
Ferroelectricity Newsletter

A quarterly update on what's happening in the field of ferroelectricity

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Fall 1997

TO CORRECT OR NOT TO CORRECT: PAPERS BY NONNATIVE ENGLISH SPEAKERS

In the summer issue of the *Ferroelectricity Newsletter* we did some catching up with scientific developments in the former east block countries by listing the papers of two meetings attended by more scientists from this area than any international conference before.

In this issue we focus on another first by directing our attention to the **First Asian Meeting on Ferroelectricity (AMF-1)**, held 5-8 October 1995 in Xian, China. Beginning on page 2, you will find the list of titles and authors of the 175 papers included in the proceedings of AMF-1, published in *Ferroelectrics*, volumes 195-197 (1997).

Dealing with the papers of this conference, **Yao Xi**, guest editor of the proceedings and general chairperson of AMF-1, remarked in his editorial: "Since many of the authors are not native speakers of English, [the level of] proficiency of language is generously tolerated as long as the content of the presentation is understandable." What a nice way to address a difficult issue!

The guest editors of the **Proceedings of the Eighth European Meeting on Ferroelectricity**, published in *Ferroelectrics*, volumes 183-186 (1996), also had to wrestle with this problem. In this case, more than 90 percent of the submitted manuscripts were by nonnative speakers of English. Faced by this editorial problem, it had to be decided "whether to correct the English of all the manuscripts thoroughly (enormously time-consuming), to correct none of them (a more democratic solution), to allow everyone to write in their own language (the most democratic solution) or to adopt a procedure like the one we have used here." Which was, and we quote again: "To avoid too much delay, we had to decide to be thorough with only those needing the most correction, improving the remainder only slightly. A paradoxical consequence of this policy imposed by necessity is that some manuscripts, originally difficult to read, may now be in better condition than others initially easier to read."

I am sure many of us appreciate the difficulty of finding the optimal solution to this issue. All we can do is continue to put forth our best efforts in every aspect of our work, which includes the most effective communication possible within the worldwide ferroelectric community. A propos communication: don't miss the **Index of Volume 5** on page 19.

-- Rudolf Panholzer
Editor-in-Chief

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AMF-1 PAPERS

FIRST ASIAN MEETING ON FERROELECTRICS

Earlier this year, Gordon and Breach Science Publishers issued in volumes 195, 196, and 197 of their journal **Ferroelectrics** the **Proceedings of the First Asian Meeting on Ferroelectricity**, held 5-8 October 1995 in Xian, China. The meeting was concurrently held with the Second East Asia Conference on Chemical Sensors (EACCS-2) and the International Conference on Electronic Components and Materials with the International Conference on Sensors and Actuators (ICECM-ICSA'95). One hundred and eighty-five participants from 12 countries and regions attended the meeting. Many of the registrants of the concurrent meetings also participated in some of the academic activities of AMF-1.

The main sponsor of the meeting was the Asian Ferroelectric Association, whose objective it is to promote theoretical and practical studies on ferroelectrics in Asia, to create a regional forum to exchange experiences and ideas of ferroelectric studies, and to provide a communication channel within the area and with the worldwide ferroelectric community. AMF-1 was cosponsored by the Chinese Institute of Electronics (CIE).

The Proceedings of AMF-1 include 175 papers delivered at the meeting. The manuscripts of the papers were refereed twice, once before the meeting and then again during the meeting.

In his editorial, the guest editor of the Proceedings, **Yao Xi** of Xian, thanked everybody involved in making this first meeting a reality and said that the scientific program, as well as the social program of AMF-1, were considered very successful.

Dielectric properties of $\text{Ba}_{1-x}\text{Sr}_x\text{TiO}_3$ prepared by the SAG method
L. Zhang, H.S. Zhao, P.L. Zhang, and W.L. Zhong

Thermal decomposition of KTN gel and formation of perovskite structure KTN
S. Wang, J. Zhao, T. Zhou, L. Wang, and A. Kuang

Dielectric properties of tungsten bronze lead barium niobate partially substituted by tantalum
X. Xiao, Z. Gui, L. Li, and X. Zhang

Characterization of the magnesium diffused lithium niobate surface layer by GIXRD
W. Que, X. Yao, and L. Zhang

Phase equilibrium in Bi_2O_3 - ZnO - Nb_2O_5 systems
W. Hong, W. Xiaoli, and Y. Xi

Dielectric and piezoelectric properties of lanthanum modified lead zirconate titanate ceramics
R.P. Tandon

The variation of phase transition behavior on substituting Pb^{2+} and Sr^{2+} for a site cations in $(\text{Na}_{1/2}\text{Bi}_{1/2})\text{TiO}_3$ systems
S.-Y. Cho, S.-E. Park, and K.-S. Hong

Piezoelectric resonance study of urea
S.K. Lee, C.H. Lee, D.K. Oh, and C.E. Lee

Determination of the piezoelectric coefficient d_{33} at high frequency by laser interferometry
Z. Zhao, H.L.W. Chan, and C.L. Choy

Ferroelectricity, electronic and ionic conductivity in $\text{Ba}_3(\text{TiNb}_4)\text{O}_{15}$ ceramics

V. Andiamampianina, J. Ravez, D. Ming, and J.M. Reau

Synthesis and dielectric properties in the $0.65\text{Pb}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3$ - 0.35PbTiO_3 system modified with BaO
S.W. Choi and J.M. Jung

Dielectric, pyroelectric, and piezoelectric properties in the $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - $\text{Pb}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3$ - PbTiO_3 system
J.M. Jung, Y.J. Kim, Y.H. Shin, and S.W. Choi

Dielectric properties of semiconducting ceramic capacitors fired in a reducing-reoxidizing atmosphere
H. Igarashi, T. Ishiya, and S. Tashiro

Dielectric and pyroelectric properties in the $\text{Pb}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3$ - PbZrO_3 system

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Y.J. Kim, J.M. Jung, Y.H. Shin, Y. H. Park, and S.W. Choi

Structural characteristics of lead-zirconate-titanate piezoelectric films around morphotropic phase boundaries

S. Leppävuori, A. Uusimäki, and H. Zhang

High T_c positive temperature coefficient resistivity ($\text{Pb}_{0.6}\text{Sr}_{0.3}\text{Ba}_{0.1}\text{TiO}_3$) materials prepared by microwave sintering

H.-Y. Chang, H.-W. Chen, C.-T. Hu, and I-Nan Lin

Ferroelectric properties of cerium-doped barium titanate ($\text{BaTiO}_3:\text{Ce}$)

Y. Zhu, D. Zhang, C. Dong, X. Niu, J. Zhang, and T. Zhou

Piezoelectric properties and equivalent circuits of ferroelectric relaxor single crystals

B.M. Jin, R. Guo, and A.S. Bhalla

Electromechanical properties of LiB_3O_5 single crystals

R. Guo, S.A. Markgraf, Y. Furukawa, M. Sato, and A.S. Bhalla

A phenomenological theory of nonlinear responses

Y. Ishibashi

Synthesis of $\text{Ba}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3$ with complex perovskite structure

M. Li

Analyses and syntheses of ferroelectric refrigeration ceramics

D.Q. Xiao, B. Yang, S.Q. Peng, Y.C. Wang, and J.G. Zhu

Correlation and comprehensive selection of the piezoelectric ignition material parameters

T. Zhou, S. Wang, D. Bao, Y. He, and A. Kuang

The effect of doping Sb_2O_3 in high d_{18g33} PZT piezoelectric ceramics

T. Zhou, S. Wang, H. Gu, Y. He, and A. Kuang

Research on the medium temperature sintered BaTiO_3 -base ferroelectric material with X7R behavior

L. Liping, C. Jinqing, and L. Fusheng

Defect mechanism and dielectric properties of moderate temperature sintered (BaLa) (TiNb) O_3 -base ferroelectric ceramic material

L. Liping, C. Jinqing, O. Ming, C. Shaomao, Q. Qichun, J. Tao, and G. Yuyuan

Development, characterization, and some design considerations of piezoceramic composites for ultrasonic applications

R.P. Tandon

Comparison of the resonance characteristics of 1-3 composites of PZT in epoxy and PZT in (VDF-TrFE) copolymer

K. W. Kwok, H.L.W. Chan, and C.L. Choy

Saw properties of $\text{Li}_2\text{B}_4\text{O}_7$ crystals and their application to acousto-optic waveguide modulators

M. Adachi, K. Nakazawa, and A. Kawabata

A ceramic transformer inverter for driving liquid crystal back light lamps

N. Hagiwara

Study on the ethanol sensitivity of $\text{La}_{0.7}\text{Sr}_{0.3}\text{FeO}_3$ nanocrystalline

S. Hui, W. Jing, W. Fengqing, L. Xi, X. Baokun, and Z. Muyu

Uniform incorporation of sintering aids and MnO in PTC BaTiO_3 by liquid phase coating process

X. Junming, L. Chengen, Z. Meiyu, and Y. Zhiwen

Studies on phase transition and PTC effect of semiconducting BaTiO_3 ceramics

Z. Meiyu, Y. Yao, X. Junming, and Z. Binghe

Polar microdomain in relaxor ferroelectric ceramics and its electrostrictive effect

W. Baosong, S. Wenjun, and M. Jihua

TiO_3 thin film oxygen sensors

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Phase transition and the actuation effect of PZT ceramics

S. Huimin, L. Chaojing, G. Fengfei, Z. Zhifang, Y. Zhen, W. Xiaomin, and W. Yening

Study of standing wave ultrasonic motor with L-B mode

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Effect of temperature on degradation of multilayer ceramic actuators

K. Nagata and S. Kinoshita

Preparation and characteristics of $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$ thin films on Pt electrode by RF magnetron sputtering

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Preparation of PZT thin films on conductive perovskite LSCO electrode films by pulsed laser deposition
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Excimer laser ablation of (001) textured ZnO waveguiding films of fused silica
W.S. Hu, Z.G. Liu, X.L. Guo, J. Sun, S.B. Xiong, and D. Feng

Nonlinear optical LiNbO₃ films grown on α -Si₂ and α -Al₂O₃ in waveguiding form
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Epitaxial growth of ferroelectric PbTiO₃ thin films by metallorganic chemical vapor deposition
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Transmission electron microscopy study of ferroelectric PbTiO₃ thin films by metallorganic chemical vapor deposition
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In situ preparation of polycrystalline BaTiO₃ thin films on silicon by the hydrothermal method
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Pulsed laser deposition of PZT/BaRuO₃ bilayered films on silicon substrate
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Proposed mechanism for the improvement of PZT thin films deposited by direct current glow discharge assisted laser ablation
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Pulsed excimer laser deposition of Pb(Zr,Ti)O₃ thin films on simox substrates
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Effects of particle size on the vibrational modes of ultrafine lead titanate particles
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Early stages of ion-beam-sputter deposition on films of Pb-Ti-O system
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Effect of doping ions on optical absorption properties of lithium niobate crystals
J. Zhu, G. Xu, X. Wang, and D. Xiao

Influence of RTA on the structures of BTO thin films and their physical properties
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Electrical properties of ferroelectric Bi₄Ti₃O₁₂ thin films by APMOCVD
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Preparation of PbTiO₃ thin films by modified sol-gel processing
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Structure and properties of PLT(28) thin films with nano grain
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Preparation of PLZT/LSCO/ITO/Si multilayer films by RF-magnetron sputtering
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Low temperature fabrication of PbZr_{0.44}Ti_{0.56}O₃ thin films
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Preparation of highly oriented KTN/SrTiO₃(111), KTN/SrTiO₃(100) thin films by the sol-gel method
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Structure and phase transition of PbTiO₃ polycrystalline ferroelectric thin films
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A-axis Nd:MgO:LiNbO₃ single crystal fibers with magnesium-ion indiffused cladding
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Structures and properties of Pb(Zr,Ti)O₃ thin films by the metallorganic compound deposition process
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Properties of lead lanthanum titanate ferroelectric thin films by rapid thermal annealing

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Epitaxial ferroelectric thin films prepared by the sol-gel technique

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Synthesis of BaTiO₃ fine powders and determination of the critical size of the tetragonal crystal

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Ferroelectric properties of Ba₂NaNb₅O₁₅ films by the RF magnetron sputtering method

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Dielectric properties of electro-phoretically layered barium strontium titanate films

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Pyroelectric properties of La-modified PbTiO₃ thin films and their applications

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Domain structures of epitaxial PT, PLT, and PZT thin films on MgO(001) single crystal substrates

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Rapid thermal annealing effect of (Ba,Sr)TiO₃ thin films

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Atomic force microscopic investigation of PZT thin films by MOD technology

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Epitaxial growth and properties of BaTiO₃ thin films prepared by laser deposition

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Preparation and structure of PbZrO₃ films by KrF pulsed laser deposition

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Study of the dielectric property of diphasic polar glass ceramics

X. Weimin, D. Zhenya, and Z. Peilin

Study of polar glass ceramics containing crystalline SrTiO₃

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Composite films of BaTiO₃ and PVDF

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Dielectric and ferroelectric properties of Ba₃NaLaNb₁₀O₃₀ crystals

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Photorefractive properties and phase conjugation of doped KNSBN crystals

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Tape casting prepared pyroelectric thick film ceramics used for focal plane thermal imaging arrays

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Hydrothermal synthesis of ordered ultralarge pore molecular sieves

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Nanocomposite materials of ultrafine particles assembled within LB films

Y. Li, C. Wu, and T. Qian

Extrusion and properties of lead zirconate titanate piezoelectric ceramics

S. Cai, C.E. Millar, L. Pedersen, O. T. Sorensen, and Y. Xu

Atomic force microscopy studies of rubbed polyimide films

H.-M. Wu, Y.-M. Zhu, X.-M. Yang, Q. Luo, Z.-H. Lu, and Y. Wei

Large electrostriction and microstructure of LA:PZT ceramics

Y. Liu, B. Wen, and J. Ma

Effects of lanthanum doping on dielectric and electrostrictive properties of lead magnesium niobate lead titanate ceramics

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Modulated structures of lead barium niobate ceramics

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Studies of growth and photo-refractive properties of manganese doped potassium sodium strontium barium niobate crystals

H. Cen, Q. Jiang, X. Lu, and L. Chen

Probing the nature and structure of dense gel in porous silica

W. Sasa, L. Hongling, Z. Liangying, and Y. Xi

Temperature-stable $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ based ceramics prepared by mixed sintering method

Z. Yue, L. Zhang, and X. Yao

Dielectric and pyroelectric properties of PZT-PVDF pyroelectric composites

X.P. Zou, L.Y. Zhang, and X. Yao

Ferroelectric and resistivity studies of modified $\text{Sr}_6\text{Ti}_2\text{Nb}_8\text{O}_{30}$ ceramics

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yam, and S.M.M. Rao*

Low temperature sintering of PZT ceramics using a glass additive

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Crystallization and dielectric property of $\text{Li}_2\text{B}_4\text{O}_7$ glass

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An approach for studying natural unipolarity in doped and pure single

TGS crystals

M. Amin, L. Balloomal, S.S. Ibrahim, and Z.A. El-Salam

The conduction and thermally stimulated polarization currents in (TGS-PE) particulate composites

H.M. Osman and S. El-Sayed

Sintering behavior of lead metaniobate

H.S. Lee and T. Kimura

Thermal hysteresis in resistivity of P(VDF-TrFE) copolymers

H.L.W. Chang, W.K. Chan, Y. Chen, Y. Chen, and C.L. Choy

Ferroelectricity and ionic conductivity in $\text{Ba}_5\text{Li}_2\text{Ti}_2\text{Nb}_8\text{O}_{30}$ ceramics

D. Ming, J.M. Reau, and J. Ravez

Dielectric properties of amorphous KNbO_3

Y.S. Yang, S.H. Kim, H.J. Kim, N.Y. Ryu, and M.S. Jang

Dielectric constants of PMN-pyrochlore mixture and porous PZT ceramics

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Effect of complex oxide additives on the sintering of MnO_2 added $\text{Pb}(\text{Zr,Ti})\text{O}_3$ ceramics

K. Murakami, D. Dong, H. Suzuki, and S. Kaneko

Poling characteristics of $\text{Pb}(\text{Co}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - PbTiO_3 - PbZrO_3 ceramics

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Lead-free piezoelectric ceramics based on $(\text{Bi}_{1/2}\text{N}_{1/2})\text{TiO}_3$ - NaNbO_3

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Dielectric dispersion of flux-grown PbTiO_3 single crystals

T. Tsurumi, K. Kakuta, and O. Fukunaga

Crystallization kinetics of amorphous ferroelectric films

V.Y. Shur, S.A. Negashev, A.L. Subbotin, and E.A. Borisova

Processing of fine-scale piezoelectric ceramic/polymer composites for transducer applications

A. Safari and V.F. Janas

Improvement of remanent polarization stability in vinylidene fluoride-trifluoroethylene copolymers

Z. Hongyan, X. Zhongfu, C. Yang, L. Huamao, and Z. Minzhou

Formation of perovskite phase in $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ -based ceramics

W. Xiaoli and Y. Xi

Superior electrical performance of Raychem ZnO varistor through advanced processing

A.S. Chu, S.J. Souri, M.A. Helfand, K. Kinsman, and R.W. Dupon

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Observation of 90° domains in BaTiO_3 by atomic force microscopy

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Computer-controlled image acquisi-

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tion and processed system for scanning electron-acoustic microscopy

Y. Yang, Z. Bingyang, J. Fuming, H. Senxing, and Y. Qingrui

Application of scanning electron acoustic microscope to ferroelectric semiconductor material: $\text{BaTiO}_3 + \text{Y}_2\text{O}_3$

Z. Bingyang, Y. Yang, J. Fuming, and Y. Qingrui

Photoacoustic study of some ferroelectric ceramics and related materials

Y. Qingrui, J. Fuming, Z. Bingyang, and Y. Yang

Piezoelectric electron acoustic microscopy and some applications to materials analysis

J. Fuming, H. Sengxing, Z. Bingyang, and Y. Qingrui

Investigations on second-order nonlinear optical polarization in one-dimensional ionic conductive crystals

W. Xiu and X. Dingquan

Organic electronic crystals and electronic and optic properties

D. Yang, W. Deng, S. Wang, Z. Wu, and Y. Jiang

Photocurrent decay and thermoluminescence of doped $\text{Bi}_4\text{Ge}_3\text{O}_{12}$

L. Wensheng, F. Xioi, C. Chaoyang, H. Guanqing, M.R. Khanlary, S.G. Raymond, and P.D. Townsend

Optical properties of silica glass doped with nanosized semiconductor crystallites

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The crystallization of $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ glass

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Influence of the charge carrier contribution on the dielectric permittivity of LiTaO_3 -type crystals

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Ionic conductivity in ferroic CuInP_2S_6 and CuCrP_2S_6

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Relaxation and conduction of amorphous LiNbO_3

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Growth and properties of tungsten-bronze ferroelectric potassium lithium niobate single crystals

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Molecular switching in single azobenzene monolayers

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Frequency, electric field, and temperature dependence of piezoelectric constant of $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$ based ceramics under high electric field

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Ferroelectric and crystallographic properties of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 solid solution system

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Self-pumped phase conjugation in $\text{KnbO}_3:\text{Ni}$ at near infrared wavelength

Z. Zhang, B. Feng, L. Wu, J. Kang, X. Zhang, P. Fu, D. Shen, X. Ma, J. Chen, G. Zhou, and J. Tang

Novel ferroelectric properties of ferroelectric liquid crystal conducting polymer systems

X.H. Yin, K. Kobayashi, H. Moritake, M. Hamaguchi, M. Ozaki, and K. Yoshino

Nonlinear optical properties of ferroelectric liquid crystals

K. Yoshino, S. Uto, K. Myojin, K. Nakayama, K. Kobayashi, X.H. Yin, H. Moritake, and M. Ozaki

UV-VIS and IR optical absorption properties in MgO doped LiNbO_3 crystals

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Electrochemical doping of porous silicon with rare earth elements

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Static and dynamic properties of ferroelectric liquid crystals and their novel applications

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Nonlinearity and slow relaxation effects of piezoelectric ceramics

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Stress effects on the coercive field of PbTiO₃ thin films

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Stress and its effect on PbTiO₃ films

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Domain structure in ferroelectric films with a first-order phase transition

Y.G. Wang, W.L. Zhong, and P.L. Zhang

Monte Carlo simulation of polarization switching in ferroelectric thin films by a realistic kinetic Ising model

J. Liu, X. Li, J. Zhao, L. Huang, X. Huang, D. Lu, and J. Xuan

Nanometer crystallites in ferroelectric PbTiO₃, BaTiO₃ ultrafine powders

S. Lu, H. Liu, Y. Han, L. Zhang, and X. Yao

The energy gap of RF-sputtered BaTiO₃ thin films with different grain sizes and thickness

J.S. Zhu, X.M. Lu, X. Liu, Z. Yang, and Y.N. Wang

Ferroelectric domain inversion in LiTaO₃ single crystals by applying an electric field

S.-N. Zhu, Y.-Y. Zhu, Z.-Y. Zhang, H.-F. Wang, and N.-B. Ming

Study of domain inversion in LiNbO₃ by Ti-indiffusion

H. Shu, Y. Zhu, S. Zhu, Z. Zhang,

H. Wang, C. Ge, and N. Ming
Fabrication of periodically domain-inverted LiTaO₃

Y.-Y. Zhu, J.-F. Hong, S.-N. Zhu, H.-F. Wang, K.-Q. Zhang, and N.-B. Ming

Theoretical study of polarization behaviors in complex perovskite-type relaxor ferroelectrics

H. Gui, B. Gu, and X. Zhang

A-site cation ordering and dielectric behavior of lead calcium titanate

F. Fei and Z. Xiaowen

Forming mechanism and structure of the antiphase boundary in high-ordered PST crystals

X. Wang, X. Zhang, L. Cai, Z. Gui, and L. Li

Dielectric and mechanical loss and mobility of domain walls

Y. Wang, Y. Huang, and H. Shen

The effects of polishing on the formation of 90° domain walls in barium titanate single crystals

B.M. Park and S.J. Chung

Dielectric study of Rb_{1-x}(NH₄)_xH₂PO₄ power system in ferroelectric phase boundary regions

K.H. Noh, T.K. Song, H.J. Bang, and S.-I. Kwun

The improper ferroelectric phase transition in Pb₃(VO₄)₂ crystals

B.G. Chae, H.J. Kim, S.Y. Jeong, and M.S. Jang

The study of ferroelectricity and phase transition in Li₂B₄O₇ single crystals

J.-W. Cha and J.-N. Kim

Effects of the bottom electrode on

the structural and electrical properties of PbTiO₃ ferroelectric thin films

H.N. Le, Y.T. Kim, and S.H. Choh

Recent applications of the Landau theory to ferroelectric structures

S.R.P. Smith, D.R. Tilley, and C. L. Wang

A C-V model of ferroelectric thin film capacitors

C. Zheng and T. Ting-Ao

Surface laser intensity modulation method (SLIMM) and data analysis by means of the constrained regularization method

S.B. Lang

Nonlinear resonance in strontium titanate and barium titanate crystals

Z. Yin and M.S. Zhang

Raman scattering studies of phase transitions in ester ferroelectric liquid crystals

P. Zhang, Z. Yin, Q. Chen, and M.S. Zhang

Nano-size effects on quantum paraelectric SrTiO₃ fine particles

S.-I. Kwun and T.K. Song

A new glass model for lead magnesium niobate relaxors

Z.-Y. Cheng, L.-Y. Zhang, and X. Yao

A possible new kind of glass state: Pinned domain wall glass (PDWG)

Y.-N. Huang, Y.-N. Wang, and X. Li

Barium strontium titanate thin films by metallorganic solution deposition technique for DRAM applications

P.C. Joshi, R.P. Tandon, and A. Mansing

RESEARCH

Piezoelectric radial modes and dielectric properties of manganese doped lead zirconate titanate ceramics

V.K. Katiyar, S.L. Srivastava, and J. Singh

Preparation and properties of oriented composite ATSG-PVDF films

F.C. Shui, W.Q. Wu, Z.H. Sheng, Z.S. Xiang, Z. Peilin, and C. Weili

Study of piezoelectric ceramic materials for high temperature and high frequency applications

J. Shenglin, W.X. Zheng, and Z. Xuli

Chemical bonding, a relevant tool for designing new perovskite-type ferroelectric materials

J. Ravez, M. Puchard, and P. Hagenmuller

Studies of the Seebeck Effect in erbium-doped silver vanadate

T.S. Magdum, D.V. Pawar, and S.H. Chavan

Some niobium-containing high temperature relaxors

A.J. Ranade and S.V. Salvi

Dispersion of dielectric constant of oxygen-deficient copper ferrosphenel

S. Surve, B. Parab, and S. Salvi

<p>The proceedings of AMF-1 are published in <i>Ferroelectrics</i> volumes 195, 196, 197 (1997)</p>
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NOVEL PYROELECTRIC SENSOR MATERIALS

Scientists at the Army Research Laboratory in Maryland have investigated ceramic composites of barium strontium titanium oxide (BSTO) and other nonferroelectric oxides for applications as pyroelectric sensor materials. The material has been fabricated in thick and thin film forms. In general, they have demonstrated high pyroelectric coefficients (p) accompanied with low dielectric constant and dissipation factor. The results were compared with those of the existing commercial ferroelectric materials. Also, the temperature at which the maximum p is observed can be altered by adjusting the ratio of BSTO and the nonferroelectric oxide in the composite.

In this work, we have shown that by adjusting the composition of the BSTO composites, the maximum reversible pyroelectric coefficient can be obtained at any desired temperature. Also, the BSTO composites offer a very low dielectric loss at that temperature. This translates to a high material figure-of-merit defined as: $FOM = p / (d \cdot \epsilon_r \cdot \tan \delta)$ where p is the maximum pyroelectric coefficient, d is the thickness of the material, ϵ_r is the relative dielectric constant and $\tan \delta$ is the dielectric loss. Equation (1) is true when dielectric loss tangent noise is dominant. The dielectric parameters of the materials are measured at the frequency of interest (usually 50 to 200 Hz for thermal imaging applications).

In conclusion, we have shown that by adjusting the ratio of Ba/Sr and adding nonferroelectric oxides to the BSTO matrix, one can lower the overall dielectric constant and dielectric loss and still maintain an appreciable pyroelectric coefficient to obtain a relatively higher figure-of-merit.

If accepted, a paper with the details of the work will be presented at the upcoming ISIF'98 on 1-4 March 1998 in Monterey, California.

For further information, please contact: Somnath Sengupta; ssengup@arl.mil.

DATABASES

PIEZOELECTRICITY AND PYROELECTRICITY DATABASE (PPDB)

The database used in Professor Sidney B. Lang's "Guide to the Literature of Piezoelectricity and Pyroelectricity," which appears semiannually in *Ferroelectrics*, is now accessible on the Gordon and Breach Internet website.

The current version of the Piezoelectricity and Pyroelectricity Database (PPDB) contains references to most of the publications on piezoelectricity and pyroelectricity during the period 1990-1994, with a small number from 1995. The database will be updated about twice a year with an additional 500-1000 new references. In order to make the database as comprehensive as possible, references are included even if piezoelectricity and/or pyroelectricity formed a minor part of the contents of the publication. The current database contains 7288 references.

References are given for articles in journals, chapters in proceedings or books, books, patents, theses, and reports. Full bibliographic information is given so that the reader can locate the publications. Additional information, such as conference presentation data, language (if other than English), and patent assignees is given where available.

The URL for accessing PPDB is

http://www.gbhap-us.com/c3/lit_guide/

Information in the PPDB can be accessed in two ways: (1) Direct search of the database on the Internet or (2) Downloading of the entire database and a public-domain search engine to the user's computer. Full instructions are supplied.

Any problems with the PPDB or suggestions should be sent to:

Prof. Sidney B. Lang, Department of Chemical Engineering, Ben-Gurion University of the Negev
84105 Beer Sheva, Israel; fax: +972-7-647-2916; e-mail: lang@bgumail.bgu.ac.il

ACMAT - NIST COMPREHENSIVE DATABASE ON FERROELECTRIC, PIEZOELECTRIC, AND RELATED MATERIALS

The database ACMAT provides scientists and engineers with fundamental and applied data on ferroelectric, piezoelectric, pyroelectric, electrostrictive, and related substances and materials. These may be compounds or solid solutions in the form of single crystals, ceramics, or composites.

One or more records are allocated for each substance described in ACMAT. A record format includes 486 numeric or nonnumeric data fields. These are grouped in eight boxes, which contain information on chemical composition, preparation technique, crystal structure, phase transition data, and dielectric, piezoelectric, acoustic, electroacoustic, pyroelectric, and optical parameters, as well as conducting and some thermic and thermodynamic quantities. In addition, there is information on application areas of materials. Each data field may have its own text supplement of unlimited size. The supplement contains information which is complementary to that given in the main fields, e.g., nonstandard measuring conditions, the results of other authors, etc. This enables ACMAT to present a variety of data from different sources.

The current database release contains more than 1300 records and 3000 references in the complimentary bibliographical database; about 3000 data fields have text supplements. All information is in English.

ACMAT software is an easy-to-use menu-driven program. There is a multistep approach to searching, displaying, and printing data. In addition to Help and user-friendly menus, ACMAT provides prompts and reminder messages. Some of the options which the ACMAT software provides are:

- Automatic numerical, keywords, and string search for compounds and solid solutions with a given set of proper ties and any combination of parameters. They may be upper, lower, or both upper and lower limits on values of parameters imposed arbitrarily by the user
- Browsing bibliographical sources associated with a specific record

BOOK REVIEW

FERROELECTRIC PHENOMENA IN CRYSTALSby **B.A. Strukov** and **A. Levanyuk**

Springer Verlag, Berlin, 1997, 312 pages

ISBN 3-540-63132-1

The purpose of this book is to present the foundations of ferroelectric phenomena in crystals on the basis of a simple approach which is as general as possible. The microscopic theory is concentrated around a detailed consideration of the models of displacive and order-disorder structural phase transitions which make it possible to illustrate the major interactions leading to the generation of a spontaneous electrical polarization and relationship to phenomenological theory. It is a merit of this book that ferroelectric phenomena are presented as a part of a more general problem of structural phase transitions in crystals and liquid crystals. The limits of applicability of the phenomenological theory are considered for both nonferroelectric and ferroelectric phase transitions.

Chapter headings:

1. General features of the phase transitions in crystals
2. Phenomenological theory of the second order structural phase transitions in crystals
3. Proper ferroelectrics: Physical properties anomalies at phase transitions
4. Dielectric anomalies at structural nonferroelectric and improper ferroelectric phase transitions
5. Anomalies of elastic and electromechanics parameters of crystals at the second order phase transitions
6. Order parameter fluctuations in the phenomenological theory
7. Structural phase transitions in one-ion model of crystal
8. Statistical theory of order-disorder types phase transitions
9. Dynamics of the displacement and order-disorder type phase transitions
10. Domain structure and defects
11. Ferroelectrics with incommensurate phase
12. Ferroelectric liquid crystals
13. Crystallochemical aspects of the theory of ferroelectric phenomena

ACMAT - NIST DATABASE -- continued from page 10

- Selection of materials most suitable for specific device applications
- Search in the bibliographical database to select references which meet specified criteria, such as author name(s), title key words, reference type, etc.
- Creation of a user-defined database which includes records selected on the basis of desired criteria from the main database

Information is selected from various journals, patents, monographs, handbooks, and proceedings of international, national, local, and departmental meetings. The database also includes information from former Soviet sources, such as patent invention certificates, proceedings, and reports of institutions and conferences, which are virtually unavailable for scientists and engineers outside the former USSR. All data has been examined and evaluated by experts before insertion into the database.

For further information please contact

Joan Sauerwein, National Institute of Standards and Technology, Standard Reference Data Program

Bldg 820, Rm 113, Gaithersburg, MD 20899

phone: 301-975-2208; fax: 301-926-0416; e-mail: SRDATA@nist.gov

or

Yakov E. Cherner, PhRAM, 1000 Loring Ave., Ste. B-41, Salem, MA 01970

phone: 508-282-1119 or 508-745-8057; fax: 508-282-1144; e-mail: ycherner@world.std.com

UPCOMING MEETINGS

Fifteenth Meeting on Ferroelectric Materials and Their Applications (FMA-15)
27 - 30 May 1998
Kyoto, Japan

The International Session of this meeting will be conducted in English, the other sessions in Japanese. The proceedings will be published in a special issue of *Japanese Journal of Applied Physics (JJAP)* in English within four months after the meeting.

Contact

Prof. Tadashi Shiosaki
fax: +81-75-753-5749; e-mail: tshiosak@kuee.kyoto-u.ac.jp

Second International Seminar on Relaxor Ferroelectrics (ISRF-II)
23 - 26 June 1998
Dubna, Russia

The ISRF-II is being organized by the Frank Laboratory of Neutron Physics of the Joint Institute for Nuclear Research, with the support of the Institute of Crystallography and the Physics Technical Institute of the RAS.

Topics

- Atomic structure of relaxor ferroelectrics
- Chemical (compositional) ordering
- Dielectric measurements
- Nonlinear properties
- Effect of external electric fields
- Phase diagrams
- Radiospectroscopy
- Lattice dynamics (neutron and light scattering)
- Other physical properties
- Theoretical models
- Ceramic preparation and crystal growth
- Related materials
- Applications

Deadlines

10 February 1998 Abstracts deadline
31 March 1998 Confirmation of abstract acceptance

Contact

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141980 Dubna, Moscow Region, Russia
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UPCOMING MEETINGS

**Innovations in Materials Conference (IMC)
19 - 22 July 1998
Crystal Gateway Marriott, Washington, DC, USA**

A unique conference focusing on the results of, processes leading to, and hindrances to, innovation in the creation and use of new materials. This conference is not planned as the usual scientific meeting for the presentation of current research on the typical spectrum of topics by the entire spectrum of researchers from graduate students and beginners to senior researchers.

Innovations in Materials will be decidedly selective in its approach to the material presented:

- It will provide participants with the first reports on the genuinely new, often unexpected or surprising step-function advances in any aspect of materials science and engineering.
- It will select for novelty in approach, results, and discovery.
- It will select for experienced workers since they are more likely to recognize the new developments.
- It will deal with the wider scope of the innovative process from peer review to patents.

Who Should Attend?

- All engineers and scientists who have made a step-function advance in any aspect of materials.
- All managers of materials R&D in government, industry, and university.
- Venture capitalists, "angels," and corporate executives in charge of new technology opportunities.
- Science reporters for major science magazines and newspapers.
- All university and small business intellectual property officers.

Topics

Research Results:

Papers describing new step-function advances in any aspect of materials research, engineering, and development. The papers can cover (1) all materials classes and (2) all new tools for synthesis or analysis, e.g., laser processing, microwave processing.

R&D Strategy and R&D Policy:

Strategies the private and public sectors employ (after the revolution away from basic corporate research) to shorten the loop from conception to product. Some sections will be devoted to both the new linkages between industry, government, and university necessary under the new strategies and to the matter of cross-national teaming and its impact on national goals and policies.

Catalyzing Innovation:

Sessions will be devoted to the changes needed in typical R&D procedures to help innovation:

- Working alternatives to the peer review of papers and proposals
- Reforming university intellectual property positions and small business patent strategy to handle the new realities (including GATT).
- Knowledge management: Reversing the failure to use effectively the vast store of knowledge contained in both the literature and human experience. New models for such use.
- Acquiring capital beyond the venture capital level.

Contact

Innovations in Materials Conference
103 Materials Research Laboratory, The Pennsylvania State University, University Park, PA 16802
phone: + 814-863-9983; fax: +814-863-7040; e-mail: kam1@alpha.mrl.psu.edu

UPCOMING MEETINGS

**Twelfth International Conference on Crystal Growth
and the
Tenth International Conference on Vapor Growth and Epitaxy
26 -31 July 1998
Renaissance Hotel, Jerusalem, Israel**

The Twelfth International Conference on Crystal Growth, together with the Tenth International Conference on Vapor Growth and Epitaxy, will be held jointly in Jerusalem from 26 - 31 July 1998. The conference and accommodations will be at the Renaissance Hotel, in the western part of the city.

The meeting is structured around three parallel sessions. These cover most theoretical, experimental, and industrial aspects of bulk and thin-film crystal growth. The program includes topics of classical and current interest, such as oxide, semiconductor, and protein crystal growth, in-situ characterization and control, as well as emerging topics, such as wide-bandgap materials, quantum-well structures, fullerenes, nanocrystals, and biomineralization. In addition, satellite workshops aimed at enhancing industrial participation are being considered. For example, the organizing committee has already approved a workshop on "Light-Weight Detection Systems."

Abstracts Deadline

1 November 1997

Contact

ICCG-12/ICVGE-10, International Travel and Congresses, Ltd., PO Box 29313, 9 Rothschild Boulevard, 61292 Tel-Aviv, Israel; phone: +972-3-510-2538; fax: +972-3-516-0604; e-mail: 100264.2432@compuserve.com

Up-to-date information about these conferences is available on the World Wide Web at

<http://www.technion.ac.il/-iccg12>

Ferroelectricity Newsletter

including all back issues is available on Internet

<http://www.sp.nps.navy.mil/projects/ferro/ferro.html>

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The PDF file format maintains the graphics and organization of the printed newsletter. Adobe Acrobat Reader is a helper application distributed free for Web browsers. Acrobat is available for Macintosh, Windows, DOS, SGI, and Sun SPARC operating systems.

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e-mail: liebmann@redshift.com or rpanholzer@nps.navy.mil

mail: Hannah Liebmann, 500 Glenwood Circle, Suite 238, Monterey, CA 93940-4724 USA

UPCOMING MEETINGS

ISAF XI, ECAPD IV, and Electroceramics VI
24 - 27 August 1998
Congress Centre Montreux, Switzerland

The three international conferences, **International Symposium on Applications of Ferroelectrics (ISAF XI)**, **European Conference on Applications of Polar Dielectrics (ECAPD IV)**, and **Electroceramics VI**, have complementary scopes. For the first time these three conferences will take place simultaneously at the same location.

Topics**ECAPD and ISAF**

- Active control, adaptive structures, and smart systems
- Biomedical applications and ultrasonic imaging; composite materials; high coupling coefficient materials
- Bulk piezoelectric and electrostrictive materials for sensor and actuator applications
- Electrooptics, displays, and other optical applications; liquid crystals
- Ferroelectric and piezoelectric thin film devices; microsystems; microsensors and microactuators; integrated ferroelectrics
- Ferroelectric thin films for memory applications; fatigue processes
- High permittivity dielectrics for microwave applications; materials for energy storage and applications
- PVDF, copolymers, and other polar organic materials; ferroelectricity in biological systems
- Pyroelectrics and thermal imaging
- Recent progress in basic studies: theoretical and experimental; domain wall processes; thermodynamics, phase transitions; modeling of thin film properties
- Relaxors; disordered systems

Electroceramics VI

- Dielectric materials, devices, and applications; electronic packaging
- Ferroelectric, piezoelectric, and pyroelectric bulk and thin film materials; processing and applications
- Grain boundary controlled processes and devices
- Ionic and electronic conductors
- Magnetic materials, devices, and applications
- Multilayer structures; composite materials
- Optical ceramics; photonics
- Processing, sintering, and microstructure development of electroceramics
- Superconductors
- Thin film processing; sol-gel; sputtering; MOCVD
- Transport phenomena; defects; diffusion; electric conductivity
- Novel manufacturing methods, devices, and applications

Contact

Prof. N. Setter (chairman)

Dr. D. Damjanovic (program)

Dr. E. Colla (local arrangements)

LC-DMX-EPFL, CH-1015 Lausanne, Switzerland

e-mail electro@lc.dmx.epfl.ch

<http://dmxwww.epfl.ch/lc/electro/home.html>

UPCOMING MEETINGS

Fourth International Conference on Electronic Materials (IUMRS-ICEM-98)**24 - 27 August 1998****Hotel Shilla, Cheju, Korea**

Organized by the Materials Research Society of Korea (MRS-K) and under the auspices of the International Union of Materials Research Societies (IUMRS), the Fourth International Conference on Electronic Materials is a continuation of meetings held in Strasbourg, France (1992), Hsinchu, Taiwan (1994), and Boston, USA (1996).

The intense 4-day meeting will consist of 10 symposia which emphasize the latest developments in the research areas of various electronic materials, such as Si-based materials, compound semiconductors, electroceramics, display materials, packaging, conducting polymer and energy conversion materials.

Topics

- | | |
|-------------------------------|---|
| • Si-based processing | • Ferroelectric thin films |
| • Compound semiconductors | • Electronic packaging |
| • Electroceramics and sensors | • Surface, interfaces, and nanotechnology |
| • Display materials | • Polymers for electronics |
| • Magnetism | • Energy conversion and storage materials |

Deadlines

- | | |
|----------------|----------------------------|
| 28 February 98 | Submission of abstracts |
| 30 April 98 | Notification of acceptance |

Contact

Prof. Shinhoo Kang, Secretariat of IUMRS-ICEM-98, Materials Research Society of Korea, School of Materials Science and Engineering, Seoul National University, Seoul 151-742, Korea
phone: +82-2-880-7167; fax: +82-2-884-1413; e-mail: icem 98@plaza.snu.ac.kr

Fourth International Conference on Intelligent Materials (ICIM'98)**5 - 7 October 1998****Nippon Steel Makuhari Education Center, Makuhari, Chiba, Japan**

The emerging interdisciplinary field of intelligent materials and systems is developing rapidly with significant advances since the International Workshop on Intelligent Materials held in Tsukuba Science City, Japan, in 1989, followed by the First International Conference on Intelligent Materials (ICIM) held in Oiso, Japan, in March 1992.

ICIM'98, organized by the Intelligent Materials Forum of the Society of Nontraditional Technology, will address the most important aspects of the field relevant to the conceptual advances and applications of intelligent materials and systems.

English is designated as official language for all abstracts, papers, and oral presentations.

Topics

- | | |
|---|---|
| • Intelligent materials, concept and modeling | • Intelligent ceramics |
| • Intelligent composites materials | • Intelligent shape memory alloys and piezoelectric |

UPCOMING MEETINGS

- Intelligent materials for smart structures & systems
- Intelligent polymer gels
- Sensors, actuators, and/or processing functions for intelligent materials
- Self-organization and intelligent processing
- Intelligent electromagnetic rheological fluids
- photonic materials and systems
- Biomaterials and biomedical engineering
- Drug delivery systems and intelligent materials
- Micromachines and intelligent materials
- Intelligent systems and related topics

Contact

Ms. Shoko Tsuda, Conference Secretariat, Intelligent Materials Forum, The Society for Nontraditional Technology, Kotohira Kaikan Bldg. 3F, 1-2-8, Toranomon, Minato-ku, Tokyo 105, Japan
phone: +81-3-3503-4681; fax: +81-3-3597-0535; e-mail: mitoh@snet.sntt.or.jp

Third International Meeting of Pacific Rim Ceramic Societies (PacRim 3)
20 - 23 September 1998
Hotel Hyundai, Kyongju, Korea

This conference will provide an opportunity to share and discuss ideas and perspectives on research and development in ceramics and related materials.

Topics

The current plan is to organize 17 symposia in additions to several satellite symposia listed below. The list of topics is not final; suggestions for additional topics are welcome.

- Advanced structural oxide ceramics
- Advances in nonoxide ceramics and composites
- Recent progress in zirconia-based ceramics
- Recent progress in refractories and various clay products
- Advances in cement-based materials
- Dielectric ceramics
- Advances in ceramic sensors
- Electrooptic and magnetic ceramics
- Ferroelectric ceramics and thin films I:
Fabrication, electrical properties, and devices
- Ferroelectric ceramics and thin films II:
Theory, phase transition, and structural analysis
- Glasses and glass ceramics
- Defects in electronic ceramics and solid oxide fuel cells (SOFC)
- Environmental issues of ceramics and glasses, including wasteforms treatment
- Bioceramics
- Sol-gel science and technology
- Diamond and superhard materials
- Ceramic enterprise around the Pacific Rim:
Status and opportunities

Satellite Symposia

- The 4th International Symposium on Interfaces of Ceramic materials
- The 2nd Korea-Australia Joint Symposium
- 1998 KACG Technical Meeting and the 5th Korea-Japan EMG Symposium
- Advances in photonic glass

Abstract Deadline

31 March 1998

Contact

Prof. Sang-Hee Cho, Secretary General, PacRim 3, Dept. of Inorganic Materials Engineering, Kyungpook National University, Taegu 702-701, Korea
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<http://pacrim3.kyunpook.ac.kr>

UPCOMING MEETINGS

**Second Asian Meeting on Ferroelectrics, International (AMF-2)
8 -11 December 1998
Imperial Hotel, Singapore**

The meeting is devoted to all aspects of ferroelectrics and related materials and phenomena. It will provide an excellent opportunity to share updated theories and technologies among researchers in academia and industry. The scope of the meeting will be similar to that of the IMF and ISAF conferences. The scientific program will include invited and contributed presentations on theories, experiments, and applications of ferroelectrics. Particular attention will be paid to new developments in fundamental research areas and various practical applications.

Topics

- Theories and fundamental phenomena of ferroelectrics
- Measurements and characterizations
- Crystals and ceramics
- Ferroelectric polymer and liquid crystals
- Glass and amorphous systems, nanostructures and composites
- Dielectric, piezoelectric, and pyroelectric properties
- Optical properties and nonlinear phenomena
- Domains and domain boundaries
- Surface, interfaces, and defects
- Disordered systems
- Incommensurate phases and discommensuration
- Relaxor ferroelectrics
- Processing of ferroelectric materials
- Ferroelectric thin films and memory integration
- Applications: Sensors, actuators, transducers, and microwave devices
- Ferroelectrics and microelectro-mechanical systems (MEMS)
- Electrooptics, displays, and infrared imaging
- Energy storage, wireless communication, and optical data storage

Proceedings

The proceedings of this meeting will be published as a special issue of *Ferroelectrics* by Gordon & Breach Science Publishers. The original manuscripts with two additional copies of all papers presented at this meeting should be mailed to the Conference Secretariat before the meeting or submitted to the Conference Secretariat at the registration desk on the first day of the meeting. All papers will be reviewed.

Deadlines

- 1 March 1998 Abstract deadline
- 1 July 1998 Notification of acceptance
- 1 September 1998 Early-registration deadline

Important

This meeting is a self-supported event. There is no financial assistance program.

Contact

Ms. Goh Bee Dee / Ms. Merlin Toh, Nanyang Technological University, Centre for Continuing Education, AMF-2 Conference Secretariat, Administration Annex #04-06, Nanyang Ave., Singapore 639798;
phone: +65-799-4723; fax: +65-793-0997; e-mail: AMF2@ntu.edu.sg

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Upcoming Meetings

7th International Seminar on Ferroelastic Physics (ISFP-7), Kazan, Russia	25-27 Jun 97	No.1, p.17
2nd European Meeting on Integrated Ferroelectrics (EMIF-2), Jouy-en-Josas, France	29 Sep-1 Oct 97	No.1, p.19
10th International Symposium on Integrated Ferroelectrics (ISIF 98), Monterey, Calif., USA	1-4 Mar 98	No.3, p.10
5th International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-5), State College, Pennsylvania, USA	6-10 Apr 98	No.3, p.11
15th Meeting on Ferroelectric Materials and Their Applications (FMA-15), Kyoto, Japan	27-30 May 98	No.4, p.12
2nd International Seminar on Relaxor Ferroelectrics (ISRF-II), Dubna, Russia	23-26 Jun 98	No.4, p.12
Innovations in Materials Conference (IMC), Washington, DC, USA	19-22 Jul 98	No.4, p.13
12th International Conference on Crystal Growth and 10th International Conference on Vapor Growth and Epitaxy, Jerusalem, Israel	26-31 Jul 98	No.4, p.14
11th International Symposium on Applications of Ferroelectrics (ISAF XI), 4th European Conference on Applications of Polar Dielectrics (ECAPD IV), and Electroceramics VI, Montreux, Switzerland	24-27 Aug 98	No.4, p.15
4th International Conference on Electronic Materials (IUMRS-ICEM-98), Cheju, Korea	24-27 Aug 98	No.4, p.16
4th International Conference on Intelligent Materials (ICIM'98), Chiba, Japan	5-7 Oct 98	No.4, p.16
3rd International Meeting of Pacific Rim Ceramic Societies (PacRim 3), Kyongju, Korea	20-23 Sep 98	No.4, p.17
2nd Asian Meeting on Ferroelectrics, International (AMF-2), Singapore	8-11 Dec 98	No.4, p.18

Conference Reports

10th International Symposium on the Applications of Ferroelectrics (ISAF'96), East Brunswick, New Jersey, USA	18-21 Aug 96	No.1, p.12
9th International Symposium on Electrets (ISE 9), Shanghai, China	25-27 Sep 96	No.1, p.14
9th Int'l Symposium on Integrated Ferroelectrics (ISIF 97), Santa Fe, New Mexico, USA	2-5 Mar 97	No.2, p.2
COST 514 Action Workshop on Ferroelectric Thin Films, Parma, Italy	14-15 Apr 97	No.3, p.9

Index of Conference Papers

3rd European Conference on Applications of Polar Dielectrics (ECAPD-3), Part II, Bled, Slovenia	26-29 Aug 96	No.1, p.2
10th International Symposium on the Applications of Ferroelectrics (ISAF'96), Part I, East Brunswick, New Jersey, USA	18-21 Aug 96	No.1, p.12
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9th Int'l Symposium on Integrated Ferroelectrics (ISIF 97), Santa Fee, New Mexico, USA	2-5 Mar 97	No.2, p.2
4th International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-4), Vienna Austria	25-30 Mar 96	No.3, p.2
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Mar 1-4	• 10th International Symposium on Integrated Ferroelectrics (ISIF 98), Monterey, California (see <i>Ferroelectricity Newsletter</i> , Vol. 5, No. 3, p. 10)
Apr 6-10	• 5th International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-5), University Park, Pennsylvania (see <i>Ferroelectricity Newsletter</i> , Vol. 5, No. 3, p. 11)
May 3-8	• Conference on Lasers and Electrooptics (CLEO '98), San Francisco, California, USA Contact: OSA Conference Services, 2010 Massachusetts Ave. NW, Washington, DC 20036-1023, USA; phone: +202-223-0920; fax: +202-416-6100; http://www.osa.org
May 27-30	• 15th Meeting on Ferroelectric Materials and Their Applications (FMA-15), Kyoto, Japan (see p. 12)
Jun 23-26	• 2nd International Seminar on Relaxor Ferroelectrics (ISRF-II), Dubna, Russia (see p. 12)
Jul 19-22	• Innovations in Materials Conference (IMC), Washington, DC, USA (see p. 13)
Jul 26-31	• 12th International Conference on Crystal Growth and 10th International Conference on Vapor Growth and Epitaxy, Jerusalem, Israel (see p. 14)
Aug 24-27	• 11th International Symposium on Applications of Ferroelectrics (ISAF XI), European Conference on Applications of Polar Dielectrics (ECAPD IV), and Electroceramics VI, Montreux, Switzerland (see p. 15)
Aug 24-27	• 4th International Conference on Electronic Materials (IUMRS-ICEM-98). Cheju, Korea (see p. 16)
Sep 20-23	• 3rd International Meeting of Pacific Rim Ceramic Societies (PacRim 3), Kyongju, Korea (see p. 17)
Oct 5-7	• 4th International Conference on Intelligent Materials (ICIM'98), Chiba, Japan (see p. 16)
Dec 8-11	• 2nd Asian Meeting on Ferroelectrics, International (AMF-2), Singapore (see p. 18)