	INVESTIGATION OF PIEZOELECTRIC AND FERROELECTRIC CHARACTERISTICS OF LEAD-FREE Bi_{3.25}La_{0.75}Ti_{1-x}V_xO₁₂ CERAMICS I.W. Kim* ¹ , C.W. Ahn ¹ , D.S. Lee ¹ , J.S. Kim ¹ , M.S. Choi ² , J.S. Lee ² , B.M. Jin ³ ¹ Dept. of Physics, University of Ulsan, Ulsan, South Korea ² Material Science and Engineering, University of Ulsan, Ulsan, South Korea ³ Dept. of Physics, Dong Eui University, Busan, South Korea
11:30	DEVELOPMENT OF SPIN COATED MESOPOROUS OXIDE FILMS FOR MEMS STRUCTURES J-A. Paik* ¹ , S-K. Fan ² , H. Chang ³ , C-J. Kim ² , M.C. Wu ³ , and B. Dunn ¹ ¹ Dept. of Materials Science and Engineering ² Dept. of Mechanical and Aerospace Engineering ³ Dept. of Electrical Engineering, University of California, Los Angeles, CA 90095, USA
11:50	SPONTANEOUS BUCKLING OF NANOCRYSTALLINE SELF-SUPPORTED FERROELECTRICS FILMS I. Lubomirsky* ¹ , V. Lyahovitskaya ¹ , E. Wachtel ¹ , I. Zon ¹ , I. Feldman ¹ , A.L. Roytburd ² ¹ Weizmann Institute of Science, Rehovot, 76100, Israel ² University of Maryland, College Park, MD 20742, USA
12:10-13:30	Lunch

	Single Crystal Growth and Characterization <i>Session Chair: K.H. Auh</i>
13:30	DIELECTRIC AND PIEZOELECTRIC PROPERTIES OF Pb(In_{1/2}Nb_{1/2})O₃-Pb(Mg_{1/3}Nb_{2/3})O₃-PbTiO₃ TERNARY SINGLE CRYSTALS N. Ichinose ¹ , H. Sakamoto ¹ , Y. Hosono ² and Y. Yamashita ² ¹ School of Science and Engineering, Waseda University, 3-4-1 Ohkubo, Shinjuku-ku, Tokyo 169-8555, Japan ² Corporate R&D Center Toshiba Corporation, 1 Komukai, Toshiba-cho, Saiwai-ku, Kawasaki 212-8582, Japan
14:00	EDGE-DEFINED, FILM-FED GROWTH (EFG) AND CHARACTERIZATION OF SINGLE-CRYSTAL PIEZOELECTRIC FIBERS J. Shen* ¹ , B. Nunes ¹ , A.N. Soukhovjak ¹ , G.A. Rossetti ² , and Y.-M. Chiang ¹ ¹ Dept. of Materials Science and Engineering, MIT, 77 Mass Ave., Cambridge, MA 02139, USA ² Continuum Photonics, Inc., Billerica, MA 01821, USA
14:20	SINGLE-CRYSTALLINE KNbO₃ THIN FILM GROWN BY LIQUID PHASE EPITAXY K-I. Kakimoto*, I. Masuda and H. Ohsato Dept. of Mater. Sci. and Eng., Nagoya Institute of Technology, Gokiso-cho, Showa-ku, Nagoya 466-8555, Japan
14:40	GROWTH TECHNIQUE OF Ce:YIG SINGLE CRYSTAL FILMS ON SILICA SUBSTRATES T. Uno*, S. Ohta and S. Noge 1030 Shimo-ogino, Atsugi, Kanagawa 243-0292, Kanagawa Institute of Technology, Japan
15:20-15:50	Break
	Varistors <i>Session Chair: M. Alim</i>
15:50	MICROVARISTORS: FUNCTIONAL FILLERS FOR NOVEL ELECTROCERAMIC COMPOSITES F. Greuter* ¹ , M. Siegrist ¹ , P. Kluge-Weiss ¹ , R. Kessler ¹ , L. Donzel ¹ , H. J. Gramespacher ² ¹ ABB Switzerland Ltd, Corporate Research, CH-5405 Baden-Dättwil, Switzerland ² ABB Switzerland Ltd, High Voltage Technology, CH-5430 Wetztingen, Switzerland
16:10	STRUCTURAL ORIGIN OF DIMENSIONAL EFFECT IN ZnO VARISTORS L. Shengtao ¹ , L. Jianying ¹ and M.A. Alim* ² ¹ Multi-disciplinary Materials Research Center, State Key Laboratory of Electrical Insulation for Power Equipment, Xi'an Jiatong University, Xi'an 710049, P.R. China ² Dept. of Electrical Engineering, Alabama A & M University, P.O. Box 297, Normal, Alabama 35762, USA
16:30	BULK GRAIN RESISTIVITY OF ZnO-BASED VARISTORS A.C. Caballero* ¹ , J.F. Fernández ¹ , M. Peiteado ¹ , J. de Frutos ² , D. Fernández-Hevia ² ¹ Dpto. de Electrocerámica, Instituto de Cerámica y Vidrio, CSIC, Camino de Valdelatas s/n, 28049, Cantoblanco, Madrid, Spain ² E.T.S.I. Telecomunicación, Univ. Politécnica de Madrid, Ciudad Universitaria s/n, 28040, Madrid, Spain

	<i>Magnetic Materials</i> <i>Session Chair: B. Wuensch</i>
9:00	MAGNETIC OXIDE FILMS MADE BY PULSED LASER DEPOSITION C.A. Ross*, A. Rajamani, V. Sivakumar, T. Tepper, F. Ilievski and G. Dionne ⁺ MIT, Dept. Materials Science and Engineering, Cambridge MA 02139 ⁺ also at MIT Lincoln Laboratory, Lexington MA 02420
9:30	DEVELOPMENT OF A NEW Mn/Zn-FERRITE SOFT MAGNETIC MATERIAL FOR HIGH TEMPERATURE POWER APPLICATIONS V.T. Zaspalis* ¹ , V. Tsakaloudi ¹ , R. Guenther ² , M. Kolenbrander ² , P. van der Valk ³ ¹ Center for Research and Technology-Hellas, Institute of Chemical Process Engineering, Laboratory of Inorganic Materials, P.O. Box 361, 57001 Thessaloniki-Greece ² Ferroxcube Deutschland GmbH, Dept. of Materials and Process Development, Essener Str. 4, 22419 Hamburg, Germany ³ Ferroxcube International, Dept. of Advanced Product Design, Hurksestraat 19, 5652AH Eindhoven, The Netherlands
9:50	STRUCTURAL AND MAGNETIC STUDIES OF CHARGE ORDERING IN $\text{La}_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\delta}$ J.B. Yang ¹ , X.D. Zhou ^{1*} , Z. Chu ² , Q. Cai ² , W.M. Hikal ³ , H.U. Anderson ¹ et al. ¹ Graduate Center for Materials Research and Departments of Chemistry and Physics, University of Missouri-Rolla, Rolla, MO, 65409, USA ² Physics Dept., University of Missouri-Columbia, Columbia, MO 65211, USA ³ Physics Dept., Wichita State University, Wichita, KS 67260, USA
10:30-11:00	Break
	<i>Optical Materials</i> <i>Session Chair: B. Wessels</i>
11:00	CHEMICAL AND STRUCTURAL FACTORS GOVERNING TRANSPARENT CONDUCTIVITY IN OXIDES T.O. Mason* ^{1,2} , D.R. Kammler ³ , B.J. Ingram ¹ , and G.B. Gonzalez ¹ ¹ Northwestern University, Dept. of Materials Science and Engineering, Evanston, IL 60208, USA ² Northwestern University, Materials Research Science and Engineering Center, Evanston, IL 60208, USA ³ Sandia National Laboratories, Albuquerque, NM 87185, USA
11:30	PREPARATION AND PROPERTIES OF PLZT PHOTONIC CRYSTALS BY SOL-GEL PROCESS M. Kuwabara* ¹ , T. Aoki ^{1,2} , and K. Kurihara ² ¹ Dept. of Materials Engineering, The University of Tokyo, 7-3-1 Hongo, Tokyo 113-8656, Japan ² Fujitsu Laboratories Ltd., 10-1 Morinosato, Atsugi 243-0197, Japan
12:00	TiO₂ PHOTOELECTRODES FOR WATER SPLITTING: THE INFLUENCE OF ANION AND CATION DOPANTS ON THE OPTICAL ABSORPTION C.S. Enache, R. van de Krol*, and J. Schoonman Delft University of Technology, Laboratory for Inorganic Chemistry, Julianalaan 136, 2628 BL Delft, The Netherlands