Ferroelectricity Newsletter

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

Volume 5, Number 3 Summer 1997

CATCHING UP WITH SCIENTIFIC DEVELOPMENTS IN THE FORMER EAST BLOCK COUNTRIES

In October 1996, Lev A. Shuvalov from Ljubljana, guest editor of the Proceedings of the Ukrainian-Polish & East-European Workshop on Ferroelectricity and Phase Transitions, started his editorial with the following sentence: "We live in a time of great change, not only scientific but also political."

At first sight, this statement sounds rather commonplace. If we, however, look at the papers listed in this issue, the ones given at the **4th International Symposium on Ferroic Domains and Mesoscopic Structures**, held in March of last year in Vienna, Austria, and the ones presented at the above mentioned **Ukrainian-Polish & East European Workshop on Ferroelectricity and Phase Transitions**, held in September 1994 in Uzhgorod-V. Remety, Ukraine, we realize that these meetings provided a forum for more scientists from the former east block countries than any international conference before. What that means is that political change indeed influences scientific change since, in this particular case, it opened up communication and collaboration between East-European researchers and engineers with their colleagues all over the world.

This issues also brings you a report on the **COST 514 Workshop on Ferroelectric Thin Films** held at the Centro Sant'Elisabetta , Parma University, Italy, on 14-15 April 1997. The majority of the 40 participants came from Europe -- especially from Italy, Spain, and Portugal -- with representation from the United States and Japan.

Over the last few months, an increasing number of our readers have accessed the ***Ferroelectricity Newsletter*** through Internet. As an additional service, we will now **update the calendar** on the last page of each issue as soon as we get the information about upcoming events. We hope that this will facilitate the scheduling of your activities.

You will find detailed information on how to electronically access the ***Ferroelectricity Newsletter*** on page 4 of this issue. Here is the address:

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

We wish you a fruitful summer, both for your work and for the replenishment of energy, usually referred to as recreation.

-- Rudolf Panholzer
Editor-in-Chief

IN THIS ISSUE

From the Editor 1

Papers
4th International Symposium on Ferroic Domains and Mesoscopic Structures 2
Ukrainian-Polish & East-European Workshop on Ferroelectricity and Phase Transitions 6

Conference Report
COST 514 Workshop 9

Upcoming Meetings
ISIF 98 10
ISFD-5 11

Calendar of Events 12

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Volume 5 Number 3
Summer 1997

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ISFD-4 PAPERS

ISFD-4 PAPERS

The following is a list of titles and authors of presentations given at ***The Fourth International Symposium on Ferroic Domains and Mesoscopic Structures***, held from 25 to 30 March 1996 in Vienna, Austria.

The Proceedings of ISFD-4 were published in **Ferroelectrics** *vol. 190, nos. 1-4 (1997) and vol. 191, nos. 1-4 (1997), Gordon and Breach Science Publishers.*

I. Statics and Dynamics of Ferroic Domains on Any Length Scale

Optical and electron microscopy of the domain structure of $Ni_3B_7O_{13}Cl$ ferroic boracite
A.G. Castellanos-Guzman, J. Campa-Molina, and J. Reyes-Gomez

Ferroelastic domain structure in the vicinity of superionic phase transition in $CsDSO_4$ crystals
L. Kirpichnikova, B. Hilczer, M. Polomska, and A. Pietrasko

Microstructure related to a low-temperature transition in $Ba_2NaNb_5O_{15}$
S. Mori, N. Yamamoto, Y. Koyama, and Y. Uesu

Nonlinear dielectric characteristics and domain wall freezing in KH_2PO_4
J.-G. You and J.-J. Kim

Influence of the internal bias fields on the movement of the domain walls in $(CH_3NH_3)_5Bi_2Br_{11}$ crystals
K. Matyjasek and R. Jakubas

The phase front coexistence in DKDP crystal in the field of small temperature gradient
Z. Kvitek and J. Bornarel

Vibrations of domain walls in an AC field and the low-frequency permittivity of ferroelectrics
O.A. Tikhomirov

Dielectric dispersions in ferroelectric KD_2AsO_4
M. Fally, W. Schranz, A. Fuith, H. Warhanek, P. Kubinec, and C. Filipic

Domain structure in the polar phase of ammonium Rochelle salt
T. Kikuta, K. Shimizu, R. Nozaki, and Y. Shiozaki

Symmetry changes and domain structures at order-disorder phase transitions in $(TEA)_2BCI_4$ compounds (B=Zn, Cu, Hg)
P. St. Grégoire, H.N. Bordallo, A. Mahoui, J. Lapasset, and J. Moret

Calculations of order parameter, elastic compliance, and lattice parameters of ferroeleastic $(NH_4)_4LiH_3(SO_4)_4$(ALHS)
M.D. Zimmermann and W. Schranz

The effect of D-phenylalanine admixture on dielectric properties and domain structure of TGS crystals
J. Stankowska, E. Peter, and A. Czarnecka

Peculiarities of phase transitions in $Na_{0.5}Bi_{0.5}TiO_3$
J. Suchanics

EPR study of $Pb_3[(P,V)O_4O]_4$
W. Zapart, G. Muskala, M.B. Zapart, S.Y. Jeong, and M.S. Jang

"No permissible W"-domain walls in $K_2Cd_2(SO_4)_3$ ferroelastic crystals
R.O. Vlokh, O.V. Vlokh, H. Kabelka, and H. Warhanek

Low-frequency elastic behavior of the ferroelastic phase transition of benzil
D. Havlik, W. Schranz, H. Warhanek, P. Zielinski, M. More, and G. Odou

Low-frequency elastic behavior of $(NH_4)_4LiH_3(SO_4)_4$ (ALHS): Ferroelastic domain freezing and static stress dependence
M.D. Zimmermann and W. Schranz

Czochralski-grown lithium niobate with regular domain structure
I.I. Naumova, N.F. Evlanova, A.O. Gliko, and S.V. Lavrichev

Effect of phase transition sequence on the ferroelastic domain structure of $(NH_4)_3H(SeO_4)_2$ at room temperature
M. Polomska and M.A. Augustyniak

Dynamics of the Dauphine twins in quartz crystal up to the transition point
B. Iliescu, I. Enculescu, and R. Chirila

Low-frequency study on electric properties in SbSJ-modified
B. Garbarz

-- continued on page 3

ISFD-4 PAPERS

-- continued from page 2

Temperature and time changes in electric permittivity in sodium niobate
K. Konieczny, W. Smiga, and C. Kus

II. Domain Structures in Ceramics

On unusual behavior of piezoelectric coefficients of lead titanate-type ferroelectric ceramics
A.V. Turik,V.Yu. Topolov, and A.I. Chernababov

Optical second harmonic generation studies of thin ferroelectric ceramic films
O.A. Aktsipetrov, A.A. Fedyanin, D.A. Klimkin, A.A. Nikulin, E.D. Mishina, A.S. Sigov, K.A. Vorotilov, M.A.C. Devillers, and T. Rasing

Domain structure and electrophysical properties of piezoelectric ceramic materials with low coercive field
G.M. Akbaeva, V.Z. Borodin, E.F. Eknadiosyantz, A.V. Prikhod'kov, and A.N. Pinskaya

III. Microstructures in Glasses, Relaxor Phases

The behavior of relaxors of PLZT systems after γ-irradiation
S.Yu. Shishlov, A.V. Shil'nikov, A.I. Burkhanov, and A. Sternberg

Dynamics of nanodomains (clusters) and dielectric relaxation in disordered ferroelectrics
V.P. Bovtoun, H. Sturm, M.A. Leshchenko, and Yu.I. Yakimenko

Model study of contributions of polar regions to dielectric properties for relaxor ferroelectrics
C. Zhong-Yang, Y. Xi, and G.A-Qiang

Superstructure and thermal hysteresis effects at T_{Curie} in $Cd_2Nb_2O_7$ pyrochlore
N.N. Kolpakova, L. Szczepanska, I.L. Shul'pina, M. Wiesner, and P. Piskunovicz

Relaxation processes in the ferroelectric phase of $Cd_2Nb_2O_7$ far below T_{Curie}
N.N. Kolpakova, M. Wiesner, G. Kugel, and P. Bourson

Two dielectric contributions due to domain/cluster structure in ferroelectrics with diffused phase transitions
V.P. Bovtoun and M.A. Leshchenko

Dipole glass behavior of RFe_2O_4
N. Ikeda, K. Odaka, E. Takahashi, K. Kohn, and K. Siratori

Ferroelectric domains and polar clusters in disordered structures
A.A. Bokov

Method of direct determination of relaxation time distribution function in glasses, relaxor, and ferroelectric phases
M.A. Leshchenko and V.P. Bovtoun

IV. Theory of Domains and Domain Walls

PC software for crystallographic space groups and its application in symmetry analysis of domain structures
B.L. Davies, R.Dirl, V. Janovec, and Z. Zikmund

Tensor distinction of domains resulting from nonferroelastic transitions to subgroups of index n>2
D.B. Litvin and V. Janovec

Examination of point group symmetries of nonferroelastic domain walls
J. Privratska and V. Janovec

Layer groups, scanning tables, and the structure of domain walls
V. Janovec and V. Kopsky

Systematic approach to the study of domain twins in ferroic phase transitions
D.M. Hatch, R.A. Hatt, and H.T. Stokes

Domain pattern formation near phase transition: A challenge for computer simulations
K. Parlinski

Dynamics of polarization switching in an orthorhombic ferroelectric model
R. Sikora and K. Parlinski

Annealing of domain pattern of ferroelastic $LaNbO_4$ by computer simulation
K. Parlinski, Y. Hashi, S. Tsunekawa, and Y. Kawazoe

Computer simulations of oxygen ordering in quenched YBCO crystal
M. Sternik and K. Parlinski

Computer simulations of domain formation in KSCN
Z. Lodziana and K. Parlinski

A sample analysis of domain walls in simple cubic phase of C_{60}

-- continued on page 4

ISFD-4 PAPERS

- continued from page 3

P. St.-Grégoire. V. Janovec, and V. Kopsky

Static and dynamic properties of domain walls in KDP-type crystals
I. Rychetsky and O. Hudák

Domains and reconstructive phase transitions in crystals, quasicrystals, and complex fluids
P. Tolédano and V. Dimitriev

Dynamics of domain walls in ferroelectrics and ferroelastics
A. Sidorkin

V. Visualization Techniques and Detection of Domains

Atomic resolution imaging of ferroelectric domains
L.A. Bursill

Nondestructive observation of the 180˚ ferroelectric domain using the nonlinear optical (SHG) microscope
Y. Uesu, S. Kurimura, and Y. Yamamoto

Optical study of domain structures in ferroelastics
A. Sawada, Y. Watanabe, and K. Tanaka

Influence of domains on nonlinear optical properties of solids
I.V. Kityk, M. Matusiewicz, J. Kasperczyk, and M. Piasecki

Nonlinear optical investigations of domains in Hg-Ba-Ca-Cu-O crystals
I.V. Kityk, M. Piasecki. R.V. Lutciv, and J. Kasperczyk

Crystallooptical investigations of $LiNbO_3$ domain structure
A. I. Otko, A.E. Nosenko, R.M. Gumennyi, I.V. Stasyuk, and I.M. Solskii

Optical and synchrotron radiation white-beam topographic investigations during the high-temperature phase transitions of $KLiSO_4$
C. Scherf, T. Hahn, G. Heger, R.A. Becher, and W. Wunderlich

Dense domain structure in ferroelastics by EPR
M.B. Zapart, E. Snoeck, and P. St.-Grégoire

SEM studies of domains in $KTiOPO_4$ crystals
A. Skliar, G. Rosenman, Y. Lereah, N. Angert, M. Tseitlin, and M. Roth

Observation of the domain structure of ferroelectrics with the scanning electron microscope
A.A. Sogr and I.B. Kopylova

Ferroelastic phase transition in $[A(CH_3)_4]_2MBr_4$ crystals by EPR
M.B. Zapart, W. Zapart, J. Solecki, K. Tanaka, and A. Sawada

Optical study of strain distribution in the vicinity of ferroelastic domain walls in $Pb_3(PO_4)_2$ crystals
Y. Watanabe, K. Tanaka, and A. Sawada

Ferroelectric domains and domain boundaries observed by scanning force microscopy

-- continued on page 5

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in Adobe Acrobat PDT file format

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-- continued from page 4

ISFD-4 PAPERS

L.M. Eng, J. Fousek, and P. Günter

Elastooptic light diffraction of the domain structure of $Pb_3(PO_4)_2$ ferroelastic crystals
O. Vlokh, R. Vlokh, I. Skab, and E. Popel

VI. Domain-like Structures of Incommensurate Phases

Dynamics of polarization reversal in purified Rb_2ZnCl_4
T. Hauke, V. Müller, H. Beige, and J. Fousek

The lock-in transition in proper $Sn_2P_2(Se_xS_{1-x})_6$ ferroelectrics
Yu. M. Vysochanskii, M.M. Khoma, and A.A. Molnar

Incommensurate domain in high-Tc superconductors based on a localized space charge model
S. Kuwata and W. Kinase

Domain pattern formation during incommensurate-commensurate phase transition in Rb_2ZnCl_4
N.Yamamoto, M. Katoh, and S. Mori

Domain structure evolution and crystallooptic peculiarities of incommensurate ferroelastic $KSc(MoO_4)_2$
A.I. Otko, J. Dec, and S. Miga

Microdomain caused by 2D electron system and modulated structure in incommensurate phase
W. Kinase. K. Harada, R. Naganuma, S. Saito, and S. Kuwata

Domain textures of multi$_{-q}$ modulated phases example of quartz
P. St.-Grégoire and I. Luk'yanchuk

VII. Related Topics-Domains in Liquid Crystals, Thin Films, etc.

Ferroelastic domains in $RBa_2C_3O_{7-8}$ crystals
V.I. Voronkova, V.K. Yanovskii, and T. Wolf

HRTEM analysis of nanocrystalline $BaTiO_3$ and $PbTiO_3$: Size effects on ferroelectric phase transition temperature
L.A. Bursill, B. Jiang, J.L. Peng, T.L. Ren, W.L. Zhong, and P.L. Zhang

EPR studies of NH^{2+} radicals created in the TGS: Fe^{3+} crystal after UV irradiation
S. Los, Z. Trybula, and J. Stankowski

Dyeing KDP
J.A. Subramony, S.-H. Jang, and B. Kahr

Structure and optical characterization of Rochelle salt dye inclusion crystals and the fluorescence detection of their phase transitions
S. Sedarous, J.A. Subramony, and B. Kahr

Deflection of light by phase boundaries in antiferroelectric liquid crystals
H. Uehara, S. Ogawa, and J. Hatano

Effect of temperature gradient on surface domain structure in DTGS crystals
A.A. Bogomolov, O.V. Malyshkina, and A.V. Solnyshkin

Kinetics of ferroelectric domain structure: Redartation effects
V.Ya. Shur and E.L. Rumyantsev

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UZHGOROD-94 PAPERS

PAPERS OF THE UKRAINIAN-POLISH & EAST-EUROPEAN WORKSHOP ON FERROELECTRICITY AND PHASE TRANSITIONS

Earlier this year, volume 192 numbers 1-4 of the journal **Ferroelectrics** *published the proceedings of the* ***Ukrainian-Polish & East-European Workshop on Ferroelectricity and Phase Transitions,*** *held from 18 to 24 September 1994 in Uzhgorod-V. Remety, Ukraine. It was organized by the Institute of Solid State Physics & Chemistry of the Uzhgorod State University, the Institute for Condensed Matter Physics of the Ukrainian National Academy of Sciences in Lviv, and the Institute of Physics of the Ukrainian National Academy of Sciences in Kiev.*

The Program Committee consisted of the chairpersons ***B. Hilczer*** *(Poland),* ***I.V. Stasyuk*** *(Ukraine), and* ***J. Fousek*** *(Czech Republic),* ***M.D. Glinchuk*** *(Ukraine),* ***R.R. Levitskii*** *(Ukraine),* ***M.O. Romanyuk*** *(Ukraine),* ***L. Sobezyk*** *(Poland),* ***B.A. Strukov*** *(Russia), and* ***Yu.M. Vysochanskii*** *(Ukraine).*

Lev A. Shuvalov *(Ljubljana), the guest editor of the proceedings, states in his editorial: "It is not by chance that problems of structural phase transitions occupy a very important place in the programs of conferences on ferroelectricity and therefore it is appropriate that both topics be linked together in the title of this workshop."*

The range of papers is wide, covering theory, critical phenomena, phase transitions, lattice dynamics, atomic structures, optical and EPR spectroscopy, electron spectra; dielectric, pyroelectric, optical, luminescence, magnetic, and other properties; thermal electric, and superionic conductivity of different crystals, ceramics, and thin films.

Dielectric instability and vibronic-type spectrum of local anharmonic model of high-T_c superconductors
I.V. Stasyuk and A.M. Shvaika

Quenched Ising model within two-site cluster approximation
R.R. Levitskii, S.I. Sorokov, and R.O. Sokolovskii

Random S = 1/2 XY chains and the theory of quasi-onedimensional ferroelectrics with hydrogen bonds
O. Derzhko and T. Krokhmalskii

Free energy functions of disordered dipole systems
V.A. Shephanovich

Critical phenomena in uniaxial ferroelectrics of order-disorder type
N.A. Korynevskii

Renormalization group study of the *m*-vector model between two and four dimensions
Yu. Holovatch

On mesoscopic structure of incommensurate phases: Domain textures and textural blocks
P. St.-Grégoire

Crystal structure and X-ray investigation of phase transition of tetraethylammonium tetrachloroantimonate $N(C_2H_5)_4SbCl_4$
J. Zaleski

Investigation of the metastable states in $KSc(WO_4)_2$ by EPR
M.B. Zapart and W. Zapart

EPR of V^{4+} in lithium (sodium) and titanium oxyphosphate and superionic conductivity of these single crystals
I.N. Geifman, P.G. Nagorniy and M.V. Rotenfeld

The peculiarities of hydrogen bonds in Raman spectra of solid superionic polyantimonic acids
D. Ostrovskii, M. Valakh, T. Karasiova, and A. Yaremko

Optical investigation of phase transitions in di(tetraethylammonium) pentachloroantimonate(III) $[N(C_2H_5)_4]_2SbCl_5$
B. Kosturek and J. Zaleski

Phase transition in impurity subsystem of strongly anisotropic CdI_2 crystals
I.M. Bolesta, I.V. Kytik, V.I. Kovalisko, and R.M. Turchak

Interactive branch couple in low-frequency regions: A consequence of symmetry and strong anisotropy in SbSI single crystals
D.M. Bercha and L. Yu. Kharkhalis

Phase transitions in $[NH(CH_3)_3]_2ZnCl_4$ ferroelectric crystals
V. Kapustianik, S. Sveleba, V. Vaidanich, V. Mokryi, I. Polovinko, and S. Dacko

-- continued on page 7

-- continued from page 6

UZHGOROD-94 PAPERS

Electron spectra calculations of $Sn_2P_2S_6$ family crystals
V. Yu. Fenchack, I.V. Kytik, A.A. Grabar, and V.Yu. Slivka

Relation of $Sn_2P_2S_6$ ferroelectrics electron and phonon spectra peculiarities connected und unconnected with Fedorov symmetry
D.M. Bercha, L.Yu. Kharkhalis, O.B. Mitin, and R. Melnic

Critical phenomena in ferroelectric semiconductor crystals $Sn_2P_2S_6$: Dielectric investigation
A.A. Molnar, Yu. M. Vysochanskii, A.A. Horvat, and Yu.S. Nakonechnii

Electric conduction of $Sn(Pb)_2P_2S(Se)_6$-like crystals
V.M. Rizak, A.A. Bokotey, I.M. Rizak, K. Al'-Shoufi, and V.Yu. Slivka

Light-induced electric conductivity in $Sn_2P_2S_6$
A.A. Grabar

The nature of dielectric anomaly near T_c in ferroelectric phase of the proper ferroelectric $Sn_2P_2Se_6$ with an incommensurate phase
M.M. Maior, S.B. Molnar, and V.Yu. Slivka

Thermal conduction of $Sn(Pb)_2P_2S(Se)_6$-like compounds
V.M. Rizak, K. Al'-Shoufi, I.M. Rizak, A.A. Bokotey, Yu.M. Vysochanskii, and V.Yu. Slivka

On the origin of the anomalies in the temperature dependences of thermal conduction in $Sn_2P_2S_6$-like crystals at the phase transitions
V.M. Rizak, K. Al'-Shoufi, I.M. Rizak, Yu.M. Vysochanskii, and V.Yu. Slivka

The influence of high hydrostatic pressures on phase transitions temperature in ferroelectric crystals of the $(Pb_ySn_{1-y})_2P_2(Se_xS_{1-x})_6$ family
Yu.I. Tyagur and J. Jun

Low-temperature pyroelectric and luminescence phenomena in $Sn_2P_2S_6$ single crystals
S.L. Bravina, N.V. Morozovsky, A.K. Kadashchuk and V.S. Manzhara

Optical and electronic parameters of $RbNH_4SO_4$ crystals
V. Yo. Stadnyk, M.O. Romanyuk, and R.S. Brezvin

New resources of the optical refraction method for investigation of phase transition in dielectrics: K_2SO_4 and $LiKSO_4$ crystals
B.V. Andriyevsky, M.O. Romanyuk, V.Yu. Kurlyak, and V.Yo. Stadnyk

Luminescence investigation of β-K_2SO_4 ==> Sr_2GeS_4-type phase transition in Cs_2CdI_4-Mn crystals
I. Bolesta and Y. Furgala

Optical characteristics of $(NH_4)_2SbF_5$ crystals at different phases
B.V. Andriyevsky, M.M. Romanyuk, Z. Czapla, and V.I. Kardash

The action of mechanical stress and other influences on birefringence inversion of $LiKSO_4$ and $(NH_4)_2BeF_4$ crystals
M.O. Romanyuk and V.Yu. Stadnyk

Elimination of systematic polarimetric errors in Haup-type crystal optical studies of ferroelectrics
O.S. Kushnir and O.G. Vlokh

Peculiarities of magnetic properties of the iodine-doped bismuth-2234 high-temperature superconductors
V.V. Bunda. A.M. Kun, S.A. Bunda, V.Yu. Slivka, and J. Kovac

Ultra-low temperature investigations of antiferromagnetic ordering in $DyBa_2Cu_3O_7$-δ single crystals
V.V. Bunda, V.Yu. Slivka, A. Feher, M. Orendac, and V.P. Dyakonov

Complex approach to the direct evaluation of the dielectric dispersion parameters in ferroelectrics
M.A. Leshchenko and V.P. Bovtun

Electron emission of ferroelectrics induced by an AC electric field in the vicinity of the phase transition
K. Bierdrzycki

Photovoltaic effects in TGS crystals
J. Furtak, E.L. Lebedeva, Z. Czapla, A.I. Pirozersky, and J. Mroz

Surface potential Fe^{3+} admixtured TGS crystals
M. Debska, Z. Czapla, and J. Mroz

Radiation defects and phase transition in some glycine-containing ferroelectrics
B.A. Strukov, S.A. Taraskin, and Y.W. Song

-- continued on page 8

UZHGOROD-94 PAPERS

-- continued from page 11

The temperature and time changes in dielectric permittivity of $Li_{0.01}Na_{0.99}NbO_3$
C. Kus and R. Le Bihan

Thermal vibrations in $PbTiO_3$ crystals
J. Kwapulinski, M. Pawelczyk, and J. Dec

Peculiarities of the phase transitions of the perovskite-type structure of ferroelectric thin films
Z. Surowiak, D. Czekaj, and V.P. Dudkevich

Structure and pyroelectric properties of vacuum-deposited thin films of alkali metal stearates
A. Yu. Borovikov, L.V. Levash, A.G. Naumovets, G.A. Puchkovskaya, V.B. Samoilov, and V.I. Styopkin

Some properties of $Na_{0.5}Bi_{0.5}TiO_3$
J. Suchanicz, R. Popwraski, and S. Matyjasik

Glass-like transition in $Ba(Ti_{0.70}Sn_{0.30})O_3$
C. Kajtoch

The investigations of the R3c->R3m phase transition in PZT-type ceramics: Correlation with ordering effects
R. Skulski, J. Dudek, and M.F. Kupryianov

Phase transitions in polychrystalline $Ba(Ti_{1-x}Sn_x)O_3$
W. Smiga

Reproducibility of low temperature capacitance thermometers based on $Pb_{0.45}Sn_{0.55})_2P_2Se_6$ single crystals
S.A.J. Wiegers, M.M. Maior, F.C. Penning, S.B. Molnar, H. van Kempen, Yu. M. Vysochanskii, and J.C. Maan

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MRS EXPANDS SERIES ON AMORPHOUS AND CRYSTALLINE THIN FILMS

The newest volume in a highly successful series from the Materials Research Society, *Amorphous and Crystalline Insulating Thin Films--1996*, is devoted to the continuing research and development of thin dielectric films for optical and microelectronic applications. Although thermal SiO_2 has been the dominant dielectric for thin films in microelectronic applications for many years, there is a growing need for low-dielectric constant materials for interlevel dielectrics (less capacitive cross-talk and reduced delay) and high-dielectric constant materials to minimize the space and maximize the capacitance of storage devices such as DRAMs. With the demands put forth by the microelectronics community, this field is expected to develop significantly in the near future. Also featured is the growing area involving the structure and characterization of buried a-SiO_2 layers formed by O+ion implantation or the Smart Cut Unibond® process.

These techniques are evolving into viable methods for producing commercial silicon-on-insulator substrates for device applications requiring radiation hardness, high-speed and low-speed performance, and high-temperature operation. Topics include thin oxides, SiON and organic dielectrics, silicon-on-insulators, SiO_2 and low-K dielectrics, high-K dielectrics, and other dielectrics.

Edited by William L. Warren (Sandia National Laboratories), Roderick A.B. Devine (France Télécom/CNET), Masakiyo Matsumara (Tokyo Institute of Technology, Sorin Cristoloveanu (IPN), Yoshio Homma (Hitachi Ltd.), and Jerzy Kanicki (University of Michigan), *Amorphous and Crystalline Insulating Thin Films--1996* [ISBN: 1-55899-350-9] is volume 446 in the MRS Symposium Proceedings Series.

Documenting proceedings from the 1996 MRS Fall Meeting in Boston, Massachusetts, it contains 65 papers, 440 pages, and is available in hardcover or microfiche for $62.00 (MRS members), $71.00 (US list), and $82.00 (non-US list).

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CONFERENCE REPORT

COST 514 ACTION WORKSHOP ON FERROELECTRIC THIN FILMS

The COST 514 Action Workshop on Ferroelectric Thin Films was held at the Centro Sant'Elisabetta, a converted farmhouse on the grounds of Parma University, on 14-15 April 1997. It was the fourth in a series of workshops held previously in Stockholm, Lausanne, and Madrid. It was funded by the EC COST ACTION and Consiglio Nazionale delle Ricerche, and was organized by MASPEC/CNR Institute of Parma (Italy). The COST Action gives researchers an informal framework within which it is possible to exchange researchers for brief visits, organize workshops, and launch more complex research projects.

Approximately 40 participants attended the workshop. The talks were divided into five sessions.

Invited Speakers and Their Topics

Dr. B. Tuttle (Sandia National Laboratories, Albuquerque, USA): "$Pb(Zr,Ti)O_3$ Thin Film Fabrication: Process Modifications for Different Applications"

Prof. T. Shiosaki (Department of Electronic Science and Engineering, Kyoto, Japan): "The Recent Progress in the Research and Development of Ferroelectric Memory in Japan"

Dr. P. Kirby (GEC Marconi Materials Technology Ltd., Caswell, UK): "Ferroelectric Thin Film Activities at GEC Marconi Materials Technology"

Dr. L. Boyer (Radiant Technologies, Albuquerque, USA): "A Practical Interlayer Dielectric Process for Integrated Ferroelectric Capacitors"

Dr. M.L. Calzada (ICMM/CSIC, Madrid, Spain): "Conditioning Treatments on $(Pb,Ca)TiO_3$ Thin Films"

Prof. A. Sternberg (Institute of Solid State Physics, University of Latvia, Riga, Latvia): "Composition-Structure-Properties Relationships in Ferroelectric Thin Films"

Contributed Talks

Dr. B. Malic (Laboratoire de Céramique, EPFL, Lausanne, Switzerland) "PLZT x/65/35 Thin Films Prepared by Acetic Acid Based Sol-Gel Route"

Dr. A. De Benedittis (Dipartimento di Scienze dei Materiali e della Terra, Università di Ancona, Italy): "Characterization of Ferroelectric Thin Films by X-ray Diffraction and Electron Microscopy"

Prof. N. Setter (Laboratoire de Céramique, Département des Materiaux, EPFL, Lausanne, Switzerland): "Research Activity in the Ceramics Laboratory of EPFL in the Area of Ferroelectric Thin Films for Microsensors and Microactuators"

Dr. G.J. Norga (IMEC, Leuven, Belgium): "Control of Texture and Oxygen Stoichiometry in Conducting Oxide Electrode Layers for Low Fatigue PZT FECAPS"

Dr. F. Fuso (Dipto. di Fisica, Università di Pisa, Italy): "Pulsed Laser Ablation and Deposition of PZT-based Multilayers"

Prof. M.J. de Matos Gomes (Depto. de Física, Universidade do Minho, Braga, Portugal): "On the Preparation and Characteriztion of PLZT Thin Films Grown by Pulsed Laser Deposition"

Dr. C.H. Kohli (Institut de Physique Appliquée, EPLF, Lausanne, Switzerland): "Ferroelectric and Pyroelectric Properties of Lithium Tantalate ($LiTaO_3$) Thin Films"

Dr. L. Pardo (ICMM/CSIC, Madrid, Spain): "Microstructures and Properties of La-modified Lead Titanate Sol-Gel Processed Thin Films"

Dr. B.E. Watts (Istituto MASPEC/CNR, Parma, Italy): "Correlation Between Deposition Conditions and Defect Structures in Sol-Gel Lead Zirconate Titanate Films"

Prof. J. Petzelt (Institute of Physics, Czech Academy of Sciences, Praha, Czech Rep.): "Spectroscopic Investigation of Ferroelectric and Incipient Ferroelectric Films"

Dr. A. Bianco (Dipto. di Scienze e Tecnologie Chimiche, Università di Roma, Italy): "Zirconium Titanate Ceramics Obtained Via Sol-Gel Process"

The organizers are grateful to all the speakers for their contributions, which will be published in a booklet and will be available on request from the address below:

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UPCOMING MEETINGS

Tenth International Symposium on Integrated Ferroelectrics (ISIF 98)
1 - 4 March 1998
Hyatt Regency Hotel, Monterey, California, USA

This celebration of ISIF's tenth anniversary comes at the time when substantial progress has been made in the basic science and technological applications of ferroelectric thin films, which opens a potentially bright future for science and new technologies. Based on the work presented at previous ISIFs, other conferences, and the work reported in the literature, we think that ISIF 98 provides an appropriate forum for a critical review of the science and technology of the two main ferroelectric materials being investigated for applications to NVFRAMs.

The work on high permittivity thin films suggests that these materials may play a fundamental role in a new generation of DRAMs.

The field of ferroelectric/piezoelectric materials is also experiencing an explosive growth due to the potential applications in MEMS technologies.

Another important field that is attracting the attention of funding from various agencies is the field of pyroelectric sensors.

Topics

- Ferroelectric memories
- Ferroelectric and pyroelectric CCDs
- High dielectric constant materials for ULSI DRAMs
- Integrated optics
- Optical storage
- Radiation-related subjects, such as radiation hardness
- Fundamental properties
- Process and substrates
- New devices and architecture
- Device modeling
- Materials processing and integration
- Supporting circuitry and applications
- Ferroelectric ACICs
- Smart tags and RF ID devices
- Neural networks
- Microsensors and actuators
- Bypass capacitors
- GaAs/ferroelectric devices
- Reliability
- Applications and new products
- Biomedical

Tutorial Sessions

Three tutorial sessions, which will run consecutively, are planned for Sunday, 1 March 1998, from 1:00 pm to 6:00 pm. For further information please contact Dr. Ramesh at the University of Maryland, College Park, MD 20742; phone 301-405-7364; fax 301-314-9467

Organizing Committee

C.A. Paz de Araujo and R. Panholzer, *Chairmen;* O. Auciello and C.M. Foster, *Technical Program Chairmen;* R. Ramesh, *Tutorial Chairman*

Deadline for Submission of Abstracts

30 September 1997

Contact

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UPCOMING MEETINGS

Fifth International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-5)
6 - 10 April 1998
State College, Pennsylvania, USA

The mission of this international symposium series is to exchange research information on the study of domains and mesoscopic structures in ferroic materials. The last four consecutive symposia were hosted in Russia, France, Poland, and Austria. ISFD-5 will be held at State College, Pennsylvania, and will broaden the scope to include material properties and applications relevant to domain structures.

Topics

- Theories of domain structures in ferroic systems
- Computer simulations of domain kinetics
- Novel techniques for domain observations
- Domain formation in thin films
- Switching and domain wall mobility in thin films
- Domain configurations and response in ceramic materials
- Processing and domain engineering
- Microstructures in relaxors
- Domain-related physical properties
- Hysteresis in ferroic materials
- Domain walls
- Pretransformation microstructures
- Domain clusters and spatially modulated structures
- Hierarchial structures
- Domains and mechanical stability
- Superelastic materials
- Nonlinear optics and domains
- Size effects and domains

Organizing Committee

Wenwu Cao, *General Chair;* Clive Randall, *Technical Chair;* Susan Trolier-McKinstry, *Local Chair;* L. Eric Cross (Penn State); Dorian Hatch (Brigham Young University); Robert Newnham (Penn State); Manfred Wuttig (University of Maryland)

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CALENDAR OF EVENTS 1997

Aug 24-29	•	9th International Meeting on Ferroelectricity (IMF-9), Seoul, Korea (see *Ferroelectricity Newsletter*, Vol. 4, No. 3, p. 10)
Sep 28-**Oct** 1	•	Eastern Regional Conference on Crystal Growth and Epitaxy (ACCG/East-97), Atlantic City, New Jersey, USA. Information: Rose Scripa, University of Alabama at Birmingham, Department of Materials Engineering, 1150 10th Avenue S., Birmingham AL 35294-4461 USA; phone: +205-934-8453; fax: +205-934-8485; e-mail: rscripa@eng.ual.edu
Sep 29-**Oct** 1	•	2nd European Meeting on Integrated Ferroelectrics (EMIF-2), Jouy-en-Josas, France (see *Ferroelectricity Newsletter*, Vol. 5, No. 1, p. 19)
Oct 12-15	•	49th Pacific Coast Regional Meeting & Basic Science, Division Meeting of the American Ceramic Society, San Francisco, California, USA. Information: The American Ceramic Society, phone: +614-794-5880; fax: +614-899-6109; e-mail: meetings@acers.org; http://www.acers.org
Oct 14-16	•	1997 Fall Meeting Electronics Division of the American Ceramic Society, Philadelphia, Pennsylvania, USA. Information: The American Ceramic Society, phone: +614-794-5880; fax: +614-899-6109; e-mail: meetings@acers.org; http://www.acers.org

Preview for 1998

Mar 1-4	•	10th International Symposium on Integrated Ferroelectrics (ISIF 98), Monterey, California (see p. 10)
Apr 6-10	•	5th International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-5), University Park, Pennsylvania (see p. 11)
Aug 24-27	•	11th International Symposium on Applications of Ferroelectrics (ISAF XI), European Conference on Applications of Polar Dielectrics (ECAPD IV), and Electroceramics VI, Montreux, Switzerland
Dec 8-11	•	2nd Asian Meeting on Ferroelectrics, International (AMF-2), Singapore. Abstract deadline: 1 March 1998. Information: AMF-2 Secretariat, CCE, Nanyang Technological University, Singapore 639798 fax: +65-793-0997; e-mail: amf2@ntu.edu.sg *or* Dr. Weiguang Zhu, fax: +65-792-0415; e-mail: ewzhu@ntuvax.ntu.ac.sg

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