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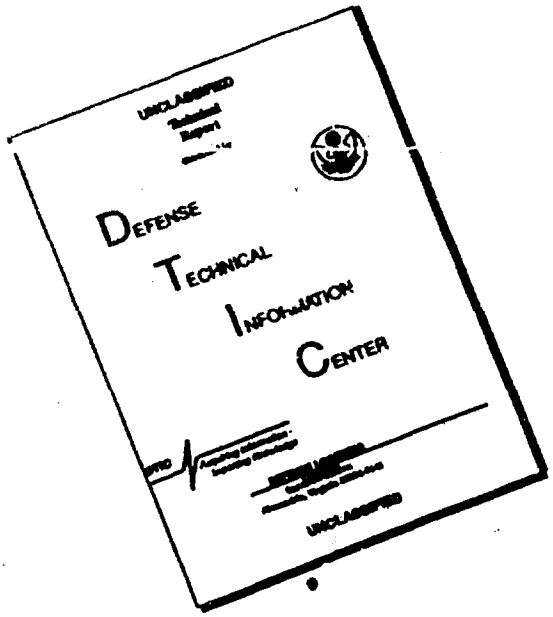

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Final Report

The Second CIS-USA Seminar on Ferroelectrics was held in St. Petersburg from June 22-26, 1992. As attested to by the attached table of contents copies from the *Ferroelectrics* devoted to the proceedings of the seminar, this meeting achieved its goals of providing a forum for direct exchange between the large and productive ferroelectric research community in the CIS and the smaller but active research community in the USA. Coming as it did during the transition from the defense-oriented cold war era of a state-run and funded science base, to an open market economy where science must fill different needs and find new funding sources, both sides had a first hand exposure to much more than just a productive scientific exchange. Many of the discussions centered on the adaptation of ferroelectric science to the new (post cold-war) boundary conditions. Applications of ferroelectrics materials in industrial and consumer devices, and the development of new ventures both in the CIS and the USA, were much discussed.

Entrepreneurial activities in piezoelectrics, ferroelectrics, pyroelectrics, and electrooptics were discussed at length, with the presence of Jim Scott, Bill Lawless, Paz de Araujo, and Maria Huffmann from the U.S. providing their CIS counterparts with an in-depth profile of entrepreneurial activity in the US. Since the conference there have been several exchange visits to both contries stimulated by the discussions in St. Petersburg. Numerous scientific proposals to The American Physical Society, NSF, and the International Science Foundation have resulted and are currently under review.

The situation in the CIS is deteriorating rapidly for the large cadre of scientists doing scientific research on ferroelectrics. While some support has been forthcoming, the United States is missing a unique opportunity to take advantage of the superior skills and knowledge base in ferroelectricity and ferroelectric materials present in the CIS (and to some extent Japan), but largely missing in the U.S. It is my judgement that this will again cost the U.S. dearly in the 21st century when ferroelectric DRAM memories, thin film capacitors, MMICs and many other hybrid semiconductor devices will flood the world markets mostly from the Far East (Japan, Korea, Taiwan, Singapore, and eventually China). It will also hurt in other areas such as actuators, biosensors, micromotors, ferroelectric liquid crystal switching devices for optical communications, and wireless personal communicators. Ferroelectric fibers and composites using them as smart materials, and self-damping passive structure materials are another area where large commercial markets will eventually develop, probably not with U.S. owned manufacturers playing the leading role. There is not, at present, a single large U.S manufacturer of multilayer piezoelectric actuators (or capacitors for that matter) for consumer or even classified applications. All such manufacturers are currently Japanese or British owned and controlled.

Another goal of the CIS-USA seminar series is to stimulate and encourage the introduction of new young researchers (especially in the U.S.) to the exciting field of ferroelectricity. The first two CIS-USA meetings have seen the growth of Professor Keith Nelson of MIT into such a leadership role. Without the influx of bright young scientific leaders into the U.S. ferroelectric community, the U.S. will lose any hope of a leadership role in this important field of materials science.

Codes
A-1

Scientific Council on Physics of Ferroelectrics and Dielectrics
of Russian Academy of Sciences
A.F.Ioffe Physico-Technical Institute of Russian Academy of Sciences
Electrotechnical University of St.Petersburg

Second CIS-USA Seminar on Ferroelectricity

22-26 June 1992

St Petersburg, Russia

Dear Colleague,

You are welcome to the Second CIS-USA Seminar on Ferroelectricity in St.Petersburg, Russia.

The city of St.Petersburg was founded in 1703 by Peter the First as "a window from Russia on Europe". Since that time St.Petersburg has been both means and a symbol of close relations between Russia and the West World.The attempts of some people during 70 years of our history to shut this window by iron curtain have failed. It was St.Petersburg, where the first page of the Russian Science was opened and Russian Science was and is open to the whole world and was and is a part of the World Science.We could remember, for example, that in the XVIII century among the members of St.Petersburg Academy of Sciences founded in 1725 there were both L.Euler and M.Lomonosov.

The First USA-USSR Seminar on Ferroelectrics was held in Boulder, Colorado in July, 1989. Only three years have passed but great changes have occurred in this country. The former Soviet Union, "the evil empire" has been transformed into the Commonwealth (we hope so) of the Independent States, freedom, democracy and human rights being the priorities in our present life.

The situation in this country is now not easy (economical difficulties, ethnical clashes) but we all hope for the best and are sure that the participants of the Fourth Seminar on Ferroelectricity which will be held in this country four years later will see an actually free, rich, stable and civilized country.

St.Petersburg is also a great center of Russian culture. It is a beautiful city designed and built by both Russian and West architects. One often calls this city "Venice of the North".

The Local Organizing Committee hopes that you will enjoy participating in the Seminar and visiting St.Petersburg with its historical and cultural places and monuments. We shall also do our best to provide you with nice, sunny weather.

On behalf of the Local Organizing Committee

V.V.Lemanov

SCIENTIFIC PROGRAM

Monday, 22 June

10:00 **WELCOME AND INTRODUCTION TO SEMINAR**
K.S.Aleksandrov
V.V.Lemanov
G.W.Taylor
J.F.Scott

Plenary Session 1

Session Chair: K.S.Aleksandrov, G.W.Taylor

10:20 **P.A.Fleury and K.B.Lyons**
Defects and Dynamics in Dipolar Glasses.

10:40 **A.I.Baranov, O.A.Kabanov, L.A.Shuvalov, and V.V.Sinitsyn**
Glass and ferroelastic phase transitions in $Cs_5H_3(SeO_4)_4H_2O$ and $Cs_5H_3(SO_4)_4H_2O$ crystals.

11:00 **D.P.Billesbach and F.G.Ullman**
Raman Scattering and Birefringence Studies of the Phase Transitions in Cs_2ZnI_4.

11:20 **I.G.Siny**
Raman Scattering in Ferroelectrics with Diffuse Phase Transitions.

11:40 – 12:00 **Coffee**

Plenary Session 2

Session Chair: P.A.Fleury, L.A.Shuvalov

12:00 **S.A.Basun, S.P.Feofilov, and A.A.Kaplyanskii**
Ferroelectric Transition Induced Pseudo-Stark Splitting in Optical Spectra of $Li_2Ge_7O_{15}:Cr^{3+}$ Crystals.

12:20 **K.A.Nelson**
Femptosecond Time Resolved Spectroscopy of Ferroelectric Phase Transitions.

12:40 **J.Grigas**
Ferroelectrics at Microwaves.

13:00 **O.G.Vendik and L.T.Ter-Martirosyan**
High-T_c Superconductivity Turns on a New Spire of Applications of Ferroelectrics at Microwaves.

13:20 – 14:20 **Lunch**

Plenary Session 3

Session Chair: K.B.Lyons, B.A.Strukov

14:20 **Ting Chen and J.F.Scott**
Thermal Focusing and Optical Bistability in Ferroelecrics.

14:40 **T.R.Volk and N.M.Rubinina**
Lithium Niobate for the Nonlinear-Optical Applications (Photorefractive and Damage Resistant Impurities).

15:00 **W.N.Lawless and S.F.Clark**
Survey of Dielecrics at 2 K for Signal-Conditioning Capacitors.

15:20 **G.V.Kozlov, A.V.Sinitski, and A.A.Volkov**
Dielectric Response Function of the Disordered Solids.

15:40 **K.B.Lyons**

Thuesday, 23 June

Plenary Session 4

Session Chair: J.F.Scott, V.Ya.Shur

9:30 V.Ya.Shur, A.L.Gruverman, N.Yu.Ponomarev, and E.L.Rumyantsev
On the Limiting Velocity of Reversal Process in Ferroelectrics.

9:50 C.A.Paz de Araujo, L.D.McMillan, and J.F.Scott
Integrated Ferroelectric Memory.

10:10 I.L.Baginsky and E.G.Kostsov
Information Writing Mechanisms in the Thin-Film Metal-Ferroelectric-Insulator-Semiconductor Structures.

10:30 A.L.Roytburd
Domain Structures in Ferroelecric Epitaxial Films.

10:50 B.M.Darinski, A.P.Lazarev, and A.S.Sidorkin
Domain Structure in Ferroelectric Film of Oblique Cut.

11:10 – 11:40 Coffee

Plenary Session 5

Session Chair: J.L.Bjorkstam, J.Grigas

11:40 E.V.Orlova, V.I.Petrovskii, E.F.Pevtsov, and K.A.Vorotilov
Ferroelectric Films for Microelectronic Applications.

12:00 V.S.Vikhnin
Effects of Local Centers Interaction with Soft Modes in Ferroelectrics.

12:20 D.A.Payne
Antiferroelectric-Ferroelectric Phase Transitions in $Pb(ZrSnTi)O_3$.

12:40 E.V.Balashova and A.K.Tagantsev
Polarization Response of Crystals with Two (Structural and Ferroelectric) Instabilities.

13:00 – 14:00 Lunch

Plenary Session 6

Session Chair: A.Bhalla, A.K.Tagantsev

14:00 S.B.Vakhrushev, E.V.Colla, E.Yu.Koroleva, A.A.Naberezhnov, N.M.Okuneva, and B.P.Toperverg
Glassy Phenomena in the Disordered Ferroelectrics.

14:20 H.A.Farach
Switching Times of Domains in DKDP.

14:40 ~~C.P.Poole~~ Lawless
~~Switching Times of Domains in DKDP.~~

15:00 N.K.Yushin and S.N.Dorogovtsev
Acoustic and Dielectric Relaxation in Ferroelectrics with Diffuse Phase Transitions.

15:20 M.D.Glinchuk, I.P.Bykov, and V.V.Laguta
NMR Investigation of Nb Ion Ordering and Displacement in PMN and PSN.

15:40 – 16:00 Coffee

16:00 – 18:00 POSTER SESSIONS

A – Phase Transition.
B – Superconductive Oxides.
C – Theory.
D – Ceramics, Films, and Applications.

Wednesday, 24 June

Plenary Session 7

Session Chair: F.G.Ullman, O.G.Vendik

9:30 **I.P.Aleksandrova, K.Parlinski, R.Currat, C.Vettier, and G.Escold**
P-T Phase Diagram of Rb_2ZnBr_4. The Neutron Diffraction and Resonance Spectroscopy.

9:50 **J.L.Bjorkstam** Yeshin
NMR Studies of Phase Transition Precursors.

10:10 **M.E.Bolko, Yu.F.Markov, and B.S.Zadokhin**
The Physical Property Anomalies of Hg_2Cl_2, Hg_2Br_2 Ferroelastics in the Vicinity of the Phase Transition Point.

10:30 **P.B.Littlewood** Glinchuk
Nonlinear-Dynamics of Pinned Electron Crystals and Charge-Density Waves.

10:50 **I.N.Flerov, M.V.Gorev, S.V.Melnikova, M.L.Afanasyev, and K.S.Aleksandrov**
Investigations of Ferroelastic Phase Transitions in $ABF_6 \cdot 6H_2O$ Crystals (A: Zn,Co,Mg,Mn,Fe; B: Ti,Si).

11:10 – 11:40 **Coffee**

Plenary Session 8

Session Chair: C.P.Poole, N.K.Yushin

11:40 **K.A.Verkhovskaya, V.M.Fridkin, A.V.Bune, and J.F.Legrand**
Photoelectric Properties and Phase Transitins in the Optically Sensitized Ferroelectric Copolymers.

12:00 **G.W.Taylor**
Sensor Applications of Ferroelectic Polymers.

12:20 **N.A.Perlsev and A.G.Zembilgotov**
Domain Theory of Polarization Growth and Reversal in Ferroelectric Polymers.

12:40 **J.I.Scheinbeim**
High Temperature Stable Piezoelectric Polymers: the Odd-Numbered Nylons.

13:00 – 14:00 **Lunch**

Plenary Session 9

Session Chair: P.B.Littlewood, A.S.Sigov

14:00 **S.K.Kurtz**
A Computer Simulation of Ceramic Microstructures–Local Stress and Strain Concept in $BaTiO_3$, $SrTiO_3$ and PZT.

14:20 **O.E.Kwjatkowsky and B.F.Schegolev**
Ab initio Cluster Calculations for TiO_6 Octahedron Based Ferroelectric Perovskites.

14:40 **H.M.Lu and J.R.Hardy**
First Principles Studies of Phase Transitions in A_2BX_4 Compound.

15:00 **N.E.Zein, V.I.Zinenko, and A.S.Feodorov**
The Calculation of the Q=0 TO-Optical Phonon Frequencies and Dielectric Constant ε_∞ of the A^4B^6 Crystals by the Local-Denity Functional Pseudopotential Total-Energy Method.

15:20 **A.Bussmann-Holder**
Electron-Phonon Interactions in Ferrolectrics *and Possible Extensions to Oxide Superconductors.*

15:40 – 16:00 **Coffee**

16:00 – 18:00 **POSTER SESSIONS**

E – Optics and Spectroscopy.
F – Disorder Phenomena, Defects, and Domains.
G – Structure and Crystal Growth.

Plenary Session 10

Session Chair: S.K.Kurtz, V.P.Sakhnenko

9:30 **A.Bhalla**
Single Crystal Fibers for Optoelectronic Applications.

9:50 **Yu.M.Poplavko and L.P.Pereverzeva**
Pyroelectricity in Piezoelectrics.

10:10 **S.W.Freiman**
Fracture Behaviour of Electronic Ceramics.

10:30 **A.A.Bokov and I.P.Rayevsky**
Recent Advances in Compositionally Orderable Ferroelectrics.

10:50 **A.Bhalla**
Pyrooptic Infrared Sensing Materials.

11:10 – 11:40 **Coffee**

Plenary Session 11

Session Chair: J.R.Hardy, G.V.Kozlov

11:40 **A.I.Sokolov**
Fluctuation Anomalies and Phenomenological Parameters of Superconducting Oxides.

12:00 **M.V.Raymond and D.M.Smyth**
Defects and Transport in PZT.

12:20 **A.I.Zvyagin, N.M.Nesterenko, and Y.S.Syrkin**
Study of Ferroelastic Phase Transitions in Double Molibdates and Tungstates.

12:40 **J.P.Dougherty**
Particle and Grain Size Dependence of Low-Temperature Phase Transitons in $BaTiO_3$.

13:00 **Closing Session**

A. Phase Transitions

Session Chair: A.I.Baranov, I.N.Flerov

A-1. E.V.Balashova, V.V.Lemanov, A.B.Sherman, and A.K.Taganisev
Acoustic and Dielectric Study on the Sequence of Phase Transitions in Deuterated Betaine Arsenate.

A-2. V.A.Isupov
Phenomena at the Gradual Diffusion of the Ferroelectric Phase Transition.

A-3. A.I.Kruglik, S.V.Meinikova, A.D.Vasilyev, V.M.Zrazhevsky, and K.S.Aleksandrov.
Phase Transitions in the Polar Crystal $RbLiCrO_4$.

A-4. A.A.Sukhovsky, I.P.Aleksandrova, and O.V.Rozanov
The Study of the Phase Transitions in Mixed Crystals of NH_4HSeO_4 Group.

A-5. B.A.Strukov, M.Ju.Kozhevnikov, H.A.Nizomov, and M.D.Volnyanskii
Acoustical and Thermal Properties of Weak Ferroelectrics TSCC and $(Li_{1-x}Na_x)Ge_7O_{15}$

A-6. B.Sh.Bagautdinov, I.M.Shmyt'ko, T.K.Barsamyan, and V.Sh.Shekhtman
Invar Effect and Characteristics of Modulated Structure of Incommensurate Phases.

A-7. B.Sh.Bagautdinov and I.M.Shmyt'ko
Dynamical Structure Reconstructions in Thiourea.

A-8. E.V.Charnaya
Ionic Mobility and Elastic Relaxation in Ferroelectric and Piezoelectric Crystals.

A-9. L.Ja.Sadovskaya, S.Yu.Stephanovich, A.M.Antonenko, and A.Yu.Kudzin
Investigation of the Phase Transition in Bismuth Tellurite.

A-10. A.Nasyrov, Z.Tylczynski, H.Shodiev, A.D.Karaev, G.Gylamov, and V.S.Kim
Anisotropy of the Elastic Properties of K_2ZnCl_4 at Low-Temperature Phase Transition.

A-11. M.P.Trubitsyn, M.D.Volnyanskii, and A.Yu.Kudzin
Critical Slowing Down Near Ferroelectric Phase Transition in $Li_2Ge_7O_{15}$ via ESR of Mn^{2+} Probe.

A-12. M.P.Trubitsyn, T.M.Bochkova, and S.A.Savchenko
The Order Parameter Behavior in the Incommensurate Crystals With Controlled Impurity Concentration.

A-13. S.A.Gridnev, V.V.Gorbatenko, and B.N.Prasolov
On the Nature of Anomalous Thermal Hysteresis in Crystals With Incommensurate Phase.

A-14. A.I.Lebedev and I.A.Sluchinskaya
Unusual Phase Transitions in $Pb_{1-x}Sn_xTe_{1-y}Se_y$ and $Pb_{1-x}Sn_xTe_{1-y}S_y$ Crystals Induced by Off-Center Sn Ions.

A-15. **Yu.M.Vysochanskii**
Critical Behavior of $Sn_2P_2(Se_xS_{1-x})_6$ Uniaxial Ferroelectrics.

A-16. **I.M.Rizak, V.M.Rizak, Yu.M.Vysochansky, M.I.Hurzan, and V.Yu.Slivka**
Tricritical Lifshitz Point in the Phase Diagram of $(Pb_ySn_{1-y})_2P_2(Se_xS_{1-x})_6$ Ferroelectrics.

A-17. **I.M.Rizak, V.M.Rizak, and S.I.Perechinsky**
On the Role of Charge Carriers in Thermooptic Memory Effect in the Incommensurate Phase of $Sn_2P_2Se_6$ Ferroelectric Semiconductor.

B. Superconducting Oxides

Session Chair: A.I.Sokolov

B-1. **Yu.V.Venevtsev**
Systems with Supercunductivity and Ferroelectricity.

B-2. **L.M.Volkova, S.A.Polyshchuk, S.A.Magarill, and S.V.Borisov**
Crystallochemical Aspect of Dynamic Ordering and Mixed Valency in Layered Superconducting Yttrium and Thallium Cuprates.

B-3. **L.M.Volkova, S.A.Polyshchuk, and S.A.Magarill**
Correlation Between the Composition of Superconducting Cuprates and Conduction of CuO_2 Layer.

B-4. **O.N.Ivanov, O.V.Dybova, and V.I.Kudryash**
Twin Structure Effect on Superconducting Properties of $YBa_2Cu_3O_{7-\delta}$.

B-5. **V.V.Bryksin, A.V.Goltsev, S.N.Dorogovtsev, Yu.I.Kuzmin, and A.N.Samukhin**
Modelling of the Critical State in t[illegible] Granulated High-T_c Superconductors.

B-6. **S.N.Dorogovtsev**
The Influence of the Ferroelectric Substrate on the Ultrathin High-T_c Superconductor Film.

B-7. **P.Konsin, N.Kristoffel, and T.Örd**
High-Temperature Superconductivity of Perovskites in a Two-Band Model.

B-8. **S.G.Ovchinnikov and O.G.Petrakovsky**
The Energy Band Structure of the Strongly Correlated Electrons in La_2CuO_4.

B-9. **A.I.Dedyk, N.W.Plotkin, and L.T.Ter-Martirosian**
The Dielectric Hysteresis of YBCO-$SrTiO_3$-YBCO Structures at 4.2 K.

B-10. **V.V.Lemanov, S.T.Pavlov, and I.S.Pivovarov**
Electric Field-Controlled Ferroelectric-Superconductor Structures.

B-11. **G.S.Kulikov, P.S.Malkovich, E.A.Skorylina, V.P.Usacheva, T.D.Dzhafarov, and S.F.Gafarov**
Diffusion and Electromigration in PZT and High-T_c Superconductor Ceramics.

C. Theory

Session Chair: V.I.Zinenko

C-1. **A.F.Sadreev and Yu.V.Sukhinin**
Microscopic Theory of Phase Transitions in $NaNO_2$.

C-2. **A.I.Morosov and A.S.Sigov**
Sound Absorption in KDP-Type Ferroelectrics.

C-3. **D.G.Sannikov**
Phenomenological Description of Phase Transition Cascade in Betain Calcium Chloride Dihydrate.

C-4. **O.E.Kwjatkowsky**
Microscopic Theory of Displacive Type Ferroelectrics.

C-5. **R.F.Mamin**
Memory Effect in Incommensurate Phase and Kinetics of Electron Subsystem.

C-6. **S.V.Pavlov and L.F.Kirpichnikova**
Phenomenological Theory of Phase Transitions in DMAAS Crystals.

C-7. **I.V.Stasyuk and R.Y.Stetsiv**
Electron Spectrum and Optical Constants of Ferroelectrics with Hydrogen Bonds.

C-8. **V.Ya.Shur, N.Yu.Ponomarev, N.A.Tonokachyova, S.D.Makarov, and V.I.Sarapulov**
Computer Simulation of Switching Process in Ferroelectrics.

C-10. **B.V.Beznosikov**
Prognosis of Crystals of α-K_2SO_4 Family Undergoing Phase Transitions.

C-11. **N.M.Plakida and S.E.Krasavin**
A Microscopical Model of Structural Phase Transitions in $La_{2-x}M_xCuO_4$.

C-12. **A.D.Shefer, I.V.Shapiro and A.N.Vtyurin**
Lattice Dynamics Simulation of A_2BX_4 Perovskite-Like Crystals.

D. Ceramics, Films, and Applications

Session Chair: V.A.Isupov

D-1. **N.M.Galiyarova, S.V.Gorin, and A.V.Shilnikov**
Peculiarities of Low-Frequency Dielectric Behavior of Piezoceramics PZTNB-1 in Morphotropic Region.

D-2. **A.V.Shilnikov, A.I.Burkhanov, M.A.Shuvaev, A.Sternberg, and V.Dimza**
Dielectric Relaxation in Alloy-and-γ-Treated Transparent Ferroelectric Ceramics PLZT.

D-3. **E.P.Smirnova, O.V.Rubinstain, and V.A.Isupov**
Dielectric and Electrostrictive Properties of PMN-Based Complex Perovskites.

D-4. **N.A.Pertsev and G.Arlt**
Correlated Translational Vibrations of 90° Domain Walls in Ferroelectric Ceramics.

-5. F.F.Legusha and R.E.Passynkov
Visualization of Dissipation Fields in Ferroelectrics on Basis of Thermooptical Effect in Liquid Crystalline Films.

-6. V.Ya.Shur, G.G.Lomakin, S.A.Negashev, and A.Z.Subbotin
Sputtering Thin Films of Lead Germanate.

-7. A.A.Erofeev
Piezoelectronics: Trends and Prospects.

-8. V.P.Afanasjev and G.P.Kramar
Multilayer Ferroelectric-Semiconductor Structures for Controlled Sensors with Memory.

-9. L.N.Syrkin, E.T.Kancherova, and N.N.Feoktistova
Volume-Sensitive Piezoelectric Composites for Electroacoustic Transducers.

-10. M.M.Akhmedzhanova, F.R.Akhmedzhanov, and V.V.Lemanov
Acoustical Activity in $Bi_{12}SiO_{20}$ and $La_3Ga_5SiO_{14}$.

-11. V.Ya.Zyryanov, S.L.Smorgon, and V.F.Shabanov
Electro-Optics of Polymer Dispersed Ferroelectric Liquid Crystals.

E. Optics and Spectroscopy

Session Chair: I.G.Siny, O.G.Vlokh

-1. A.A.Kaplyanskii, S.A.Basun, and S.P.Feofilov
On Micromechanism of Photoelectric Domain Instability of Centrosymmetric Ruby Crystals.

-2. E.V.Bursian
Observation of Non-Classical Fluxes Caused by the Coherent State Excitation of a Polar Crystal.

-3. S.V.Ivanova and I.I.Naumova
Investigation of the Phase Transitions in $Ba_2NaNb_5O_{15}$ Crystal by Means of Raman and Elastic Scattering.

E-4. I.I.Polovinko, S.A.Sveleba, V.I.Mokryi, Z.Trybula, W.Kempinski, and T.Zuk
Dielectric and Optical Properties of New Ferroelectric Crystals $(NH(CH_3)_3)_2CdCl_4$ and $(NH(CH_3)_3)_2 ZnCl_4$.

E-5. V.I.Alshits, N.B.Ming, A.L.Shuvalov, and Y.Y.Zhu
Second Optical Harmonic Generated in Fibonacci Domain Superlattice at Inclined Incidence.

E-6. G.V.Kozlov, A.A.Mukhin, A.S.Prokhorov, and A.Yu.Pronin
Observation of the Ferroelectric-Like Exitations in Antiferromagnetic $TmFeO_3$.

E-7. V.N.Gridnev, B.B.Krichevtsov, V.V.Pavlov, and R.V.Pisarev
Gyrotropic Birefringence and Nonreciprocal Reflection of Light From Magnetoelectric Media.

E-8. I.I.Polovinko, S.A.Sveleba, V.S.Zhmurko, J.Stankovski, Z.Trybula, and W.Kempinski
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Monday 22 June (Evening)	Welcome Party
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- City-sightseeing excursions will be organized
- Theater tickets will be available in Seminar Office.
- A ladies program will also be organized.

SECOND CIS-USA SEMINAR ON FERROELECTRICITY
22 - 26 June 1992
St. Petersburg, Russia

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			K. Lyons
			F. Ullman

LIST OF PARTICIPANTS

A. CIS

NAME	COUNTRY, City,	SCIENTIFIC CENTER
	RUSSIA	
1. Baranov V.I.	Moscow	Institute of
2. Kirpichnikova L.F.		Crystallography,
3. Sannikov D.G.		Russ. Acad. Sci.;
4. Shuvalov A.L.		59, Leninsky pr.,
5. Shuvalov. L. A.		Moscow 117333,
6. Suvorova E. I.		Russia;
7. Verkhovskaya K. A.		Ph.(095) 135-02-51.
8. Volk T.R.		Ph.(095) 135-61-00.

9. Mukhin A.A. 10. Sinitskyi A.V.	Moscow	Inst. of General Physics Russ. Acad. Sci.; 38, Vavilov st., Moscow 117942, Russia; Ph.(Inst.) (095) 135-23-68, Fax (Inst.) (095) 135-02-70.
11. Valeev A.S.	Moscow	Institute of Microelectronics.
12. Stephanovich S.Yu. 13. Tomashpolskyi Yu.Ya. 14. Venevtsev S.Yu.	Moscow	L.Ya. Karpov Institute of Physical Chemistry; Moscow 171120, Russia; Ph.(095) 277-00-14 (Ext:23-27).
15. Ivanova S.V. 16. Naumova I.I.	Moscow	P.N. Lebedev Physical Inst., Russ.Acad.Sci. 53, Leninsky pr., Moscow 117294, Russia.
17. Barkhota M.A. 18. Sigov A.S.	Moscow	Moscow Inst. of Radioengineering, Electronics and Authomatics; 78, pr. Vernadskogo, Moscow 117454, Russia; Ph.(095) 433-01-66, 434-92-47.
19. Lebedev A.I. 20. Strukov B.A.	Moscow	Moscow State University Moscow 119899, Russia; Ph.(095) 939-11-28, 939-20-03.

21. Peskin V.F.	Moscow	Research and Prod. Company "Promtekh-industria"; Moscow 121029, Russia; Ph.,Fax (Inst.) (095) 265-61-13.
22. Schagina N.M.	Moscow	Gordon and Breach Science Publishers; 39, korp.1, Marshal Djukov st., Moscow 123423, Russia; Ph.(095) 947-88-95.
23. Afanasjev V.P. 24. Korzhenevskii A.L. 25. Sokolov A.I. 26. Ter-Martirosyan L.T. 27. Vendik O.G.	St.Petersburg	Electrotechnical Univ. of St. Petersburg 5 Prof Popov st., St.Petersburg 197376, Russia Ph.(812) 234-99-83.
28. Kwjatkowsky O.E.	St.Petersburg	Inst. of Silicate Chem. Russ. Acad. Sci.; 2, Makarov naber., St.Petersburg 199034, Russia.
29. Goltsman B.M. 30. Isupov V.A. 31. Kaplyanskii A.A. 32. Kolpakova N.N. 33. Krainik N.N. 34. Lemanov V.V.	St.Petersburg	A.F.Ioffe Physico-Technical Institute, Russ. Acad. Csi.; 26, Politekhnicheskaya st., St.Petersburg 194021, Russia; Ph.(812) 247-81-88. Ph.(812) 515-66-60, Fax (812) 247-10-17.
35. Lushnikov S.G. 36. Markov Yu.F. 37. Markova L.A. 38. Markovin P.A.		

39. Pertsev N.A.		
40. Pisarev R.V.		
41. Pivovarov I.S.		
42. Schukin V.A.		
43. Sherman A.B.		
44. Smirnova E.P.		
45. Tagantsev A.K.		
46. Vakhrushev S.B.		
47. Yushin N.K.		Ph.(812) 515-19-22
48. Syrkin L.N.	St.Petersburg	Research and Production Company "Oceanpribor"; St.Petersburg 344104, Russia; Ph.(812) 235-92-43.
49. Yarmarkin V.K.	St.Petersburg	Research and Production Company "Positron"; St.Petersburg 194021, Russia; Ph.(812) 552-90-53.
50. Bursian E.V.	St.Petersburg	Russian State Pedagogical University; 48, nab. r. Mojky, St.Petersburg 191186, Russia; Ph.(812) 210-61-83.
51. Erofeev A.A.	St.Petersburg	St. Petersburg State Technical University; 29, Politekhnicheskaya st., St.Petersburg 195251, Russia; Ph.(812) 221-99-64.
52. Lebedeva E.L.	St.Petersburg	St.Petersburg State Univ., Inst. of Physics, 1, Ulyanovsky st., Petrodvorets,

		St.Petersburg 198904, Russia; Ph.(812) 257-94-68.
53. Legusha F.F.	St.Petersburg	St.Petersburg State University of Ocean Technology; 3, Lomonosovskaya st., St.Petersburg 190008, Russia; Ph.(812) 157-10-11.
54. Aleksandrov K.S. 55. Aleksandrova I.P. 56. Beznosikov B.V. 57. Flerov I.N. 58. Kruglik A.I. 59. Ovchinnikov S.G. 60. Sadreev A.F. 61. Vtyurin A.N. 62. Zinenko V.I. 63. Zyryanov V.Ya.	Krasnoyarsk	L.V.Kirensky Inst. of Physics, Russ. Acad. Sci., Siberian Branch; Krasnoyarsk 660036, Russia Ph.(Inst.) (3912) 45-26-54; Ph.(Aleksandrov K.S.) (3912) 25-26-54, 25-25-41.
64. Bokov A.A. 65. Sakhnenko V.P.	Rostov-on-Don	Institute of Physics, Rostov State Univ.; 194, pr. Stuchky, Rostov-on-Don 344104, Russia.
66. Kramarov S.O.	Rostov-on Don	Pedagogical Institute
67. Kostsov V.K. 68. Malinovsky V.K.	Novosibirsk	Inst. of Automation and Electrometry, Russ. Acad. Sci., Siberian Branch; 1, Universitetskii pr., Novosibirsk 630090, Russia; Ph.(3832) 35-10-52, Fax (3832) 35-48-51.

69. Antsigin V.D.	Novosibirsk	Inst. of Mineralogy and Petrography, Russ. Acad. Sci., Siberian Branch; 3, Universitetskii pr., Novosibirsk 630090, Russia.
70. Darinskii 71. Gorbatenko V.V. 72. Gridnev S.A. 73. Ivanov O.N. 74. Prasolov B.N.	Voronezh	Polytechnical Institute 14, Moscowsky pr., Voronezh 394026, Russia; Ph.(0732) 11-26-30. Ph.(0732) 16-25-13.
75. Lazarev A.P. 76. Sidorkin A.S.	Voronezh	Voronezh State Univ. Voronezh 394693, Russia; Ph.(Inst.) (0732) 56-67-84.
77. Ponomarev N.Yu. 78. Shur V.Ya.	Ekaterinburg	Ural State University 51, Lenin pr., Ekaterinburg 620083, Russia; Ph.(3432) 22-02-72, 22-07-27.
79. Bagautdinov B.Sh. 80. Bdykin I.K. 81. Ponamoreva N.M. 82. Shekhtman V.Sh.	Chernogolovka	Institute of Solid State Physics, Russ. Acad. Sci.; Chernogolovka, Moscow district 142432, Russia.
83. Plakida N.M. 84. Savenko B.N.	Dubna	Joint Institute for Nuclear Research; Dubna, Moscow district 141980, Russia.

85. Mamin R.F.	Kazan	Physicotechnical Inst. Kazan' Sci.Center, Russ. Acad. Sci.; Kazan 420029, Russia.
86. Burkhanov A.I. 87. Galiyarova N.M.	Volgograd	Civil Engineering Inst. 1, Academicheskaya st., Volgograd 400074, Russia; Ph.(Inst.)-(8442) 44-91-68.
88. Bolshakova N.N. 89. Rudyak V.M.	Tver	Tver State University; 35, Sadovyi per., Tver 170002, Russia.
90. Zaitdinov A.M.	Vladivostok	Institute of Chemistry Russ. Acad. of Sci. Far East Branch 22-55, Magnitogorskaya st., Vladivostok 690068, Russia.
91. Magataev V.K.	Makhachkala	Institute of Physics, Daghestan Centre of Russ. Acad. Sci.; 26, Bakinskii Komissar st., Makhackala 367005, Russia.

UKRAINE

92. Glinchuk M.D. 93. Pechennyi V.I. 94. Smolyaninov I.M.	Kiev	Frantsevich Inst. for Material Science, Ukr. Acad. Sci.; 3, Krjijanovsky st., Kiev 252180, Ukraine; Ph.(Glinchuk M.D.) (044) 444-15-40.
95 Bovtun V.P. 96. Poplavko Yu.M.	Kiev	Polytechnical Institute; 37, Pobeli st., Kiev 252056, Ukraine; Ph.(044) 441-91-25.
97. Stetsiv R.Y.	Lviv	Institute of Condensed Matter Physics, Ukr. Acad. Sci.; 1, Svientsitskogo st., Lviv 290011, Ukraine; Ph.(Inst.) (0322) 76-11-61.
98. Mokryi V.I.	Lviv	Lviv State University; 8/203, Lomonosova st., Lviv 290005, Ukraine.
99. Bochkova T.M. 100.Flerova S.A. 101.Kudzin A.Yu. 102.Sadovskaya L.L.	Dniepropetrovsk	Dniepropetrovsk State University; 72, Gagarin pr., Dniepropetrovsk 320010, Ukraine; Ph.(Inst.) (0562) 46-55-97. Ph. (0562) 39-15-11.
103.Grabar A.A. 104.Rizak V.M. 105.Vysochansky Yu.M.	Uzhgorod	Uzhgorod State Univ. 54, Oktyabrskaya st., Uzgorod 294000, Ukraine.

ESTONIA

106.Kristoffel N.N.	Tartu	Institute of Physics, Estonian Acad. Sci.; 142, Riya st., Tartu 202400, Estonia; Fax (01434) 72-227

LITHUANIA

107.Grigas J.	Vilnius	Vilnius University, Lithuania; Ph.(0122) 76-94-33.

LATVIA

108.Dambekalne M.Ya.	Riga	Institute of Solid State Physics, University of Latvia; 8, Kengarova st., Riga 226063, Latvia.

UZBEKISTAN

109.Akhmedzhanov F.P. 110.Shadiev H.T.	Samarkand	Samarkand State Univ. 15, Universitetskii av., Samarkand 703004, Uzbekistan; Ph.(Inst.) (3662) 35-14-40.

B. USA

NAME	CITY	SCIENTIFIC CENTER
1. Dougherty J.P.	University Park, PA	Penn State University
2. Farach H.A.	Columbia, SC	Univ. of South Carolina
3. Huffmann M	Colorado Springs, CO	Ramtron International Corp.
4. Kurtz S.K.	University Park, PA	Penn State University
5. Lawless W.N.	Westerville, OH	Ceram. Physics. Inc.
6. Lyons K.B.	Murray Hill, NJ	ATT Bell Labs
7. Nelson K.A.	Cambridge, MA	MIT
8. Paz De Araujo C.A.	Colorado Springs, CO	Univ. of Colorado
9. Poole C.P.	Colombia, SC	Univ. of South Carolina
10. Roytburd A.L.	College Park, MA	Univ. of Maryland
11. Scheinbeim J.I.	New Bronswik, NJ	Rutgers University
12. Scott J.F.	Boulder, CO	Univ. of Colorado
13. Smyth D.M.	Bethlehem, PA	Lehigh University
14. Ullman F.G.	Lincoln, NE	Univ. of Nebraska
15. Bussman-Holder A.	Stuttgart, Germany	Max-Plank-Institute

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Part 1 of 1 Parts

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V. V. Lemanov
F. G. Ullman

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GUEST EDITORIAL

It was brilliant of George Taylor and Vladimir Fridkin to establish in 1988 the concept of holding a joint USA–USSR Seminar Series on Ferroelectricity. The First Seminar was held at the University of Colorado in Boulder, July 9–15, 1989, attended by 13 Soviet and 41 American scientists. The Second Seminar was scheduled for Summer 1991 in Krasnoyarsk but for reasons (independent of scientists) was postponed. So, the Second Seminar was rescheduled for St. Petersburg, June 22–26, 1992. By that time, the former Soviet Union had been transformed into the Commonwealth (we hope) of Independent States.

The Second CIS–USA Seminar on Ferroelectricity was attended by 16 American and 100 CIS scientists. The scope of the seminar covered the main topics of ferroelectricity: phase transitions (both experimental and theoretical); disordered ferroelectrics; diffuse phase transitions; glassy behaviour; microwave properties; polarization switching; domain structure; thin films and memory devices; polymers; ceramics, including computer simulation; and high-T_c superconductivity and its possible relation to ferroelectricity. There were 41 presentations in the plenary sessions (24 from the CIS and 17 from the USA) and 87 poster contributions. The whole atmosphere of the meeting was warm and productive, with many useful discussions; old personal and scientific contacts were strengthened and new ones established.

Since two seminars have been held already, this allows us to refer to the tradition of holding the CIS–USA Seminars on Ferroelectricity. The Third Seminar will be held in the USA in 1994, and we look forward to meeting our American colleagues and discussing various problems of ferroelectricity.

If the organization of the Second Seminar in St. Petersburg was very good (the American guests may judge for themselves), it was due mostly to Mrs. Albina Nikkonen and her small team. We would like to express our sincere gratitude to all of them.

V. V. Lemanov
Ioffe Institute
St. Petersburg, Russia

GUEST EDITORIAL

From the very first moments of our arrival, the American delegation was touched by the warm reception and hospitality—beyond protocol—shown us by our CIS hosts. Despite all the economic and political pressures and accompanying uncertainties they were facing, they were able to organize the meeting effectively. Throughout the seminar, Albina Nikkonen and her headquarters' staff reacted rapidly and efficiently to all requests, however trivial. They arranged our free time with tours, ballet, opera, and a glorious final banquet in a river-moored restaurant looking across to the Hermitage. Perhaps the most memorable times were in the late evening, when we convened in the headquarters' room for snacks, drinks, and socializing; it was then that we came to know each other as friends rather than just professional colleagues.

Our time in St. Petersburg was not without hardship (for Americans), however. Our meeting coincided with the annual cleaning of the central hot water supply facility for that area of the city; so a universal topic of discussion among all the residents at the conference facility centered on the suffering we experienced in our early morning showers!

Another memorable incident involved several of the American delegation, including myself and my wife, who unknowingly overloaded an elevator at 11:00 P.M. one night and found ourselves stuck between two of the upper floors! Fortunately, our cries for help were heard, and after some time the elevator was lowered manually to a few feet above a lower floor and we were able to force the door open and jump down.

I felt that my attendance at the seminar was a worthwhile investment. A great deal of interesting new work was reported at both the plenary and poster sessions, as will be borne out by these Proceedings. I look forward to the next seminar in 1994.

Finally, I want to thank Ken Lyons for agreeing to represent the American delegation at the banquet. Ken delivered his remarks in Russian and judging from the laughs and applause, they were very well received. Since the Americans present didn't understand what he said, I asked Ken for an English translation, which he kindly provided. It was a wonderfully appropriate closing statement of the feelings of the entire American delegation and so I reproduce it below to close this editorial.

Frank G. Ullman
University of Nebraska
Nebraska, USA

Remarks at Banquet

Ken Lyons

(translated from the Russian)

When Stu Kurtz asked me to say a few words this evening, I had no idea what I could say. "But," he said, "you speak Russian!" And here I am.

At first, I worried that my Russian would be too poor and you would not get my drift. But you have all been so kind to speak Russian to me that I am no longer worried.

I know that I speak for all my colleagues when I congratulate the CIS committee for a most interesting seminar. We have heard many fine lectures, had discussions, and got advice. We have made new friends, and have had many interesting experiences. For example, we learned how to use a cold shower!

Seriously, and most important, we have had a wonderful time. You were most thoughtful hosts, doing everything possible to help us. I especially want to notice and thank Albina, Natalya, Elena, and Yaroslovna of the office staff for all they did to help us. We thank Vladislav, Orest, and Lev, as well as Nikolai and Alexandr, for organizing an outstanding program. Finally, of course, we are indebted to Kiril Aleksandrov for his strong leadership.

I am sure that the discussions we have had, and the collaboration that will continue, will advance the science of ferroelectrics and will strengthen the friendship of our peoples.

Many thanks

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PROCEEDINGS OF

THE SECOND CIS-USA SEMINAR ON FERROELECTRICITY

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June 1992

Part II of II Parts

Guest Editors
V. V. Lemanov
F. G. Ullman

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Princeton Resources, P.O. Box 211, Princeton, New Jersey 08540, U.S.A

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JULY 1993

PROCEEDINGS OF

THE SECOND CIS-USA SEMINAR ON FERROELECTRICITY

St. Petersburg, Russia
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Part II of II Parts

Guest Editors

V. V. Lemanov
F. G. Ullman

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