



Guest Editorial

This volume contains papers presented at the 5th International Workshop on Oxide Electronics, held December 7 and 8, 1998, at the University of Maryland, an intensive workshop focusing on advances in oxide films and their applications. The topics included conducting and superconducting oxides, colossal magnetoresistance (CMR) and magnetic oxides, dielectric and ferroelectric oxides, optical oxides and oxides to be used for sensors. Extensive discussion and interactions among approximately 100 participants were facilitated by the Workshop's intense format, which featured all 18 invited talks, evening poster sessions followed by discussion sessions, all meals on-site, no parallel sessions, and limited attendance. Please see the Appendix for a complete program of the Workshop.

The workshop contained the most recent scientific information on oxide electronic thin films from industry, academia and government laboratories. This workshop was started in Yokohama, Japan in 1994 by a chief organizer, Professor H. Koinuma. The 2nd and 3rd ones were also held in Tokyo Institute of Technology. From the 4th, the venue was changed to the University of Maryland and the 6th will also be held in Maryland in December 1999.

We wish to express sincere thanks to the staff members and students of the University of Maryland for their indispensable contributions to the local organizations of the workshop.

The workshop was held with the support of sponsors. They are listed in the preliminary pages as a sign of our appreciation.

M. Kawasaki
C.B. Eom
H. Hosono
R. Ramesh
J.M. Triscone
T. Venkatesan
X.D. Xiang
Guest Editors

Program of 5th International Workshop on Oxide Electronics

December 7–8, 1998

University of Maryland, Inn and Conference Center College Park, Maryland, USA

Sponsored by: DAPRA, University of Maryland NSF-MRSEC, Center for Superconductivity Research, University of Maryland, and Japan Society for the Promotion of Science

Program

Sunday (December 6)

6:30pm–8:00pm Registration

7:00pm–9:00pm Workshop Reception

Monday (December 7)

7:30am–9:00am Registration

8:10am–8:30am Welcoming Remarks

Invited Speakers(including 10 min for discussion)

Optical Devices

8:30am–9:10am

Session Chair **M. Kawasaki**

M. Fejer(Stanford)

Periodically-Poled Ferroelectrics for Nonlinear Optical Applications

9:10am–9:50am

H. Kawazoe(TIT)

Chemical Design and Thin Film Preparation of *p*-type Conductive and Transparent Oxides

9:50am–10:30am

J. Zhao(NZ Applied Tech.)

Oxide Thin Film Materials for Electro-optical Devices

10:30am–10:50am

Break

Sensors/Devices

10:50am–11:30am

Session Chair **R. Ramesh**

X. Pan(U. Michigan)

Oxide Thin Films for Chemical Sensors Applications

11:30am–12:00am

H.L. Tuller(MIT)

Advanced Sensor Technology Based on Oxide Thin Films—MEMS Integration

12:00am–12:30am

X.X. Xi(Penn S. U)

Ferroelectric Thin Films for Frequency Agile Electronics

12:30am–2:00pm

Lunch

Sponsors

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University of Maryland NSF-MRSEC,
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Japan Society for the Promotion of Science

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Chang-Beom Eom	(Duke University)
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Hideo Hosono	(Tokyo Institute of Technology)
R. Ramesh	(University of Maryland)
T. Venkatesan	(University of Maryland)
J.M. Triscone	(University of Geneva)
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H. Yamauchi	(Tokyo Institute of Technology)
M. Yoshimoto	(Tokyo Institute of Technology)

Ferroelectricity in low dimensions

2:00pm–2:40pm

Session Chair **T. Geballe**
K. Rabe(Yale U)

Ferroelectricity in Ultrathin PbTiO₃ Films: A First-Principles Approach

2:40pm–3:10pm

T. Tybell(U. Geneva)

Ferroelectricity in Ultrathin Perovskite Films

3:10pm–3:40pm

H. Christen(Neocera)

Size and Strain Effects in Epitaxial Perovskite Superlattices: Physical Mechanisms and Potential Applications

3:40pm–4:00pm

Break

4:00pm–7:00pm

Poster Session I (with buffet dinner around 6pm)

7:00pm–7:30pm	Break	
7:30pm–10:00pm	Night Session Discussion Leader H. Koinuma (TIT) and I. Takeuchi (LBL)	Combinatorial Approach for Oxide Materials and Devices

Tuesday (December 8)

Invited Speakers(including 10min for discussion)

HTS and CMR 8:30am–9:10am	Session Chair J.-M. Triscone T.H. Geballe (Stanford)	Electrical Transport in Perovskite Films and Structures
9:10am–9:40am	I. Maggio-Aprile (Geneva)	Scanning Tunneling Spectroscopy of High Tc Superconductors
9:40am–10:10am	S.M. Anlage (Maryland)	Noncontact Imaging of Dielectric Constant with a Near Field Microwave Microscope
10:10am–10:30am	Break	
Epitaxial Growth and Related Problems 10:30am–11:10am	Session Chair C.B. Eom D. Schlom (Penn S. U.)	High-K Candidates for use as the Gate Oxide in Silicon MOSFETs
11:10am–11:50am	E. Gusev (IBM)	Ultrathin Oxide Films for Advanced Gate Dielectric Applications: Current Progress and Future Challenges
11:50am–12:30am	D. Blank (Twente)	A New Approach in Layer-by-layer Growth of Oxide Materials by Pulsed Laser Deposition
12:30am–2:00pm	Lunch	
Devices 2:00pm–2:30pm	Session Chair X.D. Xiang R.D. Vispute (Maryland)	Hybrid Metal-Oxide-Nitride Based Wide Band Gap Heterostructures by PLD
2:30pm–3:10pm	H. Takasu (ROHM)	The Ferroelectric Memories and its Applications
3:10pm–3:50pm	D.M. News (IBM)	The Mott Transition Field Effect Transistor: a Nanodevice?
3:50pm–4:00pm	Break 4:00pm–7:00pm	Poster Session II (with buffet dinner around 6pm)
7:00pm–7:30pm	Break	
7:30pm–10:00pm	Night Session Discussion Leader T. Venkatesan	Where are the Markets for Oxide Electronics?

Posters of the International Workshop on Oxide Electronics

Poster session I: Monday, December 7, 4:00pm–7:00pm

- I-1 Epitaxial Growth of SrBi₂Ta₂O₉ and SrBi₂Nb₂O₉ Thin Films** J. Lettieri, Y. Jia, C.I. Weber, D.G. Schlom, Penn State University, Dept of Materials Science and Engineering, State College, PA; H. Li, R. Ramesh, University of Maryland, Dept. of Physics, College Park, MD; G.W. Brown, M.E. Hawley, Los Alamos National Laboratory, Materials Science and Technology Division, Los Alamos, NM; R. Uecker, P. Reiche, Institute of Crystal Growth, Berlin, Germany.
- I-2 Epitaxial Sr-Bi-Ta oxide films of cubic fluorite-like phase** T.W. Noh, S.J. Hyun, B.H. Park, S.D. Bu, Seoul National University, Department of Physics, Seoul 151–742, Korea; Jeong Soo Lee, LG Corporate Institute of Technology, Seoul 137–724, Korea.
- I-3 Evolution of the Surface Morphology of c-axis Bi₄Ti₃O₁₂ Films Grown by Molecular Beam Epitaxy** G.W. Brown, Center for Materials Science, Los Alamos National Laboratory, Los Alamos, NM 87545; M.E. Hawley, Materials Science & Technology Division (MST-8) Los Alamos National Laboratory, Los Alamos, NM 87545; C.D. Theis, J. Yeh, and D.G. Schlom, Department of Materials Science and Engineering, The Pennsylvania State University, University Park, PA 16802–5005.
- I-4 Studies of Growth, Post-Deposition Processes, and Surface Structure of Strontium Bismuth Tantalate Thin Films Using in situ Time-of-Flight Ion Beam Analysis and Spectroscopic Ellipsometry** J. Im,¹ O. Auciello,² A.R. Krauss,¹ D.M. Gruen,¹ Argonne National Laboratory, ¹Materials Science and Chemistry Divisions, ²Materials Science Division, Argonne, IL 60439; Y. Gao and E.A. Irene, University of North Carolina, Chemistry Department, Chapel Hill, NC 27599–3290; J. Lettieri and D.G. Schlom, PennState University, Materials Science and Engineering, University Park, PA16802; R.P.H. Chang, Northwestern University, Department of Materials Science, Evanston, IL 60208.
- I-5 Study of Nucleation and Growth of SrBi₂Ta₂O₉ Thin Films on YBCO Electrode Layers Using in situ Mass Spectroscopy of Recoiled Ions** J. Im,¹ O. Auciello,² A.R. Krauss,¹ D.M. Gruen,¹; Argonne National Laboratory, ¹Materials Science and Chemistry Divisions, ²Materials Science Division, Argonne National Laboratory, Argonne, IL 60439; R. Ramesh; University of Maryland, Materials and Nuclear Engineering, College Park, MD 20742; S.P. Pai and T. Venkatesan; University of Maryland, Center for Superconductivity Research and Department of Physics, College Park, MD 20742.
- I-6 The Effect of Stress on the Microwave Dielectric Properties of (Ba,Sr)TiO₃ Thin Films** J.S. Horwitz, W. Chang, W. Kim, J.M. Pond, S.W. Kirchoefer, S.B. Qadri and D.B. Chrisey Naval Research Laboratory, Washington D.C. 20375.
- I-7 Development of Ba_{1-x}Sr_xTiO₃ Based Ferroelectric Structures for Room Temperature Microwave Applications** C.L. Cenedy, S. Aggarwal, A. Henry, Hao Li, L. Salamanca-Riba, T. Venkatesan and R. Ramesh, Materials Research Science and Engineering Center (MRSEC), University of Maryland, College Park, MD 20742; F.W. Van Keuls, R.R. Romanofsky, N.D. Varaljay and F.A. Miranda, NASA Lewis Research Center, Cleveland, OH 44135.
- I-8 ZnMgO Alloy Thin Films for Short-wavelength Emitters** S. Choopun, R.D. Vispute, W. Noch, A. Balsamo, R. Enck, R.P. Sharma and T. Venkatesan Center for Superconductivity Research, Dept of Physics, Univ of Maryland, College Park, Maryland 20742 USA.
- I-9 Quantum Chemical Study on the Surface Structure and Doping of ZnO—An Ultra-Violet Laser Emitting Material** Yasunori Oumi, Hiromitsu Takaba, S. Salai Cheettu Ammal, Momoji Kubo, Kazuo Teraishi and Akira Miyamoto, Department of Materials Chemistry, Graduate School of Engineering, Tohoku University, Aoba-yama 07, Sendai 980-8579, Japan; Masashi Kawasaki, Department of Innovative and Engineering Materials, Tokyo Institute of Technology, Midori-ku, Yokohama 226–8502, Japan; Mamoru Yoshimoto, Materials and Structures Laboratory, Tokyo Institute of Technology, Midori-ku, Yokohama 226–8502, Japan; Hideomi Koinuma, CREST-JRDC and Materials and Structures Laboratory, Tokyo Institute of Technology, Midori-ku, Yokohama 226-8502, Japan.

- I-10 Molecular Dynamics Simulations on Ultraviolet Laser Emitting Materials ZnO** M. Kubo, Y. Oumi, K. Teraishi, A. Miyamoto, Dept. of Materials Chemistry, Graduate School of Engineering, Tohoku University, Aoba-yama 07, Sendai 980-8579, Japan; J. Kawasaki, Dept. of Innovative and Engineering Materials, Tokyo Institute of Technology, Midori-ku, Yokohama 226-8502, Japan; M. Yoshimoto, Materials and Structures Laboratory, Tokyo Institute of Technology, Midori-ku, Yokohama 226-8502, Japan; H. Koinuma, CREST-JRDC and Materials and Structures Laboratory, Tokyo Institute of Technology, Midori-ku, Yokohama 226-8502, Japan.
- I-11 Tuning of Ferromagnetism and Antiferromagnetism in $\text{La}_{0.6}\text{Sr}_{0.4}\text{MnO}_3/\text{La}_{0.6}\text{Sr}_{0.4}\text{FeO}_3$ Superlattices** Makoto Izumi, Yoshinori Konishi, and Takashi Manako, JRCAT, Tsukuba, JAPAN; Masashi Kawasaki, JRCAT, Tsukuba, JAPAN and, Tokyo Institute of Technology, Dept. of Innovative and Engineered Materials, Yokohama, Japan; Yoshinori Tokura, JRCAT, Tsukuba, Japan; Univ. of Tokyo, Dept. of Applied Physics, Tokyo, Japan; Youichi Murakami, PF, High Energy Accelerator Research Organization, Tsukuba, Japan.
- I-12 Construction of Spin-Frustrated Superlattices of $\text{LaMnO}_3/\text{LaFeO}_3$ and Their Spin Glass Properties.** Hitoshi Tabata, Kenji Ueda, Yuji Muraoka, Tomoji Kawai, Osaka Univ, ISIR, Mihogaoka, Osaka, Japan.
- I-13 Local Control of the Ferroelectric Polarization in $\text{Pb}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ Thin Films** T. Tybell, C.H. Ahn, L. Antognazza, and J.-M. Triscone, DPMC, University of Geneva, 24 Quai Ernest Ansermet, 1211 Geneva 4, Switzerland; M. Foeth, P. Stadelmann, CIME, EPFL, Batiment MXC, 1015 Lausanne, Switzerland.
- I-14 Determination of the Spin-Polarization of Magnetic Oxides Using Point Contact Tunneling with a Superconducting Tip** M. S. Osofsky, R.J. Soulen, Jr., J.M. Byers, B. Nadgorny, P.R. Broussard, and M. Rubinstein, Naval Research Laboratory, Washington, D.C. 20375; Y.M. Mukovskii, Moscow State Steel and Alloys Institute, Moscow, Russia.
- I-15 $\text{Fe}_3\text{O}_4/\text{TiN}$ Superlattices: Growth and Characterization of Magnetization and Magnetotransport Properties** A. Orozco, S.B. Ogale, C.M. Innes, H. Asano, M. Robson, V. Smolyaninova, C. Galley, R.L. Greene, T. Venkatesan, and R. Ramesh, University of Maryland, College Park.
- I-16 Correlations between Static and Dynamic Structural Distortions and the Complex Magnetic Behavior in Layered Perovskite Double Sheet Single Crystals** R.P. Sharma, P. Fournier, M. Downes, S. Choopun, R.L. Greene, and T. Venkatesan, Center for Superconductivity Research, Physics Department, University of Maryland, College Park, Maryland-20742; J.F. Mitchell and D. Miller, Materials Science Division, Argonne National Laboratory, Argonne, IL-60439; T. Kimura, Y. Tokura, Joint Research Center for Atom Technology (JRCAT), Tsukuba 305-0046, Japan.
- I-17 CMR Manganite Thin Films for Infrared Detection** M. J. Downes, M. Rajeswari, A. Goyal, R. Shreekala, M. Lewis, C. Sehman, R. Ramesh, and T. Venkatesan, Univ. of Maryland, Center for Superconductivity Research, Dept. of Physics, College Park, MD.
- I-18 Growth and Characterization of Single Crystal SrRuO_3 Thin Films** J.W. Reiner, L. Klein, A. Kapitulnik, T.H. Geballe, M.R. Beasley, Stanford University, Ginzton Laboratory, Stanford, CA; Marshall, Stanford University, Center for Material Research, Stanford.
- I-19 Surface-step-Mediated Epitaxy of Oxide Thin Films** Q.D. Jiang, M. G. Medici, L.M. Dezaneti, and C.W. Chu University of Houston, Texas Center for Superconductivity and Department of Physics, Houston, TX, USA.
- I-20 Magnetically Tunable Microwave Filters Based on Epitaxial YBCO/YIG/GGG Heterostructures.** Hans-Martin Christen, Sherwood D. Silliman, Lee A. Knauss, K.S. Harshavardhan, Neocera Inc., 10000 Virginia Manor Rd., Suite 300, Beltsville, MD 20705 Mahmoud M.A. El Sabbagh, Kawthar Zaki, Electrical Engineering Department, University of Maryland, College Park MD 20742.
- I-21 Ion-beam-assisted Deposition of In-plane Textured Buffer Layers for Oxide Electronics** Vladimir C. Matijasevic, Conductus, Inc., Sunnyvale, CA; Robert H. Hammond, C.P. Wang, and M.R. Beasley, Stanford University, Stanford, CA.

- I-22 In-situ Growth Monitoring Using RHEED for Fabrication of Planar REBa₂Cu₃O_{7-d} Junctions** Guus J.H.M. Rijnders, Gertjan Koster, Dave H.A. Blank, and Horst Rogalla, Univ. of Twente, Dept. of Applied Physics, Low Temperature Division, The Netherlands.
- I-23 Single Crystal Epitaxial Thin Films and Heterostructures of Relaxor Ferroelectric Pb(Mg_{1/3}Nb_{2/3})O₃-PbTiO₃** D. Lavric, Q. Gan, R.A. Rao and C.B. Eom, Department of Mechanical Engineering and Materials Science, Duke University, Durham, NC 27708; J.C. Jiang, X.Q. Pan, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI 48109.
- I-24 Initial Stage Nucleation and Growth of Epitaxial SrRuO₃ Thin Films on (001) SrTiO₃ Substrates** R. Chae, Q. Gan, R.A. Rao, and C.B. Eom, Department of Mechanical Engineering and Materials Science, Duke University, Durham, NC 27708.
- I-25 Strain Inhomogeneity in Epitaxial PLD La_{0.67}Ca_{0.33}MnO₃ Thin Films** R.A. Rao, D. Lavric, T.K. Nath, and C.B. Eom, Department of Mechanical Engineering and Materials Science, Duke University, Durham, NC 27708; L. Wu, and F. Tsui, Department of Physics and Astronomy, University of North Carolina, Chapel Hill, NC 27514.
- I-26 Partial Separation of Carrier Paths from Dopant Ions in a Transparent Conductive Oxide, Indium Gallium Zinc Oxide** Hiromichi Ohta, Masahiro Orita, Hiroaki Tanji, HOYA Corporation, R&D Center, Tokyo, Japan.

Poster session II: Tuesday, December 8, 4:30pm–7:00pm

- II-1 Continuous Thin Film Composition Spread of (Ba_{1-x-y}Ca_xSr_y)TiO₃** Haiyee Chang, Ichiro Takeuchi, Xiao-Dong Xiang, Lawrence Berkeley National Laboratory, Berkeley, CA.
- II-2 A New Route to Artificial Crystal Lattice Engineering: Combinatorial Laser MBE** Tsuyoshi Ohnishi, Daisuke Komiyama, Mikk Lippmaa, Satoru Ohashi, Ceramics Materials and Structures Lab., Tokyo Inst. of Tech., Yokohama, Japan; Akira Ohtomo, Masashi Kawasaki, Dept. of Innovative and Engineering Materials, Tokyo Inst. of Tech., Yokohama, Japan; Hideomi Koinuma, Ceramics Materials and Structures Lab., Tokyo Inst. of Tech., Yokohama, Japan; and also CREST-JST.
- II-3 Step Flow Growth of SrTiO₃ Films with a Dielectric Constant Exceeding 10,000** M. Lippmaa, N. Nakagawa, M. Kawasaki, Dept. of Innovative and Engineered Materials, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226–8502, Japan; S. Ohashi, Y. Inaguma, M. Itoh, H. Koinuma, Materials and Structures Laboratory, Tokyo Institute of Technology, Japan.
- II-4 RHEED Intensity Oscillations for the Stoichiometric Growth of SrTiO₃ Thin Films by Molecular Beam Epitaxy** Jeffrey H. Haeni, Christopher D. Theis, Darrell G. Schlom, Pennsylvania State University, Dept. of Materials Science and Engineering, University Park, PA.
- II-5 A New Approach in Layer-by-Layer Growth of Oxide Materials by Pulsed Laser Deposition** Gertjan Koster, Guus J.H.M. Rijnders, Dave H.A. Blank and Horst Rogalla, Univ. of Twente, Dept. of Applied Physics, Low Temperature Division, The Netherlands.
- II-6 Tunneling Magnetoresistive Ordered Double Perovskite Sr₂FeMoO₆ Working at Room Temperature** Kei-Ichiro Kobayashi,¹ Yasuhide Tomioka,¹ Tsuyoshi Kimura,¹ Hideaki Sawada,¹ Kiyoyuki Terakura¹ and Yoshinori Tokura,^{1,2} ¹Joint Research Center for Atom Technology(JRCAT) Tsukuba, 305-8562 Japan, ²University of Tokyo, Tokyo, 113–0033, Japan.
- II-7 Magnetoresistance at Room Temperature in Sr₂FeMoO₆ Thin Films** Takashi Manako, Makoto Izumi, Yoshinori Konishi, Joint Research Center for Atom Technology, Tsukuba, Japan; Masashi Kawasaki, Joint Research Center for

Atom Technology, Tsukuba, Japan, and Tokyo Institute of Technology, Dept. of Innovative and Engineered Materials, Yokohama, Japan; Yoshinori Tokura Joint Research Center for Atom Technology, Tsukuba, Japan; Univ. of Tokyo, Dept. of Applied Physics, Tokyo, Japan.

- II-8 Growth of $\text{Sr}_2\text{FeMoO}_6$ Thin Films by Pulsed Laser Deposition and Study of Their Electrical and Magnetic Properties** H. Asano, J. Garrison, E. Li, A. Orozco, S. B. Ogale, R. Ramesh, and T. Venkatesan, Center for Superconductivity Research, Dept. of Physics, University of Maryland, College Park, MD; M. Johnson, Naval Research Laboratory, Washington DC.
- II-9 Plume-Induced Stress in Epitaxial Dielectric Films Grown by Pulsed-Laser Deposition** D.P. Norton, J.D. Budai, C. Park, YI. E. Lee, D.B. Geohegan, and A. Puzos, Oak Ridge National Laboratory, Solid State Division, P.O. Box 2008, Oak Ridge, TN 37831-6056.
- II-10 Crystallographic Orientation Dependence of the Schottky Properties of Metal/ SrTiO_3 Junctions** Takashi Shimizu, Yuji Usui, Tomoyuki Nakagawa, Hideyo Okushi, Electrotechnical Laboratory, Tsukuba, Japan.
- II-11 Effect of Hydrogen on Perovskite Oxide Electrodes for Thin Film Ferroelectric Capacitors** S. Aggarwal, C.J. Kerr, S.R. Perusse and R. Ramesh Department of Materials and Nuclear Engineering and Center for Superconductivity Research, Physics Department University of Maryland, College Park, MD 20742.
- II-12 Defect Characterization of Ferroelectric Thin Films Using Positron Annihilation Spectroscopy** T. Friessnegg, Univ. of Maryland, College Park, MD; B. Nielsen, Brookhaven National Laboratory, Upton, NY; R. Godfrey, S. Aggarwal, and R. Ramesh, Univ. of Maryland, College Park, MD; D.J. Keeble, Univ. of Dundee, Scotland; E.H. Poindexter, Army Research Laboratory, Adelphi, MD.
- II-13 Carrier Generation in Wide Band Gap Crystalline and Amorphous Oxides by Ion Implantation** Hideo Hosono, Kazushige Ueda, Hiroshi Kawazoe, Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, Japan.
- II-14 Epitaxial Growth and Luminescent Properties of Mn-doped ZnGa_2O_4 Films** Y. E. Lee, D.P. Norton, and J.D. Budai, Oak Ridge National Laboratory, Solid State Division, P.O. Box 2008, Oak Ridge, TN 37831-6056.
- II-15 Magnetoresistance in Tunneling Junctions using Epitaxially Grown Manganate Films with 1.6-nm-thick Barriers** Takeshi Obata, Takashi Manako, Yuichi Shimakawa, and Yoshimi Kubo, Fundamental Research Laboratories, NEC Corporation, 34 Miyukigaoka, Tsukuba, Ibaraki 305-8501, Japan.
- II-16 Growth and Evaluation of Pulsed Laser Deposited Magnetite Thin Films** Eric Li, S.B. Ogale, I. Jin, A. Orozco, M. Robson, R. Ramesh, T. Venkatesan, University of Maryland at College Park, Center for Superconductivity Research, Department of Physics; J. Johnson, Naval Research Laboratory.
- II-17 Biaxial Strain and Phase Control of Manganite Thin Films** Yoshinori Konishi, Makoto Izumi, Takashi Manako, Joint Research Center for Atom Technology(JRCAT), Tsukuba 305-0046, Japan; Masashi Kawasaki, Department of Innovative and Engineered Materials, Tokyo Inst. of Technology, Yokohama 226-8502, Japan Joint Research Center for Atom Technology(JRCAT), Tsukuba 305-0046, Japan; Yoshinori Tokura Department of Applied Physics, University of Tokyo, Tokyo 113-8656, Japan Joint Research Center for Atom Technology(JRCAT), Tsukuba 305-0046, Japan.
- II-18 Photo-induced Effect of Near-infrared Laser Irradiation on the Charge-order in $\text{Pr}_{0.65}\text{Ca}_{0.35}\text{MnO}_3$: X-ray Diffraction and Electron-Spin Resonance** Osami Yanagisawa, Mitsuru Izumi, Wei-Zhi Hu, Kai-Hua Huang, Laboratory of Applied Physics, Tokyo University of Mercantile Marine Kenji Nakanishi 1, Hideo Nojima; Functional Devices Research Laboratory, Sharp Corporation, 273-1, Kashiwa, Kashiwa-shi, Chiba 277 -0005, Japan.
- II-19 Disorder-driven Electronic Instability in the Doped Manganites** R.M. Stroud, V.M. Browning, J.M. Byers, W.W. Fuller-Mora, V.G. Harris, Naval Research Laboratory, Washington, DC.

- II-20 Effect of Ultra-thin SrTiO₃ Seed Layers on Microwave Surface Resistance of YBa₂Cu₃O₇ Films Deposited on (100) MgO** J.P. Contour, C. Couvert, Y. Lemaire, B. Marcilhac, Unit* Mixte de Physique C.N.R.S./Thomson-CSF, F-91404 Orsay, France; O. Durand, LCR/Thomson-CSF, F-91404 Orsay, France.
- II-21 A Novel Epitaxy Concept for Multicomponent Oxide Films: Tri-Phase Epitaxy** Masashi Kawasaki, Dept. Innovative and Engineered Materials, Tokyo Institute of Technology, Yokohama, Japan; Byeong Dae Choi, Kyung Sung Yun, Hideomi Koinuma, Ceramics Materials and Structures Lab., Tokyo Institute of Technology, Yokohama, Japan.
- II-22 Ion Channeling Investigation of Static and Dynamic Structural Fluctuations in Oxygen Depleted YBa₂Cu₃O_{7-x} Samples** R.P. Sharma and T. Venkatesan, Center for Superconductivity Research, Physics Department, University of Maryland, College Park, Maryland-20742; Z.H. Zhang, J.R. Liu and W.K. Chu, Texas Center for Superconductivity, University of Houston, Houston, Tx- 77204 Boyed Veal, A Paulikas; H. Zheng, Materials Science Division, Argonne National Laboratory, Argonne, Illinois- 60439.
- II-23 Unusual Photon Energy Dependence of the Cooper Pair Breaking Rate in YBa₂Cu₃O_{7-d} Epitaxial Thin Films** Y.G. Zhao,¹ W.L. Cao,² J.J. Li,² R. Shreekala,¹ C.H. Lee,² H.D. Drew,¹ S.P. Pai,¹ M. Rajeswari,¹ S.B. Ogale,¹ G. Baskaran,³ and T. Venkatesan.^{1,2} Center for Superconductivity Research and the NSF MRSEC on Oxide Thin Films and Surfaces ¹Department of Physics, ²Department of Electrical Engineering University of Maryland, College Park MD 20742, ³Institute for Mathematical Sciences, Tharamani, Chennai 600028, India.
- II-24 Physical Properties of Epitaxial Ferroelectric/Superconductor Heterostructures** C.H. Ahn, S. Gariglio, P. Paruch, T. Tybell, L. Antognazza, J.-M. Triscone.
- II-25 Pulsed laser Deposition of Zr_{1-x}Ce_xO₂ and Ce_{1-x}La_xO_{2-x/2} for Buffer Layers and Insulating Barrier in Oxide Heterostructures** J. Lyonnet, J.-P. Contour, J.-L. Maurice, Unit* Mixte de Physique C.N.R.S./Thomson-CSF, 91404 Orsay, France; O. Durand, LCR/Thomson-CSF, 91404 Orsay, France; Khodan, Institute of Physical Chemistry, Russian Academy of Sciences, 117915 Moscow, Russia; D. Michel, C.E.C.M./C.N.R.S., 94407 Vitry sur Seine, France.