Ferroelectricity Newsletter

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

Volume 10, Numbers 1&2 Winter/Spring 2002

HIGHLIGHTS OF THE 10TH INTERNATIONAL MEETING ON FERROELECTRICITY IN MADRID

The first ***Ferroelectricity Newsletter*** of 2002 comes to you as a double issue, mainly because of the large number of presentations (917) at the **10th International Meeting on Ferroelectricity (IMF-10),** held last September in Madrid, Spain.

The importance of this conference does not only lie in the high number of participants (701), representing 44 countries from the five continents, but also in the fact that the IMF-10 Organizing Committee made a special effort to enable the participation of young researchers, as well as senior scientists from countries with emerging economies, such as Latin America, eastern Europe, northern Africa, and certain Asian countries. Please turn to page 2 for a table and two figures showing details about participants and contributions.

The proceedings of IMF-10 will be published by the international journal ***Ferroelectrics*** in less than a year after the closing of the meeting. Because of the huge number of presentations, the organizers decided to accept only one paper from each registered participant for publication in ***Ferroelectrics***. The 424 articles included in the proceedings reflect the variety of topics presented at the meeting, including the poster sessions, and the specific weight with respect to the number of communications of each topic covered at the conference.

As a special service to our readers, this double issue of ***Ferroelectricity Newsletter*** lists the authors and titles of all the 917 presentations given at IMF-10. We want to thank Dr. Rafael J. Jiménez Riobóo of the Instituto de Ciencia de Materiales de Madrid for his report on IMF-10, which you will find on pages 2 and 3. Apart from providing an informative write-up, Dr. Jiménez Riobóo distinguished himself by having sent us the piece very soon after the close of the conference.

As usual, we inform you about upcoming meetings: The **7th Russia/CIS/ Baltic/Japan Symposium on Ferroelectricity**, the **6th European Conference on Applications of Polar Dielectrics**, and the **10th European Meeting on Ferroelectricity**, as well as an overview of what's happening in the field of ferroelectricity through the Calendar of Events on page 40.

Rudolf Panholzer
Editor-in-Chief

IN THIS ISSUE

Ferroelectricity Newsletter
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CONFERENCE REPORT

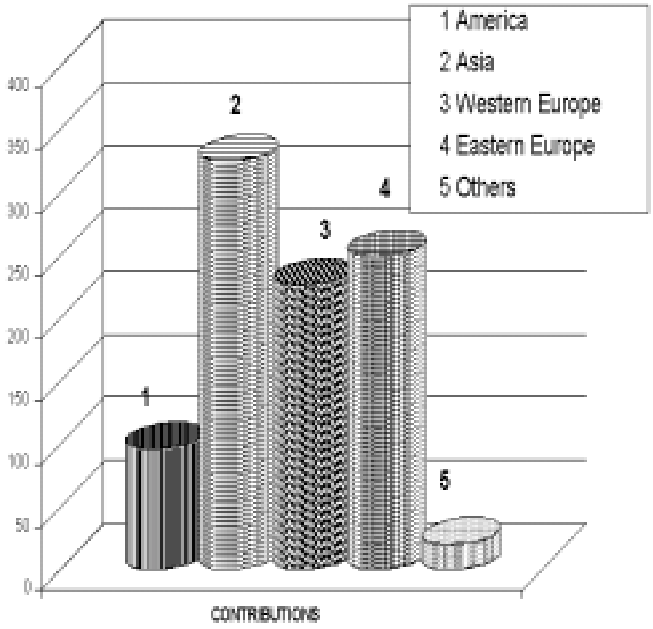
10TH INTERNATIONAL MEETING ON FERROELECTRICITY (IMF-10)

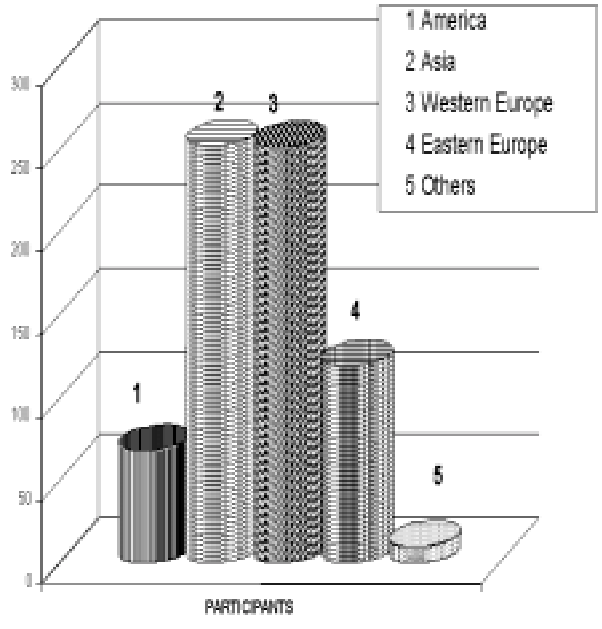
International Meetings on Ferroelectricity have been uninterruptedly taken place every four years since 1960. The aim of these reunions is to provide a global vision of the research activities in the field of ferroelectricity, not only from the point of view of basic research but from the point of view of material preparation and final application of ferroelectrics. These meetings promote the exchange between participants stemming from universities and research centers located on the five continents. The International Advisory Committee decided in 1997 to organize the 10th International Meeting on Ferroelectricity in Spain. Madrid was the selected to be the site of the congress, and from 3-7 September 2001 Madrid hosted researchers from all over the world to participate in this event.

The IMF-10 Organizing Committee made a big effort to enable the participation of young researchers, as well as senior scientists coming from countries with emerging economies, e.g., Latin America, eastern Europe, northern Africa, and Asia. As a result, one third of the participants received some kind of financial support in order to be able to take part in the meeting.

America			Asia			Western Europe			Eastern Europe			Others		
Country	P	C	*Country*	P	C	*Country*	P	C	*Country*	P	C	*Country*	P	C
USA	34	47	Japan	135	141	Spain	110	75	Russia	41	130	Israel	3	8
Brazil	10	11	Korea	79	103	France	32	48	Poland	29	43	Morocco	3	5
Mexico	13	16	China	18	48	Germany	53	43	Ukraine	8	27	Turkey	2	4
Cuba	1	4	Taiwan	6	12	Portugal	14	20	Czech Rep.	16	20	Egypt	1	2
Canada	2	8	India	2	10	U.K.	16	19	Slovenia	8	8	Australia	1	1
Argentina	5	5	Hong Kong	10	8	Switz.	6	7	Romania	1	4			
Colombia	2	1		1	1	Italy	7	4	Belorussia	1	3			
Ecuador	1	4		1	2	Sweden	3	4	Armenia	2	2			
						Finland	4	4	Estonia	1	1			
						Ireland	1	1	Uzbekistan	1	1			
						Holland	5	1	Latvia	1	1			
										10	9			
TOTAL	**68**	**96**		**252**	**325**		**251**	**226**		**119**	**249**		**10**	**20**

P: participants
C: Contributions





CONFERENCE REPORT

The high number of participants (701) from 44 countries representing the five continents (see figure and table above), as well as the great number of contributions (917) of high scientific interest and technological significance reflect the importance of this reunion.

The scientific presentations were distributed in the following way: 8 plenary talks, 35 invited talks (30 minutes), 35 invited presentations (20 minutes), 51 oral presentations (15 minutes), and 740 posters. In order to offer a reasonable time frame for this program, oral presentations were held simultaneously each day (three in the morning and three in the afternoon) and poster sessions were held in parallel (one at noon and one in the evening). The opening session took place on Monday, 3 September morning. On Wednesday there was a special plenary symposium, "Great 20th century solid state physicists."

The scientific presentations covered the whole field of ferroelectricity. It is very important to stress the big number of communications devoted to thin film ferroelectric materials. In fact, this topic was the one with the highest number of contributions and the Scientific Programme Commission had to include many of them covering the characterization and fabrication of ferroelectric materials, new applications, as well as sensors and actuators in other sessions. This decision allowed the participants to obtain a multidisciplinary view of the field. Four oral sessions were exclusively devoted to thin films, the same number as those devoted to the classical field of ferroelectricity, phase transition and critical phenomena. Other relevant sessions were dielectric properties and microwaves.

From the very beginning, the aim of the Organizing Committee was to send the IMF-10 proceedings as soon as possible to the journal *Ferroelectrics* so that they could be published less than a year after the closing of the meeting. Because of the huge number of participants, the organizers decided to accept only one paper from each registered participant. As a result, in many cases the participants selected the best contribution to be included in the proceedings. This fact has been certified by the referees in their reports. The IMF-10 Proceedings Committee finally sent 424 articles to *Ferroelectrics*. These 424 articles reflect the variety of topics presented in the poster sessions and conferences, as well as the specific weight (in number of communications) of each topic within the meeting.

The opening session on Monday, 3 September, was devoted to the history of ferroelectricity and its evolution since the beginning of the international meetings. On Wednesday the attention of the meeting was focused on the personalities of prominent solid state physicists of the 20th century. Peter Debye, John Bardeen, L. D. Landau, and the Braggs were the subject of this special symposium.

To finish this brief report about the IMF-10, it is worth mentioning the two decisions taken by the International Steering Committee at the end of the Madrid meeting. The first one is that the next International Meeting on Ferroelectricity (IMF-11) will be held on the American continent, at the frontier between Argentina and Brazil. The second one is the election of Professor Dr. Julio Gonzalo (chairman of IMF-10) as chairman of the International Steering Committee.

Dr. Rafael J. Jiménez Riobóo
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IMF-10 PAPERS

10TH INTERNATIONAL MEETING ON FERROELECTRICITY (IMF-10)

The 10th International Meeting on Ferroelectricity, held on 3-7 September 2002 in Madrid, Spain, provided an up-to-date general view of the current activity in the field of ferroelectricity and related areas.

The scientific program included three plenary lectures at the opening session, five additional plenary lectures at a special symposium, "Great 20th century solid state physicists," 39 invited talks, 33 invited presentations, 57 oral presentations and more than 700 poster presentations by scientists from all over the world.

The proceedings of IMF-10 will be published in the journal ***Ferroelectrics***.

PLENARY LECTURES

Ferroelectrics 1966-2001: An overview
R. Blinc

Phase transitions in ferroelectrics: Some historical and other remarks
V. Ginzburg

On ferroelectrics and high temperature superconductors
K.A. Müller

PLENARY SPECIAL SYMPOSIUM

Great 20th Century Solid State Physicists

The Braggs
A.M. Glazer

Peter Debye
E. Courtens

John Bardeen
F. Sols

L.D. Landau
V. Ginzburg

The relevance of materials physics
S.L. Jaki

ADVANCES IN THEORY

Recent developmnets in *ab-initio* calculations in ferroelectrics with effective Hamiltonians
A. Garzia

Bond geometry and charge transfer in hydrogen-bonded ferroelectrics
A. Bussmann-Holder

First-principles calculations on isotope effect on $K_3(H,D)(SO)_2$ of hydrogen-bonded dielectric materials: Approach with dynamic extended molecular orbital method
M. Tachikawa

Novel ferroelectricity in II-VI semiconductor ZnO
A. Onodera

Phase transitions and the domain structure in epitaxial ferroelastic films
A.M. Bratkovsky

Fractal diffusion path and energy landscape for bound charges explain dielectric, NMR, and nonergodic behavior in DRADP glass
V.H. Schmidt

The effect of phonon-electron interactions in electronic charge transport in ferroelectric thin films
M. Dawber

DIELECTRIC & MICROWAVE PROPERTIES

Soft mode behavior in $SrTiO_3$ and BST films and ceramics
J. Petzelt

Impurity-induced ferroelectric phase transitions and giant dielectric relaxation in incipient ferroelectrics
V.V. Lemanov

Dielectric dispersion of the new compound betaine rubidium iodide dihydrate
A. Almeida

Dynamic theory of nonlinear response in relaxors
R. Pirc

Phase transitions and dielectric relaxation in dyeing KDP
B.A. Strukov

Strain-induced diffusion of dielectric anomaly in ferroelectric thin films
A. Tagantsev

Low-frequency dielectric properties of Rochelle salt and its deuterated analogue
I.A. Malyshkina

Radio and microwave spectroscopy of the betaine phosphate/betaine phosphite mixed crystal: Influence of deuteration
J. Banys

Temperature dependence of electrical properties for $SrBi_2Ta_2O_9$ thin films
N. Ichinose

IMF-10 PAPERS

THIN FILMS

Antiferroelectric thin films and their applications in MEMS
S.B. Krupanidhi

Electromechanical response of ferroelectric thin films: Microscopic vs. local behavior
A. Kholkin

Ferroelectic and electric properties of PZT-ZnO hybrid thin films
S.H. Lee

Ferroelectric medical microsystems
D. Polla

Sol-gel derived SBT films chrystallized with low temperatures and short times
L. Calzada

Pulsed laser deposition of epitaxial $SrBi_2Ta_2O_9$ films with controlled orientation
A. Garg

Metal organic chemical vapor deposition of $(BaSr)TiO_3/Pt/SiO_2/Si_2$ heterostructures
J. Lindner

Thermal focusing and optical bistability in ferroelectrics
J. Scott

The effect of repeated sol infiltrations on the microstructure and electrical properties of PZT composite sol-gel films
R.W. Whatmore

Top electrode induced self-polarization in CSD processed SBT thin films
R. Jiménez

Structural and dielectric properties of $(BaTiO_3/SrTiO_3)_{15}$ superlattices
R. Pantou

Chemical solution deposition of ferroelectric thin films: State of the art and recent trends
T. Schneller

PZT-based thick films on silicon
M. Kosec

PHASE TRANSITIONS & CRITICAL PHENOMENA

Atomistic mechanism of relaxor ferroelectrics
T. Egami

Low-T ferroelectricity in antiphase domain boundaries of $SrTiO_3$
E. Courtens

First-principles study of the role of hydrogen in ferroelectric perovskite oxides
C.H. Park

Random fields at transitions from relaxor to glassy and ferroelectric states
W. Kleemann

Empirical modeling of relaxor-ferroelectric behavior of PMN-PZ ceramics
V.K. Wadhawan

Bioferroelectricity, nanotechnology and related problems
V.S. Bystrov

Thermodynamic instability of relaxation processes TGS near Curie point
O. Rogazinskaya

On the morphotropic phase boundaries
Y. Ishibashi

Ferroelectric ceramics: A crash of the thermodynamic approach and necessity of using the statistical approach
A.N. Turik

The structural phase transitions sequence of bis-buthylammonium tetrachloro cupprate $(C_4H_9NH_3)_2CuCl_4$
M.J. Tello

Effect of oxygen octahedral tilting on the properties of Sr-doped PZT ceramics
H. Zheng

Pyroelectric response of PZT-PVDF nanocomposites of (0-3) connectivity
B. Hilczer

The mechanism of proton conductivity in quasi-onedimensional hydrogen-bonded crystals
D. Michel

STRUCTURE

Mesoscopic structures in ferroelastic and coeleastic materials
E. Salje

X-diffraction quantitative analysis of Ca-modified lead titanate thin structures combining texture, structure and stress determinations
D. Chateigner

Accurate charge densities of chrystalline materials obtained by third generation Sr and MEM/ Rietveld analysis
Y. Kuroiwa

IMF-10 PAPERS

PROCESSING AND NEW MATERIALS

A new candidate material for use in ferroelectric random access memory (FRAM): Lanthanium-substituted bismuth titanate
T.W. Noh

Langmuir-Blodgett ferroelectrics
S. Ducharme

Phase transitions and microscopic environments in TlH_2PO_4 (TDP) and TlH_2AsO_4 (TDA) systems
C.E. Lee

50 YEARS OF PZT

Low symmetry phases in PZT and related piezoelectric systems
B. Noheda

The new monoclinic phase and elastic-matching features in $PbZr_{1-x}Ti_xO_3$ solid solutions
V. Topolov

Processing of porous PZT materials for underwater acoustics
C. Galassi

A new method for the determination of the elastic properties of thin piezoelectric PZT fibers
R. Steinhausen

DOPING, DEFECTS, AND IMPERFECTIONS

Modulation of electrical conductivity through microstructural control in $Bi_4Ti_3O_{12}$-based piezoelectric ceramics
M. Villegas

Focus on Aurivillius ceramics
L. Fuentes

Oxygen vacancies migration influence upon some dielectric properties of perovskite oxide thin films
V.K. Yamarkin

Computer modeling of point defects in perovskite crystals
R.I. Eglitis

FERROELECTRIC SENSORS AND ACTUATORS

Application of HAUP to the study of phase transitions undergoing subtle symmetry
J. Kobayashi

Ca- and La-modified lead titanate sol-gel thin films by UV-assisted processing for piezoelectric sensors
L. Pardo

Maxwell-Wagner piezoelectric relaxation in ferroelectric heterostructures
D. Damjanovich

Piezoelectric properties of the modified $SrBi_2Nb_2O_9$ ceramics
A. Ando

COMPUTER SIMULATIONS

First-principle calculations of structure, lattice dynamics, and phase transitions
K. Parlinski

Photorefractive self-focusing of continuous and pulsed light: Experiment, theory, simulation
G. Kugel

Computer simulation of ferroelectric dipole systems
H. Kliem

Domain switching and relaxation in threedimensional disordered ferroelectrics
B. Tadic

DOMAINS AND DOMAIN BOUNDARIES

Phase transitions in the domain boundaries of ferroelectrics induced by an external electric field
B.M. Darinski

Barkhausen jumps during domain wall motion in ferroelectrics
V. Shur

Fine mechanisms of polarization switching in $KTiOPO_4$ ferroelectric crystals
R. Urenski

Domain related nonlinear effects in piezoelectric materials
W. Ren

Boracites: A structural family presenting ferroic phase transitions
A.G. Castellanos

Nanoscale theory of ferroelectric surface predicting skin-deep quantized twodimensional electron gas
Y. Watanabe

Nanoscale measurement of threedimensional ferroelectric polarization distribution using scanning nonlinear dielectric microscopy
H. Odagewa

Anisotropic domain reorientation in PZT ceramics
M.H. Lente

INCOMMENSURATE PHASES

EPR probes in incommensurate systems

IMF-10 PAPERS

W. Windsch

Elastically hinged molecule model: Relation between discrete media and continuum
S. Dimitriev

A sublattice model for the incommensurate transition in A_2BX_4-type crystals
H. Mashiyama

Continuity of normal incommensurate phase transitions as a consequence of defects
A. Cano

POLYMERS, LIQUID CRYSTALS, AND OTHER COMPLEX SYSTEMS

Relaxor ferroelectric polymers
Q.M. Zhang

The ferroelectric transition in P(VDF-TrFE) copolymers: Dipolar ordering vs conformational disorder
J.F. Legrand

Ferroelectric behavior of P(VDF-TrFE)/PMMA low crystallinity blends
R.I. Moreira

Induced asymmetric antiferroelectric liquid crystal response
J.M. Oton

ATOMIC FORCE MICROSCOPY

Nanoscale characterization of ferroelectric structures
A. Gruverman

Modeling and measurement of surface displacement in $BaTiO_3$ in piezoelectric force microscopy (PFM)
G.A. Schneider

Domain response features of SBN:Ce single crystals
P. Lehnen

Visualization of the domain orientation in $PbTiO_3$ single crystals by vertical and lateral piezoresponse microscopy
H. Niori

FERROELASTICS

Li_2TiGeO_5: A novel ferroelastic crystal
J. Przeslawski

Stress induced depolarization of different ferroelectrics in thin film form
M. Algueró

Ferroelastic phase transition in a superionic crystal
A. Khodorov

Direct observation of fluctuations in the ferroelastic phase transition of Nd_2O_3, $Sm_2O_3Gd_2O_3$
M. Ben Salem

GROWTH AND BULK FERROELECTRIC PROPERTIES

Recent developments in $K_{1-x}Li_xTa_{1-y}Nb_yO_3$ investigations
V. Trepakov

Optical microscopy observation of the phase transitions in some ferroelectric Aurivillius phases single crystals
J.P. Mercurio

MOCVD-grown $(Pb_{1-x}Ba_x)TiO_3$ thin films on MgO substrates: Influence of process parameters on film formation and electrical properties
S. Ritter

Phase diagrams of thick epitaxial ferroelectric films
V.G. Koukhar

QUANTUM EFFECTS

Cell volume effect on the ferroelectricity stability of perovskite oxides from first principle calculations
C.L. Wang

Motion of extended defects in crystals experiencing a phase transformation
A. Korzhenevskii

Photo-induced ferroelectricity at picosecond time scale
M.H. Lemée-Cailleau

Ab initio quantum mechanical approaches of the ferroelectric ABO_3 perovskite polarization properties
P. Baranek

SPECTROSCOPIES

Directional dispersion of polar optical phonon frequencies in low-symmetry crystals: Raman studies on $Sn_2P_2S_8$
I. Gregora

Surface phonons in ferroelastic crystals
B. Mröz

Ferroelectric soft modes and central modes near the phase transitions
S. Kamba

Neutron, X-ray, and Raman studies of $Sr_{1-x}Ba_xTiO_3$ systems
C. Menoret

IMF-10 PAPERS

MIXED SYSTEMS

Ferroelectric ceramic/polymer composite materials and their electro-active properties
Das Gupta

Phonon spectra and phase transitions in $CuInP_2(Se_xS_{1-x})_6$ and $Sn_2P_2(Se_xS_{1-x})_6$ ferroelectrics
Y. Vysochanskii

Novel BST:$MgTiO_3$ composites for frequency agile applications
E.F. Alberta

Phase transitions in the ferroelectric lead-rich $PbTiO_3$ - $Na_{0.5}TiO_3$ solid solutions
S. Sad

NOVEL APPLICATIONS

Current status of FRAM development and future direction
K. Kim

Conversion of low-grade heat to electricity using pyroelectric copolymers
M. Ikura

Morphotropic phase boundary materials: Device applications
K. Sambasivarao

Novel piezoelectric actuators
A. Safari

NMR, ESR, NQR STUDIES

Transition mechanism in ferroelectrics with N-HN+ hydrogen bonding
M. Szafranski

Elementary excitations in solids with incommensurate phases as revealed by NMR
J. Petersson

Interaction between ferroelectricity and nonstoichiometry in lithium niobate and related compounds
B. Elouadi

EPR studies of the order-disorder behavior of chromium-doped dimethylammonium gallium and aluminum sulfate hexahydrate (DMAGAS and DMAAS)
G. Völkel

OPTICAL PROPERTIES

Ferroelectricity in unconventional liquid crystal and superconducting phases
P. Toledano

Electical characteristics of sol-gel derived (100) oriented $Ba_{0.5}Sr_{0.5}TiO_3$ thin films on $LaAlO_3$ (100) substrates
R.S. Katiyar

Official characterization of PZT 65/35 thin films deposited by sol-gel
I. Boerasu

Defeating the ionic conductivity of tunnel-structured polars for optical applications: Theory and experiments
Q. Jiang

THERMAL PROPERTIES

Critical heat anomaly in antiferroelectric liquid crystals crossover and multicritical behaviors
K. Ema

Thermal studies of $PbZrO_3$ nickel doped
M. Hafid

Development of novel high temperature, high performance piezoelectrics on the basis of structure
R.E. Eitel

Specific heat and heat conductivity of thin ferroelectric films
S.T. Davitadze

HIGH PRESSURE

Vanishing of transition temperatures in hydrogen bond crystals under high pressure
M. Tokunaga

Dielectric study on pressure-induced phases in $Ca_2Ba(C_2H_3COO)_6$ (DBA) and $Ca_2Ba(C_3H_7COO)_6$ (DBB)
K. Gesi

Dielectric properties of $KNbO_3$ under pressure
E. Moya

RELAXORS AND GLASSES

Some new $Pb(B_3+Nb)TiO_3$-$PbTiO_3$ systems: Ceramics and thin films
A. Sternberg

Effect of microstructure on dielectric, relaxor, ferroelectric and piezoelectric properties of La_2O_3 modified $xPb(Mg_{1/3}Nb_{2/3})O_3$-$(1-x)Pb(Zr_{0.55}Ti_{0.55})O_3$ systems
K.V.S. Ramam

Nanocrystalline ferroelectric/relaxor multilayers
H. Schmitt

STRUCTURAL AND RELATED PROPERTIES

Dynamic elastic response of inhomogeneous structures
M.W. Schranz

IMF-10 PAPERS

Temperature evaluation of structure and lattice dynamics of cubic relaxor ferroelectrics
S.B. Vakhrushev

Hetero-epitaxial MOCVD growth of $PbZr_xTi_{1-x}O_3$ film on $SrTiO_3$ for electrooptical devices
M. Moret

POSTERS

ADVANCES IN THEORY

Dipolar glass phases and nonergodic behavior of $BP_{1-x}BA_x$
M.L. Santos

Charge transfer in perovskite oxides: Mode softening and lattice instability
A. Bussmann-Holder

Isotope induced ferroelectricity in quantum paraelectrics
A. Bussmann-Holder

Ab initio design of perovskite alloys with optimum electromechanical properties
J. Iñiguez

Model of appearance of ferroelectricity in amorphous materials
B.M. Darinskii

Correlation between the Rhodes-Wolfarth ratio and effective field higher order contributions in PZT ferroelectrics
C. Arago and J.A. Gonzalo

Photorefractive double phase conjugation using a novel quasi-geometrical model of beam fanning in barium titanate
C. Mailham, N. Fressengeas, M. Goetz, and G. Kugel

Saturation of an inhomogeneously broadened dielectric response in disordered systems
I.V. Kondakova

Thermodynamics of the cluster model for SASD and SASeD type crystals
N.A. Korinevskii

A microscopic model for elastic, piezoelectric and dielectric properties of Rochelle-type crystals
R.R. Levitskii

New type charge transfer states in ferroelectric oxides: Theoretical and experimental studies of charge transfer vibronic exciton phase
V.S. Vikhnin

Simulation of the charge transport across grain boundaries in P-type $SrTiO_3$ undeer large-signal DC load
Th. Holbling

A six-well model with elongated nanodomains
S.A. Prosandeev

Processes of aging and degradation of ferroelectric materials
A.S. Sidorkin

Dipole kinetics and relaxation in (K, Li)TaO_3 crystals
A.V. Turik

Ferroelectric-antiferroelectric superlattice from Ising model in a transverse field
C.L. Wang

Scaling and universality class in Ising nanotubes
C. Garcia, M.I. Marques, and J.A. Gonzalo

MD calculation for modulated phase in quartz
D.A. Semagin

Finite-element analysis for ceramic densification process
H. Camacho

Fluctuation effects in ferroelectric polarization switching
M.I. Molotskii

O-site disorder in mixed perovskite $A(B'B'')O_3$ from *ab initio* cluster calculations
O.E. Kvyatkovskii and M.G. Shelyapina

Stark-ladder resonances in piezo-composite systems
G. Monsivais

The origin of ferroelectricity in hydrogen-bonded KDP crystals
R.L. Migoni

Competition between short range order and coulomb interaction in $A(B'_xB''_{1-x})O_3$ ferroelectric relaxors
E.E. Tomau

Electronic and dynamical properties of $BaZrO_3$ and $BaHfO_3$ from first principles
S. Tinte

Ferroelectricity and domain wall motion in ultrathin perovskite epitaxial films
M.G. Stachiotti

On the effective properties of matrix ferroelectric composites
V.M. Levin and A.G. Luchaninov

IMF-10 PAPERS

Influence of mobility of the 90˚ domain walls on the effective properties of $PbTiO_3$ ceramics
V.I. Aleshin and A.G. Luchaninov

Computational model of the novel perovskite sodium bismuth titanate
V.I. Jennings

A novel approach to modeling the polarization in ferroelectric materials
V. Meyer

A model of polar clusters in ferroelectric relaxors: Interacting charge transfer and lattice distortions and local configuration instability effects.
V.S. Vikhnin

Computer simulation of atomic structure of amorphous $PbTiO_3$
V.V. Posmetyev

Anisotropy of electromechanical properties in ferroelectrics and related materials with inhomogeneitis on different levels: A review
V.Yu. Topolov

Modeling very high piezoelectric activity in heterophase $xPbTiO_3$-$(1-x)Pb(Zn_{1/3}Nb_{2/3})O_3$ crystals
V.Yu. Topolov

3-3-composites "ferroelectric ceramic-polymer" as potential high-sensitive piezoactive materials
V.Yu. Topolov and C.R. Bowen

Polarization and pyroelectricity of temperature-graded ferroelectric film
C.L. Wang

Phase transition properties of ferroelectric superlattice from the transverse Ising model with four-spin interactions
C.L. Wang

First principles study on band structure and optical properties of $PbZr_{0.5}Ti_{0.5}O_3$
C.L. Wang

First principles study on optical properties of $KTaO_3$ and $KNbO_3$
C.L. Wang

First principles study on optical properties of $SrTiO_3$ and $SrHfO_3$
C.L. Wang

Polarization waves in the paraelectric phase of a ferroelectric film
V. Dvorák

Ab initio calculations of atomic and electronic structure for $SrTiO_3$ (100) surfaces
R.I. Eglitis

Relaxor and glass dynamics in ferroelectric-antiferroelectric mixed crystals
Eiko Matsushita

Replica-symmetric solutions of the infinite-range Ising model spin glass in a transverse field
D.-H. Kim

Nonlinear susceptibility of Ising model spin glass in the transverse field
J.-J. Kim

A comparison between ferroelectric insulators and ferroelectric semiconductor models including surface effects
L. Baudry

A new analytical study of the order-disorder transition in $A(B'_{1/2}B''_{1/2})O_3$ perovskite type ceramics
N. Masaif

NEW FERROELECTRIC AND RELATED MATERIALS

Coexistence of ferroelectric and proton-glass phases in RADA and KADA crystals
Z. Trybula

Phase transition and dielectric properties of pyridinium halogenobismuthate (III) crystals
G. Bator

Displacive ferroelectrics from the Aurivillius phase Rafily-relation between the transition temperature and the atomic displacements
E. Kroumova

Systematic search for ferroelectrics among the compounds with symmetry pmc2
E. Kroumova

Structural study of semiconductive $Cd_{1-x}Zn_xTe$ alloy by high-energy X-ray diffraction
Y. Yoneda

Direct observation of tunneling in KDP using neutron Compton scattering
G. Reiter

Investigation of the crystal chemistry and ferroelectricity in lithium tantalate and related phases within the ternary system Li_2O-Ta_2O_6-(Nd_2O_3)
R. El Youseffi, M. Zriouil, and B. Elouadi

IMF-10 PAPERS

Crystal chemistry and ferroelectric investigations of $LiMO_3$-related solid solutions of the ternary systems Li_2O-M_2O_5-$(COO)_2$ with M=Nb, Ta
B. Lahbabi, M. Zriouil, and B. Elouadi

Dielectric and structural properties of dipyridinium iodide triiodide
M. Srafranski

Thermal expansion and linear birefringence of $Li_2Ge_7O_{15}$ crystals
R. Poprawski

Crystal chemistry and dielectric investigation of the ferroelectric tungsten bronze related phases $K_3BB'LnNb_{10}O_3$ (with B or B' = Sr, Pb; Ln = Gd, Ho)
A.I. Iahmar, M. Zzriouil, and B. Elouadi

Phase transitions in $PbBi_2Nb_2O_3$ and $SrBi_2Nb_2O_9$
S.G. Lushnikov

Effect of Zr doping on the structural and dielectric properties of BST ceramics
J.M. Siqueiros

Dielectric properties in the microwave range of the new $Pb(Mn_{1/2}LiNb_{1/2})O_3$-$(1-x)Pb(Fe_{1/2}Nb_{1/2})O_3$ solid solution system
V.V. Gagulin

Influence of the $LiNbO_3$ and $KNbO_3$ on the sintering and electrical properties of PMN ceramic
A.A. Cavalheiro, M.H. Zaghete, J.A. Varela, M. Villegas, and J.F. Fernández

Ferroelectric phase induced in $SrTiO_3$
C. Ménoret

Influence P_2O_5 addition on the microstructure and electrical conductivity of $Bi_4Ti_3O_{12}$ piezoelectric ceramics
E. Brozozowski

Influence of the relative concentration of $PbTiO_3$ in the microstructure and the dielectric properties of $xPbTiO_3$-$(1-x)SrTiO_3$ solid solution
J.M. Siqueiros

A novel ferroelectric material for application in metal ferroelectric (oxide) silicon [MF(O)S] structures
Fred P. Gnadinger

Growth, structure and properties of C-axis-oriented epitaxial La substituted $Bi_4Ti_3O_{12}$(BLT) thin films
D. Hesse

Structural phase transition and dielectric properties of $ZnCr_2O_4$
I. Kagomiya

Single crystalline composite phases in $[Rb_x(NH_4)_{1-x})_2SO_4$ systems in 4.2 300 K temperatural interval
I.M. Shmytko

Phase transitions in 4, 4'-dichlorobenzophenone
A. López-Echarri

Scaling parallels in the non-Debye dielectric relaxation of $4BaTiO_3$-SiO_2
J.E. Kim

AC conductivity and dielectric relaxation of ion doped ferroelectric $SrBi_2Nb_2O_3$ ceramics
J.S. Kim

Optical study of phase transition in $Pb(Zn_{1/3}Nb_{2/3})O_3$-8% $PbTiO_3$ single crystals
J.Y. Yi

Growth and physical characterization of La-doped $Bi_4Ti_3O_{12}$ crystals
J.P. Kim

Coexistence of ferroelectric and ferromagnetic properties in PMN-PFN
J.M. Siqueiros

Electric properties of $(Na_{0.5}Bi_{0.5})_{0.86}Ba_{0.14}TiO_3$ single crystals
J. Suchanics, J.P. Mercurio, and K. Konieczny

Low-frequency dielectric response in pulsed laser ablated $SrBi_2Ta_2O_3$ thin films
J.H. Jeong

Dielectric properties of the mixed crystal system of $(P(CH_3)_4)_2Cu(Cl_{1-x}Br_x)_4$
K. Gesi

Surface transformation of hydrogen-bonded crystals at high temperatures and topochemical nature
K.-S. Lee

The ordering effects in $Ln_{1-x}N_xMnO_3$ compounds
B. Koulbouzev

Nonlinearity of dielectric parameters of $PbNi_{1/3}Nb_{2/3}O_3$ - $Pb(Zr,Ti)O_3$ ferroelectric solid solutions
A. Kalvane

Preparation and characterization of $(Bi_{3.6}La_{0.4})Ti_3O_{12}$ ferroelectric thin

IMF-10 PAPERS

films by the sol-gel method
L. Shen, J.G. Zhu, and D.Q. Xiao

Synthesis and electrical characterization of $Bi_4Ti_3O_{12}$ in solid solution with La^{3+}
M.E. Villafuerte-Castrejón

Influence of microstructure in electromechanic properties of ferroelectric pseudoceramics
M.J. Melcon, J. de Frutos, A.M. Gonzalez, C. Duro, and F.J. Jiménez

Electric properties of ethylenediamine cobalt nitrate (ECN) single crystals
M. Maeda

Dielectric and ferroelectric properties of $BaTiO_3$/Ni ceramics under high electric fields
R. Jiménez, F. Esteban-Betegón, C. Pecharromán, J.S. Moya, and C. Alemany

Structure and recombination luminescence of new polaronic-type excitons in ferroelectric oxides
R.I. Eglitis

Elementary excitations and local polarization in layered high-Tc cuprates
S. Kuwata

Phase transformations in $Cs_5H_3(SO_4)_4xH_2O$ crystals: From dynamic to static disorder
L.A. Shuvalov

Structure/property correlations in KTP-based solid solutions:Niobium and antimony pentavalent substitutions
S.Y. Stefanovich

Low temperature Thermal conductivity behavior of $Gd_2(MoO_4)_3$
Z. Tylczynski

Synthesis and characterization of $Sr_2(Sr_{N-1}TiNO_{3N+1})$ series by mechanichemical activation
A. Castro

Ion doping effects in ferroelectric $SrBi_2Nb_2O_9$ ceramics
T.K. Song

Linear and thermal expansion of ferroelectric Rb_2CoCl_4
T. Yamaguchi

Phase transitions, dielectric relaxation and conductivity of the $LaGaO_3$-based perovskites
E.D. Politova

Thermal expansion and polarization at phase transitions in the perovskite $Pb[Zr_{1-x}(Fe_{0.5}Nb_{0.5})_x]O_3$ ceramics
A. Yu. Tuflin

Trigonal to monoclinic transitions and morphotropic phase boundary in $CnInP_2(Se_xS_{1-x})_6$ layered crystals
Yu. Vysochanskii

$BaBi_8Ti_7O_{27}$ ferroelectric ceramics and their modification
X.M. Chen

Morphotropic phase boundary in $(Sr_{1-x}BaX)_2Nb_2O_7$ ceramics
Y. Akishige

Structural and electrical properties of the new ferroelectric $PbK_2LiNb_5O_{15}$
Y. Gagou

Low temperature dielectric behavior in iron-doped $KTaO_3$
Z. Trybula

DOMAIN DEFECTS AND STRUCTURE I

Parameters of the domain and crystallographic structure of single crystals and ceramics of $BaTiO_3$
Z. Bochynski

Domain structure in $K_2Ba(NO_2)_4$ crystals
L. Kirpichnikova

New ferroelastic $Lu(HCOO)_3.2H_2O$
L. Kirpichnikova, M. Polomska, J. Kulek, and B. Hilczer

Domains and new phase transitions in some hydrogen sulphate and selenate crystals
L. Kirpichnikova

Dielectric response of ferroelectric domain structures in epitaxial ferroelectric films
A.P. Levanyuk

Surface waves in polydomain ferroelectrics
B.M. Darinskii, A.S. Sidorkin, and A.A. Sigov

Domain average engineering in ferroics
D.B. Litvin

Size effects in SBT powders
C. Muller

Domain arrangements around intersected variant structures in $PbTiO_3$ single crystals
C.-C. Chu

Single domain wall jumps in $Gd_2(MoO_4)_3$

IMF-10 PAPERS

D.C. Lupascu

Spontaneous polarization and domain reversal in new ferroelectric $LaBGeO_5$
E.V. Milov and B.A. Strukov

Peculiarities of physical properties of heterostructural piezoelectric ceramic PZT-based materials
G.M. Akbaeva, A.V. Shilnikov, A.I. Burkhanov, and Y.N. Mamakov

Investigation of polarization switching processes in $Pb(Zr,Ti)O_3$ capacitors using piezoresponse imaging
H. Fujisawa

Correlation between grain structure and ferroelectric domains in La-modified $PbTiO_3$ thin films prepared by PLD
E. Vasco

Domain morphology evolution and field-induced phase transition in "two phase zone" of PZN-based ferroelectrics
H. Fan

On the domain structure of ferroelectric films in integrated microelectronic devices
Igor A. Luk'yanchuk and Pierre Saint-Gregoire

Characterization of *in situ* switching of 90˚ domains in $BaTiO_3$ single crystals by scanning force and electron microscopy, comparison of methods
J. Muñoz-Saldaña, G.A. Schneider,P. Obenaus, and A. Schönecker

Linear birefringence and domain structure in dabco salts
J. Przelawski

Dissipative domain wall motion and macroscopic response of ferroelectric ceramics
W.S. Kreher

The effect of L- and DL-tyrosine admixtures on dielectric properties of TSG crystals
J. Stankowska and E. Peter

A study of defect structure of $SrTiO_3$ capacitor-varistor ceramics by PAT
Z. Yan and Li Sa-Zhen

E-TOF-ERD analysis of H-exchanged and Zn-diffused $LiNbO_3$ optical waveguides
O. Espeso-Gil

Frequency dependence of coercive fields in 180-degree ferroelectrics
A.S. Sidorkin

Low-frequency anomalous dielectric and elastic bahavior of calcium substituted lead titanate ceramics in paraelectric phase
B. Jiménez

Influence of the point defects on dielectric and elastic properties of layered bismuth titanate ceramics
B. Jiménez, R. Jiménez, A. Castro, P. Millán, and L. Pardo

Defect structures in Sb-doped $BaTiO_3$ ceramics
E. Brzozowski

Fatigue behavior and microstructural evolution of antiferroelectric lead zirconate stanate titanate ceramics
C.-L. Li

Surface layer consideration of ferroelecctric thin films for integrated ferroelectric device applications
D.Q. Xiao, J.G. Zhu, J.L. Zhu, and L. Shen

Landau theory-based validation of the fatigue mechanism in sol-gel and MOCVD PZT films using the correlated analysis of the hysteresis loop parameters
D. Ricinschi

Molecular correlation of water $K(H_2O)_N$ in silica gel $SiO_2.XH_2O$
Z. Bochynski

X-ray studies of Debye temperature and lattice dynamics of some ABO_3 perovskites
L. Shebanovs

X-ray photoelectron and X-ray spectra of $La_2Ti_2O_7$
T.N. Bondarenko

X-ray analysis of liquid 1,5-diphenylpentane structure
Z/ Bochyriski, H. Drozdowski, and W. Schmidt

Ferroelectric clysine phosphite: Growth and characterization
A. Deepthy and H.I. Bhat

X-ray structure analysis of $K_2Cd_{2x}Mn_{2(1-x)}(SO_4)_3$ mixed crystal in the high-temperature phase
E. Magome

Neutron diffraction and critical scattering in KLTN single crystals
S.B. Vakrushev

Polarization switching in ferroelectric glycine phosphate

IMF-10 PAPERS

single crystals
A. Deepthy and H.L. Bhat

Structural and magnetic characterization of the double perovskite $AA'MnWO_6$ (AA' = Ba, SrBa, Sr_2, SrCa and Ca_2)
A.K. Azad

Extremely slow phase transition and particle size effect in $CsZnPO_4$ crystals
A. Sawada

X-ray diffraction study of amorphous $PbTiO_3$
A.V. Bondarev

Anisotropic properties of $SrBi_2Ta_2O_9$ single crystals
Z.-G. Ye

Phase transitions on dehydration of transition metal tartrates
G. Gonzaléz-Silgo

Tetragonal to cubic phase transition in $Sr_{0.75}Ba_{0.25}HfO_3$
A. López-García

Oxygen-plasma treatment of sol-gel-derived lead zirconate titanate thin films
Cheol Eui Lee

Cyrstallographic analysis of tungsten-bronze structured ceramics: Phase stability and lattice energy
S.-H. Cho

Effect of excess Pb level on the grain growth speed and composition of $Pb_{1+y}(Zr_{0.3}Ti_{0.7})O_3$ thin films
D.P. Chu

Mossbauer effect and X-ray studies of the phase transitions in $K_2Fe(SO_4)_2.nH_2O$ (n=2,4,6)
H. Nida

Temperature dependence of order parameters in the antiferroelectric phases of perovskite $PbHfO_3$
H. Fujishita

Structural change of the surroundings of K^+ in K_2ZnBr_4 crystals on the monoclinic-orthorhombic phase transition
H. Kasano

Phase transitions and the structure of the new triclinic phase of relaxor La-modified $Pb(Zr_{0.65}Ti_{0.35})O_3$ by high-resolution neutron diffraction
H. Liu

Phase transition of $Pb(Yb_{1/2}Nb_{1/2})O_3$ as the Ba^{2+} substituting in A-site
H.S. Kim

AFM analysis of $(Pb,La)TiO_3$ ferroelectric thin film prepared by RF magnetron sputtering technique at room temperature
J.L Zhu, D.Q. Xiao, J.G. Zhu, and L. Shen

Ferroelectric properties of deuterated glycine phosphate
J. Nayeem

Incommensurate modulation in $(Sn_{55}Pb_{45})_2P_2Se_6$ by inelastic neutron scattering
J. Hlinka

Characterization by X-ray diffraction, thermal analysis and Raman spectroscopy of the system $LiNH_4SO_4$-$LiKSO_4$
J. Mata

Phase stability near morphotropic phase boundaries of $Pb(Yb_{1/2}Nb_{1/2})O_3$-$PbTiO_3$ solid solution
K.V. Im, H. Lim, H.S. Kim, K.S. Koh, and W.K. Choo

The crystal structure of $BaBi_4Ti_4O_{15}$
Ma. E. Fuentes

The structure of sodium nitrite embedded in porous matrix
S.B. Vakhrushev

Clusters in real and insipient model ferroelastics
K. Knorr, Y.F. Markov, and E.M. Roginskii

FERROELECTRIC MATERIALS PROCESSING

PZT piezoelectric ceramics toughened by dispersed coarse grains
X.M. Chen

Preparation of Zr-rich $Pb(Zr,Ti)O_3$ films by sol-gel technique
T. Fujii

Polymeric precursor synthesis of barium titanate
J.E. Rodríguez-Páez, C.F. Villaquirán, and A. Caballero Cuesta

Texture and microstructure control in $(SrBi_2Nb_2O_9)_{1-x}(Bi_3TiNbO_9)_x$ ceramics
A. Moure

Pb-based films prepared by a simple sol-gel process
A.L. Ding

Effect of crystallization techniques on the microstructure and electrical properties of sol-gel barium stron-

IMF-10 PAPERS

tium titanate films
A.S. Sigov

Structure and properties of donor doped barium titanate prepared by citrate process
B.D. Stojanovic

Positive temperature coefficient properties of $(Sr_{0.2}Ba_{0.8})TiO_3$ prepared by microwave sintering technique
I.-N. Lin

Low temperature sintering of PMN ceramics by doping with SrO
C. Feng

Preparation and electrical properties of $(Bi,La)TiO_3/Pb(Zr,Ti)O_3/(Bi,La)TiO_3$ multiplayer thin films by a chemical solution deposition method
D. Bao

Effect of solvent on the crystallization behavior of $(Sr,Ba)Nb_2O_6$ thin films prepared by metallorganic decomposition
D.G. Lee

Influence of microstructure on physical properties of PT porous ceramics
E. Dimitriu

Structural, dielectric and ferroelectric properties of Nb-doped PZT thin films produced by oxide precursor method
E.B. Araújo

Towards smaller particle size in ferroelectric relaxors
B. Dkhil

Properties of an electro-rheological fluid using ferroelectric bismuth titanate ceramic powders
M.E. Mendoza

Preparation of B-site ordered complex perovskite $SrYb_{0.5}Nb_{0.5}O_3$ by amorphous citrate process
K.S. Koh

X-ray study and dielectric properties of Se-substituted $Pb(Yb_{1/2}Nb_{1/2})O_3$ ceramics
J.-H. Kim

X-ray and dielectric studies of Fe- and Nb-substituted $Pb(Mg_{1/2}W_{1/2})O_3$ ceramics
J.-H. Kim

The effect of $Pb(Mg_{1/2}W_{1/2})O_3$ substitution on the dielectric properties of $Pb(Yb_{1/2}Nb_{1/2})O_3$ ceramics
J.-H. Kim

Preparation and properties of PZT thick film on alumina substrate with $Pb_2RuO_{6.5}$ electrode
J. Holc

Influence of doping on the field induced intrinsic response in PZT ceramics
J.-T. Reszat

Transparent PZT thick films prepared by aerosol deposition method
J. Akedo

Processing and properties of $xBiScO_3$-$(1-x)PbTiO_3$ perovskite ceramics
K. Yuse

Effects of annealing conditions on crystallization of hexagonal manganite films
K. Suzuki

Enhanced retention characteristics of $Pb(Zr,Ti)O_3$ capacitors by surface treatment
K.-M. Lee

Effect of grain growth on PZT properties
L.A. Celi, A.C. Caballero, M. Villegas, J. de Frutos, and J.F. Fernández

Ferroelectric properties of grain-oriented $SrBi_2Nb_2O_9$-based ceramics
M. Avdeev

Synthesis and characterization of the $(1-x)LaCrO_3$ - $xPbTiO_3$ solid solution system
Z.G. Ye

$La_{1-x}Sr_xMnO_3$ $(0.33 \le x \le 1.0)$ perovskite: Structure, chemical analysis, resistivity, and magnetization
M. Valkeapää

Synthesis and properties of lead scandium niobate solid solution containing rare earth elements
M. Dambekaine

Dielectric and surface morphological studies of rapidly quenched ferroelectric oxides
M. Takashige

Patterning properties of PZT thick films made by aerosol deposition
M. Lebedev

Dielectric characteristics and microstructure evolution of $Sr_{0.7}Ba_{0.3}Nb_2O_6$ ceramics at different Nb_2O_5 content
S.-H. Cho

Effect of heat treatment conditions on the electrical properties

IMF-10 PAPERS

of y-doped $BaTiO_3$ prepared by chemical coprecipitations
N.M. Ghoneim

Effect of initial particle size and distribution of piezoelectric properties and heating behavior of piezoelectric transformer
S.-K. Kwon, D-H. Seo, and K.-H. Hur

Influence of secondary phases on microstructural evolution of PZT-based ceramics
T. Jardiel

Microwave sintering PZT piezoelectric ceramics
W.-C. Lee, K.-S. Liu, C.-S. Chen, and I.-N. Lin

Effect of Y_2O_3 dopants on the electrical properties of $BaTiO_3$ materials
W.-C. Yang

The role of TiO_2 and WO_3 in improving the processing behaviors of bismuth-based ceramics
C. Wang

Sol-gel preparation of lead zirconate titanate ceramics fibers
Z. Mei

RELAXOR FERROELECTRICS

Relaxor properties of $KNbO_3$ thin films
S. Chattopadhyay

A Raman scattering study in relaxor $Pb(Zn_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ solid solutions
M. Iwata

Experimental determination of instantaneous ionic-pair displacement-correlation of relaxor PMN
N. Takesue, Y. Fujii, and H. You

Preparation and electrical properties of PZN-based thin films by metallorganic decomposition
H. Fan

Dielectric and Brillouin spectroscopy of the relaxor ferroelectric lead scandotantalate
S.G. Lushnikov

Dielectric spectroscopy of $Pb(Mg_{1/3}Nb_{2/3})O_3$ - $PbTiO_3$ relaxor ferroelectrics
A.A. Bekov and Z.-G. Ye

Dynamic linear and nonlinear dielectric response of relaxor ferroelectrics
A. Levstik

Chemical order and relaxor properties in the solid solution $Pb_{1-x}Bi_xMg_{(1+x)3}Nb_{(2-x)3}O_3$
A.M. Castagnos

Influence of synthesis process on the AC response of PZLT (8/65/35) ferroelectric ceramic systems
A. Peláiz Barranco

Distribution of the relaxation times of relaxor PLZT ceramics
J. Banys

Dielectric properties of Ba-based layered relaxors
A.L. Kholkin

Glassy-like dielectric spectrum behavior in PMN-PZT solid solution
A. Khodorov

Some TTB-type lead-free relaxor ferroelectrics
A. Simon

First principles-based studies of cation ordering in relaxor ferroelectrics
B.P. Burton

Relaxors as highest-K materials for multilayer and thin film capacitors
C. Hofer

Structural study of the relaxor compound $Pb_2(ScNb)O_6$: Evidence of an antiferroelectric order
Ch. Muller

Phase transitions in relaxor $Pb(Sc_{1/2}Nb_{1/2})O_3$ ceramics
B. Hilczer

Field cooled zero field heated and zero field heated dielectric behaviors of $(PbMg_{1/3}Nb_{2/3}O_3)_{0.33}$ single crystals
V. Hugo Schmidt

Diffuse neutron scattering study of a disordered perovskite $Pb(Zn_{1/3}Nb_{2/3})O_3$ crystal
D. La-Orauttapong

Property of lead magnesium niobate-lead titanate single crystal near the morphotropic phase boundary
D. Sun

Dielectric and piezoelectric properties of PZT-PMN multilayer thin films
D. Fu

Acoustic emission and phase hardening in $Pb(Mg_{1/3}Nb_{1/3})O_3$ crystals
E. Dul'kin

Transparent $Pb(Ni_{1/3}Nb_{2/3})O_3$:

IMF-10 PAPERS

$PbZrO_3$:$PbTiO_3$ relaxor ferroelectrics for electromechanical applications
A.S. Bhalla

Investigation of a peculiar relaxor ferroelectric: $Na_{0.5}Bi_{0.5}TiO_3$
J. Kreisel

The growth of relaxor-based high T^c PMN-PSN-PT single crystals
H. Luo

Analysis of relaxation time distribution of relaxor ferroelectrics by inverse integral transformation
H. Kim

Dielectric behavior of $Pb_{0.76}La_{0.16}(Zr_{0.53}Ti_{0.47})O_3$ with diffuse phase transition
A. Peláiz Barranco

Correlation between cation vacancy and phase transition behavior in La-modified $Na_{0.5}Ba_{0.5}TiO_3$ (NBT)
J.Y. Yi

Dielectric and pyroelectric properties of relaxor strontium barium niobate along the axes perpendicular to the polar C-axis
J.-H. Ko

Monoclinic structures in morphotropic high piezoelectric PMN-PT and PZN-PT compounds
J.-M. Kiat

On application of $PbMg_{1/3}Nb_{2/3}O_3$ - $PbZn_{1/3}Nb_{2/3}O_3$ - $PbNi_{1/3}Nb_{2/3}O_3$ solid solutions in tuneable capacitors
G. Grinvalds

Transmission electron microscopy of (40)PIN:(60)PMN ceramics
K.Z. Baba-Kishi

Correlation radius of polarization in ferroelectric relaxors
M.D. Glinchuk

Phase diagram of the $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$ - PbO system
Z.-G. Ye

Dielectric anomalies in relaxor ferroelectric thin films
M. Tyunina

Dielectric Fourier spectroscopy in relaxor and normal ferroelectric thin films
M. Tyunina

The novel relaxor ferroelectrics: $Cd_2Nb_2O_7$-based pyrochlores
N.N. Kolpakova

Polydispersive dielectric manifestation of increasing polar clusters in $Cd_2Nb_2O_7$ relaxor ferroelectrics
N.N. Kolpakova

The structure and dielectric properties of $Pb_{1-x}Mg_{1/3}Nb_{2/3}O_{3-x}$ and $Pb_{1-x}Sc_{1/2}Ta_{1/2}O_{3-x}$ obtained under high pressure
N.P. Vyshatko

Dielectric and piezoelectric properties of lead indium niobate-lead titanate single crystals with high Curie temperature near the morphotropic phase boundary
N. Yasuda

Morphotropic phase boundary in $Pb(Fe_{2/3}W_{1/3})O_3$ - $PbTiO_3$ system
L. Mitoseriu

The system of BaO_3-$BaZrO_3$-$ZaTiO_3$ comparison between Ba- and Pb-based relaxors
Ph. Sciau

Delay time in low-temperature phase of relaxors
R.F. Mamin

Semi-phenomenological model of relaxor ferroelectrics
R.F. Mamin

E-field dpendent structure-property relations of MPB PZT ceramics: Perspective of the monoclinic phase
Ruyan Guo, Beth A. Jones, Edward Alberta, L. Eric Cross, B. Noheda, D.E. Cox, and G. Shirane

Simple versus cooperative relaxation in complex correlated systems
S. Lanceros-Méndez

Phase diagram for cation ordering in $A(B'XB''_{1-x})O_3$ relaxors
S. Lapinskas

Relaxor ferroelectric perovskites: Temperature evolution of atomic and magnetic structures
S.A. Ivanov

Dielectric properties of complex perovskite $Pb[(Zn_{1/3}Ta_{2/3})_{0.8-x}Mg_{1/3}Nb_{2/3})XTi_{0.2}]O_3$ ceramics
N.-K. Kim

High temperature relaxor materials
S. Kuharuangrong

Dielectric, hypersonic and domain anomalies of relaxor-based single crystals $(PbMg_{1/3}Nb_{2/3}O_3)_{1-x}(PbTiO_3)_x$
V. Hugo Schmidt

Anomalies of polarization kinetics in relaxor ferroelectrics
V.V. Gladkii

Evolution of fractal

IMF-10 PAPERS

nanodomain structures in relaxor X/65/35 PLZT ceramics
V. Ya. Shur

Nature of high electric constant in relaxor ferroelectrics
Y. Poplavko

Relaxation of polystyrene below the glass transition
Y. Takagi

Processing and properties of relaxor-type ferroelectric $Pb(Sc_{1/2}Nb_{1/2})O_3$-$Pb(Ni_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ perovskite ceramics
Y. Shimojo

Dielectric properties of $K_{1-x}Li_xTa_{1-y}Nb_yO_3$:Cu crystals
S.B. Vakhrushev

Quasistatic linear and nonlinear field-cooled dielectric response in relaxation materials
Z. Kutnjak

Aging mechanisms in relaxor ferroelectrics
Eugene V. Colla, Lambert K. Chao, and M.B. Weissman

THIN FILMS I

Properties of ferroelectric $Pb(Zr,Ti)O_3$-SiO_2-B_2O_3 glass-ceramic thin film derived by sol-gel method
X. Wang

Microstructure and local ferroelectric properties of non-c-oriented epitaxial $SrBi_2Ta_2O_9$ thin films
A. Pignolet

Influence of surface phenomena on the impedance response of PZT thin films
J.-H. Park, K.-S. Lee, and B.-C. Choi

Structural and electric properties of $PbYb_{1/2}Ta_{1/2}O_3$ thin films deposited by pulsed laser deposition
J. Lee

Ferroelectric memory window in strained $(Ba_{0.5},Sr_{0.5})TiO_3$ thin films grown on Si
J. Lee

Very large dielectric response of thin ferroelectric films with the dead layer and the " capacitor" model
A.M. Bratkovsky

Low temperature growth and reliability of SBT films for RAM memories
P. Ramos

The dependence of the piezoelectric property of $Pb(Zr_{0.58},Ti_{0.42})O_3$ (PZT) thin films on the deposition temperature
H.W. Song

Peculiarities of dielectric properties of PZT and BST thin films in the range of low and infralow frequencies
A.V. Shil'nikov, R.A. Laletin, A.I. Burkhanov, S.A. Satarov, A.S. Sigov, and K.A. Vorotilov

Influence of oxygen flow on crystallization of $LiNbO_3$ thin films
B.D. Stojanovic

Study of ferroelectricity in glassy $Bi_{1.8}Pb_{0.3}Sr_2Ca_2Cu_{3-x}K_xO_z$
A.A. Bahgat

Photoactivated Ca-$PbTiO_3$ solutions for the preparation of films at low temperatures
A. González. R. Poyato, L. Pardo, and M.L. Calzada

Was the intrinsic coercive field observed in PVDF ferroelectric films?
A.M. Bratkovsky

Domain nucleation in ferroelectric thin films with dead layer
A.M. Brarkovsky

Effect of lead content on the microstructure and electrical properties of sol-gel PZT thin films
A.S. Sigov

Obtaining and ferroelectric properties of thin films of lead titanate on monocrystal silicon substrate
A.S. Sidorkin

Fatigue behavior in seeded lead zirconate titanate thin films studied by atomic force microscopy
Aiying Wu

Microstructure and properties of $Pb(Zr,Ti)O_3$ (PZT) thin films having different thickness
J. Hong

Retention characteristics of $Bi_{3.26}La_{0.75}Ti_3O_{12}$ films deposited using pulsed laser deposition
B.S. Kang

Self-polarization in PZT films
K.W. Kwok

Influence of Pt bottom electrodes of lead scandium niobium titanate thin films
B.J. Kuh

Influence of surface stress on phase transition properties of ferroelectric

IMF-10 PAPERS

thin films
C.L. Wang

"Aurivillius phases" ferroelectric thin films by metallorganic decomposition
J.P. Mercurio

Investigation of leakage current in $Si/Pt/SrBi_2Ta_2O_9/Pt$ sputtered thin films
Ch. Muller

Ferroelectric properties in nonstoichiometric $SrBi_2Ta_2O_9$ ceramics
C. Cheon

Low-temperature preparation of PZT thin films using high-pressure crystallization (HPC) process
C.-H. Lu and Y.-C. Sun

Retention property analysis of epitaxially grown $YMnO_3/Y_2/Si$ capacitor
D. Ito

Influence of the oxygen stoichiometry on the structural characteristics and ferroelectric properties of laser-ablated $BaTiO_3$ thin films
D. Cui

A sample sol-gel technique of conductive $LaNiO_3$ film electrodes for integrated ferroelectric thin film devices
D.-H. Hong

Metallorganic chemical vapor deposition of $(Ba,Sr)RuO_3$ conductive oxide film for $(Ba,Sr)TiO_3$
D.H. Hong

Preparation of $Sr_2(Ta,Nb)_2O_7$ films by the sol-gel technique for ferroelectric gate structures
E. Tokumitsu

Dielectric properties and interface phenomena in $0.5PbTiO_3$-$0.5SrTiO_3$ film deposited on Si, TiN/Si, RuO_2/Si and RuO_2/TiN/Si substrates by RF ion sputtering
J.M. Sigueiros

Characterization of $(Ba,Sr)RuO_3$ bottom electrode deposited by liquid delivery metallorganic chemical vapor deposition for $(Ba,Sr)TiO_3$ integration
S.-G. Yoon

Dielectric properties of $Bi_2Ti_2O_7$ films grown by APMOCVD
H. Wang

C-V characterization of PZT/$Bi_2Ti_2O_7$ films grown by chemical solution deposition
H. Wang, S.W. Wang, S.X. Shang, Y. Hou, X. Xu, M.Wang, and J. Yu

Fabrication of $BaTiO_3$ P-N junctions by laser molecular beam epitaxy
H. Lu, S. Dai, F. Chen, Y. Zhou, and G. Yang

Influence of lead oxide excess on ferroelectric properties of lead zirconate titanate thin films
I.P. Pronin

The preparation and properties of metallic $LaNiO_3$ thin films derived from a diol-based sol-gel process
I.B. Shim

Frequency agile BST thin films for RF/microwave applications
A. Safari

Optical and electrical properties of $PbZr_xTi_{1-x}O_3$ and $LaNiO_3$ thin films for uncooled infrared focal plane arrays
J.H. Chu

Crystallographic orientation dependence of ferroelectric fatigue in $Bi_{4-x}La_xTi_3O_{12}$ films
J.K. Lee

Structural aspects in epitaxial thin film heterostructures of relaxor ferroelectric perovskites
J. Levoska

TEM characterizationof electrolytic separated specimens of strontium bismuth tantalate ferroelectric thin films
J. Ricote

High-pressure sputtering of $PbZr_{0.52}Ti_{0.48}O_3/SrRuO_3$ thin films on $SrTiO_3$ substrates
J. Rodríguez Contreras

Preparation and characterization of $PbTiO_3/(Pb,La,Ca)TiO_3/PbTiO_3$ multilayer thin films
J.G. Zhu, G.L Yu, and D.Q. Xiao

Electrical model for thresholdless antiferroelectric liquid crystal cells
J.M.S. Pena

Tunable photoluminescence in sol-gel processed $SrTiO_3$:Pr
J.Y. Hwang

Electrical properties of $Bi_{4-x}La_xTiO_{12}$ thin films
Gun-Eik Jang

Ferroelectric properties of Mn and Ta doped $Bi_3LaTi_3O_{12}$ thin films
J.H. Jeong

IMF-10 PAPERS

The textured $PbTiO_3$ - Al_2O_3 composite films prepared by the sol-gel method
J. Bursik

Characterization and elimination of PZT thin films damaged by dry etching process
J.K. Lee, Y. Park, C.J. Kim, Y.K. Lee, I. Yi, and I. Chung

Tunnel diode properties, large photovoltaic and memory effects of $Pb(Ti,Zr)O_3/SrTiO_3$
M. Okano

A study on GaAs metal-ferroelectric-insulator-semiconductor structure using Gd_2O_3 as an insulator
J.-K. Yang

Memory effect in ferroelectric gate field effect transistors using 0.1μm silicon-on-insulator substrates
K. Aizawa

Physical modeling of the effect of dipolarization field on the hysteresis curves of ferroelectric film capacitors
K.W. Lee

Thin film effect in the ferroelectric $PbTiO_3$
K. Wasa

Residual stresses and electric properties of laser ablated PZT thin films for microactuators
L. Zhang, M Ichiki, J. Wan, and R. Maeda

Size effects in static and dynamic dielectric susceptibility of ferroelectric thin films and multilayers
V.A. Stephanovich

The effect of thermal annealing of PZT thin films prepared by sol-gel
M.H. Bae

Effects of introduction of initial nuclei on physical properties of $(Pb,La)(Zr,Ti)O_3$ films crystallized from amorphous conditions
M. Kobune

Effect of low temperature processing on microstructure and ferroelectric properties of PZT thin films
M.-C. Kim

Temperature dependence of electrical properties for $SrBi_2Ta_2O_9$ thin films
H. Maiwa and N. Ichinose

Effects of thickness on the electrical properties of metallorganic chemical vapor deposited $Pb(Zr,Ti)O_3$ (25nm-100nm) thin films on $LaNiO_3$ buffered Si
C.H. Lin, P.A. Friddle, C.H. Ma, and Haydn Chen

PHASE TRANSITIONS AND CRITICAL PHENOMENA

Heywang-Jonker theory for PTCR in Er-doped $BaTiO_3$ ceramics
L. Mitoseriu

Staggered and homogeneous susceptibilities in $NH_4H_2PO_4$-type antiferroelectric crystals
K. Wada

Ferroelectricity of ABO_3 perovskite crystals and electronic polarizability
W. Kinase

Ferroelectric phase transition in layered perovskite $SrBi_2Ta_2O_9$
A. Onodera

Electronic structure and phase transition effects in some ABO_3 materials
F. Karadag

MIE scattering and domain structure of ferroelectrics
F. Karadag

Stability and ferroelectricity of antiphase boundaries in $SrTiO_3$
A.K. Tagantsev

Striction-mediated attraction of the domain walls and discontinuity of commensurate-incommensurate transitions
A.P. Levanyuk

Some features of formation of domain structures in ferroelectrics having limited form at the phase transition
B.M. Darinskii, A.P. Lazarev, and A.S. Sidorkin

Domain structure in the films of magnetoelectrics with free charge carriers
B.M. Darinskii, A.P. Lazarev, and A.S. Sigov

Domain structure in the plate at improper phase transition of the second kind
A.P. Lazarev

Structure of domain boundaries appearing at the phase transitions in pyroelectrics
B.M. Darinskii, A.P. Lazarev, and A.S. Sigov

Domain structure of ferroelectrics in the external electric field
B.M. Darinskii, A.P. Lazarev, and A.S. Sigov

IMF-10 PAPERS

Phase transition in a system of the casually distributed dipoles
B.M. Darinskii, A.F. Klinskikh, and A.S. Sigov

Temperature anomalies of anisotropy degree of crystal's characteristics at phase transitions
B. Andriyevsky

Theory of ferrotoroic phase transition sequence in nickel bromine boracite $Ni_3B_7O_{13}Br$
D.G. Sannikov

Modeling of nonlocal elastic field in polarized ferroelectrics
E. Klotins

Phase transition in $C_8H_{20}XN{\bullet}2CH_4N_2S$ (X=1, Br, Cl)
H. Ishigami

Theory of nonlinear response in transitions from smectic A to tilted smetic phases
Hiroshi Orihara

Influence of shear stresses on KDP type ferroelectrics
A.P. Moina

Structural study of the modulation of the four-fold phase above and below the T_8 temperature in 2% brominated BCCD
J.L Ribeiro

Order parameter-entropy relation in paraelectric-incommensurate phase transition in Rb_2ZnCl_4
J.M. Martin-Olalla

Study of electron density in ferroelectric Li-doped ZnO at 19 K by maximum entropy method
Keiji Yoshio

Surface relaxation and finite-size effect in ferroelectric perovskites
K. Ishikawa

The peculiarities of DC and AC field dependent relaxor/ferroelectric properties of some disordered crystals
L.S. Kamzina

Phase transitions and pressure-temperature phase diagrams of ammonium containg cryolites and elpasolites
M.V. Gorev

Origin of impurity induced ferroelectricity in quantum paraelectrics
O.E. Kvyatkovskii

Phase transitions in the $K_2Cd_2(SO_4)_3$,$Mn_2(SO_4)_3$, $Ti_2Cd_2(SO_4)_3$, $Rb_2Cd_2(SO_4)_3$ langbeinites and in the solid solutions on their basis
R. Vlokh

Phonon density of states reconstruction of the temperature dependence of heat capacity ferroelectrics $Sn_2P_2Se(S)_6$ crystals
V.M. Rizak, I.M. Rizak, O.I. Lendyel, and V.V. Maslyuk

Dielectric response in moderate doped $K_{1-x}Li_xTaO_3$
S.A. Prosandeev

Low frequency dielectric response of dilute $K_{1-x}Li_xTaO_3$
S.A. Prosandeev

Structural change of $Cu(HCOO)_2$, 4 H_2O associated with the antiferroelectric phase transition
T. Omura

First-principles calculation on phase transition and isotope effect in H_2SQ
T. Ishimoto

Classical and quantum nonlinear dynamics of hydrogen-bonded ferroelectric-like systems
T.R. Tazieva

Cluster model of induced ferroelectric and glass-like phase transitions: Effect of impurity pairs
V.S. Vikhnin

Induced phase transitions of functinal ceramics and their applications
Y.L. Wang

Ferroelectric phase transition in perovskite oxide $CdTiO_3$
Y.J. Shan

Two-dimensional order-disorder phase transition in the layered perovskite NH_4AlF_4
E. Palacios

Orientational phase transitions of $(CH_3)_4NClO_4$ in two and three dimensions
R. Burriel

Low frequency Raman spectra and the incommensurate phase in quartz
T. Shigenari

Theoretical temperature - pressure phase diagrams for TMATC-M family crystals
D.G. Sannikov

Born effective charges and the origin of ferroelectricity in $PbTiO_3$ crystals
A.V. Turik

Study of the electronic polarizabilities, the spontaneous

IMF-10 PAPERS

polarization and the geometric isotope effect in KH_2PO_4 (KDP)
B. Er-raha

Theory of isotopic effect in displacive ferroelectrics
O.E. Kvyatkovskii

Thermodynamics of KDP family hydrogen bonded ferroelectrics: Role of tunneling effects
R.R. Levitskii

PYROELECTRICITY AND THERMAL PROPERTIES

Thermally optimized linear pyroelectric array
W.M. Fung

Pyroelectricity and mechanisms of conductivity in $PbZr_{0.53}Ti_{0.47}O_3$ + 2.5 mol% La_2O_3 ferroelectric ceramics
A. Peláiz Barranco, F. Calderón Piñar, O. Pérez Martinez, and J.A. Eiras

Thermostimulated electron emission in the paraelectric phase of TGS crystals heated up with high rate
A.A. Sidorkin

Temperature stability of pyroelectric parameters of multicomponent electroceramics
D. Czekaj

Pyroelectric coefficient in ferroelectric thin films and multilayers
M.D. Glinchuk

Measuring the residual absorption of $LiNbO_3$ from thermo-piezoelectric resonance
F. Bezançon, M. Maglione, J. Mangin, and P. Strimer

Study of the Ca effect in the cubic-tetragonal transition of $Ca_{1-x}Sr_xTiO_3$ by specific heat measurements
M.C. Gallardo

Properties of ferroelectric two-phase ceramics with slightly different compositions
J. de Frutos, A.M. González, M.E. Villafuerte, and M.J. Melcón

Influence of electric field on commensurate-incommensurate phase transition in Rb_2ZnCl_4: A calorimetric study
J.M. Martín Olalla

Pyroelectric and dielectric studies in Nd^{3+} -BSKNN
K. Sambasiva

Pyroelectric properties in samarium modified BSNN
K. Sambasiva

Ferroelastoelectric switching in barium-titanate films
P. Günter

Experimental study of the cubic-tetragonal phase transition in perovskites: Evidence of Landau behavior near the tricritical point
J. del Cerro

Scanning thermal microscopy using pyroelectric sensors
W.-M. Lin

Relaxation of the macroscopic polarization in Rochelle salt crystals stimulated by applying a DC electric field
S.N. Drozhdin

A simple thermal and electrical model of an infrared pyroelectric detector using the SPICE program
P. Ramos, F.J. Meca, J. Mendiola, and E. Martin

Thermal and optical properties of $[N(C_2H_5)_4]_2ZnCl_4$: crystals at phase transitions
R. Poyato

Pyroelectric characterization and applications of self-organized $LiNbO_3$ inversely polarized structures in new generations of pyroelectric devices
S.L. Bravina

Pyroelectric manifestation of self-organization phenomena in $LiNbO_3$ single crystals under deep cooling
N.V. Morozovsky

Complete pyroelectric characterization of thin film PZT/Si structures
S.L. Bravina, E. Cattan, N.V. Morozovsky, and D. Remiens

Influence of a “thermoelectric” treatment on the pyroelectric properties of pure and doped TGS crystals
S.N. Drozhdin

Phase transformations and thermal effects of mechanically activated $BaCO_3$-TiO_3 systems
V.B. Pavlovic, T. Sreckovic, V.P. Pavlovic, Z. Marinkovic, B. Stojanovic, and M.M. Ristic

Magnitude and sign on the piezoelectric coefficient determined by the interferometric technique
S. Muensit

Study on laser ablated Nb-modified lead zirconate tin titanate

IMF-10 PAPERS

antiferroelectric thin films
S.S.N. Bharadwaja and S.B. Krupanidhi

Pyroelectric studies in a homologous series of achiral mesogenic mixtures of polymer-monomer
E.A. Soto Bustamente, R. Vergara-Tolosa, P.A. Navarrete-Encina, and W. Haase

SPECTROSCOPIES AND MECHANICAL PROPERTIES

Structure and phase transitions in ferroelastic chloroantimonate (V) crystals
R. Jakubas

Deflection of light and phase transition in AHSe crystals
Z. Czapla

Isotope effect and phase diagram in $Tl(H_{1-x}D_x)_2PO_4$
K.-S. Lee

Phase diagram of magnetoelastic crystals $CaDy_{1-x}Gd_x(MoO_4)_2$
N. Nesterenko

Influence of y and electron irradiation on parameters of ferroelectric phase transition in the $(CH_3)_2NH_2Al(SO_4)_2 \cdot 6H_2O$ crystals from the ultrasonic data
A.Ja. Yachkouski

The evidence of precursor effect and intermediate phase in $RbMnCl_3$
Y.C. Cho, H.-W. Kim, H.-J. Lee, J.-Y. Hwang, and S.-Y. Jeong

Phase transition of $SrTi_{18}O_3$ studied with Raman scattering
M. Kasahara

Infrared spectroscopy and thermal analysis of $Ba(Mg_{1/3}Nb_{2/3})O_3$ hydrothermal ceramics
A. Dias

New features of the morphotropic phase boundary in the $PbZrO_3$-$PbTiO_3$ system: A Raman spectroscopy study
A.P. Ayala

Investigation on synthesis and optical properties of ceramics with layer perovskite structure
A. Lisinska-Czekaj

Features of behavior of ammonium ions intrinsic in the mixed KADP crystals
A.V. Van'kevich, Yu.A. Popkov, and I.A. Taranova

Micro-Raman mapping study of the phase transition in $K_2Mn_2(SO_4)_3$
A. Sakai

Local order in $LiNbO_3$ in the paraelectric and the molten states
B. Moulin

Optic phonons in mixed $(Sn_{0.45}Pb_{0.55})_2Se_6$ in incommensurate crystals by infrared and Raman spectroscopy
E. Buixaderas

Brillouin scattering study of ferroelectric $SrTi(^{18}O_x{}^{16}O_{1-x})_3$
Y. Tsujimi

Structural modulation in the $A_3B_2X_9$ layered compounds
I.P. Aleksandrova

On the mixed phase regions of the BA_xBP_{1-x} phase diagram as a binary eutectic phase diagram
J.A. Mendes

Order-disorder behavior in strongly deuterated betaine arsenate
J.A. Moreira

Neutron diffraction and Raman scattering studies of $Pb(Zr_xTi_{1-x})O$ ceramics
J. Frantti

Low-temperature phase transition in SBN crystals
P.T.C. Freire

Initial process of the ferroelectric B_2 soft mode of KDP studied by impulsive stimulated Raman scattering
J. Kano

Raman spectra of GPI (glycine phosphate) single crystals
K. Abe

Raman spectra in the proton ordered XI phase of KOH doped ice single crystals
K. Abe

Study of the elastic properties of $Cs_{1.5}Li_{1.5}H(SO_4)_2$ superionic crystals by Brillouin scattering
K. Lapsa

Possible incipient antiferroelectricity in double perovskites $La(2-x)/3Li_xTiO_3$ ($0.1 \leq X \leq 0.5$), $La_{1/3}NbO_3$
M.A. Laguna and M.L. Sanjuán

Raman spectrocsopy as a probe of defects in $LiNbO_3$ crystals
M.D. Fontana

RF sputtered PZT thin films investigated by Raman spectroscopy
M.J.M. Gomes, D. Czekaj, Z. Surowiak, and M.F. Kupriyanov

Up-conversion luminescence in the $Bi_{12}SiO_{20}:Er^{3+}$ piezoelectric crystal
M.O. Ramírez

IMF-10 PAPERS

FT NIR Raman studies of ferroic phase transitions in B - $LiNH_4SO_4$ and $C_5H_5NHIO_4$ crystals
M. Polomska, J. Wolak, and Z. Pajak

Ferroelastic-superionic phase transition in $(NH_4)_3H(SeO_4)_2$ single crystals: FT NIR Raman, DSC and ferroelastic domain studies
L. Szczesniak

Raman studies of lithium tantalate ceramics and related solid solutions with tungsten oxide
P. Bourson, B. Elouadi, E. Lofti, A. Ridah, R. Mouras, and G. Kugel

Effect of Li-dipoles in $K_{1-x}Li_xTa_{1-y}Nb_yO_3$: A Raman study
P. Galinetto

High resolution Brillouin spectroscopy and determination of elastic properties of ferroelectrical and piezoelectric films
R.J. Jiménez Riobóo

Infrared active soft mode in $SrBi_2Ta_2O_9$
S. Kamba

Photo induced polaronic absorption in pure and Fe doped $Ba_{0.77}Ba_{0.23}TiO_3$ crystals
S. Kapphan

Terahertz time domain spectroscopy of phonon polarization in ferroelectric bismuth titanate
S. Kojima, N. Tsumura, M.W. Takeda, and S. Nishizawa

Analysis of A_1(1TO) soft phonon modes in single crystal lead titanate ($PbTiO_3$)
Hyun M. Jang

Infrared and micro-Raman investigation of $SrTiO_3$:Bi ceramics
T. Ostapchuk

Soft mode behavior in $Sr_{1-x}Ba_xTiO_3$ (x = 0, 0.1, 1) films
T. Ostapchuk

Infrared and Raman spectroscopy of $PbZrO_3$ single domain crystals
T. Ostapchuk

On the light scattering in some crystals with triple period commensurate
T.A. Aslanyan

Study of soft mode behavior in $CaTiO_3$ by infrared reflectance
V. Zelezny

Soft modes condensation in Raman spectra of Rb_2KScF_6 elpasolite
A.S. Krylov

Raman scattering study of the cubic to monoclinic phase transition in $(NH_4)_3ScF_6$ cryolite
A.S. Krylov

Relations between the oscillator strength of Raman modes and dielectric constants in single crystal $LiTaO_3$
Y.S. Yu

Determination of elastic constants in single crystal $Bi_{12}SiO_{20}$ by Brillouin scattering spectroscopy
Y.S. Yu

Brillouin scattering of strongly first order phase transition in $CsNO_3$
Y. Takagi

Raman scattering study of order-disorder phase transition in $ZrTiO_4$ single crystals
Y.K. Kim

Hydrogen bonds behavior in brominated betaine calcium chloride dihydrate
M.R. Chaves

Raman scattering in sol-gel derived $PbTiO_3$ films modified with Ca
Yu.I. Yuzyuk

Raman study of epitaxial $(Ba,Sr)TiO_3$/MgO thin films
Yu.I. Yuzyuk

Ultrasonic wave velocities in the crystals of A_2ZnCl_4: A=K, NH_4, Rb
Z. Tylczynski

Effect of hydrogen in ferroelectric $PbTiO_3$ crystals and $Pb(Zr,Ti)O_3$ thin films
M.S. Jang

Raman spectra in a ferroelectric $SrTi_{18}O_3$: Effect of electric field
K. Abe

Excited states as a probe of structural phase transitions in poliphenyl crystals
T. Shigenary

Optical characteristics of RF sputtered PZT-type thin films
D. Czekaj, Z. Surowiak, M.J.M. Gomes, M.I. Vasilevskiy, and M.F. Kupriyanov

EPR studies of the modulated low temperature phase of chromium-doped dimethylammonium gallium sulfate hexahydrate (DMAGaS)
G. Völkel

Solid state NMR studies of ^{23}Na IN $LiK_{1-x}Na_xSO_4$ mixed systems

IMF-10 PAPERS

S.H. Choh

Photoinduced centers in $PbZr_{1-x}Ti_xO_3$ single crystals
I.P. Bykov, M.D. Glinchuk, V.V. Laguta, S.N. Nokhrin, J. Rosa, L. Jastrabik, V. Smotrakov, and V. Eremkin

A density functional study of the complex nature of the hydrogen-bond network and mechanism of the antiferroelectric transition in squaric acid
J. Palomar and N. Dalal

Bisquaric acid: Unusual solid state NMR and theoretical preditctions for a phase transition
J. Palomar and N. Dalal

NMR study on $(CH_3)_2NH_2H_2AsO_4$
J. Hatori

Electron spin resonance of Fe^{3+} ions in ZnO single crystals
K. Matsuki

EPR of Gd^{3+} ions in $KSc(MoO_4)_2$ ferroelastic
M.P. Zapart

Synthesis, single crystal growth and thermodynamic and NMR of characterization of ^{17}O-labeled hydrogen bonded ferroelectrics
N.S. Dalal

Size effect in Mn^{2+} doped $BaTiO_3$ nanopowders studied by electron paramagnetic resonance and X-ray diffraction
G. Völkel

Investigation of the ferroelastic domain structure of TMCC means of nuclear magnetic resonance spectroscopy
D. Michel

Excitation of ESR signal by light in dye doped KDP
T. Hikita

Photo and thermally induced charge transfer in $SrTiO_3$ single crystals
V.V. Laguta, M.D. Glinchuk, R.O. Kuzian, S.N. Nokhrin, I.P. Bykov, J. Rosa, L. Jastrabik, and M. Karkut

Ferroelastic phase transition in $[P(CH_3)_4]_2MnBr_4$ by EPR of Mn^{2+} ions
W. Zapart

^1H-NMR on superionic conductor $Ti_3H(SO_4)_2$
Y. Matsuo

Small inverted domain on formation in stoichiometric $LiTaO_3$ single crystals using scanning nonlinear dielectric microscopy
Y. Cho

Recent researches of the copper centers in potassium tantalate single crystals
L. Jastrabik

Ferroelectric phase transition and twin structure by ^{133}Cs NMR in a C_8PbCl_3 single crystal
A.R. Lim, S.-Y. Yeong, and S.H. Choh

A study of the order-disorder mechanism of the phase transition in $KTa_{0.988}Nb_{0.012}O_3$ by the application of electric field
E. Bouziane, M.D. Fontana, and M. Ayadi

High temperature ESR investigation of the Mn(II) doped lithium tantalate and related compounds
A. Assani, G. Villenueve, M. Zriouil, and B. Elouadi

DIELECTRIC AND MICROWAVE PROPERTIES

Microwave dielectric properties $Ba_{6-3x}Eu_{8+2x}Ti_{18}$ (x=2/3) with Sm and Nd substituted for Eu
Y. Futamata

Acoustic and dielectric anomalies at ferroelectric phase transition in glycine phosphite
E.V. Balashova, V.V. Lemanov, and G.A. Pankova

Time-resolved and backward-wave oscillator submillimeter spectroscopy of some ferroelectric ceramics and thin films
A. Pashkin

Phase diagram and dielectric propertiess of mixed $Cs_{1-x}(NH_4)_xH_2PO_4$ crystals
A.I. Baranov

Influence of surface on the dielectric relaxation in TGS crystals
A.M. Solodukha

Induced phase transitions and dielectric relaxation in $Pb:SrTiO_3$, $Zr:SrTiO_3$ and $(Pb,Zr):SrTiO_3$
A.V. Sotnikov

The dielectric and pyroelectric properties of lithium potassium niobate ceramics
C.L. Wang

Pulse polarization inversion in TGS
T. Averty

The nature of dielectric dispersion in PLZT ceramics
E. Birks

Dielectric nonlinearity at phase

IMF-10 PAPERS

conversion in $SrTiO_3$ - $BaTiO_3$ solid solutions
E.P. Smimova

Microwave properties of tunable interdigitated capacitor fabricated on ferroelectric $Ba_{1-x}Sr_xTiO_3$ thin films
E.-K. Kim

Dielectric properties of the mixed system of $(Cs_{1-x}Rb_x)_2CdI_4$
F. Shimizu

Dielectric spectroscopy of ferroelectric strontium barium niobate
G. Garcia-Belmonte

The spatial distribution of the dielectric constant at the surfaces of potassium sodium tantalate niobate and potassium lithium tantalate niobate crystals
A.J. Agranat

Microwave dielectric properties of $(Pb_{0.4}Ca_{0.6})(Fe_{0.5}Ta_{0.5})O_3$ ceramics prepared by mechanochemical processing
E.S. Kim

Microwave dielectric properties of $Ba_{6-3x}Eu_{8+2x}Ti_{18}O_{54}$
H. Ohsato

Terahertz and infrared spectroscopic stufy on dielectric properties of $Bi_2(Zn_{1/2}Nb_{2/3})_2O_7$ for microwave application
H.-F. Cheng

Dielectric properties and phase transition in niobium substituted $Pb(YB_{1/2}Ta_{1/2})O_3$
H.J. Kim

Poling effect of dielectric and piezoelectric properties in PMWN-PZT ceramics
J.K. Hong

Properties of (40)PIN:(60)PMN ceramics
J. Wang, H.W. Chan, A.S. Bhalla, K.Z. Baba-Kishi, and C.L. Choy

Simultaneous measurements of latent heat and dielectric constant under electric field in the paraelectric-ferroelectric phase transition in $KD_2PO_4Ta_{1-x}Nb_{1-x}O_{1-x}$:Cu
F.J. Romero

Phase relation and dielectric properties of Bi_2O_3-ZnO-Nb_2O_5 based ceramics
J.S. Kim

Phase relation and microwave dielectric properties of BaO-Sm_2O_3-TiO_2 systems
J.H. Park

New dielectric properties of the TGS crystal influenced by transverse electric field
K. Cwikiel

Effect of B_2O_3.Li_2O on the microwave dielectric properties of $(Ca_{0.275}Sm_{0.4}Li_{0.25})TiO_3$ ceramics
K.H. Yoon

Microwave dielectric properties of $(1-x)(Mg_{0.93}Ca_{0.07})TiO_3$ - $x(Ca_{0.3}Li_{0.14}Sm_{0.42})TiO_3$ ceramics
E.S. Kim

Relaxation dynamics in amorphous and nanocrystalline ferroelectrics
L.N. Korotkov, A.A. Khodorov, S.V. Kashirski, and S.A. Konstantinov

Temperature hysteresis in sodium bismuth titanate ceramics
C.L. Wang

Dielectric hysteresis of $SrBi_4Ti_4O_{15}$ ceramics
C.L. Wang

Phase transitions in monoclinic RbH_2PO_4
M. Komukae

Crystal structure and ferroelectric properties in the mixed crystals $[(CH_3)_2NH_2]_3Sb_{2(1-x)}Bi_2xCl_9$ and $[(CH_3NH_2]_3Sb_2Cl_{9(1-x)}Br_{9x}$
M. Wojtas

Low-temperature dielectric anomalies in some new $SrTiO_3$ based impurity systems
P.A. Markovin

Microstructure and microwave dielectric properties of $(1-x)NdGaO_3$-$xCaTiO_3$ ceramics
M.-H. Kim

Dielectric and structure properties of change competing system YFe_2O_4
N. Ikeda

Interrelations of processes accompanied by charge transport in the area of ferroelectric surface near electrodes as at polarization and depolarization as well as with polarization reversal
P.V. Loginov and A.M. Savvinov

Dielectric dispersion in TEA_2MeCl_4 single crystals
P. Biskupski

Dielectric properties during the phase transition of $LiTaO_3$-SiO_2 glasses

IMF-10 PAPERS

S.J. Kim

Infrared and microwave dielectric spectroscopy of Bi-pyrochlores
S. Kamba

X-ray diffraction and dielectric properties of Fe^{3+} substituted $Pb(Yb_{1/2}Ta_{1/2})O_3$
S.C. Youn

Ferroelectric $Ba_{1-x}Sr_xTiO_3$ phase shifters under high power microwave
S.-F. Moon

Effect on dopant on the microwave dielectric properties of the ceramics in the $BaO-Sm_2O_3-TiO_3$ ternary system
T.J. Kim

Microwave dielectric properties of $Ba_NLa_4Ti_{3+N}O_{12+3N}$ homologous series
T. Okawa

Dielectric anomaly in the region IV of RS-ARS mixed crystals
T. Kikuta

Dielectric dispersion of TGS at the ferroelectric phase
T. Kikuta

Dielectric permittivity and photoluminescence of $Sr_{1-x}Ba_xTiO_3:Cr^{3+}$
Z. Potucek

Wide-frequency range dielectric properties of $Sr_{1-1.5x}Bi_xTiO_3$ ceramics
V. Bovtun

Phase transitions in $Li_xNa_{1-x}NbO_3$ solid solution for $0<x<0.06$
B. Garbarz

Low temperature sintering of $Bi_23-ZnO-Nb_2O_5$ microwave dielectric materials
W.-C. Yang

Dielectric properties of the ferroelectric niobates with tetragonal tungsten bronze structure
W. Bak

The structure and dielectric properties of bismuth-nickel-niobium oxide based ceramics
C. Wang

Microwave dielectric properties of $BaO-(Ti_{1-x-y}Zr_xSn_y)O_2$ binary ceramic materials
Y.-P. Fu

Photoluminescence and dielectric spectroscopy of chromiun-doped $Cd_2Nb_2O_7$
Z. Bryknar

Electrical properties of $BaTiO_3$ superlattice
J. Lee

Evaluation of sol-gel and MOCLD $Ba_xSr_{1-x}TiO_3$ thin films on $LAALO_3$ in microwave coupled microstrip phase shifters
F.W. Van Keuls

Electromechanical behavior of TGSe single chrystals and pseudo-ceramics in paraelectric phase
F.J. Jiménez-Martínez, J. de Frutos, A.M. González, M.C. Duro

Dielectric properties and freezing water molecule vibrations of betaine potassium bromide dihydrate
A. Almeida

Field and composition dependence of the thermal hysteresis at the F_{RL} - F_{RH} phase transition in Zr-rich $PbZr_{1-x}Ti_xO_3$
C. Garcia, C. Arago, J.A. Gonzalo

POLYMERS AND LCS

Effects of drawing temperatures on phase transition in poly(vinylidene fluoride) films
Y. Liu

X-ray diffraction in LOGN chain liquid in n-alkanes
Z. Bochynski and H. Drozdowski

Effect of proton irradiation on 80/20 mol.% P(VDF-TrFe) copolymers
S.T. Lau

Molecular dynamics and thermal hysteresis loops in ferroelectric copolymers measured by neutron backscattering spectroscopy
A.F. Braña

Optical purity dependence of the dielectric property in an antiferroelectric liquid crystal
H. Orihara

Electromechanical properties of mechanically deformed B-PVDF films
M.V. Moreira

Dielectric nonlinearity of P(VDF/TrFe) copolymer
C. Filipic

Relaxor behavior g-irradiated P(VDF-TrFe) copolymers
R.L. Moreira

The problem of gyrotropy in nonhomogeneous media: The case of short-pitch chiral-smectic-C liquid crystals and incommensurate

IMF-10 PAPERS

structures
J. Etxebarria, C.L Folcia, and J. Ortega

Electroclinic effect around a smectic achiral nematic phase transition
J. Ortega

Matching electric and optic response in V-shape liquid crystals
V. Urruchi

Influence of pressure and impurity on the ferroelectricity of liquid crystals
H. Uehara

DOMAINS, DEFECTS AND STRUCTURE II

Temperature dependence of the switching process in telluric acid ammonium phosphate (TAAP) crystals
K. Matyjasek

Ferroelastic phase tansition in the urea inclusion compounds: Urea/ heptadecane and urea/nonadecane
L. Rubia-Peña

Domain state properties of the oxygen-isotope exchanged strontium titanate: $SrTi^{18}O_3$
M. Itoh

UV light induced effect of ferroelectric domain in Rochelle salt
M. Takesada

Domain switching and stochastic resonance
M. Distelhorst

Study of the polar surface of TGS crystals by AFM
A.L. Tolstikhina

The relation between polarization and electric field for the phase transition from antiferroelectric to ferroelectric one of solid solutions $(1-x)Pb(Sc_{1/2}Ta_{1/2}O_3)$-$XPbZrO_3(0.8<x<1)$
N. Yasuda

The role of domains structure in pyroelectric measurements
O.V. Malyshkina

Electron emission out of mirror split of TGS unipolar crystal samples
O.V. Rogazinskaya

Thermostimulated emission of electrons from TGS crystal irradiated by X-rays
O.V. Rogazinskaya

Scanning probe microscopy of periodically poled domain configurations
M. Lesnih, P. Urenski, A. Agronin, G. Rosenman, and Y. Rosenwaks

X-ray reflectivity study of structural phase transition on $BaTiO_3$ single crystals
S. Doi, T. Nakayama, I. Takahashi, and Y. Akishige

Effect of a permanent magnetic field on domain dynamics in GMO and TGS crystals
S.A. Gridnev

Time dependence of the piezoelectric response in lead zirconate titanate ceramics
B.K. Mukherjee

SPM observation of domain structures on successive phase transitional crystals
S.-I. Hamazaki

Ferroelectric domain branching in KDP
T. Osaki and N. Miyoshi

Dielectric relaxation in TGS and DTGS crystals under the temperature changing
V.V. Ivanov

Domain kinetics in congrunet and stoichiometric lithium niobate
E.I. Shishkin

Domain shape in congruent and stoichiometric lithium tantalate
E.V. Nikolaeva

Engineered micro- and nanodomain structures in lithium niobate and lithium tantalate
V.Ya. Shur

Dielectric dispersion, aging, nonlinearity and domain freezing in ferroelectrics: Dynamics of weakly pinned domain walls
V. Mueller

Higher order nonlinear dielectric imaging
K. Ohara

Domain dielectric relaxation and domain freezing in ferroelectric $(CH_3)_2NH_2Al(SO_4)_2.6H_2O$ (DMAAS) single crystals
Cz. Pawlaczyk

Nanoscale investigation of the remanence and fatigue properties of sol-gel $(PbZr_xTi_{1-x})O_3$ thin films
B. Gautier

Influence of Ni doping on the

IMF-10 PAPERS

electrical and dielectrical properties of $LiTaO_3$
F. Bennani

Pressure-induced mosaic structure of barium titanate and its heat capacity
H. Ikawa

Fatigue in bulk PZT
C. Verdier

Nonstoichiometric defect effect on the coercive field in lithium niobate crystals
J.H. Ro

Influence of small X-radiation doses on the polarization reversal of chromium doped triglycine sulphate
S.N. Drozhdin

Resistance degradation in KLTN:FeTi
A. Agranat

Polar states induced by weak off-center impurities in incipient ferroelectrics
P.A. Markovin

On the phase transition in foreign phase inclusions in crystals of the KH_2PO_4 family
S.A. Gridnev

Defect structure of $LiNbO_3$ crystals doped with optical-damage resistance impurities and its relation to optical and photorefractive properties
T. Volk

Influence of stoichiometry on the optical properties in potassium lithium niobate crystals
T.H. Kim

A mechanism of reentrant glass state formation in $KTaO_3$ weakly co-doped by Li+Nb
V.S. Vikhnin

Shallow traps in pure $KTaO_3$: thermally stimulated current and thermoluminescence study
E. Giulotto

Ion-irridiation influence on optical absorption spectra of $MgO:LiNbO_3$ and $MgO+Fe_2O_3:LiNbO_3$ single crystals
I.W. Kim

Ferroelectric Curie temperature of $BaTiO_3$ single crystals
Y. Akishige

Fabrication of grain oriented lead metaniobate components by fused deposition of ceramics (FDC)
K. Nonaka

The origin and structure of the X-phase in highly brominated betaine calcium chloride dihydrate (BCCD)
L.G. Vieira

Stability of lower symmetry ferroelectric phases in perovskite structure solid solutions
L.E. Cross, F. Fuman, and P. Hana

Polarization-flip phase transition under electric field in BCCD
J.M. Perez-Mato

Influence of the composition on the structural and electrical properties of SBT-derived crystalline powders
M.A. Frémy

Phase diagrams of $SrTiO_3$-based solid solutions with built-in random fields
P. Markovin

Phase transitions in ferroelectric $CdTiO_3$ and in solid solution $Sr_{1-x}Cd_xTiO_3$
P.A. Markovin

Reconstructive phase transitions in $CdTiO_3$
M. Kupriyanov

Monitoring the texture and optical properties of ferroelectric multilayers on amorphous substrates
M. Maglione

Variations in electrical properties of Nb-doped $SrTiO_3$ with cation nonstoichiometry
J.-H. Moon, K.-I. Park, Y. Kim, and K. Kim

Structure determination of monoclinic RbD_2PO_4 in the high-temperature phase
C. Moriyoshi

Structural evolution of iron phosphate as a function of temperature
N. Aliouane

Structure of two hexakis(imidazole) metal II salts and the order-disorder phase transition
N. Fernández-González, P. Martín-Zarza, J. González-Platas, C. González-Silgo, and E.H. Bocanegra

Reconstructive phase transitions in ABO_3 oxides
N. Kofanova, O. Goncharova, Yu. Kabirov, B. Koulboujev, L. Pustovaya, V. Krishtop, E. Larin, Yu. Gufan, and M. Kupriyanov

IMF-10 PAPERS

Structural phase transition in two-dimensional polar crystallites of organic dye molecules: In-plane X-ray diffraction analysis
N. Kato

Structure and properties of TGS crystals grown from the seed irradiated with alpha particles
O.V. Rogazinskaya

Structural characterization of [1-x $SrBi_2Nb_2O_9$ - x Bi_3TiNbO_9] for ferroelectric applications
M.S. Tomar

Growth and optical microscopy observation of the lysozyme crystals
O.G. Vlokh

Obtaining and transport effects in monocrystalline and glassy $Li_2B_4O_7$
V.M. Rizak, I.M. Rizak, N.D. Baisa, V.S. Bilanich, K.V. Domoratski, V.V. Maslyuk, and V.M. Holovey

Precise charge density analysis of $PbTiO_3$
S. Aoyogi

Phase transitions and magnetic order in $La_{1-x}Sr_xMnO_3$ ($x \leq 0.3$; $2.85 \leq 3-\partial\ 3.00$)
S.-G. Eriksson

Lattice relaxation in nanocrystalline $BaTiO_3$ particles
S. Tsunekawa

Ferroelectric phase transitions in Nb-doped $KTiOPO_4$
S.A. Ivanov

Improving the ICDD powder diffraction file: Ferroelectrics and related materials subfile
S.A. Ivanov

Formation sequences and phase stability in $Pb[(Mg,Zn)_{1/3}(Ta,Nb)_{2/3}]O_3$ systems
N.-K. Kim

Effect of TiO_2 on the phase structure and electric properties of semiconductive barium titanate
T.-T. Weng

Constant temperature crystal growth method for TGS_x•$TGSe_{1-x}$ compounds
V. Shuvaeva

Structural disorder in perovskite niobates
V.A. Shuvaeva, Y. Azuma, K. Yagi, K. Sakaue, and H, Terauchi

Thermal motion in sodium nitrate: The temperatur dependence of Debye-Waller factors
Y. Kawamura

Peculiar difference of bond length for electrons and nuclei of hydrogen atoms in MeHPLN
Y. Noda

Grain growth and orientation of nanocrystalline laser-deposited $Pb_{0.97}Nd_{0.02}(Zr_{0.55}Ti_{0.45})O_3$ thin films
J. Lappalainen

THIN FILMS II

Structrual and ferroelectric properties of $SrBi_2Ta_2O_9$ thin films grown by a two-stage PLD process
J.M. Siqueiros

Characterization of ferroelectricity in the $Pt/YMnO_3/SiO_2/Si$ structure by C-V measurement
M.K. Ryu

Ferroelectric behavior of spin coated $Bi_{4-x}La_xTi_3O_{12}$ thin films
M.S. Tomar

Low temperature growth of $Pb(Zr,Ti)O_3$ thin films by two-step MOCVD using $PbTiO_3$ seed islands
M. Shimizu

Characterization of $(Bi,La)_4Ti_3O_{12}$ (BLT) thin films fabricated by low temperature sol-gel synthesis
M. Hida

Polarization switching and dielectric properties
A. Sigov

Enhancement of remanent polarization in $Bi_4Ti_3O_{12.}$ $SrBi_4Ti_4O_{15}$ thin film having intergrowth structure
M. Noda

Extreme vibrational modes of domain wall superlattices in epitaxial ferroelectric thin films
N.A. Pertsev

The progress of $YMnO_3/Y_2O_3/Si$ system for ferroelectric gate field effect transistor
N. Fujimura

Effect of nano-powder incorporation on characteristics of PZT films
N.-H. Tai

Ferroelectric properties of $Pb(Zr_{1-x}Ti_x)O_3$ graded thin films
N.-H. Tai

Low temperature sputtering deposition of $Pb(Zr_xTi_{1-x})O_3$ thin films
O. Blanco

Dielectric spectroscopy of barium

IMF-10 PAPERS

titanate thin films prepared by chemical spray pyrolysis
J.R. Ramos-Barrado

Preparation and characterization of antiferroelectric PZT thin films on steel substrates using intermediate oxide layers
R. Seveno

Dielectric properties of $Sr_{0.76}Ba_{0.25}Nb_2O_6$ thin films: Bias field, frequency and temperature dependence
R.G. Mendes, I.A. Santos, E.B. Araújo, and J.A. Eiras

Pulsed laser deposition of $(Sr_{0.8}Ba_{0.2})Bi_2Ta_2O_9$ ferroelectric thin films
R.S. Katiyar

Enhanced dielectric and ferroelectric properties of $(PbLa)TiO_3$ thin films
S. Bhaskar, S.B. Majunder, and R.S, Katiyar

Crystallographic, dielectric and optical properties of $SrBi_2Ta_2O_9$ thin films prepared by the polymeric precursor method
S.M. Zanetti

UV light-induced modification of domain structure of PZT films by scanning probe microscopy
S.O. Iakovlev

Fatigue-free $Pb(Zr,Ti)O_3$ (PZT) based ferroelectric film capacitors
Hyun M. Jang

Growth of $SrBi_2Ta_2O_9$ thin films on a conductive oxide substrate
G. Nihoul

Structural and electrical characterization of $Pb(Sc,Ta)O_3$ thin films derived by aerosol-assisted chemical vapor deposition
S.H. Song

Surface morphology and physical properties of $Bi_{3.25}La_{0.75}Ti_3O_{12}$ thin films by chemical solution deposition
S. Shang, Y. Hou, Y. Zhang, X. Xu, H. Wang, M. Wang, and J. Yu

High deposition rate growth of PZT thin films prepared by RF sputtering
S. Mochizuki

Polarization distribution measurements of ferroelectric multilayer structures
Sidney B. Lang

Low temperature synthesis and characterization of ferroelectric $SrBi_{2.2}Ta_2O_9$ thin films on silicon
S. Chattopadhyay

Characterization of compositionally upgraded and downgraded $Ba_xSr_{1-x}TiO_3$ thin films
S. Upaliadikary

The hydrogen-induced degradation in the ferroelectric thin films of $Pb(Zr,Ti)O_3$ and $Bi_{3,25}La_{0.75}Ti_3O_{12}$
J.-G. Yoon

Structural and optical properties of doped ZnO films by a solution deposition
S.-K. Kim

Ultra-thin ferroelectric films with new structure
T. Kijima

Giant dielectric permittivity of perovskite type artificial superlattices measured using fine interdigital electrodes
T. Tsurumi, T. Ichikawa, T. Harigai, and S. Wada

Double-layer type microwave absorber made of magnetic-dielectric composite material
T. Yamamoto

Field dependence of dielectric properties of $(Pb,Sr)TiO_3$ thin films
T. Karaki

Effect of excess lead on dielectric and ferroelectric properties of alkoxied-derived lead titanate thin films
T. Ohno

Investigations on the influence of the film-electrode interface in thin film capacitors
U. Ellerkmann

Ferroelectric properties of La-modified bismuth titanate (BLT) films epitaxially grown on $Pt/TiO_2/SiO_2/Si(100)$
K.-B. Kim

Detectors and dosimeters of infrared and ultraviolet radiation based on thin PZT films
V.P. Afanasjev

Measurement of the differential Pockels and Kerr coefficients of thin films by a two-beam polarization interferometer with a reflection configuration
V.V. Spirin

Fatigue and rejuvenation in sol-gel PZT thin films
V.Ya. Shur

Ferroelectric

IMF-10 PAPERS

$Pb(Zr_{0.52}Ti_{0.48})O_3$ thin films on corrosion resistant alloy substrates
V. Tura

Simulation of thickness dependent coercivity in PZT thin films
V.-C. Lo

Microstructure and nonlinear dielectric properties of BST thin films using sol-gel technique
W. Zhu

Fabrication and characterization of metal-ferroelectric-insulator-semiconductor field effect transistor using $La_2M_2O_7$ (M=Ti,Zr) as ferroelectric material
W. Sik Kim

Effects of Br_2O_3 buffer layer on growth and ferroelectric properties of $SrBi_2Ta_2O_9$: thin films by liquid-delivery metallorganic chemical vapor deposition
W.-Chul Shin

Temperature dependence on the crystal size of thin films
C.L. Wang

Novel metal-ferroelectric-insulator-semiconductor transistor with long retention characteristics under low voltage operation
Y. Fujisaki

Effect of lanthanide dopants on the ferroelectric property of $Bi_4Ti_3O_{12}$ thin films
Y.W. So

Effects of Sr/Bi composition ratio on ferroelectric properties of $SrBi_2Nb_2O_9$ thin films
Y.T. Kim, H,S, Choi, S.-Il Kim, and I.H. Choi

Asymmetric polarization and imprint in $(Pb,La)(Zr,Ti)O_3$ thin films
Z.G. Zhang

Studies on PZT/BCO heterostructures leakage and ferroelectricity by using combined conducting atomic force (C-AFM) and EFM
Z. Xie

TEM of the early stage of pyrolysis in "triol"-based sol-gel $PbZr_{53}Ti_{47}O_3$ thin films deposited on $Pt(111)/Ti/SiO_2/Si(100)$ substrates
Z. Zhou

Electrical and optical properties of strongly reduced epitaxial $BaTiO_{3-x}$ thin films grown by laser molecular beam epitaxy
Z. Chen

NONLINEAR PROPERTIES, SENSORS, ACTUATORS AND NOVEL APPLICATIONS

Electrical properties of ferroelectric PZT systems as energy transducer
M. Ichiki

Nonlinear characterization of high power 1-3 piezocomposite air-transducers with burst excitation
A. Albareda

Surface acoustic wave pressure sensor
O. Elmazria

Piezoelectric rotary actuator driven devices and applications
C. Kim

Figures of merit of PLZT system for practical applications
A. Peláiz Barranco

On the simulation of mechanical behavior of traveling wave ultrasonic motors
H. Rodríguez

Electrical and magnetic properties of Mn-doped ZnO
J.H. Kim

Preparation and properties of Ba and La substituted $PbNb_2O_6$ ceramics for broadband ultrasonic transducers
K. Nagata and J. Soejima

Stress measurements of Pt/PZT/Pt thin film stackers on oxidized silicon substrate for microactuators
L. Zhang, M. Ichiki, and R. Maeda

Growth of langasite family compounds for bulk and SAW applications
M. Adachi

New design of ceramic gas sensor for better stability
P. Yu, D.Q. Xiao, and Y. Pan

The effect of powder size on properties of ceramic gas sensors
P. Yu, D.Q. Xiao, Y.L. Zhuang, and Y. Pan

Performances of PMN-PT detectors used in electron acoustic imaging systems
Q.R. Yin

Poling behavior of functional gradient materials bending devices
R. Steinhausen

Memory retention characteristics of MFMIS structure using SBT and

IMF-10 PAPERS

Al_2O_3 buffer layer
S.-K. Kang

Circuit parameter effects in pulse switching current responses of ferroelectric capacitors
T.K. Song

Microstructural and electrical properties of ZnO-V_2O_5-Cr_2O_3 varsistors
T. Abkan

Gas sensor using complete reflection at free edge of SH-SAW
T. Nomura

Piezoelectric thick films derived from a novel sol-gel route for silicon membrane resonators
Z. Wang and W. Zhu

The performances of piezoelectric transformer for fluorescent T5 lamp
J.S. Lee

Electrooptic ceramics PLZT devices for vision science applications
M. Ozolinsh

Electrical properties of Sr and Fe modified piezoelectric ceramic PZT using commercial raw materials
E. Pochmann de Magalhães, M.A.P. dos Santos, and M.L. Gregori

Electrocaloric effect in some perovskite ferroelectric ceramics and multilayer capacitors
K. Borman

The application of piezoelectric thick film implantation in acoustic nerve systems
R.-H. Dong, Y. Wang, and X. Dong

The phase transitions in ferroelectric crystals of A_2MX_4 and AMX_3 type
S. Kaluza

A critical comparison of degradation phenomena in PZT, SBT, and BLT thin films for high density FeRAM devices
S.-H. Kim, H.-J. Woo, C.Y. Koo, J. Yang, D.-S. Lee, D.-Y. Park, C.-S. Hwang, A.I. Kingon, and J. Ha

New chemical solution derived high quality PZT thick films for MEMS and IR sensor devices
S.-H. Kim

Polarization switching and charge injection during scanning of $LiNbO_3$ crystals with needle-shaped electrodes
A.B. Sherman

Preparation and property of novel ferroelectric and ferromagnetic array structure thin films
N. Wakiya, D. Bao, K. Shinozaki, and N. Mizutani

A comparison of Ti/Pt and TiN/Pt electrodes used with ferroelectric $SrBi_2Ta_2O_9$ films
B.E. Watts, F. Leccabue, S. Guerri, M. Severi, M. Fanciulli, S. Ferrari, and C. Morandi

Optical properties of PZT ferroelectric films
A. Deineka

Two beam coupling in photorefractive potassium niobate crystals
A. Radoua

Measurements of nonlinear optical coefficients and angular acceptance of LTB by second harmonic generation
R.S. Klein

Static and dynamic behavior of the electrooptic coefficients of $Li_2B_4O_7$
A. Maillard, A.E. Elbelhriti, M. Fontana, R.S. Klein, I. Franke, and K. Roleder

Interaction of a powerful low-frequency laser radiation with a thin film ferroelectric crystal
B.M. Darinskii

Ferroelectric behavior of $Sr_{0.6}Ba_{0.4}Nb_2O_3$ related to nonlinear optical properties
C. Arago, J.J. Romero, J. García Solé, and J.A. Gonzalo

Field enhanced SHG properties of pure and doped $KTaO_3$ and $SrTiO_3$
S. Kapphan

Relaxation of electric field-induced birefringence in PlZT 9/65/35 ceramics
D.-Y. Kim

Electrooptic characteristics of PLZT 9/65/35
D.-Y. Kim, J.-J. Choi, H.-E. Kim, and S.-Il Kwun

Dielectric dispersion and nonlinearity in soft PZT
H. Beige

Second-order optical nonlinearities in bulk ferroelectrics
J. Osman

Numerical estimates of nonlinear susceptibility coefficients for first-order transition bulk ferroelectrics
F. Razak

Direct piezoelectric loops modeling using a viscous Preisach approach
G. Robert

Ferroelastic-like behavior of the

IMF-10 PAPERS

$(NH_4)_2SO_4$ crystal at a ferroelectric phase transition
L.P. Mikhailova

Photoluminescence and thermoluminescence in congruent IBN crystals doped with Ce and Cr
I. Kislova

Codoping effects on the laser gain of neodymium activated lithium niobate crystals
J.A. Sanz García, J.J. Romero, B. Oliveros, D. Jaque, O. Enguita, and J. García Solé

Nonlinear optical properties of ferroelectric SBN crystals near the phase transition
J.J. Romero

Nonlinear electrostriction in the mixed ferroelectric $KTa_{1-x}Nb_xO_3$ (KTN)
J. Toulouse

Near-stoichiometric $LiTaO_3$ for bulk quasi-phase-matched devices
M. Nakamura

The crossflow piezo-electrooptical effect in the $Ca_2Pb(C_2H_5CO_2)_6$ and $LiTaO_3$ crystals
O. Vlokh

Phenomenological theory for the optical, electrooptic and nonlinear optical properties of ferroelectric materials
Q. Jiang

Relation between nonlinear dielectric behavior and alterations of domain structure in a piezoelectric ceramic
R. Pérez, J.E. García, and A. Albareda

Absolute measurements of nonlinear optical coefficients of $LiNbO_3$ by second harmonic generation
R.S. Klein

Gradient thermooptical effect in $LiNbO_3$ crystals
R. Vlokh

Light scattering study of the incommensurate phase and phase transitions in barium sodium niobate
S.V. Ivanova

Slow dynamics and out of equilibrium behavior in $Rb_{1-x}(ND_4)_xD_2AsO_4$ mixed crystals
S.-Il Kwun, K.H. Noh, and J.-G. Yoon

Electrooptic and dielectric properties of antiferroelectric liquid crystals
V. Allouchery, M.R. de la Fuente, M.A. Pérez Jubindo, and T. Sierra

Dielectric anomaly near antiferromagnetic transition (T_N) temperature in $BiFeO_3$ thin films
V.R. Palkar

Second-harmonic scattering by ferroelectric domains in RbH_2PO_4
Y. Le Grand, D. Rouede, R. Aubry, and S. Mattauch

Conduction on insulating $BaTiO_3$ free surface suggesting intrinsic surface electron layer
Y. Watanabe

Observation of single lattice height steps and domains on $BaTiO_3$ suggesting weak size effect
Y. Watanabe

Study on the periodically poled $LiNbO_3$ for high performance CPM devices using scanning nonlinear dielectric microscopy
Y. Cho

Threedimensional analysis of inverted domain structure in $LiNbO_3$ by SHG interference microscope
Y. Uesu

Thermal luminescence and the possible origin of the visible luminescence of nominally pure $KTaO_3$ crystals
Z. Potucek, Z. Bryknar, H.-J. Schulz

Photorefractive damage resistant Zn-diffused optical waveguides in $LiNbO_3:Nd^{3+}$ and laser operation
R.E. Di Paolo, E. Cantelar, R. Nevado, J.A. Sanz-García, M. Domenech, P.L. Pernas, G. Lifante, and F. Cussó

Piezoelectric and electrostrictive effects in $_{0.76}Pb(Mg_{1/3}Nb_{2/3})O_3$ - $0.35PbTiO_3$ single crystals
A.A. Bokov and Z.-G. Ye

PIEZOELECTRICITY AND HIGH PRESSURE EFFECTS

SAW filters composing of parallel and series connected IDTS
T. Kojima

Piezoelectric transducers and its application to the micro power generation
M. Ichiki

Design optimization of piezoelectric cymbal composite transducer using FEA

IMF-10 PAPERS

A. Dogan, A. Erman Uzgur, and R.E. Newnham

Preparation and characterization of $Bi_{4-x}RxTi_3O_{12}$ ((R=Pr, Nd, Gd, Dy) layered electroceramics
A. Huanosta-Tera, J.L. Pineda, A.M. González, J. de Frutos, and R. Castañeda-Guzmán

Temperature dependence of piezoelectric properties of $(SrBi_2Nb_2O_9)_{1-x}(Bi_3NbTiO_9)_x$ from mechanochemically activated precursors
A. Moure

Approaches to simulate temporal responses in piezoelectric stages involved in pulsed ultrasonic sensor/actuator systems
A. Ruíz, M. Hernández, A. Jimenez, A. Sotomayor, O. Sánchez,, A. Ramos, P.T. Sanz, J.L. San Emeterio

Preisach model and piezoelectric hysteresis in ferroelectric ceramics
A.V. Turik

Piezoelectric aluminium nitride for surface acoustic wave devices
M.B. Assouar

Supersonic love waves in strong piezoelectrics of symmetry mm2
M. Weihnacht

Spherical piezomotor for space applications
S. Yerofeyev

Modeling, design and development of multilayer piezotransformers
S. Yerofeyev

Characterization of multilayer actuators
C.R. Bowen

Piezoelectric properties of $Na_{0.5}Bi_{4.5}Ti_4O_{15}$ based lead-free ceramics
Ill-W. Kim

Bismuth sodium titanate-based piezoelectric ceramics
D.Q. Xiao, Z. Wan, J.G. Zhu, L.L. Meng, and W. Zhang

Structural and piezoelectric properties of rare earth doped PT ceramics
E. Dimitriu

Effect of Q in piezoelectric transducers based on $Pb_{0.88}(Ln)Ti_{0.98}Mn_{0.02}O_3$ (Ln = Gd, Sm, Nd, Eu, La) ceramics used in human tissue
E. Suaste-Gómez, R. González-Ballesteros, and V. Castillo-Rivas

3D piezoelectric structures made by ink-jet printing
M. Lejeune

Determination of the elastic properties of a $Li_2B_4O_7$ single crystal from the piezoelectric resonance
I. Franke and K. Roleder

The dielectric and piezoelectric properties of PZT-PMNS ceramics
J.S. Lee

Evaluation of impedance matching schemes for pulse-echo ultrasonic piezoelectric transducers
J.L. San Emeterio

A novel design study for the monoblock dielectric ceramic filter using the couple mode analysis method
Y.B. Jung

High temperature stable high electromechanical coupling substrates and application for surface acoustic wave devices
K. Yamnouchi

Induced piezoelectricity in Aurivillius relaxor ceramics of composition $Pb_xBi_4Ti_{3+x}O_{12+3x}$ x=2 y 3
L. Lascano, A.C. Caballero, M. Villegas, J. de Frutos, J.F. Fernández

High rank electric polar moments and piezoelectricity
Y. Poplavko

Photoelastic and acoustooptical properties of Cs_2HgCl_4 crystals
A.V. Kityk

Effective piezoelectric coefficient calculation of cymbal piezocomposite
P. Ochoa

Acoustic properties of PMN-PT transducers
Q.R. Yin

Photoacoustic study of phase transition in Aurivillius type ceramics
R, Castañeda-Guzmán

Depolarization in real time by photoacoustic
S.J. Pérez-Ruíz

Effect of MnO additions and PbO excesses of sintering and piezoelectric properties of Ca-modified titanate ceramics
C.L. Wang

Concentration dependences and anisotropy of electromechanical

IMF-10 PAPERS

properties of ferropiezoelectric composites with elements of connectivity 1-1
V.Yu. Topolov

Poling treatment and piezoelectric properties of potassium niobate ferroelectric single crystals
S. Wada

Calcite crystals in the pineal gland of the brain: Second harmonic generators
Sidney B. Lang

Formation and characterization of self-patterned PZT film for applying to micromechanical detecting system
Su-Min Ha

Effects of the rare-earth impurities on ferroelectric properties of strontium-barium niobate crystals
T. Volk

Piezoelectric properties of bismuth layer-structured ferroelectric ceramics with Sr-Bi-Ti-Ta systems
T. Takenaka

Anomalous piezoelectric properties of ferroelectric semiconductor SbSBr
T. Inushima

Piezoelectric properties in $LiTaO_3$-$CaTiO_3$ solid solution ceramics
T. Fukami

Poling field dependence of ferroelectric properties in piezoelectric ceramics and single crystals
T. Ogawa

A problem of increasing the piezoelectric sensitivity of composites based on ferroelectric ceramics
V.Yu. Topolov

Interface effect on polarization switching and critical thickness of crystallization in P(VDF-TRFE) films
Xia Feng

Pressure effects on hydrogen-bonded ferroelectrics
C. Totsuji

Pressure dependence of optical absorption in $KNbO_3$
J. Sanchez-Benitez

Pressure and cationic substitution effects on thermodynamic properties of the ordered perovskites $Pb_2BB'O_6$
I.N. Flerov

Ferroelectric properties of pure and modified $Na_{9.5}Bi_{0.5}TiO_3$ ceramics under axial pressure
J. Suchanicz, S. Said, and J.P. Mercurio

Effect of deuteration on the pressure-induced critical point and ferroelectric phase of $[N(CH_3)_4]_2$ $CuCl_4$ crystals
K. Gesi

The dielectric, mechanical and piezoelectric properties of 3-3 piezoelectric composites
R. Ramesh, H. Kara, and C.R. Bowen

MANUFACTURING LICENSES
AVAILABLE FROM THE DEPARTMENT OF THE ARMY

The Department of the Army announces the general availability of exclusive, partially exclusive or non-exclusive licenses (manufacturing only) relative to U.S. Patent No. 5,486,491, issued 23 Jan 1996, entitled “Ceramic
Ferroelectric Composite Material - BSTO-ZRO2"; U.S. Patent No. 5,312,790, issued 17 May 1994, entitled “Ceramic Ferroelectric Material”; and U.S. Patent No. 5,427,988, issued 27 Jun 1995, entitled “Ceramic Ferroelectric Composite Material -BSTO-MGO”. Licenses shall comply with 35 U.S.C. 209 and 37 CFR 404.

For further information contact:

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UPCOMING MEETINGS

The 7th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity (RCBJSF-7)
24 - 28 June 2002
St. Petersburg, Russia

The 7th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity succeeds six previous meetings, in Novosibirsk (1976 and 1984), Kyoto (1980), Tsukuba (1988), Moscow (1994), and Noda (1998). The program of the symposium will cover all the basic and applied aspects of ferroelectricity and related phenomena. Both oral and poster sessions are planned.

Organizing Committee
Honorary Chairmen:
K.S. Aleksandrov, L.A. Shuvalov, J. Kobayashi, and Y. Ishibashi
Chairmen:
V.V. Lemanov and Y. Uesu
Vice-Chairmen:
A.S. Sigov, B.A. Strukov, and T. Yagi
Program Committee:
S.V. Vakhrushev and A. Onodera

Proceedings
The proceedings of the symposium will be published in the international journal *Ferroelectrics.*

Contact
Organizing Committee of RCBJSF-7, Ioffe Physico-Technical Institute
26 Polytechnicheskaya, 194021 St. Petersburg, Russia
phone: +7-812-247-9377; fax: +7-812-247-5894; email: RCBJSF@vul.ioffe.rssi.ru

www.ioffe.rssi.ru/RCBJSF

6th European Conference on Applications of Polar Dielectrics (ECAPD-6)
2 - 5 September 2002
Aveiro, Portugal

The 6th European Conference on Applications of Polar Dielectrics (ECAPD-6) continues a series of meetings initiated by Prof. Peter Günter: Zürich (Switzerland) -1988; London (United Kingdom) - 1992; Bled (Slovenia) - 1996; Montreux (Switzerland) - 1998; and Riga (Latvia) - 2000. The main purpose of ECAPD is to bring together scientists and engineers involved in fundamental and application-oriented research on polar dielectrics and to facilitate further development of this important class of materials.

The conference will comprise 12 technical sessions, including plenary talks, invited talks, and contributed talks covering original unpublished work related to conference topics. Contributed talks will be accepted in either oral or poster form. Posters will be accompanied by short oral presentations (2-3 minutes). Companies willing to exhibit their products and services are requested to contact the Organizing Committee.

Topics
- Materials research on inorganic and organic single crystals, thin films, ceramics, polymers, composites, and liquid crystals
- Fundamental research on application-oriented physical properties of dielectrics: ferro-, piezo- and pyroelectric properties, electrooptical and nonlinear effects, photorefractivity, and photoconductivity

UPCOMING MEETINGS

- Device research: Piezoelectric transducers, smart sensors and actuators, pyroelectric detectors, electrooptic modulators and displays, 2D and 3D optical storage devices, optical signal processors, optical frequency converters, periodically poled ferroelectric devices, ferroelectric memories and integrated optical devices, microelectromechanical systems
- Processing and fabrication technologies, technology transfer from research to industry

Chairman

Dr. Andrei Kholkin, Department of Ceramic and Glass Engineering
University of Aveiro, 3810-193 Aveiro, Portugal
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Mrs. Alexandra Vale, Conference Secretariat, Department of Ceramic and Glass Engineering
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www.cv.ua.pt/ecapd6

The 10th European Meeting on Ferroelectricty (EMF2003)
3 - 8 August 2003
Cambridge, UK

The conference will cover topics across the breath of ferroelectric research interests from fundamentals to advanced applications. We expect that EMF 2003 will be the largest European ferroelectrics conference ever. It will include a wide range of special sessions, covering subjects in ferroelectrics, pyroelectrics, piezoelectrics and ferroelastics. There will be opportunities for presenting work in various embodiments, including single crystals, bulk ceramics and thin films.

Topics

- General theory and modelling
- Phase transitions, critical phenomena, and phase diagrams
- Ferroelectric minerals
- Transducers and actuators
- Precursor chemistry
- Deposition and processing
- Electrical testing and characterization
- NMR and EPR
- Optics and spectroscopy
- Nanoscale materials
- Polymeric and liquid crystal ferroelectrics
- Domains and domain walls

All of the information about EMF2003 will be made available from the conference website, which will be regularly updated as the conference approaches, and much of the essential information will also be disseminated as email circulars. If you received this message you will also receive the later circulars (informing you of abstract deadlines, arrangements for registration etc).

UPCOMING MEETINGS

If you know of another researcher who would benefit from receiving the circulars please pass on their email address to the conference helpdesk (EMF2003@the-conference.com) run by Cambridge Publications and they will ensure that these names are added to the mailing list. Alternatively, they may register their interest themselves via the conference website.

Convenors
Jim Scott and Ekhard Salje
phone: +44-1223-333-438; fax::+44-1223- 333-438; email:EMF2003@the-conference.com

www.the-conference.com/2003/EMF2003/

18th Conference on Crystal Growth and Epitaxy
2 - 5 June 2002
Stanford Sierra Camp, Fallen Leaf Lake, California, USA

Topics

- Thin films and nanostructures
- Impurity interactions at surfaces
- Organic films and crystal surfaces
- Crystal engineering
- Current issues in modeling molecular assembly
- Fluid-solid interfaces and biological crystallization

www.crystalgrowth.org

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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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Monterey, CA 93943 USA

CALENDAR OF EVENTS 2002

May 28-Jun 1	•	International Joint Conference on the Applications of Ferroelectrics 2002 (IFFF 2002), Nara, Japan International Symposium on the Applications of Ferroelectrics (ISAF XIII 2002) International Symposium on Integrated Ferroelectrics (ISIF XIV 2002) The meeting on Ferroelectric Materials and their Applications (FMA XIX 2002) Contact: Prof. Tadashi Shiosaki: fma@ms.aist-nara.ac.jp; website: fma.aist-nara.ac.jp
Jun 2-5	•	18th Conference on Crystal Growth and Epitaxy, Stanford Sierra Camp, Fallen Leaf Lake, California, USA (see p. 39)
Jun 10-14	•	8th IUMRS International Conference on Electronic Materials (IUMRS-ICEM2002), Xi'an, China Contact: Prof. Cheng Jianhua: icem2002@btamail.net.cn; http//:www.c-mrs.org.cn/icem2002
Jun 24-28	•	7th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity (RCBJSF-7), St. Petersburg, Russia (see p. 37)
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 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)

2003

Aug 3-8	•	10th European Meeting on Ferroelectricity (EMF2003), Cambridge, UK (see p. 38)