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Ferroelectricity Newsletter

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

Volume 13, Numbers 1&2

Winter/Spring 2005

FOCUS ON APPLICATIONS OF POLAR DIELECTRICS

Almost a year ago, the **7th European Conference on Applications of Polar Dielectrics (ECAPD7)** was held at the Technical University of Liberec, Czech Republic. In this issue, we bring you a report of this conference by J. Nosek and J. Erhart, two members of the ECAPD7 organizing committee, and the title and authors of the 30 invited and 39 oral contributions, as well as of the 73 poster presentations. Since several fields of polar dielectrics are attracting particularly strong attention from industry and research laboratories, you might find the new ideas and approaches addressed at this conference of interest.

Three important international conferences, two in South America and one in Europe, will take place in September 2005. The first is the **11th International Meeting on Ferroelectricity (IMF11)** in Iguassú Falls, Brazil, from 5-9 September. You find details of this conference on page 18 in the Fall 2004 (Volume 12, Number 4) issue of the *Ferroelectricity Newsletter*.

This meeting will be followed by the **12th International Symposium on Electrets (ISE12)** to be held in Salvador, Bahia, Brazil, on 11-14 September. Please go to page 12 of this issue for more information.

The **10th International Conference on Ferroelectric Liquid Crystals** will take place in Stare Jablonski, Poland, from 12-17 September. (More on page 13.) The line-up of topics is impressive, as are the amenities of the hotel where the conference is held. According to the brochure, the surroundings abound in natural beauty, especially during the fall season. There is also a special item among the cultural events listed under "social activities." It is an excursion to a place in Frombork where Nicolas Copernicus (1473-1543), founder of modern astronomy, mathematician, and physician, lived.

On page 14 we list some of the new publications from the Materials Research Society. The topics include novel oxide/semiconductor interfaces; quantum dots, nanoparticles, and nanowires; amorphous and nanocrystalline metals; and thin films dealing with stresses and mechanical properties.

As always, go to the Calendar of Events for a concise overview of upcoming meetings.

Rudolf Panholzer
Editor-in-Chief

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Ferroelectricity Newsletter

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

Dr. Hannah Liebmann
Managing Editor

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CONFERENCE REPORT

7TH EUROPEAN CONFERENCE ON APPLICATIONS OF POLAR DIELECTRICS (ECAPD7)

The 7th European Conference on Applications of Polar Dielectrics (ECAPD7) has been hosted by the Technical University of Liberec, Czech Republic, on September 6-9, 2004 in Liberec. ECAPD conferences have been founded by Prof. P. Günter (ETHZ, Switzerland) with the first meeting held in Zürich, Switzerland, in 1988. Meetings in London, UK (1992), Bled, Slovenia (1996), Montreux, Switzerland (1998), Riga, Latvia (2000), and Aveiro, Portugal (2002) followed.

ECAPD7 attracted attention of 153 participants from 30 countries from Europe, America (Canada, USA, and Mexico) and Asia (China, Japan, Korea, and Singapore). Keynote lectures were presented in 4 plenary sessions by the outstanding researchers in the field – Prof. R. Blinc (University of Ljubljana, Slovenia), Prof. L. E. Cross (MRL Penn State University, USA), Prof. J. Fousek (Technical University of Liberec, Czech Republic) and Prof. P. Günter (ETHZ, Switzerland). Other participants presented 30 invited and 39 oral contributions in three parallel sessions and 73 posters in two poster sessions. Selected invited speakers (not only from Europe) gave the highest possible level of presentations and good overviews on polar dielectrics topics.

The mainly populated sessions included: dielectric spectroscopy, optical properties, thin films, domain, nanostructures and domain engineering, modeling and theory. Less attention has been paid to ceramics, including lead-free materials, polymers, and applications and devices. Topics on material issues possibly applicable for devices were covered in great extent; few presentations dealt with device applications.

The conference attracted attention of several companies – APC International, Ltd., Mackeyville, USA; Ferroperm Piezoceramics A/S, Danmark; Piezoceram, s.r.o., Librice, CZ; Fujitsu Laboratories Ltd., Japan; Mitsui Chemicals, Inc., Japan; Rainbow Photonics AG, Switzerland; aixACCT Systems GmbH, Germany – state agencies (Academy of Sciences from several countries; NUWC, USA) and a number of university laboratories.

Conference proceedings will be published as a special volume of *FERROELECTRICS*. CD-ROM with the

conference papers will be delivered to the participants after it is published (expected time is about 8 months after the meeting). Profs. J. Erhart, J. Fousek and J. Nosek from the Technical University of Liberec, and J. Petzelt from the Institute of Physics, Academy of Sciences, Prague, have been assigned as guest editors. Organization of the next ECAPD8 meeting in 2006 has been granted to Prof. M.D. Fontana, University of Metz, France.

Social program included conference welcome party, banquet and trips to the local sightseeing places in Liberec – Jizera Mountains (artificial lake with the excursion into the dam facility), top of Jested Mountain (nature reservation, funicular railway facility, observation tower), Castle Sychrov and opera performance of G. Verdi: Nabucco in the Theatre of F.X. Salda in Liberec. A post-conference tour has been organized according to the participants' selection to Prague or to the nature reservation "Bohemian Paradise." Bus transportation was organized from Prague International Airport to Liberec and back for the participants' convenience.

Finally, we would like to highly acknowledge the support from all conference sponsors, especially from EU Thematic Network program POLECER, Taylor and Francis Publishers, and Office of Naval Research International Field Office. Our thanks go also to all members of the local organizing committee for their help with meeting organization, especially to L. Burianová, J. Drábková, V. Drozdová, A. Engová, J. Fousek, L. Machonsky, Z. Plíva and M. Sulc. Their work contributed not only to the scientific exchange but also to personal contacts among the participants.

J. Nosek and J. Erhart
ECAPD7 Organizing Committee

ECAPD7 PAPERS

PLENARY SESSION

Strain gradient induced electric polarization in paraelectric, ferroelectric and relaxor

L.R. Cross, Wenhui Ma, and Wenyi Zhu

Photorefractive materials for near infrared applications

P. Günter, G. Montemezzani, D. Haertle, M. Jazbinsek, and A.A. Grabar

Polar nanoclusters in relaxors

R. Blinc, B. Zalar, V. Laguta, and R. Pirc

Technical applications of open domain-related problems

J. Fousec

THIN FILMS

Piezoelectric films and their applications in microsystems

Paul Muralt

FRAM capacitor and reliability technology

J.S. Cross

Pyroelectric arrays using ceramics and thin films

R.W. Whatmore

Size effects in ultra-thin epitaxial ferroelectric heterostructures

V. Nagarajan and R. Waser

Ferroelectric films for electronic device applications

W. Zhu, X.F.Chen, Z.H. Wang, and O.K. Tan

Epitaxial films of relaxor ferroelectric $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3$ in strong electric fields

M. Tjunina and J. Levoska

Infrared study and preparation of KTN thin films

V. Zelezny, J. Bursik, and P. Vanek

Lead excess in self-polarized PZT thin films deposited by reactive sputtering at low temperatures

G. Suchanek, A. Deyneka, L. Jastrabik, and G. Gerlach

Storage and erasure of optical information in Pt-PZT-SnO₂ thin film structures

P.V. Afanasiev, D. Yu. Bulat, A.V. Pankrashkin, P. Pronin, G. Suchanek, and G. Gerlach

Dielectric properties of lead titanate thin ferroelectric films depending on obtaining conditions

A.S. Sidorkin, L.P. Nesterenko, I.A. Bocharova, G.L. Smirnov, and S.V. Ryabsev

OPTICAL PROPERTIES

LiNbO₃ optical waveguide devices: Study of the physical phenomena causing the DC drift

M.D. Fontana, L. Guilbert, J.P. Salvestrini, S. Gille, R. Radouani, Y. Zhang, and P. Bourson

Electromechanical and electro-optical properties of nonferroelectric polar bismuth triborate, BiB₃O₆

L. Bohaty and P. Becker

Optical properties of bismuth triborate (BiBO) single crystal

D. Kasprowicz, J. Kroupa, A. Majchrowski, E. Michalski, and M. Drozdowski

Optical uses of ferroelectric crystals with 180° domains

R.S. Cudney

Laser intensity modulation method (LIMM): Experimental techniques, data analysis and applications

S.B. Lang

Growth of nonlinear optical DAST crystals for terahertz generation and electro-optics

C. Medrano, B. Ruiz, and P. Günter

Spectrum of terahertz pulses from organic DAST crystals

Arno Schneider and Peter Günter

CERAMICS

Processing and field induced transition of PZST ceramics

Yao Xi and Zhang Liangying

Bi-pyrochlore dielectric ceramics for microwave applications: Current status and future prospects

Hong Wang and Xi Yao

Grain orientation and electrical properties of some bismuth layer-structured ferroelectrics for lead-free piezoelectric applications

T. Takenaka and H. Nagata

DIELECTRIC SPECTROSCOPY

Broad-band dielectric spectroscopy of relaxor ferroelectric

E. Buixaderas, M. Kempa, S. Veljko, M. Savinov, S. Kamba, and J. Petzelt

Dielectric properties of new relaxors PMN-PSN-PZN ceramics

ECAPD7 PAPERS

J. Banys, J. Macutkevici, J. Grigas, A. Brilingas, K. Bormanis, and A. Stenberg

Dielectric relaxation in doped SrTiO₃ in the regimes of classical thermal activation and of quantum tunneling

V.V. Lemanov

Infrared and high-frequency dielectric behaviour and soft modes in ferroelectric and relaxor films

J. Petzelt, T. Ostapchuk, A. Pashkin, M. Kempa, and S. Kamba

Soft mode and central-mode behaviour in thin films of PbMg_{1/3}Nb_{2/3}O₃ and PbSc_{1/2}Ta_{1/2}O₃ relaxor ferroelectrics

S. Kamba, M. Kempa, J. Petzelt, K. Brinkman, and N. Setter

Nano-scale frustrated ferroics

N.N. Kolpakova, P. Czarnecki, W. Nawrocik, M.P. Shcheglov, and L. Szczepanska

Off-center ion displacements and the phase transition in perovskite ferroelectrics

R. Pirc and R. Blinc

Raman scattering investigation of the lead barium niobate phase diagram

A.P. Ayala, J.J. Lima-Silva, J. Mendes Filho, D. Garcia, and J.A. Eiras

Lattice dynamics and polar studies in (Sr_{1-1.5x}La_x)TiO₃ ceramics

A. Almeida, M.R. Chaves, I. Gregora, J.A. Moreira, N.J. Muga, P.M. Vilarinho, A.L. Kholkin, and A.M. Costa

Intrinsic local modes and heterogeneity in relaxor ferroelectrics

A. Bussmann-Holder and A.R. Bishop

Investigation of acoustoelectric phenomena in Sn₂P₂(Se_{0.28}S_{0.72})₆ single crystals

V. Samulionis, J. Banys, and Yu. Vysochanskii

DOMAIN ENGINEERING

High piezo- and ferroelectric single crystals

Zuo-Guang Ye

Enhanced piezoelectric properties of potassium niobate single crystals by domain engineering

S. Wada, K. Muraoka, H. Kakemoto, T. Tsurumi, and H. Kumagai

Novel physical effects in dielectric superlattice

Shi-ning Zhu

Micro and nanodomain engineering in lithium niobate and lithium tantalate

V.Ya. Shur

DOMAINS AND NANOSTRUCTURES

Ferro-nano-optics: Dielectric, polarization, and optical properties in ferroelectric domains and domain walls

L.M. Eng

Scanning force microscopy of ferroelectric relaxors

A.L. Kholkin, V.V. Shvartsman, I.K. Bdikin, and S.V. Vakhrushev

Piezoresponse force microscopy of domain structures in ferroelectric Pb(Mg_{1/3}Nb_{2/3}O₃-PbTiO₃ single crystals

Q.R. Yin, H.R. Zeng, H.F. Yu, G.R. Li, and H.S. Luo

Dielectric properties of ferroelectrics in restricted geometries: Nanotubes, nano-rods, ribbon structures, and shoulders on [3D] capacitor

J.F. Scott, D.J. Jung, M. Dawber, and F.D. Morrison

LEAD-FREE MATERIALS

Properties of lead-free piezoceramics based on alkali niobates

E. Ringgaard, T. Wurlitzer, and W.W. Wolny

Spark plasma sintering of (Ba,Sr)TiO₃ nano-powders

Jing Liu, Zhijian Shen, and Mats Nygren

Structural order and dielectric behaviour of hydroxyapatite

S.A.M. Tofail, D. Haverty, K.T. Stanton, and J.B. McMonagle

THEORY AND MODELLING

Effect of spontaneous polarization screening on dielectric response of ferroelectric polydomain films

P. Mokry, A.K. Tagantsev, and N. Setter

Internal bias field effects and polarization imprint in ferroelectric films

A.K. Tagantsev

Temperature dependence and

ECAPD7 PAPERS

nonlinearity of dielectrics with composition gradients

A.J. Bell and R. Kurchania

Databases of ferroic phase transitions

V. Janovec, P.E. Tomaszewski, L. Richterowa, J. Fabry, and Z. Kluiber

Equivalent circuit modelling of the time-dependent poling behaviour of ferroelectric multilayer structures

C. Pientschke, R. Steinhausen, A. Kouvatov, H.T. Langhammer, and H. Beige

Ferroic layer composites: The effective properties and possible instability of the domain structure

A. Kopal and T. Sluka

Distributions of electric and elastic fields at 90° domain boundaries in ferroelectric thin layer — Various configurations

J. Novak, J. Fousek, J. Maryska, and M. Marvan

Anomalous power law dispersions in AC conductivity and permittivity shown to be characteristics of microstructural electrical networks

C.R. Bowen and D.P. Almond

POLYMERS

Functionalization of ferroelectric polymers

B. Hilczer, H. Smogor, and J. Goslar

Elasticity control of curved piezoelectric polymer films

Eiichi Fukada, Munehiro Date, Hidekazu Kodama, and Yuhei Oikawa

Annealing of storage influence on pyroelectricity of ferroelectric PVDF and P(VDF-TrFE) copolymer

L. Ibos, A. Bernes, and C. Lacabanne

Measurement of hysteretic losses exhibited by a family of fluoropolymer films

O. Richard Hughes

ELECTRICAL AND OPTICAL PROPERTIES

Size effect on crystal structure, phase transitions and dielectric properties of dense nanocrystalline BaTiO₃ ceramics

V. Buscaglia, M. Viviani, M.T. Buscaglia, L. Mitoseriu, A. Testino, P. Nanni, Z. Zhao, M. Nygren, and J. Petzelt

Surface effect on electrical and optical properties of BaTiO₃ at room temperature

H. Chaib, F. Schlaphof, T. Otto, and L.M. Eng

Notable anomalies of the 403K phase transition observed in etched BaTiO₃ single crystals

A. Kojima, S. Sasou, Y. Yoshimura, H. Iwasaki, and K. Tozaki

High pressure studies of the giant-dielectric-constant CaCu₃Ti₄O₁₂

A.G. Souza Filho, D. Valim, S.B. Fagan, P.T. Freire, A.P. Ayala, J. Mendes Filho, A.F.L. Almeida, P.B.A. Fechine, and A.S.B. Sombra

Orientation of LiIO₃ nanocrystals in Laponite matrix for periodically structured nonlinear waveguides

J. Teyssier, R. Le Dantec, C. Galez, Y. Mugnier, J. Bouillot, and J.-C. Plenet

MISCELLANEOUS PHENOMENA

Static and dynamic heterogeneity of fatigued bulk lead zirconate titanate

Young Zhang, D.C. Lupascu, and J. Rodel

Defect dipoles and internal bias field in glycine phosphate doped glycine phosphite crystals

V.K. Yarmarkin, S.N. Popov, S.G. Shulman, and V.V. Lemanov

Non ergodicity in low temperature phases of glycine phosphite and betaine phosphite

J.A. Moreira, A. Almeida, M.L. Santos, M.R. Chaves, N.J. Muga, A.M. Costa, A. Klopperpieper, and T.M. Correia

Improper ferroelastic phase transition and its interrelation with ferroelectric transition in (1-x) SrTiO₃ - x ATiO₃ (A=Ba, Pb)

E.P. Smirnova, A.V. Sotnikov, R. Kunze, M. Weihnacht, and V.V. Lemanov

Dynamic nanoscale inhomogeneities due to the charge localization in relaxors

R.F. Mamin

APPLICATIONS, DEVICES

Piezoelectric bimorph with giant electromechanical coupling factor of bending mode nearly 70% fabricated by low symmetry monodomain Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O₃ single crystals

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Toshio Ogawa

Linear electrostatic micromotor on the basis of ferroelectric ceramics

I.L. Baginsky and E.G. Kostsov

A high-power piezoelectric transformer using in DC/DC converters

Jinlong Du, Junhui Hu, and King Jet Tseng

Pulse driving of piezoceramic actuators and their present technical limitations

A. Richter, P. Rydlo, M. Pustka, and M. Kolár

Novel tweezers for biological cells using piezoelectric polylactic acid fibers

M. Kanesaki, M. Date, E. Fukada, and Y. Tajitsu

Mass-loading influence on piezoelectric resonators characteristics

I. Mateescu, G. Johnson, K. Scott, S. Georgescu, and C. Bran

POSTERS

Sintering temperature effects on properties of composite PZT thick films

Z. Wang, C. Chao, X. Chen, C. Zhao, W. Zhu, and J. Miao

Dielectric and piezoelectric properties of $\text{Sn}_2\text{P}_2\text{S}_6$ single crystals

Yu. Tyagur, A. Kopal, I. Tyagur, L. Burianova, and P. Hana

Orientation control of low temperature deposited sol-gel PZT52/48 films

J.M. Marshall, Q. Zhang, Z. Huang, and R.W. Whatmore

Anomalous broad dielectric relaxation in mixed $\text{CuInP}_2(\text{S}_x\text{Se}_{1-x})_6$ crystals with $x=0.4-0.8$

J. Banys, J. Macutkevicius, R. Gringalaitis, A. Brilingas, V. Samulionis, J. Grigas, and Yu. Vysochanskii

Ferroelectric based pyroionization IR converter

Filiz Karaömerlioglu and Amirullah Mamedov

Effect of quantum fluctuations and of isotopes on Curie temperature in BaTiO_3 , PbTiO_3 and KNbO_3

F. Karadag, O.E. Kvyatkovskii, and A.M. Mamedov

Interband photorefractive in pure and magnesium doped near-stoichiometric lithium tantalate

Ph. Dittrich, B. Kozjarska-Glinka, M. Jazbinsek, G. Montemezzani, P. Günter, K. Kitamura, and Y. Furukawa

Microstructural investigation of complex doped Pt-type ceramics

Elena Dimitriu, Rodica Ramer, V. Ciupina, G. Prodan, and A. Calboreanu

Seeding effect in SBN thin films

G. González-Aguilar, I.M. Miranda Salvado, and M.E.V. Costa

Angular correlation of deflected beams intensity at single domain wall of GPI crystal

Z. Czapla, S. Ciechanowicz, and L. Guilbert

Conceivable engineered domain configurations of monoclinic m-phases in relaxor PZN-Pt crystals

J. Fuksa and V. Janovec

Elastic stiffness constants of PZN-4.5%Pt single crystal influenced by DC bias electric field applied at various directions to prototypic crystal symmetry

P. Hana, L. Burianova, E. Furman, S. Zhang, T.R. Shrout, V. Ryzhenko, and P. Burry

Cole-Cole analysis of a new lead free ferroelectric relaxor

J.-L. Dellis and I. Raevsky

Numerical model of electro-elastic field in ferroelectrics based on mixed-hybrid finite element method

J. Královcová and J. Maryska

Structured EBG ceramics by a wax moulding technique

R. Elsebrock and C. Makovicka

Computer modeling and simulation of thickness mode piezoelectric transducers under different driving conditions

J.L. San Emeterio, A. Azbaid, and A. Ramos

Space charge and polarization in crosslinked polyethylene

Tadeusz Pawlowski, Sidney B. Lang, and Robert Fleming

Ferroelectric transition in KTaO_3 induced by large size isovalent impurities: $\text{KTaO}_3:\text{Rb}$ (3% at)

E/ Giulotto, V. Trepakov, M. Savinov, P. Galinetto, V. Stasi, P. Syrnikov, F. Rossella, G. Samoggia, and L. Jastrabik

Low temperature Raman spectra of PMN-xPt around the morphotropic phase boundary

P.T.C. Freire, J.A. Lima Jr., A.G. Souza Filho, F.E.A. Melo, J. Mendes Filho, M.H. Lente, and

ECAPD7 PAPERS

J.A. Eiras

Lanthanum doping effect on the microwave dielectric properties of PbTiO₃ ferroelectric ceramics

J. de los Santos Guerra and J.A. Eiras

Broad-band dielectric spectroscopy of PZN-8%Pt single crystal

V. Bovtun, S. Veljko, M. Savinov, A. Pashkin, S. Kamba, and J. Petzelt

Atomistic structure of ferroelectric domain walls in perovskite crystals — A topological approach

V. Janovec and M. Grocky

Ba(Ti_{0.68}Zr_{0.32})O₃ films and Ba(Ti_{0.68}Zr_{0.32})O₃/BaTiO₃ superlattices: X-ray diffraction, dielectric and Raman study

B. Dkhil and I.P. Raevski

Integrated optical filter using periodic non-180° domains in ferroelectric single crystal

J. Hirohashi, K. Yamada, H. Kamio, M. Uchida, and S. Shichijyo

Sol-gel synthesis of PMN from Nb-ethyleneglycoltartaric complex

J. Briancin, H. Bruncková, and L'. Medvecky

Aging and memory in PLZT above the polar freezing temperature

F. Cordero, F. Cracium, A. Franco, and C. Galassi

Origin of the low-temperature phase in SrTiO₃

A. Levstik, C. Filipic, R. Pirc, V. Bobnar, R. Blinc, and M. Itoh

Induced phase transition and

dielectric studies in Pr-doped SrTiO₃ solid solutions

A. Durán, J. Mata, E. Martínez, and J. Siqueiros

Characterization of polar axis of a ferroelectric crystal from thermal expansion

S. Devanarayanam, Ajith Devan, and Aparna G.D.

Evolution of strain and dielectric properties in Ba_{1-x}Sr_xTiO₃ epitaxial thin-film heterostructures

J. Levoska, M. Tyunina, I. Jaakola, and S. Leppävuori

The influence of thermal treatments and illuminations on the EPR spectra of copper centres in potassium tantalate single crystal

A.G. Badalyan, V.A. Trepakov, C.B. Azzoni, P. Galinetta, M.C. Mozzati, L. Jastrabik, J. Rosa, and M. Hrabovsky

Sn₂P₂S₆ crystals for fast near-infrared photorefractive

M. Jazbinsek, D. Haertle, T. Bach, G. Montemezzani, P. Günter, A.A. Grabar, and Yu.M. Vysochanskii

Electrical characterization of ferroelectric SrBi₂Nb₂O₉ single crystals grown from high temperature self-flux solution

R.S. Martins, H. Amorín, A.L. Kholkin, and M.E.V. Costa

PZT ceramics prepared from mechanically activated precursor

Kmecová M., Medvecky L', Briancin J., and Bruncková H.

Relaxation processes in dielectric and electro-mechanical response of PZT thin films under nano-

indentation

V. Koval, M.J. Reece, and A.J. Bushby

Compositional evolution of properties in epitaxial films of relaxor PbMg_{1/3}Nb_{2/3}O₃ - PbTiO₃

J. Levoska and M. Tyunina

The influence of the re-poling in the weak electric field on electromechanical properties of PZT ceramics

T. Malysh and J. Erhart

Dielectric studies of the polyampholyte hydrogels

I.A. Malyshkina, P. Pissis, and G. Polizo

PbTiO₃ ceramics obtained by sol-gel processing and utilising ultrasounds

Jose Marat-Mendes, Irinela Chilibon, Rui Igreja, Mario do Carmo, Carlos Dias, and Paulo Inacio

Structural and ferroelectric properties of textured PST thin films grown on epitaxial LSCO electrodes

E. Martinez, O. Blanco, A. Fundora, and J. Siqueiros

Effect of PZT substitution to barium titanate ceramics on the dielectric and piezoelectric properties of mixed compounds

C. Miclea, C. Tanasoiu, L. Amarande, C.F. Miclea, M. Cioangher, and N.F. Sima

SFM and EFM studies on a clay-based dielectric nanocomposite

Y. Mugnier, J. Teyssier, R. Le Dantec, C. Galez, and

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J. Bouillot

Far infrared and Raman spectroscopy of BaTiO₃ thin films and nanocrystalline ceramics

T. Ostapchuk, J. Pokorny, I. Gregora, S. Kamba, C. Pecharroman, J. Petzelt, and L. Mitoseriu

Contribution to the measurement constants on domain-engineered ferroelectric crystals

S. Panos, D. Panosová, J. Erhart, and M. Sulc

Temperature dependencies of piezoelectric coefficients of L-alanine doped TGS crystals

D. Panosová and S. Panos

Orientation control of (Bi,La)₄Ti₃O₁₂ thin films derived by sol-gel method

Byung-Eun Park, Chul-Ju Kim, and Hiroshi Ishiwara

Laser interferometric displacement measurements of multi-layer actuators and PZT ceramics

L. Burianova, C.R. Bowen, M. Prokopova, and M. Sulc

Orientation of compatible domain walls in terms of lattice parameters

J. Prívarská

Design and properties of piezoelectric transformers

P. Pulpan and J. Erhart

Ferroelectric hysteresis and aging in ferromagnetic PFN ceramics

O. Raymond, R. Font, E. Martínez, N. Suárez-Almodovar, J. Portelles, and J.M. Siqueiros

Microelectronic thermobiosensors
V. Ryzhenko and A. Shmyryeva

Evolution from ferroelectric to relaxor behaviour in the (1-x)BaTiO₃ - xLa(Mg_{1/2}Ti_{1/2})O₃ system

A.N. Salak, M.P. Seabra, and V.M. Ferreira

Far infrared spectroscopy of SrTi₂O₃ /BaTiO₃ superlattices
P. Samoukhina, J. Petzelt, D. Simek, and D. Dubourdieu

Nonlinear dielectric permittivity and nature of the phase transitions in diluted KTaO₃:Nb

M.E. Savinov, V.A. Trepakov, L. Jastrabik, and L.A. Boatner

Domain evolution during switching in non-uniform electric field and periodical domain patterning

V. Shur, D. Fursov, A. Shur, E. Shishkin, D. Hum, J. Kurz, and M. Fejer

Domain structure and local electro-mechanical properties of PMNT and PZNT single crystals of the composition close to the morphotropic phase boundary

V.V. Shvartsman, I.K. Bdikin, J. Erhart, and A.L. Kholkin

Dielectric characterization of mineral oil in transformers isolation
A. Soualmia, M. Abdelguerfi, and R. Saoud

Differential LImm technique for measurement of thermal diffusivity
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Broad-band dielectric response of

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UPCOMING MEETINGS

**16th American Conference on Crystal Growth & Epitaxy (ACCGE-16)
10-15 July 2005**

and

**12th US Biennial Workshop on Organometallic Vapor Phase Epitaxy(OMVPE-12)
10-14 July 2005
Big Sky Resort and Convention Center, Big Sky, Montana, USA**

Following the very successful merging of these two crystal growth meetings in 2003, we are pleased to announce that the joint format will continue in 2005 at the spectacular Big Sky Resort in Montana. The meeting will consist of four parallel sessions, three for ACCGE and one for OMVPE. A single registration fee will give attendees access to both meetings. A combined ACCGE/OMVPE vendor exhibit will showcase the latest in crystal growth and related products.

ACCGE-16 (10-15 July 2005)

The Sixteenth American Conference on Crystal Growth and Epitaxy (ACCGE-16) will provide a forum for the presentation and discussion of recent research and development activities in all aspects of bulk crystal growth and epitaxial thin film growth, with sessions integrating fundamentals, experimental and industrial growth processes, characterization, and applications. In addition to the focused sessions listed below, other sessions may be organized upon topical distribution of contributed papers. The conference will include both oral and poster sessions, as well as plenary and invited speakers, to provide a broad picture of developments in the field. The meeting will focus on a wide range of crystal growth science issues.

Focused Sessions

- Biocrystallization
- Bulk crystal growth
- Characterization
- Correlated electron crystals
- Crystal growth for beginners (a tutorial session)
- Crystal growth for lasers and NLO
- Crystal growth fundamentals
- Growth of quantum dots, wires, and other 4D nanocrystals
- Growth of crystalline silicon and other photovoltaic materials
- Industrial crystallization
- Novel materials
- Oxides films: ferroelectrics, dielectrics and beyond
- Wide bandgap bulk and epitaxial growth

OMVPE-12 (10-14 July 2005)

This workshop continues a tradition first started in Cornell in 1983, bringing together OMVPE specialists from industry, academia, and government laboratories in an informal atmosphere and scenic surroundings. The OMVPE workshop is an excellent opportunity to present and discuss new results, as well as providing a venue for recent entrants to familiarize themselves with the latest OMVPE science and technology. The format of the conference is designed to maximize interaction amongst OMVPE specialists, and within the context of a wider crystal growth community represented at the ACCGE.

UPCOMING MEETINGS

Topics

- OMVPE growth of novel nanostructures and materials
- III/V nitrides, other wide gap materials, and devices
- III/V phosphides, arsenides, and antimonides
- Quantum dots, wires, and other nanocrystals
- Selective and nonplanar growth
- OMVPE surface and reaction chemistry
- Simulation and modeling of growth processes
- Doping issues in III/V materials
- Relationship between epitaxy and device physics
- Production and process safety issues
- Role of OMVPE in emerging markets for epitaxial materials

Industrial Exhibit

An exhibit of apparatus, materials, and services of interest to the crystal growth community will be held in a room close to the technical sessions. This will also be the site of coffee breaks and the continental breakfasts. Vendors interested in contracting space should contact

Gordon Banish, Cyberstar, email: CyberstarAmerica@aol.com

or

Robert Biefeld, Sandia National Laboratory, email: rmbiefe@sandia.gov

Publication of Proceedings

The proceedings of ACCGE-16 and OMVPE-12 will be published in a special volume of the *Journal of Crystal Growth*. Authors of papers accepted for poster or oral presentation are invited to submit manuscripts comprising five or fewer journal pages of material for consideration for publication.

Contact

Laura Bonner, ACCGE Executive Administrator, 25 4th Street, Somerville, NJ 08876 USA
phone: (908) 575-0649; fax: (908) 575-0794; email: accge@att.net

**12th International Symposium on Electrets (ISE12)
11-14 September 2005
Salvador, Bahia, Brazil**

The Organizing Committee of the 12th International Symposium on Electrets cordially invites you to attend the symposium to be held in Salvador, Bahia, Brazil, on 11-14 September 2005. ISE12 will include the Bernhard Gross Memorial Lecture and the Dilip Das-Gupta Memorial Award. The conditions governing the Gross Memorial Lecture and the Das-Gupta Memorial Award can be found on the ISE12 Web site.

We also encourage delegates to participate in the **11th International Meeting on Ferroelectricity (IMF11)** to be held in Iguassu Falls, Brazil, from 5-9 September 2005.

<http://www.ifasc.usp.br/-ise12/>

UPCOMING MEETINGS**10th International Conference on Ferroelectric Liquid Crystals
12-17 September 2005
Stare Jablonski, Poland**

The conference will be organized by the LC groups from the Institute of Applied Physics and the Institute of Chemistry, Military University of Technology, Warsaw, Poland.

Topics

- Synthesis, design, and properties of new materials
- Banana shaped and achiral switchable systems
- Novel tilted smectic phases (ferri-, antiferro-, TGB, de Vries SmA, etc.)
- V shaped switching
- Surface interactions and alignments
- Theory and modeling of the chiral smectic phases
- Linear, nonlinear, and electro-optical properties
- Display technologies: Addressing, switching, alignment
- Nondisplay applications: Switching, data processing, telecommunication

Tutorial seminars will take place on Monday, 12 September. Three poster sessions are planned for the late afternoon of Tuesday, Wednesday, and Friday.

Location

The conference will be held in the three-stars hotel "Anders" (<http://www.hotelanders.com.pl>) in Stare Jablonski (200 km from Warsaw, 130 km from Gdańsk). This hotel is located among beautiful lakes and forests of Warmia, a region in the northern part of Poland. This place is particularly beautiful in autumn.

All single and double rooms are equipped with TV-Sat, radio, phone, and bathroom with shower. It is possible to use Internet via phone line. A gym, swimming pool, sauna, etc., are available for hotel guests. The hotel has got some rooms prepared for handicapped people.

The restaurant "Anders" serves dishes of European and traditional Polish cuisine, as well as vegetarian meals. During the conference three meals a day will be served for all participants.

Shuttle busses from and to Ilawa railway station are planned for participants who will use the railway. These busses will be free of charge. Express trains from Warsaw or from Gdańsk arrive every hour; (for the time table please visit <http://www.pkp.com.pl>).

Contact

Professor Jerzy Zielinski, Chairman of the Organizing Committee
Institute of Applied Physics
ul, Kaliskiego 2
00-908 Warsaw, Poland
phone: +48 (22) 683 97 31; fax: +48 (22) 683 92 62; email: jzielinski@wat.edu.pl

<http://www.wat.edu.pl/023/FLC.main.html>

PUBLICATIONS

NEW VOLUMES FROM THE MATERIALS RESEARCH SOCIETY***Fundamentals of Novel Oxide/Semiconductor Interfaces***

The interfaces between oxides and semiconductors are important to a number of emerging technologies and are becoming all the more critical as devices scale into the nanometer regime. Concurrent with the advances in incorporating new gate dielectrics in traditional silicon technology, ferroelectric/semiconductor interfaces for novel sensors and oxide/compound semiconductor interfaces for field-effect transistors are being considered. Topics include fundamentals of the oxide/semiconductor interface; characterization of dielectrics on silicon; high-k dielectrics on silicon; high-k oxides, metal gates and integration; and novel oxides for compound semiconductor electronics. This is Volume 786 from the MRS Symposium Proceedings Series and contains 58 papers, 408 pages (ISBN: 1-55899-724-5). It is available in hardcover for \$83.00 (MRS member), \$91.00 (U.S. list), and \$105.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Thin Films—Stresses and Mechanical Properties X

Understanding the mechanical behavior of thin films is crucial for a wide variety of technologies, including semiconductor devices and packaging (i.e., advanced interconnects, dielectrics and silicides), information storage media, optical films, hard coatings, micro- and nanoelectromechanical systems (MEMS and NEMS), and biomedical devices. Topics include stress evolution; modeling stresses and film instability; deformation and adhesion; film fracture and fatigue; processing and structure; indentation testing; mechanical properties; properties and performance; and multi-layers and nanolaminates.

This is Volume 795 from the MRS Symposium Proceedings Series and contains 91 papers, 583 pages (ISBN: 1-55899-733-4). It is available in hardcover for \$92.00 (MRS member), \$101.00 (U.S. list), and \$116.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Quantum Dots, Nanoparticles and Nanowires

Nanostructures of semiconductors and metals show novel optical and transport properties. Semiconductor quantum dots, for example, show striking size-dependent optical and electronic properties when their dimensions become comparable to, or smaller than, the Bohr exciton radius, due to quantum confinement of the charge carriers. Topics include synthesis and characterization of semiconductor quantum dots, nanoparticles and nanowires using wet chemistry and molecular beam approaches; synthesis, characterization and self-assembled quantum dots; nanoscale devices and sensors based on nanostructures and their properties; and design and characterization of quantum dot-bioconjugates and their use in assay developments.

This is Volume 789 from the MRS Symposium Proceedings Series and contains 63 papers, 429 pages (ISBN: 1-55899-727-X). It is available in hardcover for \$98.00 (MRS member), \$108.00 (U.S. list), and \$124.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Amorphous and Nanocrystalline Metals

Progress for these advanced materials depends crucially on the development of new fabrication and processing techniques, as well as on a fundamental understanding of the relationship between the structure and properties. Because the atomic-scale structure of high-angle grain boundaries is highly disordered, it is reasonable to expect that as the grain size becomes very small, the properties of nanocrystalline metals might approach those of metallic glasses. Common ground can also be found in processing. For example, nanocrystalline phases can be produced by devitrification of metallic glasses.

This is Volume 806 from the MRS Symposium Proceedings Series and contains 58 papers, 416 pages (ISBN: 1-55899-744-X). It is available in hardcover for \$86.00 (MRS member), \$95.00 (U.S. list), and \$109.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

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Upcoming Meetings

UK Ferroelectric Materials Network Conference, Cranfield, UK	14-15 Jun 04	No.1, p.13
American Chemical Society Short Courses, Philadelphia, Blacksburg, and Richmond, Virginia, USA	Jun - Dec 04	No.1, p.13
7th European Conference on Applications of Polar Dielectrics, Liberec, Czech Republic	6-9 Sep 04	No.1, p.14
2004 MRS Fall Meeting, Boston, Massachusetts, USA	29 Nov-3 Dec 04	No.2/3 p.26
17th International Symposium on Integrated Ferroelectrics (ISIF 2005), Shanghai, China	17-20 Apr 05	No.2/3 p.27
2005 Workshop on Fundamental Physics of Ferroelectrics, Williamsburg, Virginia, USA	6-9 Feb 05	No.4, p.16
2nd International Piezoelectric Quartz Crystal and Technology Exposition (CHINAPe2005), Shanghai, China	22-24 Jun 05	No.4, p.17
11th International Meeting on Ferroelectricity (IMF-11), Foz do Iguacu, Argentina/Brazil Border	5-9 Sep 05	No.4, p.18

Conference Report

16th International Symposium on Integrated Ferroelectrics (ISIF 2004)	5-8 Apr 04	No.4, p.2
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7th Russian-CIS-Baltic-Japanese Symposium on Ferroelectricity, St. Petersburg, Russia	24-28 Jun 02	No.1, p.2
6th European Conference on Applications of Polar Dielectrics, Aveiro, Portugal	2-5 Sep 02	No.1, p.8
16th International Symposium on Integrated Ferroelectrics (ISIF 2004), Gyeongju, Korea	5-8 Apr 04	No.2/3, p.2
300th Volume of <i>FERROELECTRICS</i>		No.2/3, p.25
10th European Meeting on Ferroelectricity (EMF-10), Cambridge, UK	3-8 Aug 03	No.4, p.2

Publications

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Ferroelectricity Newsletter

including all back issues is available on Internet

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

in Adobe Acrobat PDF file format

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.

If you want a hard copy of the newsletter, please let us know by

email: rpanholzer@nps.navy.mil

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

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

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CALENDAR OF EVENTS 2005

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Sep 11-14 • 12th International Symposium on Electrets (ISE12), Salvador, Bahia, Brazil (see p.12)

Sep 12-17 • 10th International Conference on Ferroelectric Liquid Crystals, Stare Jablonski, Poland (see p.13)