

Schedule and Program Overview

April 19 (Mon)

Room A (Nagisa)			Room B (#1001)		
8:50	Opening remark: T. Tsurumi				
9:00	Plenary Lecture (1) Chair: S. Nishi A. Matsuzawa				
Session I Ceramics Microsystems (1) Chair: K. Yokouchi and S. Nishi			Session III Direct Writing Technology (1) Chair: J. Akedo and P. G. Clem		
9:30	19A1-1I	S. Denda	9:30	19B1-1I	K. Suganuma
9:50	19A1-2I	F. Uchikoba	9:50	19B1-2I	S. -H. Kim
10:10	19A1-3I	Y. Tsukada	10:10	19B1-3I	H. Abe
10:30	Coffee break		10:30	Coffee break	
Session II Ceramics Microsystems (2) Chair: F. Uchikoba and L. Golonka			Session IV Direct Writing Technology (2) Chair: H. Abe and S. -M. Nam		
11:00	19A1-4	D. Belaviè	11:00	19B1-4I	Y. Didenko
11:15	19A1-5	A. Miller	11:20	19B2-5I	T. Tsuchiya
11:30	19A1-6	P. Bembnowicz	11:35	19B2-6	C. Maeda
11:45	19A1-7	M. Eberstein	11:50	19B2-7	Y. Kato
12:00	19A1-8	C. -M. Huang	12:05 Lunch		
12:15	Lunch				
Session V Ceramic Microsystems(3) Chair: K. Kageyama and D. Plumlee			Session VII Novel Processing Technique (1) Chair: M. Osada and S. Mathur		
13:30	19A2-1I	S. Kawata	13:30	19B2-1I	S. Mathur
13:50	19A2-2I	S. Kawai	13:50	19B2-2I	Y. Gao
14:10	19A2-3	R. Tadaszak	14:10	19B2-3	Y. Masuda
14:25	19A2-4	A. Schulz	14:25	19B2-4	S. Ohara
14:40	19A2-5	A. Vissotski	14:40	19B2-5I	K. Kato
14:55	19A2-6	T. Hosokura	15:00	19B2-6I	M. Osada
			15:20	19B2-7	A. A. Almajid
15:10	Coffee break		15:35	Coffee break	
Session VI Piezoelectric Applications Including MEMS (1) Chair: Y. Noguchi and W. Ren			Session VIII Dielectric and Ferroelectric Materials and Components Chair: H. -T. Kim and H. Suzuki		
16:00	19A3-1I	H. Toshiyoshi	16:00	19B3-1I	D. Suvorov
16:20	19A3-2I	R. Eitel	16:20	19B3-2I	S. Nahm
16:40	19A3-3I	R. G. Polcawich	16:40	19B3-3	H. Ogiso
17:00	19A3-4	Z. Jianhui	16:55	19B3-4I	U. Balachandran
17:15	19A3-5	M. Hartmann	17:15	19B3-5I	B. Bontempo
17:30	19A3-6	T. Noda	17:30	19B3-6	A. K. Nath
17:45	19A3-7	H. Sato	17:45	19B3-7	H. Naghib-zadeh
18:00	19A3-8	J. -H. Park	18:00	19B3-8	M. Suzuki
18:15	19A3-9	H. Takeda			

April 20 (Tue)

Room A (Nagisa)			Room B (#1001)		
8:30	Plenary Lecture (2) Chair: J. Müller K. A. Peterson				
Session IX Direct Writing Technology (3) Chair: M. Aoyagi and J. -H. Kim			Session XI Novel Processing Techniques (2) Chair: Y. Gao and Y. Masuda		
9:00	20A1-1I	P. G. Clem	9:00	20B1-1I	Y. Imanaka
9:20	20A1-2	S. Hirose	9:20	20B1-2	S. Schimpf
9:35	20A1-3	M. Fritsch	9:35	20B1-3	U. Partsch
9:50	20A1-4	M. Wassmer	9:50	20B1-4	A. Dellert
10:05	Coffee break		10:05	20B1-5	D. Bishop
Session X Direct Writing Technology (4) Chair: K. Suganuma and C. Apblett			10:20	Coffee break	
			Session XII Ceramics in Energy Systems (1) Chair: M. Awano and T. Suzuki		
10:30	20A1-5I	J. -H. Kim	10:40	20B1-6I	Y. Mizutani
10:50	20A1-6	A. Endo	11:00	20B1-7I	N. Sammes
11:05	20A1-7I	S. -M. Nam	11:20	20B1-8I	U. Partsch
11:25	20A1-8	F. Xiang	11:40	20B1-9	S. Baba
11:40	20A1-9	M. Aoyagi	11:55 Lunch		
12:00	Lunch				
Session XIII Piezoelectric Applications Including MEMS (2) Chair: S. -H. Kim and M. Lanagan			Session XIV Electromagnetic Properties Chair: S. Kirihara and J. -H. Jean		
13:30	20A2-1I	Y. Noguchi	13:30	20B2-1I	W. Jiang
13:50	20A2-2I	Y. Li	13:50	20B2-2I	S. Nishizawa
14:10	20A2-3I	M. Takahashi	14:10	20B2-3	T. Teranishi
14:30	20A2-4I	W. Ren	14:25	20B2-4	J. Topfer
14:50	20A2-5I	H. Suzuki	14:40	20B2-5	N. Ohta
15:10	20A2-6I	H. Nagata	14:55	20B2-6I	K. Takigawa
15:30	20A2-7	H. Matsuo	15:15	20B2-7I	S. Kirihara
15:45	20A2-8	A. Morishita	15:35	20B2-8	Y. Takinami
16:00	20A2-9	Y. Kitanaka			
16:30	Poster Session (Hall Lobby)				
18:00- 21:00	Excursion and Banquet. Entrance of OVTA at 18:00.				

April 21 (Wed)

Room A (Nagisa)			Room B (#1001)		
Session XV Dielectric and Piezoelectric Materials Chair: Y. S. Cho and D. Suvorov			Session XVII Ceramics in Energy Systems (2) Chair: N.Sammes and Y.Fujishiro		
8:30	21A1-1I	Y. Miyauchi	8:30	21B1-1I	M. Awano
8:50	21A1-2I	T. Maeder	8:50	21B1-2I	T. Suzuki
9:10	21A1-3	J. -H. Jean	9:10	21B1-3I	S. Suda
9:30	21A1-4I	W. Sakamoto	9:30	21B1-4I	Y. Fujishiro
9:50	21A1-5	H. Morioka	9:50	21B1-5	H.Munakata
10:05	21A1-6	T. Hoshina	10:05	21B1-6I	T. Sekino
10:10	Coffee break		10:25	21B1-7I	J. Moon
Session XVI Dielectric and Piezoelectric Materials Chair: R. Eitel and H. Nagata			10:45	21B1-8	M. -H. Wu
			11:00	21B1-9	J. -H. Chou
Dielectric and Piezoelectric Materials Chair: R. Eitel and H. Nagata			11:15	Coffee break	
			10:40	21A1-7I	M. Lanagan
			11:00	21A1-8I	Y. S. Cho
			11:20	21A1-9I	H. T. Kim
			11:40	21A1-10	H. Matsudo
			11:55	21A1-11	T. Karaki
			12:20	Plenary Lecture (3) Chair; T. Tsurumi Yao Xi	
			12:50	Closing remark: M. Lanagan	
13:00	Lunch				

Technical Program

April 19 (Mon) Morning Sessions

Room A (Nagisa)

- 8:50 – 9:00 Opening remark Takaaki Tsurumi (Tokyo Institute of Technology, Japan)
- 9:00 – 9:30 Plenary lecture (1)
Chairperson: Shin-ichi Nishi (Konica-Minolta IJ Tech., Inc., Japan)
CMOS LSI Design for mm-Wave Broadband Radio Systems
Akira Matsuzawa, Tokyo Institute of Technology, Japan
- Session I: Ceramics Microsystems (1)**
Chair person: Kishio Yokouchi (Fujitsu Interconnect Tech., Japan)
Chair person: Shin-ichi Nishi (Konica-Minolta IJ Tech., Inc., Japan)
- 9:30 – 9:50 19A1-1I **Through Silicon Via Technologies Development in Japan (invited)**
Sei-ichi Denda, Nagano Prefec. Inst. Tech., Japan.
- 9:50 – 10:10 19A1-2I **Fabrication of Fine Conductor Pattern and Cavity Structure in Multilayer LTCC Substrate by Photo Resist Film (invited)**
Fumio Uchikoba*, M. Takatou and T. Ishigaki, *Nihon Univ., Japan.
- 10:10 – 10:30 19A1-3I **Chip Package Interaction – Current Barriers and Future Direction – (invited)**
Yutaka Tsukada, i-PACKS, Japan.
- 10:30 – 11:00 Coffee break
- Session II: Ceramics Microsystems (2)**
Chair person: Fumio Uchikoba (Nihon Univ., Japan)
Chair person: Leszek Golonka (Wroclaw Univ., Poland)
- 11:00 – 11:15 19A1-4 **An Evaluation of LTCC-based Capacitive Pressure Sensors**
Darko Belaviè*, M. S. Zarnik, M. Hrovat, M. Jerlah, S. Maèek, M. Pavlin, S. Kocjan, I. Lipušèek, J. Holc, K. Makaroviè and M. Kosec, *Precision Driving Lab., Nanjing Univ. Aeronautics and Astronautics, China.
- 11:15 – 11:30 19A1-5 **Development of an Inductively Coupled Plasma (ICP) Source for Miniaturized Ion Thruster in Low Temperature Co-fired Ceramic (LTCC)**
Alex Miller*, D. Plumlee and J. Browning, *Boise State Univ., USA
- 11:30 – 11:45 19A1-6 **Preliminary Studies on LTCC Based PCR Microreactor**
Pawe BEMBNOWICZ*, W. KUBICKI, P. SZCZEPAŃSKA, A. GÓRECKA-DRZAZGA, J. DZIUBAN, L. GOŁONKA, M. MAŁODOBRA, A. JONKISZ, A. KARPIEWSKA, T. DOBOSZ, *Wroclaw Univ. Tech., Poland.
- 11:45 – 12:00 19A1-7 **Study of LTCC Property Shifts by Composition Additives and Silver Metallization**
Markus Eberstein*, F. Gora, A. Kipka, U. Partsch, U. Marzok, R. Mueller, *Fraunhofer IKTS, Germany.
- 12:00 – 12:15 19A1-8 **Design and Manufacture of a High Performance Valve-Less Planar Micro-Pump in Low Temperature Co-Fired Ceramics (LTCC)**
Chi-Mo Huang and Y. –C. Wang, National Cheng Kung Univ., Taiwan
- 12:15 – 13:30 Lunch

Room B (Room# 1001)

- Session III: Direct Writing Technology (1)**
Chair person: Jun Akedo (AIST, Japan)
Chair person: Paul G. Clem (Sandia National Lab., USA)
- 9:30 – 9:50 19B1-1I **On Demand Printing Nano-Inks for Printed Electronics (invited)**
Katsuaki Suganuma* and M. Nogi, *Osaka Univ., Japan.

9:50 – 10:10 19B1-2I **The Feasibility of PZT-based MEMS Applications Using Non-lithographic Process by Chemical Solution Derived Ink-jet Printing Method (invited)**
Seung-Hyun Kim*, C. Y. Koo, J. H. Moon, M. Kim, B. L. Wardle and A. I. Kingon, *Brown University / INOSTEK Inc., USA/Korea.

10:10 – 10:30 19B1-3I **Nanoparticle Inks for Direct-Writing of Ceramic Components (invited)**
Hiroya Abe*, A. Kondo, Z. Tan, K. Sato, M. Naito and J. Akedo, *Osaka Univ., Japan.

10:30 – 11:00 Coffee break

Session IV: Direct Writing Technology (2)

Chair person: Hiroya Abe (Osaka Univ., Japan)

Chair person: Song-Min Nam (Kwangwoon Univ., Korea)

11:00 – 11:20 19B1-4I **Low Temperature Sintering Conductive Nanoinks and Applications (invited)**
Yuri Didenko, UT Dots, Inc., USA.

11:20 – 11:35 19B1-5 **Low Temperature Growth and Patterning of Metal Oxide Film by Photo-Induced Chemical Solution Process (invited)**
Tetsuo Tsuchiya*, T. Tsuchiya, T. Nakajima and T. Manabe, *AIST, Japan.

11:35 – 11:50 19B1-6 **Fabrication of Artificial Bone Models with Porous Scaffold Structures Composed of Hydroxyapatite Ceramics by Using Stereolithography**
Chiaki Maeda*, M. Suwa and S. Kirihara, *Osaka Univ., Japan.

11:50 – 12:05 19B1-7 **Pico Liter Dispenser with Needle and Tube**
Yoshiyuki Kato*, S. Takahashi, Y. Irie and H. Aoyama, *Applied Micro Systems Inc., Japan.

12:05 – 13:30 Lunch

April 19 (Mon) Afternoon Sessions

Room A (Nagisa)

Session V: Ceramic Microsystems (3)

Chair person: Keisuke Kageyama (Murata Manufact. Co. Ltd., Japan)

Chair person: Don Plumlee (Boise State Univ., USA)

13:30 – 13:50 19A2-1I **Sinterability and Dielectric Properties of Constrained Sintering Low-Temperature Cofired Ceramics (invited)**
Shuichi Kawata*, T. Takeda, S. Matsumoto, Y. Sugimoto, J. Harada and H. Takagi, *Murata Manufact. Co., Ltd., Japan.

13:50 – 14:10 19A2-2I **Development of LTCC Materials with High Mechanical Strength (invited)**
Shinya Kawai*, T. Furuse, Y. Terashi, S. Nishiura, *Kyocera Corp., Japan.

14:10 – 14:25 19A2-3 **Compatibility of Different Types of LTCC Materials with Sol-Gel Layers for Optoelectronic Applications**
RafaA, Tadaszak*, A. Aukowiak, L. Golonka and S. Patela, *Wroclaw Univ. Tech., Poland

14:25 – 14:40 19A2-4 **Ultra-Wideband-LGA-Transitions from a PCB-Board to Different LTCC-Materials from DC up to 67 GHz**
Alexander Schulz*, S. Rentsch, J. Müller, *Ilmenau Univ. Tech., Germany.

14:40 – 14:55 19A2-5 **Towards Optimization of a Low Temperature Co-fired Ceramic Catalyst Chamber for a Monopropellant Microthruster**
Andrew Vissotski* and D. Plumlee, *Boise State Univ., USA.

14:55 – 15:10 19A2-6 **(100) Three-Axis-Oriented BT, BST Thin Film Prepared by Chemical Solution Deposition Method**
Tadasu Hosokura*, K. Kageyama, H. Takagi and Y. Sakabe, *Murata Manufact. Co., Ltd., Japan.

15:10 – 16:00 Coffee break

Session VI: Piezoelectric Applications Including MEMS

Chair person: Yuji Noguchi (Univ. Tokyo, Japan)

Chair person: Wei Ren (Xi'an Jiaotong Univ., China)

- 16:00 – 16:20 19A3-1I **MEMS Actuators for Optical and RF Communication Devices (invited)**
Hiroshi Toshiyoshi, Univ. Tokyo, Japan.
- 16:20 – 16:40 19A3-2I **Package-level Multilayered Piezoelectric Micropumps for Lab-on-Chip (invited)**
Richard Eitel* and Wenli Zhang, *Univ. Kentucky, USA.
- 16:40 – 17:00 19A3-3I **PiezoMEMS: Applications for Communications, Radar, and mm-Scale Robotics (invited)**
Ronald G. Polcawich*, J. S. Pulskamp, R. Proie, T. Ivanov, L. Sanchez, D. Potrepka, and G. Smith, *US Army Research Lab., USA.
- 17:00 – 17:15 19A3-4 **Flow Field Simulation and Experimental Research on a Novel Piezoelectric Pump**
Zhang Jianhui, Nanjing Univ. Aeronautics and Astronautics, China.
- 17:15 – 17:30 19A3-5 **A Two Component Piezoelectric Transformer Manufactured by Ceramic Injection Molding**
Matthias Hartmann*, S. Hirsch and B. Schmidt, Otto-von-Guericke-Univ. Magdeburg, Germany.
- 17:30 – 17:45 19A3-6 **Effect of Residual Stress on Orientation Control of CSD-Derived $\text{Pb}(\text{Zr}_{0.53}\text{Ti}_{0.47})\text{O}_3$ Thin Films**
Toshinari Noda*, N. Wakiya, N. Sakamoto, H. Suzuki, K. Komaki, *Panasonic Electronic Devices Co., Ltd. Japan.
- 17:45 – 18:00 19A3-7 **Modal Analysis of Guided Waves of Ultrasonic Flowmeter**
Harumichi Sato*, H. Ogiso and J. Akedo, *AIST, Japan.
- 18:00 – 18:15 19A3-8 **Non-Silicon Based Optical MEMS Scanners Actuated by Piezoelectric Thick Films**
Jae-Hyuk Park and Jun Akedo, AIST, Japan.
- 18:15 – 18:30 19A3-9 **Relationship between Material Constants and Generation Characteristics in Piezoelectric Energy Harvester**
Hiroaki Takeda, K. Mihara, T. Hoshina and T. Tsurumi, *Tokyo Tech., Japan.

Room B (Room# 1001)

Session VII: Novel Processing Technique(1)

Chair person: Minoru Osada (NIMS., Japan)

Chair person: Sanjay Mathur (Univ. Cologne, Germany)

- 13:30 – 13:50 19B2-1I **Chemically Designed Nanoparticles and Nanowires: Controlled Growth, Applications and Devices (invited)**
Sanjay Mathur, Univ. Cologne, Germany.
- 13:50 – 14:10 19B2-2I **Innovative Solution Processing Technologies to New Ceramic Materials (invited)**
Yanfeng Gao, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China.
- 14:10 – 14:25 19B2-3 **Metal Oxide Electrodes for Environmental Sensors**
Yoshitake Masuda*, D. Chu, X. Hu, T. Ohji, K. Kato, M. Ajimi, M. Bekki and S. Sonezaki, *AIST, Japan
- 14:25 – 14:40 19B2-4 **DNA Templated Integration of Metal and Ceramic Nano-materials**
Satoshi Ohara*, J. Han, K. Sato, and M. Umetsu, Osaka Univ., Japan.
- 14:40 – 15:00 19B2-5I **Synthesis and Self-Assembly of CeO_2 Nanocubes by Using A Liquid-Liquid Interface (invited)**
Kazumi Kato*, F. Dang, H. Imai, S. Wada, H. Haneda and M. Kuwabara, *AIST, Japan.
- 15:00 – 15:20 19B2-6I **Bottom-Up Assembly of Oxide Nanosheets toward Nanoelectronics (invited)**
Minoru Osada* and T. Sasaki, *NIMS, Japan.

- 15:20 – 15:35 19B2-7 **Microwave Synthesis of nanocrystalline YAlO₃**
Abdulhakim A. Almajid, King Saud Univ., Saudi Arabia
- 15:35 – 16:00 Coffee break
- Session VIII: **Dielectric and Ferroelectric Materials and Components**
Chair person: Hyo Tae Kim, Korea Inst. Ceram. Eng. Tech. (KICET), Korea.
Chair person: Hisao Suzuki (Shizuoka Univ., Japan)
- 16:00 – 16:20 19B3-1I **Polarization Behavior in the Na_{0.5}Bi_{0.5}TiO₃-Li_{3x}La_{(2/3)-x} • (1/3)-2xTiO₃ System (invited)**
Danilo Suvorov* and M. Spreitzer, *Jožef Stefan Institute, Slovenia.
- 16:20 – 16:40 19B3-2I **A Flexible Amorphous Bi₅Nb₃O₁₅ Film for the Gate Insulator of the Low-Voltage Operating Pentacene Thin-Film Transistor Fabricated at Room Temperature (invited)**
Sahn Nahm*, K.-H. Cho, J.-S. Kim and J. -H. Kim, Korea Univ., Korea
- 16:40 – 16:55 19B3-3 **The Effect of Embedded Metal Structure into LiNbO₃ on the THz Spectroscopy**
Hisato Ogiso*, H. Tsuda, S. Nakano and J. Akedo, *AIST, Japan.
- 16:55 – 17:15 19B3-4I **High-Dielectric-Constant Ceramic Thin Films for Embedded Capacitors (invited)**
U. Balachandran, M. Narayanan and B. Ma, Argonne National Lab., USA.
- 17:15 – 17:30 19B3-5 **Characterization of Leakage Current in Tantalum Oxide Films**
Brian Bontempo*, S. Perini, M. Fanton and M. Lanagan, *Penn State Univ., USA.
- 17:30 – 17:45 19B3-6 **Comparative Study of Ba(Ti_{1-x}Sn_x)O₃ Ceramics Obtained from Nanocrystalline Powders of Different Initial Particle Sizes**
A. K. Nath*, K. C. Singh, R. Laishram, O. P. Thakur and D. K. Bhattacharya, *Univ. Delhi, India.
- 17:45 – 18:00 19B3-7 **Low Fired X8R Capacitor Co-Fired with Low Dielectric and Ferritic LTCC**
Hamid Naghib-zadeh*, J. Toepfer and T. Rabe, *Federal Institute for Material Research and Testing, Germany.
- 18:00 – 18:15 19B3-8 **Temperature Dependence of Dielectric Properties of BaTiO₃ Films Prepared by Aerosol Deposition Method**
Muneyasu Suzuki* and J. Akedo, *AIST, Japan.

April 20 (Tue) Morning Sessions

Room A (Nagisa)

- 8:30 – 9:00 Plenary lecture (2)
Chairperson: Jens Müller (Ilmenau Univ. Tech., Germany)
- Applications and Processing Techniques for Low Temperature Cofired Ceramic**
Ken A. Peterson^{1*}, R. T. Knudson¹, C. T. Rodenbeck¹, C. E. Sandoval¹, F. Smith², D. S. Krueger², ¹Sandia National Labs, ²Honeywell Federal Manufacturing & Technology, USA
- Session IX: **Direct Writing Technology (3)**
Chair person: Masahiro Aoyagi (AIST, Japan)
Chair person: Jong-Hee Kim (Korean Inst. Ceram. Eng. Tech., Korea)
- 9:00 – 9:20 20A1-1I **Printed Sensors for Environmental and Health Monitoring (invited)**
Paul G. Clem*, C. A. Apblett, E. D. Branson, J. F. Carroll, K. R. Fenton, *Sandia National Lab., USA.
- 9:20 – 9:35 20A1-2 **A Study of the Superconducting Thick MgB₂ Films by Aerosol Deposition Method**
Shingo Hirose*, M. Levedev, H. Sakata and J. Akedo, *AIST, Japan.
- 9:35 – 9:50 20A1-3 **Ink Jet Printing of Fine Line Metallization with Particle Ag Inks**
Marco Fritsch* and R. Jurk, *Fraunhofer IKTS Institute, Germany.

9:50 – 10:05 20A1-4 **Inkjet Printing of Thick-Film Inductors**
Marcel Wassmer*, W. Diel and K. Krueger, Helmut-Schmidt-Univ., Germany.

10:05 – 10:30 Coffee break

Session X: **Direct Writing Technology (4)**

Chair person: Katsuaki Suganuma (Osaka Univ., Japan)

Chair person: Christopher Ablett (Sandia National Lab., USA)

10:30 – 10:50 20A1-5I **Approaching 3D Integrated Dielectric Circuits via Ink-jet Printing Method (invited)**

Jong-Hee Kim, J. -H Kim, Y. -J. Yoon, H. -T. Kim, Korea Inst. Ceram. Eng. Tech. (KICET), Korea.

10:50 – 11:05 20A1-6 **Direct Wiring Technology Using Copper and Silver Ink by Laser Assisted Ink-jet Printing (invited)**

Akito Endo and J. Akedo, AIST, Japan.

11:05 – 11:25 20A1-7I **Room-Temperature Coating for 3-D Integration of Passive Components Using Aerosol Deposition Method (invited)**

Song-Min Nam*, J. -M. Oh, D. -W. Lee, H. -J. Kim, Y. J. Yoon, J. -H. Kim, Kwangwoon Univ., Korea.

11:25 – 11:40 20A1-8 **Low-Temperature Sintering Ba_{0.6}Sr_{0.4}TiO₃ Thick Film Fabricated with Direct-Write Inkjet Printing Technique**

Feng Xiang*, H Wang, L. Chen, M. Zhang and Xi Yao, *Xi'an Jiaotong Univ., Japan.

11:40 – 12:00 20A1-9I **Development of Direct Bridge Connection Process between Separated Two Electrodes by Electroless Metal Deposition Method (invited)**

Masahiro Aoyagi*, T. Yokoshima, Y. Yamaji, N. Igawa, H. Nakagawa, K. Kikuchi, *AIST, Japan.

12:00 – 13:30 Lunch

Room B (Room# 1001)

Session XI: **Novel Processing Techniques (2)**

Chair person: Chair person: Yanfeng Gao (Shanghai Institute of Ceramics)

Chair person: Yoshitake Masuda (AIST., Japan)

9:00 – 9:20 20B1-1I **Embedded Capacitor Application Using Aerosol Deposition (invited)**

Yoshihiko Imanaka, Fujitsu Lab. Ltd., Japan.

9:20 – 9:35 20B1-2 **Aerosol Deposition of PZT on Polymer Catheters as Part of a MRI Marker**

Stefan Schimpf, A. Brose, K. Will and B.Schmidt, Otto-von-Guericke Univ., Germany.

9:35 – 9:50 20B1-3 **Novel Technology Options for Multilayer-Based Ceramic Microsystems**

Uwe Partsch*, G. Hagen and M. Schneider, * Fraunhofer IKTS, Germany.

9:50 – 10:05 20B1-4 **The Origin of Anisotropic Shrinkage Behavior in LTCC Green Tapes**

Armin Dellert, Univ. Erlangen-Nuremberg, Germany.

10:05 – 10:20 20B1-5 **Inspection Principals of Modern Ceramic Composites for Electronic Packaging**

Dayton Bishop* and S. Miksa, *EPP GmbH, Germany

10:20 – 10:40 Coffee break

Session XII: **Ceramics in Energy System (1)**

Chair person: Masanobu Awano (AIST, Japan)

Chair person: Toshio Suzuki (AIST, Japan)

10:40 – 11:00 20B1-6I **Performance of Micro Tubular SOFC Module for Small Scale Stationary Applications (invited)**

Yasunobu Mizutani*, F. Okada, T. Otake, M. Awano and Y. Funahashi, *Toho

		Gas Co., Ltd. Japan.
11:00 – 11:20	20B1-7I	The effect of REDOX Cycling on Micro-Tubular SOFC's (invited) Nigel Sammes* and K. Galloway, *Colorado School of Mines, USA.
11:20 – 11:40	20B1-8I	Ceramic Interface and Multilayer Technology for Micro Fuel Cells (invited) Uwe Partsch*, M. Schneider and M. Stelter, Fraunhofer IKTS, Germany
11:40 – 11:55	20B1-9	Plasma Assisted Aerosol Deposition of (La_xSr_{1-x})CrO₃ Thick Films for SOFC Interconnect Applications So BaBa* and J. Akedo, *AIST, Japan.
11:55 – 13:30	Lunch	

April 20 (Tue) Afternoon Sessions

Room A (Nagisa)

Session XIII: Piezoelectric applications including MEMS (2)

Chair person: Paul G. Clem (Sandia National Lab., USA)

Chair person: Seung-Hyun Kim (Brown Univ. / INOSTEK Inc., USA/Korea)

13:30 – 13:50	20A2-1I	High-oxygen Pressure Crystal Growth for High-Quality Bi-Based Perovskite Crystals (invited) Yuji Noguchi*, Y. Kitanaka, M. Suzuki and M. Miyayama, *Univ. Tokyo, Japan.
13:50 – 14:10	20A2-2I	Phase Structure, Dielectric, and Piezoelectric Properties of Potassium Lithium Niobate (KLN) Modified (K_{0.48}Na_{0.52})NbO₃ Lead-Free Piezoceramics with High Curie Temperature (invited) Yongxiang Li*, Y. Wang, Y. Lu, Y. Zhao and D. Wang, *Shanghai Institute of Ceramics, Chinese Academy of Sciences, China.
14:10 – 14:30	20A2-3I	Integrated Design of Piezoelectric Loudspeaker for Mobile Phones (invited) Masatake Takahashi* and Y. Sasaki, NEC Corp., Japan.
14:30 – 14:50	20A2-4I	Lead-free Piezoelectric Thick Films for Transducer Applications (invited) Wei Ren*, L. Wang, H. Ji, P. Shi, X. Wu and Xi Yao, *Xi'an Jiaotong Univ., China.
14:50 – 15:10	20A2-5I	Stress Induced MPB Shift for CSD-derived Pb(Zr_xTi_{1-x})O₃ Thin Films (invited) Hisao Suzuki*, T. Noda, N. Wakiya, N. Sakamoto and K. Komaki, *Shizuoka Univ., Japan.
15:10 – 15:30	20A2-6I	Processing and Microstructure of Textured (Bi_{1/2}K_{1/2})TiO₃ Ceramics (invited) Hajime Nagata*, M. Saitoh, Y. Hiruma and T. Takenaka, *Tokyo Univ. Science, Japan.
15:30 – 15:45	20A2-7	Structural and Piezoelectric Properties of High-Density (Bi_{0.5}K_{0.5})TiO₃-BiFeO₃ Ceramics Hiroki Matsuo*, Y. Noguchi, M. Miyayama, M. Suzuki, A. Watanabe, S. Sasabe, T. Ozaki, S. Mori, S. Torii and T. Kamiyama, *Univ. Tokyo, Japan.
15:45 – 16:00	20A2-8	Polarization and Piezoelectric Properties of (Bi_{0.5}K_{0.5})TiO₃-(Bi_{0.5}Na_{0.5})TiO₃ Ferroelectric Single Crystals Akifumi Morishita*, Y. Kitanaka, Y. Noguchi and M. Miyayama, *Univ. Tokyo, Japan.
16:00 – 16:15	20A2-9	Oxygen-Vacancy-Induced Domain Clamping and Polarization Properties in Bi-Based Ferroelectrics Yuuki Kitanaka*, Y. Noguchi and M. Miyayama, *Univ. Tokyo, Japan.

Room B (Room# 1001)

Session XIV: Electromagnetic Properties

Chair person: Soshu Kiriara (Osaka Univ., Japan)

Chair person: Jau-Ho Jean (National Tsing Hua Univ., Taiwan)

- 13:30 – 13:50 20B2-1I **Development of High-Power Far-Infrared Radiation Source**
Weihua Jiang*, K. Hashimoto, K. Itoh, T. Hayashi, T. Saito, T. Idehara, M. Kamada, Nagaoka Univ. Tech., Japan.
- 13:50 – 14:10 20B2-2I **Terahertz Time-Domain Spectroscopy (THz-TDS) Application to dielectric Material Science (invited)**
Seizi Nishizawa* and S. Kiriara, Aispec (Advanced Infrared Spectroscopy Co. Ltd.), Japan.
- 14:10 – 14:25 20B2-3 **Wide Range Dielectric Spectroscopy in BaTiO₃-based Ferroelectrics**
Takashi Teranishi*, T. Hoshina, H. Takeda and T. Tsurumi, *Tokyo Tech., Japan
- 14:25 – 14:40 20B2-4 **Cobalt-Containing Z-, Y- and M-type hexagonal ferrites for High-Frequency Inductive Multilayer Devices**
Jorg Topfer*, S. Kračunovska, S. Barth, B. Pawlowski, F. Bechtold and J. Müller, *Univ. Appl. Sciences Jena, Germany.
- 14:40 – 14:55 20B2-5 **Fabrications of Terahertz Wave Resonators in Micro Liquid Cells Introduced into Alumina Photonic Crystals with Diamond Structures**
Noritoshi Ohta*, T. Niki and S. Kiriara, *Osaka Univ., Japan.
- 14:55 – 15:15 20B2-6I **Sensing Technique Using a 1D-Photonic Crystal Structure Made of SiO₂ Layer in Terahertz Range (invited)**
Kazuhiro Takigawa*, T. Kondo, S. Kamba, H. Matsumoto and K. Kageyama, *Murata Manufact. Co. Ltd., Japan.
- 15:15 – 15:35 20B2-7I **Terahertz Wave Properties of Flat Photonic Fractals with Metal Peano Patterns (invited)**
Soshu Kiriara*, T. Okamoto, Y. Takinami and T. Niki, *Osaka Univ., Japan.
- 15:35 – 15:50 20B2-8 **Microwave Controls through Pure Copper Photonic Crystals with Inverse Sphere Structures Fabricated by Stereolithography**
Yohei Takinami* and S. Kiriara, *Osaka Univ., Japan.

Poster Session (Hall Lobby)

16:30 – 17:30 Poster session and coffee break

- P1 **Influence of Poling Conditions on the Characteristics of Hard-type PZT Piezoceramics**
Long (Lang) Wu*, M. –C. Chure and B. –H. Chen, *Far-East University, Taiwan.
- P2 **Influence of RF Power on the Physical and Dielectric Characteristics of ZnO-doped Nd(Co_{1/2}Ti_{1/2})O₃ Thin Films**
Cheng-Hsing Hsu* and Y. –D. He, *National United University, Taiwan.
- P3 **Synthesis and Characterization of ZnNb₂O₆ Thin Films by Sol Gel Method**
Cheng-Hsing Hsu* and S. –F. Yan, *National United University, Taiwan.
- P4 **Fabrication of Mg(Zr_{0.05}Ti_{0.95})O₃ Dielectric Thin Films by Sol-Gel Method**
Chih-Wen Lee* and C. –F. Tseng, *National United University, Taiwan.
- P5 **Dielectric Properties of V₂O₅-doped Nd(Zn_{1/2}Ti_{1/2})O₃ Ceramics at Microwave Frequency**
Chia-Hao Chang* and Cheng-Hsing Hsu, *National United University, Taiwan.
- P6 **Resin Infiltration into Porous Ceramic Thick Films Fabricated by Aerosol Deposition Method**
Hong-Ki Kim*, H. –J. Kim and S. –M. Nam, *Kwangwoon University, Korea.
- P7 **Synthesis of Tin Oxide Thin Films and Their Sensing Performances**
Takeshi Ohgaki*, R. Matsuoka, K. Watanabe, K. Matsumoto, Y. Adachi, I. Sakaguchi, S. Hichita, N. Ohashi and H. Haneda, NIMS, Japan.
- P8 **Formation of BT Film by Plasma Assisted Aerosol Deposition Method**

- M. Mori*, N. Akita and J. Akedo, *Ryukoku University, Japan.
- P9 **Dielectric Properties of (Mg,Zn)Al₂O₄ Ceramics at Microwave Frequency**
Yuan-Ping Lu*, H. –H. Tung, C. –K. Hsu and C. –H. Hsu, *National United Univeristy, Taiwan.
- P10 **Research of Metal Core Piezoelectric Fiber**
Hiroshi Sato, AIST, Japan.
- P11 **Printability and Characterization of Highly Silver Loaded Ink Jet Inks**
Robert Jurk* and M. Fritsch, *Fraunhofer IKTS Institute, Germany.
- P12 **Microwave Assisted Synthesis of Nanocrystalline BaFe₁₂O₁₉**
Nurhadi Sukma Waluyo* and A. A. Almajid, *King Saud Univ., Saudi Arabia
- P13 **Compact Microwave Filters Fabricated by Aerosol Deposition Method**
Yoon-Hyun Kim*, H. –J. Kim and S. –M. Nam, *Kwangwoon University, Korea
- P14 **Correlation between the Electro-Optic Effect and Piezoelectric Effect around Resonance Frequency**
Kotaro Takeda*, T. Hoshina, H. Takeda and T. Tsurumi, *Tokyo Tech., Japan
- P15 **Nonlinear Vibration Analysis of Piezoelectric Ceramics Based on the Transient Response**
Manabu Hagiwara*, S. Takahashi, T. Hoshina, H. Takeda and T. Tsurumi, *Tokyo Tech., Japan
- P16 **Stacking-Layer Effect on Dielectric Properties of Multilayer Ceramic Capacitors**
Satoshi Yokomizo*, T. Hoshina, H. Takeda, K. Taniguchi, Y. Mizuno, H. Chazono and T. Tsurumi, *Tokyo Tech., Japan.
- P17 **A Ceramic Clevis Sensor for Online Substance Concentration Measurement, Manufactured by Ceramic Injection Molding**
Matthias Hartmann*, S. Doerner and S. Hirsch, *Otto-von-Guericke University of Magdeburg, Germany.
- P18 **Development of Optical Transparent Ceramic Films by Aerosol Deposition for Optical Interconnect Applications**
Hiroki Tsuda*, J. Akedo, M. Nakada, T. Shimizu and K. Ohashi, *AIST, Japan.
- P19 **Fabrication of All-Solid-State Li-ion Battery by Aerosol Deposition Technique**
Daniel Popovici* and J. Akedo, *AIST, Japan.

18:00 – 21:00 Excursion and banquet dinner (18:00 at the entrance of OVTA)

April 21 (Wed) Morning Sessions

Room A (Nagisa)

- Session XV: **Dielectric and Piezoelectric Materials**
Chair person: Yong Soo Cho (Yonsei Univ., Korea)
Chair person: Danilo Suvorov (Jožef Stefan Institute, Slovenia)
- 8:30 – 8:50 21A1-1I **The Improvement of Microwave Dielectric Properties on Al₂O₃ - TiO₂ Composite Ceramics (invited)**
Yasuharu Miyauchi*, I. Kagomiya, Hitoshi Ohsato, *TDK Corp., Japan.
- 8:50 – 9:10 21A1-2I **Characterisation of Integrated SMD Pressure / Flow / Temperature Multisensor for Compressed Air in LTCC Technology (invited)**
Thomas Maeder*, Y. Fournier, J. –B. Coma, N. Craquelin and P. Ryser, *EPFL, Switzerland
- 9:10 – 9:30 21A1-3I **Failure Analysis of Multilayer Ceramic Capacitor with an Inner Ag Electrode (invited)**
Jau-Ho Jean*, Y. –T. Shih and S. –C. Lin, *National Tsing Hua Univ., Taiwan.
- 9:30 – 9:50 21A1-4I **Aqueous Slurry Processing and Characterization of Pb(Zr,Ti)O₃ Ceramic Sheets for Multilayer Piezoelectric Actuators (invited)**
Wataru Sakamoto*, M. Fujioka, T. Yamaguchi, K. Kikuta, S. Hirano, *Nagoya Univ., Japan.

- 9:50 – 10:05 21A1-5 **Effect of 90°-domain Switching in Piezoelectric Microcantilever Analyzed by in-situ Two-Dimensional X-ray Diffraction**
Hitoshi Morioka*, K. Saito, T. Kobayashi, S. Yasui, T. Kurosawa and H. Funakubo, *Bruker AXS, Japan.
- 10:05 – 10:20 21A1-6 **Size Effect on Dielectric and Piezoelectric Properties of BaTiO₃ Ceramics**
Takuya Hoshina*, S. Hatta, Y. Kigoshi, H. Takeda and T. Tsurumi, *Tokyo Tech., Japan.
- 10:20 – 10:40 Coffee break
- Session XVI: Dielectric and Piezoelectric Materials
Chair person: Richard Eitel (University of Kentucky, USA)
Chair person: Hajime Nagata (Tokyo Univ. Science, Japan)
- 10:40 – 11:00 21A1-7I **High Energy Glass Laminates for Pulse Power and Power Electronic Applications (invited)**
Michael Lanagan*, C. Randall, A. Baker, and E. Furman, *Penn State Univ., USA.
- 11:00 – 11:20 21A1-8I **Nonconventional Characteristics Driven by Novel LTCC Materials (invited)**
Yong Soo Cho*, Y. H. Jo, I. J. Choi, D. H. Yeon, S. H. N. Doo, S. H. Key and K. P. Hong, *Yonsei Univ., Korea
- 11:20 – 11:40 21A1-9I **Aerosol Deposition of High-K Thick Films for Embedded Capacitors (invited)**
Hyo Tae Kim*, E. H. Lee, J. Kim, Y. J. Yoon and J. -H. Kim, *Korea Inst. Ceram. Eng. Tech. (KICET), Korea.
- 11:40 – 11:55 21A1-10 **Thermal Discharge Current Measurement for (Na,K)NbO₃ Piezoceramics**
Hitoshi Matsudo, Nagoya Inst. Tech., Japan.
- 11:55 – 12:10 21A1-11 **Subgrain Microstructure in High-Performance BaTiO₃ Piezoelectric Ceramics**
Tomoaki Kaaki*, Kang Yan Feng Chen Masatoshi Adachi, *Toyama Prefectural Univ., Japan

Room B (Room# 1001)

- Session XVII: Ceramics in Energy Systems (2)
Chair person: Nigel Sammes (Colorado School of Mines, USA)
Chair person: Yoshinobu Fujishiro (AIST, Japan)
- 8:30 – 8:50 21B1-1I **Development of Advanced Ceramic Electrochemical Reactors (invited)**
Masanobu Awano*, Y. Fujishiro, T. Suzuki, T. Yamaguchi, K. Hamamoto, *AIST, Japan.
- 8:50 – 9:10 21B1-2I **Development of Micro Tubular SOFC Modules for Intermediate Temperature Operation (invited)**
Toshio Suzuki*, Md. H. Zahir, T. Yamaguchi, Y. Fujishiro, M. Awano, *AIST, Japan.
- 9:10 – 9:30 21B1-3I **Development of Glass/Ceramic Composite Seals for Solid Oxide Fuel Cells (invited)**
Seiichi Suda*, K. Kawahara and Y. Nakamura, *JFCC, Japan.
- 9:30 – 9:50 21B1-4I **Effects of Anode Composition on Performance of Cathode Supported Micro Honeycomb SOFC (invited)**
Yoshinobu Fujishiro*, T. Suzuki, T. Yamaguchi, K. Hamamoto, and M. Awano, *AIST, Japan.
- 9:50 – 10:05 21B1-5 **Microstructural Observations for Electrode Design of 3DOM-Anode Supported SOFC**
Hirokazu Munakata*, Y. Katsuki, K. Kanamura, *Tokyo Metropolitan Univ., Japan.
- 10:05 – 10:25 21B1-6I **Synthesis and Modification of Titanium Oxide Nanotubes and their Energy Creation Functions (invited)**
Tohru Sekino*, J. -Y. Kim, N. Fahim, S. Tsukuda, T. Kusunose, S. Tanaka, *Tohoku Univ., Japan.

- 10:25 – 10:45 21B1-7I **Control of Nanocomposite Particles for High Performance Durable Nanoporous Electrode of SOFC (invited)**
JooHo Moon*, H. S. Song, S. Lee, S. H. Hyun and J. Kim, *Yonsei Univ., Korea.
- 10:45 – 11:00 21B1-8 **Development of Chemical Microthrusters Using Low Temperature Co-Fired Ceramic Tapes**
Ming-Hsun Wu*, P. -S. Lin, C. -Y. Shen, Z. -X. Lu, *National Cheng Kung Univ., Taiwan.
- 11:00 – 11:15 21B1-9 **Cooling Enhancement for LED Light Bar by Ceramic Substrate**
Jung-Shun Chen and Jung-Hua Chou*, *Natuional Cheng Kung Univ., Taiwan
- 11:15 – Coffee break

Room A (Nagisa)

- 12:10 – 12:40 Plenary lecture (3)
Chair person: Takaaki Tsurumi (Tokyo Institute of Technology, Japan)
Perspective of Electroceramics Yao Xi, Xian Jiaotong Univ., China.
- 12:40 – 12:50 Closing remark Michael Lanagan (Penn State Univ., USA)