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NARA CONFERENCE COMBINES STATE-OF-THE-ART TECHNOLOGY UPDATE WITH CULTURAL ENRICHMENT

Against a background infused with cultural treasures and scenic beauty,two important international symposia on the applications of ferroelectrics — **International Symposium on the Applications of Ferroelectrics** (ISAF) and **International Symposium on Integrated Ferroelectrics** (ISIF) — joined with Japan's domestic meeting on **Ferroelectric Materials and their Applications** (FMA) in the **International Joint Conference on the Applications of Ferroelectrics 2002** (IFFF 2002). During the last days of May, scientists and engineers gathered in Nara, the capital of Japan in ancient times, to exchange and discuss the latest findings in the field of applications of ferroelectric, piezoelectric, dielectric, electrooptic single crystals, polycrystalline ceramics, and films.

In this issue we list the titles and authors of all oral presentations, covering the following topics: Thin films (p. 2), piezoelectrics (p. 5), FeRAM & devices (p. 6), characterization (p. 7), domain & switching (p. 8), fundamentals (p. 8), relaxors (p. 9), optics (p. 9), micro ferroelectrics (p. 9), dielectrics (p. 10), pyroelectrics (p. 10), high-k and gate oxides (p. 11), device integration (p. 11), and microwave devices (p. 11). On pages 12 through 18 you'll find the listing of a portion of poster presentations on various topics concerning thin films. The rest of the poster presentation listing will be published in the next issue of the *Ferroelectricity Newsletter.*

What made IFFF 2002 in Nara memorable for me was the combination of the high standard of technical information in an atmosphere of friendly and competent helpfulness with experiences of rich cultural beauty.

As usual, we bring you several announcements of upcoming meetings, such as the **Non-Volatile Memory Technology Symposium** in Hawaii, the **15th International Symposium on Integrated Ferroelectrics** in Colorado next March, the **3rd Asian Meeting on Electroceramics** in summer 2003 in Singapore, a conference on **Polar Oxides** on Capri, Italy, and the **4th Asian Meeting on Ferroelectrics** in December 2003 in India. The **Calender of Events** on the back page provides an overview of all the meetings through December 2003 we heard about. If you know of a conference not listed, please send us the information and we'll be happy to include it in future issues.

Rudolf Panholzer
Editor-in-Chief

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Prof. Rudolf Panholzer
Editor-in-Chief
email: rpanholzer@nps.navy.mil

Dr. Hannah Liebmann
Managing Editor
email: liebmann@redshift.com

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INTERNATIONAL JOINT CONFERENCE ON THE APPLICATIONS OF FERROELECTRICS (IFFF 2002)

The international joint conference on the applications of ferroelectrics was held at Nara, Japan, from 28 May to 1 June 2002. At this memorable occasion, the world's most important international symposia on the application of ferroelectrics, the **IEEE International Symposium on the Applications of Ferroelectrics (ISAF XIII 2002)** and the **International Symposium on Integrated Ferroelectrics (ISIF XIV 2002)**, joined together for the first time and each of them was held in Japan for the first time. The meeting on **Ferroelectric Materials and Their Applications (FMA XIX 2002)**, Japan's domestic meeting dedicated to ferroelectric materials and their applications since 1977, was the third partner in this joint international ferroelectrics conference called **IFFF 2002**.

IFFF 2002 Proceedings

The proceedings of the international joint conference will be published in the following journals:

Proceedings:	Published in:
ISAF XIII 2002	***IEEE Proceedings***
ISIF XIV 2002	***Integrated Ferroelectrics***
FMA XIX 2002	***Japanese Journal of Applied Physics***

The following is a list of oral and poster presentations given at IFFF 2002, arranged according to topics.

PLENARY

The downscaling of piezoelectric and pyroelectric ceramics: Microdevices, nanofabrication and size effects
N. Setter

Does memory of dream come true? (Market prospects and technical hurdles for FRAM)
H. Nishi

THIN FILMS

A mass production compatible metalorganic chemical vapor deposition process of $Pb(Zr,Ti)O_3$ thin films at low temperatures
S. Jeong, J.-S. Zhao, J. Lim, and C.S. Hwang

Impact of thickness and A-site stoichiometry on the reliability of MOCVD $Pb(Zr,Ti)O_3$ thin films
D.V. Taylor, S.R. Gilbert, D. Ritchey, J. Amano, S. Aggarwal, T. Sakoda, T.S. Moise, S.R. Summerfelt, F. Celii, J. Rodriguez, S. Martin, and K.J. Taylor

Reproducibility of MOCVD-PZT thin films in the long term continuous running by PZT-MOCVD production module
T. Yamada, T. Masuda, M. Kajinuma, H. Uchida, M. Uematsu, K. Suu, and M. Ishikawa

$Pb(Zr,Ti)_3$ thin films deposited by MOCVD for embedded memory technology
S. Aggarwal, S. Martin, F. Celii, L. Hall, J. Rodriguez, K.R. Udayarkumar, S.R. Summerfelt, T.S. Moise, and K.J. Taylor

Growth of PZT thin films by LS-MOCVD for high density FeRAM application
J.K. Lee, M.-S. Lee, S. Hong, W. Lee, Y.K. Lee, and Y. Park

Electrical properties of dielectric and ferroelectric films prepared by plasma enhanced atomic layer deposition
W.-J. Lee, B.-G. Chae, S.-O. Ryu, I.-K. Yu, S.M. Cho, B.-G. Yu, and K.-I. Cho

Characterization of PLZT film capacitor degradation in reducing ambients using a newly developed *in-situ* prober
J.S. Cross and M. Tsukada

Dielectric and polarization characteristics of sol-gel derived lead zirconate titanate thin films: Effect of erbium doping
R.S. Katiyar, A. Dixit, B. Roy, W. Jia, and S.B. Majumder

Lead content control in PZT films by using Ar/O_2 sequential crystallization annealing
O. Arisumi, S. Nakamura, B.K. Moon, K. Yamakawa, and K. Imai

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Effect of textured $Pb(Zr_{1-x}Ti_x)O_3$ seed layer on fatigue improvement of ferroelectric $Pbb_{0.99}[(Zr_{0.6}Sn)_{0.85}Ti_{0.15}]_{0.98}Nb_{0.02}O_3$ thin films
K.H. Yoon, H.C. Shin, and D.H. Kang

Role of fluorite formation in orientation selection in sol-gel derived PZT films on PT electrode layers
G.J. Norga, L. Fe, F. Vasiliu, and O. Van der Bies

Relationship between orientation and ferroelectric properties in Ir/PZT/Ir epitaxial capacitors
K. Okuwada, J. Ishida, T. Yamada, A. Sawabe, and K. Saito

Development of materials integration strategies for electroceramic film-based devices via complementary *in situ/ex situ* studies of film and interface processes
O. Auciello, A.H. Muller, E.A. Irene, A.M. Dhotel, and R. Ramesh

Ln(Ln=La, Pr, Nd, Sm) dependence on ferroelectric property for $(Bi_{3.25}Ln_{0.75})(Ti_{2.97}V_{0.03})O_{12}$ thin films prepared at low deposition temperature
T. Sakai, T. Watanabe, T. Kojima, M. Osada, Y. Noguchi, M. Miyayama, and H. Funakubo

Both ohmic contact properties of tungsten plug and ferroelectric properties of $(Bi,La)_4Ti_3O_{12}$ thin film in stacked capacitor structure
S.-Y. Kweon, N.-K. Kim, E.-S. Choi, S.-J. Yoom, and J.-S. Rob

Ferroelectric characteristics of $Bi_{4-x}La_xTi_3O_{12}$ thin films crystallized at low temperatures
K. Tanaka, T. Uno, and Y. Shimada

Sol-gel hydrothermal synthesis of barium strontium titanate thin films
K. Zalonka, M. Sayer, H. Hammad, and A.P. Freundorfer

Domain structures in epitaxial PZT thin films
S. Baik

Electrical properties of epitaxial $(Pb,Sr)TiO_3$ thin films prepared by RF magnetron sputtering
J. Du, T. Karaki, T. Fujii, and M. Adachi

Ferroelectric property of PZT (001) thin film deposited on epitaxial $(Ni,Zn,Fe)Fe_2O_4(111)$ thin film for novel ferroelectric/ferromagnetic memory applications
N. Wakiya, K. Shimozaki, and N. Mizutani

Crystallization of zirconium-rich PLZT thin films below 500˚C
M. Mandeljc, B. Malic, M. Kosec, and G. Drazic

Microstructure and electrical properties of PZT thin films deposited by laser ablation on template layer
Z.J. Wang, H. Kokawa, and R. Maeda

The properties of multilayered $Pt(Ba_{0.5}Sr_{0.5}TiO_3/Pb(Zr_{0.52}Ti_{0.48})O_3/(Ba_{0.5}Sr_{0.5})TiO_3/Pt$ thin films
F. Yan, P. Bao, J. Zhu, and Y. Wang

The influence of bottom electrodes and seed islands on the epitaxial growth characteristics of SBT thin films
S.-Y. Jung, W.-C. Kwak, G.M.A. Kumar, Y.-M. Sung, and S.-J. Hwang

Preparation of $SrBi_2Ta_2O_9$ ferroelectric thin films by RF magnetron sputtering
Y. Nishioka and H. Ishiwara

Development of 500Å thick MOCVD SBT films for 0.18μm FeRAM process
S. Narayan, V. Joshi, M. Lim, C.A. Paz de Araujo, L.D. McMillan, K. Uchiyama, Y. Shimada, S. Miedl, F. Schienle, M. Schumacher, and J. Juergensen

Improvement in ferroelectric properties of $SrBi_2Ta_2O_9$ thin films with Bi_2O_3 buffer layers by liquid delivery metalorganic chemical vapor deposition
N.-J. Seong, W.-C. Shin, K.-J. Choi, and S.G. Yoon

Electrode size effect on switching time of $SrBi_2Ta_2O_9$ thin films
X.B. Chen, F. Yan, C.H. Li, J.S. Zhu, and Y.N. Wang

Modeling of thickness effect on the dielectric properties of BST thin films
A.I. Kingon, C. Parker, J.-P. Maria, and S.K. Streiffer

Influence of strains and defects on ferroelectric and dielectric properties of thin film barium strontium titanates
D. Balzar, P.A. Ramakrishnan, P. Spagnol, S. Mani, and A.M. Hermann

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Microstructures and dielectric properties of compositionally graded $(Ba_{1-x}Sr_x)TiO_3$ thin films prepared by pulsed laser deposition
X. Zhu, H.L.-W. Chan, C.-L. Choy, and K.-H. Wong

Microstructural and electrical properties of $(Ba_xSr_{1-x})Ti_{1+y}O_{3+z}$ thin films prepared at low temperatures (T<450˚C) by RF magnetron sputtering
J.D. Baniecki, T. Shioga, and K. Kurihara

Thickness dependent properties of barium strontium titanate between 15 and 600nm
J.-P. Maria, C.B. Parker, G. Stauf, and A.I. Kingon

Leakage current measurements of STO and BST thin films interpreted by the "dead layer" model
S. Schmitz and H. Schroeder

The effects of post oxygen plasma treatment on Pt/(Ba,Sr)TiO_3/Pt capacitors at low substrate temperatures
J.-L. Wang, C.-C. Hwang, D.-C. Shye, M.-J. Lai, C.-C. Jaingl, J.-S. Chen, S. Huang, M.-H. Juang, B.-S. Chiou, and H.-C. Cheng

Chemical approach using tailored liquid sources to traditional and novel ferroelectric thin films
K. Kato, K. Suzuki, D. Fu, K. Nishizawa, and T. Miki

Annealing temperature dependence of crystallinity, strain, and memory effects of $SrBi_2Ta_2O_9$/SiN/Si structure
J.-P. Han, C.J. Xie, K.-H. Kim, C.C. Broadbridge, D.L. Pechkis, Y.X. Liu, W. Tong, A.H. Lehman, and T.P. Ma

Oxygen barrier for stacked SBT-FECAP on W-plug
J. Lisoni, D. Maes, J.-L. Everaert, J. Johnson, V. Paraschiv, L. Haspeslagh, D.J. Wouters, P. Casella, C. Corvasce, R. Zambrano, H. Monchoix, and L.V. Autryve

Effect of cation substitution on the crystallization kinetics of sol-gel derived SBT thin films
W.-C. Kwak, S.-Y. Jung, G.M.A. Kumar, S.-J. Hwang, and Y.-M. Sung

Low temperature crystallization of $SrBi_2Ta_2O_9$ (SBT) in the ultra thin film region fabricated by MOCVD
K. Uchiyama, S. Narayan, Y. Shimada, L. McMillan, and C.A. Araujo

Bias sputtering as a tool for processing textured ferroelectric film
M. Maglione and J.P. Manaud

Characterization of sol-gel derived $Bi_{4-x}La_xTi_3O_{12}$ films
N. Sugita, T. Suzuki, E. Tokumitsu, and M. Osada

Dielectric properties of $CaCu_3Ti_4O_{12}$ thin film
K.Y. Cho, N.J. Wu, and A. Ignatiev

Preparation and application of PZT thin films deposited by hybrid processes: Sol-gel method and laser ablation
J.W. Wan, J.-J. Tsaur, Z.J. Wang, and R. Maeda

Stress induced phase transformations in (001) MOCVD-grown PZT thin films
M.B. Kelman and P.C. McIntyre

Preparation of ferroelectric $Ba(Ti_{0.85}Sn_{0.15})O_3$ thin films by metalorganic decomposition
T. Miyamoto, S. Murakami, K. Inoue, Y. Suzuki, T. Nomura, M. Noda, and M. Okuyama

Ferroelectric lead zirconate titanate thin films synthesized via a high-pressure crystallization process
C.-H. Lu and Y.-C. Sun

RF magnetron sputtered ferroelectric (Na,K)NbO_3 films
M. Blomqvist, J.-H. Koh, S.I. Khartsev, and A.M. Grishin

A new class of ferroelectrics suitable for 0.5 V operation of nonvolatile random access memory
T. Kijima and H. Ishiwara

High frequency LIMM: A powerful tool for ferroelectric thin film characterization
T. Sandner, G. Suchaneck, R. Koehler, and G. Gerlach

Investigation of the thermal stability of $Pb_5Ge_3O_{11}$ thin films and methods of improvement
F. Zhang, W. Zhuang, and S.T. Hsu

Characterization of rhombohedral (111) and (100) lead zirconate titanate films fabricated by RF magnetron sputtering
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Critical issues in single crystal growth of PMN:PT by seeded polycrystal conversion
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On origin of the enhanced piezoelectric response along a nonpolar direction in simple perovskites
D. Damjanovic, F. Brem, and N. Setter

High temperature high performance materials
T.R. Shrout, R. Eitel, S. Zhang, C.A. Randall, P. Rehrig, and E. Alberta

Piezoelectric properties dependence on thickness of PZT films fabricated by aerosol deposition method
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Apparent reduction in the value of the d_{33} piezoelectric coefficient in PZT thick films
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E. Hong, S.V. Krishnaswamy, C.B. Freidhoff, and S. T.-McKinstry

Sound generation with piezoelectric actuators for active noise reduction applications
T. Morita, E.L. Colla, and N. Setter

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L. Wu, B.-Huei Chen, T.-Y. Chang, J. L.-Hunang, and C.L. Huang

Low temperature sintering of piezoelectric thick films derived from a novel sol-gel route
W. Zhu, Z.H. Wang, C.L. Zhao, and O.K. Tan

Processing and characterization of pressure consolidated lead-free piezoceramics based on alkaline niobates
C. Pithan, B. Malic, E. Ringgard, and R. Waser

Preparation of orientation-controlled $Pb(Zr,Ti)O_3$ (PZT) thick films prepared by high-speed MOCVD and their properties
S. Yokoyama, T. Ozeki, T. Oikawa, Y. Ichikawa, Y. Yamachita, T. Ochiai, and H. Funakubo

Fine tolerance resonator applications of bismuth layer structured ferroelectric ceramics
A. Ando, T. Sawada, H. Ogawa, M. Kimura, and Y. Sakabe

Properties of $(Na_{1/2}Bi_{1/2})Ti_3O_{12} \cdot Bi_4Ti_3O_{12}$ piezoelectric ceramics
A. Sanson and R.W. Whatmore

$Bi_4Ti_3O_{12}$-based lead-free piezoelectric ceramics with grain orientation
H. Nagata, Y. Yano, T. Enosawa, Y. Fujita, and T. Takenaka

Novel piezoelectric ceramic/polymer composite transducers
S. Turcu, B. Jadidian, S.C. Danforth, and A. Safari

Piezoelectric properties and structural characterization of $(Na,Bi)Bi_2Ta_2O_9$ ceramics with bismuth layer structure
R. Ayoyagi, M. Matsushita, K. Komagata, H. Takeda, S. Okamura, and T. Shiosaki

Piezoelectric applications of ferroelectric single crystals
K. Nakamura

Dielectric and piezoelectric properties of $BaTiO_3$ and PMN-PT single crystals grown from polycrystalline precursors
J.-B. Lee, T.-M. Heo, D.-H. Kim, H.-Y. Lee, and D.-Y. Kim

Dielectric and piezoelectric properties of $0.93Pb(Zn_{1/3}Nb_{2/3})O_3$-$0.07PbTiO_3$ single crystals for phased array
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PZN-PT- and BS-PT-based high frequency single-element transducers for medical ultrasonic imaging
S. Rhee, S. Zhang, T. Shrout, and K.K. Shung

Nonlinear characterization of high power transducers
P. Gonnard and L. Petit

Potassium niobate single-domain crystals as the piezoelectrics with low dielectric and high electromechanical coupling properties
S. Wada, K. Muraoka, H. Kakemoto, H. Kumagai, and T. Tsurumi

The development of new high performance mechanical-electromechanical actuators
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Narayanan

A 35 MHz linear ultrasonic array for medical imaging
J.M. Cannata, T.R. Shrout, and K.K. Shung

Piezoelectric transformer for 30W output AC-DC converters
M. Yamamoto, Y. Sasaki, T. Inoue, A. Ochi, and S. Hamamura

Design of a 50 MHz annular array using fine-grain lead titanate
K.A. Smook, T.R. Shrout, and K.K. Shung

Performance enhancement of tunable bandpass filters using selectively etched ferroelectric thin films
F. Miranda, C. Mueller, F. Van Keuls, R. Romanofsky, G. Subramanyam, and S. Vignesparamoorthy

Phase development and electrical properties of $Pb(Yb_{1/2}Nb_{1/2})O_3$-$PbTiO_3$ epitaxial films
T. Yoshimura and S. T.-McKinstry

Hysteresis properties of PZT thin film bulk acoustic resonators
R. Gabl, M. Schreiter, R. Primig, and W. Wersing

Fabrications and resonant behavior of PZT thick film cantilever for biochips
H.J. Kim, Y.-B. Kim, J.-Y. Kang, and T.S. Kim

Ultrasonic phased array micro-sensor using piezoelectric PZT thin film and resonant frequency tuning by poling
K. Yamashita, T. Fukunaga, M. Okuyama, S. Aoyagi, and Y. Suzuki

Integration of piezoelectric PZT thin films with internal electrodes into an actuator structure for MEMS applications
M. Hoffmann, C. Kügeler, U. Böttger, and R. Waser

Functionally gradient piezoelectric ceramics for ultrasonic transducers
S. Takahashi, N. Miyamoto, and N. Ichinose

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Key technologies for high density FeRAM applications
N. Nagel

Scaling and performance issues of low temperature crystallized $Pb(Zr,Ti)O_3$ thin films for high density FeRAM devices
S.-H. Kim, C.Y. Koo, D.-S. Lee, H.-J. Woo, D.-Y. Park, J. Yang, and J. Ha

A low temperature LNO/PZT/LNO ferroelectric capacitor-over-inter-connect (COI) FeRAM module for advanced modular SOC
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The control of lead loss for PZT based FeRAM
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Low thermal budget process of thin $SrBi_2Ta_2O_9$ film for 3V or lower voltage operation of high density FeRAM
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Status and issues of FeRAM integration and characterization
Y.-J. Park

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T. Li, S.T. Hsu, B. Ulrich, and D. Evans

A novel single-FET cell and array architecture for ferroelectric non-volatile memories
W.-Q. Zhang, T.-L. Ren, C.-X. Li, T.-Q. Shao, J. Zhu, L.-T. Liu, and Z.-J. Li

A 0.13μm 1.5V 1T1C 4Mb embedded ferroelectric RAM with novel sense-amplifier and plate-line architecture
J. Rickes, J. Grace, J. Fong, S. Gilbert, C. Pietrzyk, R. Lanham, J. Amano, S. Summerfelt, and T. Moise

Advanced encapsulating barrier layer technology for 0.25μm 1T1C 32MB FRAM
H.J. Joo, Y.J. Song, H.H. Kim, N.W. Jang, S.Y. Lee, Y.S. Park, and K. Kim

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Annealing effect of photoelectron spectra in $SrBi_2Ta_2O_9$ films
M. Takahashi, K. Kodama, M. Noda, P. Hedblom, A. Grishin, and M. Okuyama

Electrical properties and microstructures of ferroelectric $Pb(Zr,Ti)O_3$ thin films prepared by laser annealing
C.-F. Chou, H.-C. Pan, and C.C. Chu

Dielectric properties of capacitor materials in the optical frequency range
M. Biegalski and S. T.-McKinstry

Electronic structures of $Bi_4Ti_3O_{12}$ thin films and single crystals by resonant soft X-ray emission spectroscopy
T. Higuchi, K. Kudoh, T. Takeuchi, Y. Masuda, S. Shin, and T. Tsukamoto

Scanning nonlinear dielectric microscopy: A high resolution tool for observing ferroelectric domains and nano domain
Y. Cho

Wafer-level testing of single 1T-1C ferroelectric memory cells
S. Tiedke, J. Rickes, T. Schmitz, and R. Waser

Photoinduced domain pinning and hysteresis changes in ferroelectric thin films studied by scanning force microscopy
A. Gruverman, A.I. Kingon, B.J. Rodriguez, and R.J. Nemanich

Novel numerical method to correct for both circuit distortions and passive layers effect affecting Sawyer-Tower ferroelectric thin films hysteresis measurements
R. Bouregba and G. Poullain

Role of non-180˚ domain switching in electric properties of $Pb(Zr,Ti)O_3$ thin films
K. Saito, T. Oikawa, T. Kurosawa, T. Akai, and H. Funakubo

Thickness-dependent leakage current of ($PVDF/PbTiO_3$) pyroelectric bilayer thin film detectors
M.C. Kan, C.W. Wang, and Y.C. Chen

Application of scanning prove microscope (SPM) for novel characterization of ferroelectric capacitors
I. Chung, I. Yi, and M. Yastake

Depth profiling of ferroelectric thin films with high energy ion beam spectroscopy
T. Kaneko, S. Nomura, G. Kano, and M. Watamori

SPM investigation of the Pt/PZT interface in ultrathin ferroelectrics
X. Lu, F. Schlaphof, C. Loppacher, G. Suchanek, and l.M. Eng

Microstructural characterization of $SrRuO_3$ films deposited on Si using SrO as buffer layers
Y.X. Chen, J. Koike, T. Higuchi, S. Iwashita, M. Ishida, and T. Shimoda

Electric field induced polarization reversal by scanning piezoelectric microscopy
V.V. Shvartsman, N.A. Pertsev, A.Yu. Emelyanov, and A.L. Kholkin

Models of electrode-dielectric interfaces in ferroelectric thin film devices
J.F. Scott and M. Dawber

Separation of the near interface regions from the bulk in a ferroelectric thin film
D.P. Chu, B.M. McGregor, Z.G. Zhang, P. Migliorato, K. Ohashi, K. Hasegawa, and T. Shimoda

New approach to thin film characterization by switching current analysis
V. Shur, I. Baturin, E. Shishkin, and M. Belousowa

Ferroelectric capacitor compact model including dynamic and temperature behavior
E. Supriyanto, I. Schultz, M. Ullmann, and H. Goebel

Impact of thickness on the dielectric and electrical properties of pulsed laser ablated $SrBi_2Nb_2O_9$ thin films
S. Battacharyya, P. Victor, and S.B. Krupanidhi

$PbTiO_x$ nanotube observed by electron microscopy
J. Zhu, X. Zhu, K. Yang, Q. Li, G. Ma, Z. Liu, and N. Ming

Investigation of the electrical tunability of silver-niobate-tantalate

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thick films
F. Zimmermann, W. Menesklou, and E. I.-Tiffée

Doping effects in layer structured $Bi_4Ti_3O_{12}$ ferroelectrics lattice dynamics and property design investigated by Raman spectroscopy
M. Osada, M. Kakihana, Y. Noguchi, M. Miyayama, T. Watanabe, and H. Funakubo

Nonlinear dielectric properties of $BaTiO_3$/$srTiO_3$ superlattice
L. Kim, J. Kim, D. Jung, Y.S. Kim, and J. Lee

Investigation of the polyetherketone poled polymer with highly thermal stability for electrooptical applications
Q. Pan, C. Fang, Z. Qin, W. Shi, Q. Gu, and X. Wu

Dynamical aspects of retention and its relation to fatigue in ferroelectric thin films
B.S. Kang, J.-G. Yoon, T.K. Song, S. Seo, Y.W. So, and T.W. Noh

Ferroic glass ceramics
Y. Xi

Literally two-dimensional ferroelectricity probed by SHG in ferroelectric LB monolayers
T.V. Murzina, Y.G. Fokin, T.V. Misuryaev, O.A. Aktsipetrov, S.P. Palto, and S.G. Yudin

Simultaneous measurement of specific heat capacity, thermal conductivity and thermal diffusivity of ferroelectric ceramics by thermal radiation calorimetry
K. Morimoto, A. Uematsu, S. Sawai, K. Hisano, and T. Yamamoto

Effect of copper substitution on the dielectric and magnetic properties of low-sintered Z-type hexaferrites
X. Wang, J. Zhou, S. Su, Z. Gui, and L. Li

Dielectric spectra anomalies in nanomaterials
A.V. Ragulya, M.D. Glinchuk, A.M. Slipenyuk, A.N. Morozovskaya, I.P. Bykov, A.V. Polotai, V.P. Klimenko, V.V. Skorokhod, and C.A. Randall

DOMAIN & SWITCHING

Influence of domain orientation and grain size on PZT thin film properties
B.A. Tuttle, G. Brennecka, P.G. Clem, T.J. Boyle, J.D. Dawley, M.A. Rodriguez, S. Streiffer, G.R. Bai, O. Auciello, and R. Ramesh

Model relating polarization switching and crystallographic texture of PZT for FRAM applications
G.R. Fox, S. Sun, and S. Summerfelt

Non-Kolmogorov-Avrami kinetics of switching in ferroelectric thin films
A. Tagantsev, I. Stolichnov, E. Colla, N. Setter, J.S. Cross, and M. Tsukada

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S.-O. Ryu, W.-J. Lee, N.-Y. Lee, K.-J. Choi, I.-K. You, S.M. Cho, B.-G. Yu, K.-I. Cho, and S.-G. Yoon

First-principles study of electronic polarization in Bi-layer structure oxides

H. Miyazawa, E. Natori, M. Ishida, T. Shimoda, and D. Vanderbilt

Property degradation of $Pb(Zr_{0.52},Ti_{0.48})O_3$ (PZT) thin film with thickness and aging time

H.W. Song, H. Shin, S. Kim, and K. No

Electrical and structural properties of PZT films deposited by MOCVD using ultrasonic nebulation

H.-S. Shin and C.-H. Lee

Hydrogen-induced degradation mechanisms in ferroelectric $(Bi,La)_4Ti_3O_{12}$ and $Pb(Zr,Ti)O_3$ thin films

J.-G. Yoon, S. Seo, B.S. Kang, J.D. Kim, T.W. Noh, Y.K. Lee, and Y.S. Kim

Imprint characteristics of ferroelectric thin films at high storage and operation temperatures

K.H. Noh, Y.M. Kang, B. Yang, S.W. Lee, and Y.-J. Park

Rejuvenation and fatigue effects in sol-gel PZT films with platinum electrodes

V. Shur, E. Rumyantsev, I. Baturin, E. Nikolaeva, E. Shishkin, D. Kuznetsov, D. Bolten, T. Schneller, and R. Waser

Ferroelectric properties and current conduction mechanisms of $Pt(Bi,La)_4Ti_3O_{12}/Pt$ capacitors

N.-K. Kim, C.-R. Song, S.-Y. Kweon, E.-S. Choi, S.-J. Yeom, and J.-S. Roh

Electrical properties of vanadium doped Bi-La-Ti-O thin films derived

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by chemical solution deposition method
T.-W. Chiu, N. W\\ akiya, K. Shimozaki, and N. Mizutani

Simulation of leakage current in thin films with dead layers
H. Schroeder, S. Schmitz, P. Meuffels, and R. Liedtke

Conduction behavior of strontium-bismuth-tantalate thin films by pulsed laser deposition
J.S. Kim, T.K. Song, S.S. Kim, J.K. Kim, I.W. Kim, B.C. Choi, and J.H. Jeong

Finite element analysis of demain structures in epitaxial $PbTiO_3$ thin films on MgO and Pt/MgO substrates
K. Lee, Y.K. Kim, and S. Baik

Electrical properties of in-plane oriented ferroelectric $Bi_4Ti_3O_{12}$ based thin films synthesized by chemical solution
H. Matsuda and T. Iijima

Characterization of SBT based capacitors using Zr-silicate insulator layers
H. Min, C. Jun, N. Park, S. Kong, J. Lee, and J. Kim

Influence of structural properties on the temperature of ferroelectric transition of $Ba_xSr_{1-x}TiO_3$ films
S.F. Karamanenko, A.I. Dedyk, Y.-J. Oh, V.I. Sakharov, and I.T. Serenkov

Characterization and modeling of ferroelectric thin film integrating temperature and aging dependence
L. Cima and E. Labouré

A model for switching in ferroelectric thin films by nucleation-growth of domains with three-dimensional polarization
D. Ricinschi, Y. Ishibashi, Makoto Iwata, Liliama Mitoseriu, and Masanori Okuyama

Evaluation of PLZT thin film sputtered on $Pt/IrO_x/Ir$ bottom electrode for ferroelectric memory application
Y. Miyaguchi, T. Jimbo, S. Kikuchi, K. Suu, and M. Ishikawa

Current-temperature characteristics of low-temperature sputtered $(Ba,Sr)TiO_3$ films post-treated by rapid thermal annealing
M.W. Kuo, J.-S. Chen, B.C.S. Chou, D.-C. Shye, C.-K. Jan, M.-F. Wu, H.-Y. Tseng, B.-S. Chiou, and H.-C. Cheng

Electrically activated rejuvenation of retention in thermally imprinted PLZT capacitors
S. Sun

Aging effect in sol-gel derived lead zirconate titanate thin films
R.S. Katiyar, A. Dixit, and S.B. Majumder

Correlation between microstructure and local ferroelectric properties of non-c-oriented epitaxial $SrBi_2Ta_2O_9$ thin films
C. Harnagea, A. Pignolet, M. Alexe, D.N. Zakharov, H.N. Lee, and D. Hesse

Resistance degradation of acceptor doped $Pt/Ba_{0.7}Sr_{0.3}TiO_3/Pt$ thin film capacitors
R. Liedtke, R. Meyer, and R. Waser

Polarization state instability in single grains of $Pb(Zr_{0.45}Ti_{0.55})O_3$ thin films
E.L. Colla, K. Torii, S. Hiboux, H.W. Song, I. Stolichnov, A. Tagantsev, K. No, and N. Setter

Tracer isotope studies of ionic defect redistribution during imprint and fatigue testing of PZT thin films
L.F. Schloss and P.C. McIntyre

Physical properties of MOD derived $Bi_4Ti_3O_{12}/Bi_2SiO_5/Si$ structures
M. Yamaguchi,T. Nagatomo, and Y. Masuda

Asymmetric dielectric and ferroelectric behavior of CSD ultra-thin $Sr_{0.8}Bi_{2.2}Ta_2O_9$ thin films
R. Jiménez, C. Alemany, A. González, M.L. Calzada, and J. Mendiola

Specific heat and thermal conductivity of $BaTiO_3$ polycrystalline thin films
B.A. Strukov, S.T. Davitadze, S.N. Kravchun, B.M. Goltzman, V.V. Lemanov, and S.G. Shulman

A metal-ferroelectric-semiconductor field-effect transistor memory cell
M.A. Bailey and F.D. Ho

Effects of substrates on alkoxy-derived $(Y,Yb)MnO_3$ thin films
K. Suzuki, D. Fu, K. Nishizawa, T. Miki, and K. Kato

Ferroelectric properties of CSD-derived $Sr_{0.3}Ba_{0.7}Nb_2O_6$ (SBN30) thin films
D.G. Lee, H.Y. Lee, J.J. Kim, and S.H. Cho

Ferroelectric and magnetic properties of $PtFeO_3$-$PbTiO_3$ thin films

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C.I. Cheon, J.S. Kim, and P.W. Jang

Characterization of potassium niobate produced by self-assembled nanosheet from aqueous solution
K. Toda, N. Ohtake, M. Kawakami, S. Tokuoka, K. Uematsu, and M. Sato

Dielectric relaxation in pulsed excimer laser ablated amorphous zirconium titanate thin films
P. Victor and S.B. Krupanidhi

Impact of microstructure on the electrical properties of zirconium titanate thin films in MOS configuration
P. Victor and S.B. Krupanidhi

Influence of excitation frequency and amplitude on the switching properties of SBT and PZT thin films at 10MHz hysteresis frequency
U. Kall, U. Bottger, Y.-K. Lin, A. Werner, R. Waser, C. Szot, and S. Tiedke

THIN FILM - FABRICATION - BIT SYSTEM

Effect of heat treatment on electric properties of $Bi_4Ti_3O_{12}$ thin films by two-dimension RF magnetron sputtering
K. Kudoh, T. Higuchi, M. Tanaka, and T. Tsukamoto

$Bi_{3.99}Ti_{2.97}O_{12}$ ferroelectric thin films by pulsed laser deposition
D.-Y. Wang, J.-S. Zhu, H.L.-W. Chan, and C.-L. Choy

Effect of niobium doping on the ferroelectric properties of bismuth titanate
Z.H. Bao, Y.Y. Yao, X.M. Lü, J.S. Zhu, and Y.N. Yang

La doped effect on the fatigue properties of $Bi_4Ti_3O_{12}$-$SrBi_4Ti_4O_{15}$ thin films
J.S. Zhu, D.Y. Wang, H.X. Qin, Z.H. Bao, D. Su, Y. Ding, X.M. Lü, H.L.W. Chan, and C.L. Choy

Structural and electrical properties of $Bi_{3.25}La_{0.75}Ti_3O_{12}$ thin films for memory applications
D. Wu, A. Li, Z. Liu, and N. Ming

Doping effects on the properties and microstructure of the intergrowth $Bi_4Ti_3O_{12}$-$SrBi_4Ti_4O_{15}$ thin films
H. Qin and R.A. Gerhardt

Dependence of metal composition of BLT thin films prepared by MOCVD on metalorganic precursors
Y. Tasaki, T. Tanaka, T. Hashimoto, T. Yamamoto, T. Nittamchi, and S. Yoshizawa

Effect of metalorganic precursors on the morphology of BLT thin films prepared by MOCVD
T. Tanaka, S. Yoshizawa, T. Hashimoto, T. Yamamoto, and Y. Tasaki

Effect of V-substitution on the ferroelectric properties of $Bi_4Ti_3O_3$-$PbTiO_{12}$ and $(Bi,M)_4Ti_3O_{12}$ [M = lanthanoid] films fabricated by chemical solution deposition technique
H. Uchida, H. Yoshikawa, I. Okada, H. Matsuda, T. Iijima, T. Watanabe, and H. Funakubo

Microstructures and ferroelectric properties of $Bi_4Ti_3O_{12}$ thin films prepared by sol-gel method
J.K. Kim, S.S. Kim, E.K. Choi, J.S. Kim, and T.K. Songa

Ferroelectric properties of donor-doped $Bi_4Ti_3O_{12}$ thin films prepared by sol-gel process
S.S. Kim, J.K. Kim, E.K. Choi, B.S. Kim, and T.K. Song

Preparation and properties of $Bi_{4-x}La_xTi_3O_{12}$ ferroelectric thin films using excimer UV irradiation
T. Hayashi, D. Togawa, M. Yamada, W. Sakamoto, and S. Hirano

Preparation and characterization of site-engineered $Bi_4Ti_3O_{12}$ based thin films by MOCVD
T. Watanabe, T. Kojima, T. Sakai, H. Funakubo, M. Osada, K. Saito, Y. Noguchi, and M. Miyayama

Large remanent polarization of $(Bi,Nd)_4Ti_3O_{12}$ epitaxial thin films grown by metalorganic chemical vapor deposition
T. Kojima, T. Sakai, T. Watanabe, and H. Funakubo

Direct crystallization and characterization of Bi_3TiTaO_9 and $Bi_{3-x}La_xTiTaO_9$ thin films prepared by MOCVD
M. Suzuki, M. Masatoshi, N. Nukaga, T. Watanabe, N. Hajime, T. Takenaka, and H. Hunakubo

Orientation control of $(Bi,La)_4Ti_3O_{12}$ thin films by addition of silicates and germanates
Y. Kawashima, T. Kijima, and H. Ishiwara

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Multi-step growth of oriented $LiNbO_3$ thin films
V. Bormand, I. Huet, and P. Papet

Dielectric and tunable properties of $Ba_{0.96}Ca_{0.04}Ti_{0.84}Zr_{0.16}O_3$ (BCTZ) on MgO and SiO_2/Si substrates
T.S. Kalkur, W.C. Yi, E. Philofsky, and L. Kammerdiner

Microstructural and surface morphological evolutions in compositionally graded $(Ba_{1-x}Sr_x)TiO_3$ thin films and related dielectric properties
X. Zhu, H. L.-W. Chan, C.-L. Choy, and K.-H. Wong

Dielectric properties and microstructures of $(Ba_{1-x}Sr_x)TiO_3$ epitaxial thin films with compositional gradients normal to the substrates
X. Zhu, H. L.-W. Chan, C.-L. Choy, and K.-H. Wong

Planar dielectric properties of compositionally graded $(Ba_{1-x}Sr_x)TiO_3$ thin films prepared by pulsed-laser deposition
X. Zhu, H. L.-W. Chan, C.-L. Choy, and K.-H. Wong

Growth of stoichiometric $LiNbO_3$ thin films through metalorganic decomposition process
H. Zhang, X. Wang, and T.A. Rabson

Low-temperature preparation of ferroelectric $Ba_2NaNb_5O_{15}$ thin films by pulsed laser deposition
K. Ohnuki, M. Takayasu, T. Higuchi, and T. Tsukamoto

Heteroepitaxial growth of MgO thin films on Al_2O_3 (001) by metalorganic chemical vapor deposition
W.I. Park, D.H. Kim, and G.-C. Yi

Preparation of barium strontium titanate thin film by spray deposition
Y. Takeshima, K. Nishita, K. Tanaka, and Y. Sakabe

Effect of SBN self-template layer on the structural properties of sol-gel derived $Sr_{0.6}Ba_{0.4}Nb_2O_6$ films
A.-D. Li, C.L. Mak, K.H. Wong, M.M.T. Ho, M.K. Yeung, D. Wu, and N.-B. Ming

Formation of epitaxial $BaTiO_3$/$SrTiO_3$ multilayers grown on Nb-doped $SrTiO_3$ (001) substrates
A. Visinoiu, M. Alexe, H.N. Lee, D.N. Zakharov, D. Hesse, and U. Gösele

Dielectric and pyroelectric properties of ferroelectric thin films
M.D. Glinchuk, E.A. Eliseev, and V.A. Stephanovich

Growth morphology and crystal orientation of $KNbO_3$ on $SrTiO_3$ by liquid phase epitaxy
K. Kakimoto, S. Ito, I. Masuda, N. Adachi, H. Ohsato, and T. Okuda

Crystal growth and interfacial characterization of dielectric $(Ba,Zr)O_3$ thin films on Si substrates
Y. Kitano, T. Matsui, N. Fujimura, K. Morii, and T. Ito

Synthesis of high dielectric constant titanium oxide thin films by metalorganic decomposition
S. Maeda, K.M.A. Salam, H. Fukuda, and S. Nomura

Effrect of additive elements on improvement of the dielectric properties of Ta_2O_5 films formed by metalorganic decomposition
K.M.A. Salam, H. Fukuda, and S. Nomura

Microstructure and electrical properties of $(BaSr)TiO_3$ thin films prepared by a sol-gel method
T.-L. Ren, X.-N. Wang, J.-S. Liu, H.-J. Zhao, T.-Q. Shao, L.-T. Liu, and Z.-J. Li

Ferroelectric characterization of Bi-modified $YMnO_3$ thin films grown by pulsed laser deposition for metal-ferroelectric-insulator-semiconductor (MFIS) structure
T. Choi, S.H. Shin, Y.S. Kim, and J. Lee

Fabrication and characteristic of Mn(II)- and Mn(IV)-doped BST thin films
J.-B. Bao, T.-L. Ren, J.-S. Liu, X.-N. Wang, L.-T. Liu, and Z.-J. Li

Ferroelectric $Na_xK_{1-x}NbO_3$ thin films onSiNx/Si substrates by metalorganic chemical vapor deposition
C.-R. Cho

The rest of the IFFF 2002 poster presentations will be listed in the Fall 2002 *Ferroelectricity Newsletter*

UPCOMING MEETINGS

2nd Canada-US Workshop on Smart Materials and Structures
10 - 11 October 2002
Montreal, Quebec, Canada

CanSmart, the Canadian Smart Materials and Structures Group, is pleased to announce the 2nd Canada-US Workshop on Smart Materials and Smart Structures and their applications. The workshop will be held on 10 - 11 October 2002 in Montreal, Quebec, Canada.

Since its inception in 1997, one of the CanSmart Group objectives has been to promote the emerging technologies of smart materials and structures in Canada by organizing an annual workshop on the subject. Recognizing the considerable development of this novel technology in the United States under the leadership of the federal government and its agencies, as well as the pressing need for the promotion of Canadian research and its coordination with US activities, the CanSmart Group organized the Canada-US Workshop on Smart Materials and Structures in 2001. This workshop was well received and it has now been decided that a second workshop will be held in 2002.

The workshop is planned to provide the scientific community with a forum to interact, network, and explore the potential of possible collaborations on projects of mutual interest. Special sessions featuring representatives from different governments and agencies will present the current outlook on smart materials, structures, and technologies for civilian and defense applications.

Topics

- Smart materials and composites, attached or embedded smart sensors and actuators
- Microelectromechanical systems and devices
- Shape memory alloys and active materials
- Structural vibration suppression and smart damping techniques
- Intelligent processing of materials
- Structural health monitorirng
- NDE of materials and structures
- Industrial/commercial defense applications, space, aerospace, automation, medicine, civil engineering, and marine industries

Exhibition

An exhibition will take place during the workshop. Booth space is available for companies and institutions wishing to display their products and services and to develop new partnerships.

Workshop Chairs

- Janet Sater, Institute for Defense Analysis, Virginia, USA
- Gary Anderson, US Army Research Office, North Carolina, USA
- George Akhras, Royal Military College of Canada

Contact

Prof. George Akhras, President, CanSmart Group, Dept. of Civil Engineering, Royal Military College of Canada
Kingston, Ontario, Canada, K7K 7B4; phone: +613-541-6000 ext. 6388; fax: +613-541-6218
email: akhras@cansmart.com

www.cansmart.com

UPCOMING MEETINGS

Non-Volatile Memory Technology Symposium 2002 (NVMTS2002)
4 - 6 November 2002
Honolulu, Hawaii, USA

The demands for storage technology are ever increasing, burdening designers of systems and components alike to bring ingenuity to the next level. How long can the demand for breakthrough developments keep going? What's around the corner? And where will it take us?

Recent seminars and symposia tended to focus on one technology over another. This symposium, however, is aimed at distilling information about all technologies to users, inventors, and investors alike.

This symposium is organized with three intents:

- To inform and update the users of non-volatile memory technology with the recent breakthroughs and advances.
- To make evident the needs and desires of such technology in light of NASA and DoD functions and missions (terrestrial, space, deep space) and to make evident the funding sources available.
- To encourage and establish a dialogue between the manufacturers of technology and the users of it.

Topics

- Memory cell design
- Materials and processing
- Environmental effects/radiation
- Device architecture and applications
- Packaging
- Integrated design/system on chip
- New concept
- Scalability

Industrial Exhibit

Parties interested in participating in an industrial exhibit should contact

Ms. Pat McLane
JPL Conference Administration
+818-354-5556

http://nvm.jpl.nasa.gov/

15th International Symposium on Integrated Ferroelectrics (ISIF 2003)
9 - 12 March 2003
Colorado Springs, Colorado, USA

The science of ferroelectric thin films and their technological applications have experienced rapid amd substantial progress. The worldwide increase in practical commercial applications is a sign of both the maturity of the field and the acceptance the technology has achieved.

The field of ferroelectric/piezoelectric materials is still growing rapidly due to the potential applications in MEMS technologies and the development of new generations of DRAMs.

This symposium will address topics including pyroelectric sensors, integrated high frequency devices, electrooptical components, nanotechnology, and the research and exploitation of nanosize effects.

Topics

- Circuits and devices
- Device integration issues
- Microwave devices
- Modeling and theory

UPCOMING MEETINGS

- DRAMs and materials
- FeRAMs and materials
- Ferroelectrics for space applications
- Field effect devices
- Graded ferro devices
- High frequency devices
- High-k and gate oxides
- Integrated sensors
- Nanosize effects
- Nonvolatile memory applications
- Novel characterization
- Piezoelectric and MEMS applications
- Pyroelectric/IR and optical applications
- Testing and characterization
- Thin films

Organization/Company Exhibits
If your organization or company would like to sponsor an exhibit or display during the symposium, please send your display proposal to Kerry Baugh at the ISIF office in Colorado Springs.

Contact

Kerry Baugh, Symposium Coordinator
University of Colorado at Colorado Springs
1867 Austin Bluffs Parkway, Suite 101, P.O. Box 7150, Colorado Springs, CO 80933-7150 USA
kerry@isif.net +719-262-3488

3rd Asian Meeting on Electroceramics (AMEC-3)
29 June - 4 July 2002
Singapore

The 3rd Asian Meeting on Electroceramics (AMEC-3), which is the co-symposium E: Electronic and Advanced Ceramics of the International Conference of Materials for Advanced Technology 2003 (ICMAT-2003) and IUMRS-International Conference in Asia (ICA 2003), will be held on 29 June - 4 July 2003 in Singapore.

This AMEC-3 international conference will continue the great initiative and momentum of AMEC 1 & 2 and ICMAT 2001 & IUMRS-ICA, strengthen research and development activities in electroceramics in Asia and in the world, connect academic scholars with industrial researchers, and promote AMEC as a true international forum in this increasingly important area.

The scientific program will include invited and contributed presentations on theory, experiments, and applications of electroceramics.

Topics

- Microwave dielectrics and applications
- Thin film and tunable ceramics and devices
- Multilayer electronic ceramics and devices
- Dielectric ceramics for electronic devices
- Ferroelectric, pyroelectric, and piezoelectric ceramics and applications
- Ferroelectric thin films for memories and devices
- High-k dielectrics for Si electronics
- Ceramic superconductors and applications
- Magnetic ceramic materials and applications
- Optical ceramics, single crystals, and applications
- Nanostructured ceramics, single crystals and applications
- Glass, ceramic polymer composites and devices
- Porous ceramic materials
- Crystal chemistry of functional materials
- Sensor, actuator, and transducer applications
- Advanced ceramic MEMS and microtechnology
- Electronic and optical packaging
- Processing, sintering, microstructures and interfaces
- Phase diagram, nonequilibrium and metastabe state
- Theory, modeling, and design of ceramics
- Measurement and characterization

UPCOMING MEETINGS

- Conductive ceramics, NTC & PTC varistors, battery, and fuel cell

Contact

Dr. Zhu Weiguang, School of EEE, BLK S2, Nanyang Technological University
50 Nanyang Ave., Singapore 639798
fax: +65-6792-0415; email: ewzhu@ntu.edu.sg

http://amec-3.ntu.edu.sg

Polar Oxides: Properties, Characterization and Imaging
8 - 11 June 2003
Capri, Italy

The field of polar oxides is experiencing a considerable expansion in recent years. New materials and new processing technologies are enlarging the offer of highly performing materials for a large range of device applications under wide operation conditions. The meeting **Polar Oxides: Properties, Characterization and Imaging** is a forum for users and designers, researchers, developers, and producers. The aim is to review, discuss, and assess the properties of the materials under the aspects of new and advanced characterization and imaging techniques.

Invited oral presentations by experts in the field will have the form of comprehensive and updated reviews. Contributed papers aim at informing the participants of recent scientific and technological developments in the field. These contributions are introduced during the poster session.

Contact

Sekretariat, Institut für Werkstoffe der Elektrotechnik II
RWTH Aachen, Sommerfeldstrasse 24, D-52072 Aachen, Germany
phone: +49-241-802-7812; fax: +49-241-802-2300; email: capri@iwe.rwth-aachen.de

http://www.emrl.de

4th Asian Meeting on Ferroelectrics 2003
14 - 17 December 2003
Bangalore, India

Topics

- Theories and fundamental phenomena of ferroelectrics
- Novel materials and experimental techniques
- Crystals and ceramics
- Ferroelectric polymers and composites
- Glass and amorphous systems, nanostructures
- Dielectric, piezoelectric, and pyroelectric properties
- Optical properties and nonlinear phenomena
- Domains and boundaries
- Integrated piezoelectric/electrostrictive MEMS
- Surfaces, interfaces, and defects
- Relaxor ferroelectrics
- Processing of ferroelectric materials

UPCOMING MEETINGS

- Ferroelectric thin films and memory devices
- Applications: Sensors, actuators, transducers, and microwave devices
- Ferroelectrics and microelectromechanical systems (MEMS)
- Electrooptics, displays, and infrared imaging
- Energy storage, wireless communications, and optical data storage

General Chair
Prof. S.B. Krupanidhi

Secretary
Dr. S. Gopalkrishnan

Contact
Conference Secretary of AMF 2003, Materials Reesearch Centre, Indian Institute of Science
Bangalore 560012, Karnataka, India; fax: +91-80-3600683/3600085; email: amf4@mrc.iisc.ernet.in

FORMATION OF BOARD OF ASIAN FERROELECTRIC ASSOCIATION

The Asian Ferroelectric Association (AFA) was initiated in 1993 during the Eighth International Meeting on Ferroelectrics (IMF-8) in Gaithersburg, USA. Delegates from China, India, Hong Kong, Japan, Korea, Singapore, Taiwan, and USA gathered to discuss setting up a regional forum of ferroelectrics to promote studies in Asia on ferroelectrics and related phenomena. All the delegates agreed to establish the AFA as a communication and coordinating channel of the ferroelectric community of the region and initiate the series of Asian Meetings on Ferroelectrics. Professor Yao Xi of China was elected founder-chairperson of the Asian Ferroelectric Association.

The First Asian Meeting on Ferroelectrics (AMF-1) was held at Xian, China, in October 1995 with 185 participants from 12 countries and regions. The Second Asian Meeting on Ferroelectrics (AMF-2) was held at Singapore in December 1998 with 203 registered participants from 22 countries and regions. The Third Asian Meeting on Ferroelectrics (AMF-3) was held at Hong Kong in December 2000 with 450 participants from five continents. These figures not only testify to the success of the AMF, but also give a clear indication of the strong growth and rapid development of ferroelectric research activities in Asia. The Fourth Asian Meeting on Ferroelectrics (AMF-4) will be held at Bangalore, India, in December 2003. From the excellent response and participation of delegates from Asian and Western countries, it is evident that AMF has become not just a regional forum for the Asian ferroelectric community but has effectively become an international forum.

Following the success of the AMFs, the Board of the Asian Ferroelectric Association has recently been formed to better serve the ferroelectric community of the region. The AFA Board is well represented by members from the Asian countries as well as from Europe and USA, namely: Bhalla, A. S. (USA), Chan, Helen L. W. (Hong Kong), Gerhard-Multhaupt, R. (Germany), Jang, M. S. (Korea), Ichinose, N. (Japan), Lang, S. (Israel), No, K. S. (Korea), Safari, A. (USA), Setter, N. (Switzerland), Shiosaki, T. (Japan), Takenaka, T. (Japan), Tseng, Tseung Yuen (Taiwan), Yao, Xi (China), Yin, Qingrui (China), Zhong, Weilie (China), Zhu, Weiguang (Singapore). Two additional board members from India are to be added in due course. Professor Yao Xi is the Chair of the Board.

Eminent scientists with international reputation in the field have been invited to serve as advisors of the AFA Board. They are Cross, L. E. (USA), Fousek, J. (Czech), Ishibashi, Y. (Japan), Kwun, S. I. (Korea), Newnham, R. E. (USA), Scott, J. F. (UK), Yin, Zhiwen (China).

Space Systems Academic Group
Code SP
Bullard Hall, Bldg. 233, Room 125
Naval Postgraduate School
Monterey, CA 93943 USA

CALENDAR OF EVENTS 2002

Aug 25-28	•	Electroceramics VIII Conference, Rome, Italy (see *Ferroelectricity Newsletter*, Vol.9, No. 4, p. 17)
Sep 2-5	•	6th European Conference on Applications of Polar Dielectrics (ECAPD-6), Aveiro, Portugal (see *Ferroelectricity Newsletter*, Vol.10, Nos. 1/2, p. 37)
Sep 15-19	•	7th International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-7), Peninsula of Giens, French Riviera (see *Ferroelectricity Newsletter*, Vol.9, No. 4, p. 18)
Oct 10-11	•	2nd Canada-US Workshop on Smart Materials and Structures, Montreal, Quebec, Canada (see p. 19)
Nov 4-6	•	Non-Volatile Memory Technology Symposium 2002 (NVMTS2002), Honolulu, Hawaii, USA (see p. 20)

2003

Mar 9-12	•	15th International Symposium on Integrated Ferroelectrics (ISIF 2003), Colorado Springs, Colorado, USA (see p. 20)
Jun 8-11	•	Polar Oxides: Properties, Characterization and Imaging, Capri, Italy (see p. 22)
Jun 29-Jul 4	•	3rd Asian Meeting on Electroceramics (AMEC-3), Singapore (see p. 21)
Aug 3-8	•	10th European Meeting on Ferroelectricity (EMF2003), Cambridge, UK (see *Ferroelectricity Newsletter*, Vol.10, Nos. 1/2, p. 38)
Dec 14-17	•	4th Asian Meeting on Ferroelectrics 2003, Bangalore, India (see p. 22)