



Strasbourg (France)

E-MRS Spring Meeting 2004  
May 24-28, 2004

## SYMPOSIUM D

Functional oxides for advanced semiconductor  
technologies

Symposium Organizers:

Ignazio L. Fragalà, University of Catania, Italy

Marin Alexe, MPI Halle, Germany

Patrick Rabinzohn, Applied Materials Europe, Meylan, France

Dirk Wouters, IMEC, Belgium

Raffaele Zambrano, STMicroelectronics, Catania, Italy

Papers will be published in Materials Science and Engineering B

# E-MRS 2004 SPRING MEETING

## SYMPOSIUM D

Tuesday, May 25, 2004

Morning

Session I: Fundamentals

Session chairs: I.L. Fragalà

- D-I.1** 09:00 -Invited- FERROELECTRICITY AND NANOSCALE FERROELECTRIC WRITING IN THIN PEROVSKITE FILMS  
**J.M. Triscone**, Ecole de Physique, DPMC, 24 Quai Ernest-Ansermet, 1211 Genève 4, Switzerland
- D-I.2** 09:40 -Invited- FATIGUE IN FERROELECTRIC CERAMICS  
**Doru C. Lupascu**, Institute of Materials Science, Darmstadt University of Technology, Petersenstr. 23, 64287 Darmstadt, Germany
- D-I.3** 10:05 FIRST-PRINCIPLES STUDY OF THE ELECTROOPTIC EFFECT IN FERROELECTRIC OXIDES  
Marek Veithen and Philippe Ghosez, Département de Physique, Université de Liège, Allée du 6 août 17, 4000 Sart-Tilman, Belgium, Xavier Gonze, Unité PCPM, Université Catholique de Louvain, Place Croix du Sud 1, 1348 Louvain-la-Neuve, Belgium
- D-I.4** 10:20 DYNAMIC SCALING OF HYSTERESIS DISPERSION IN FERROELECTRICS  
J.-M. Liu, H. Yu and B. Pan, Laboratory of Solid State Microstructures, Nanjing University, Nanjing 210093, China
- 10:35 **BREAK**

Session II: Fundamentals

Session chairs: J.M. Triscone

- D-II.1** 11:00 VISCOPLASTIC BEHAVIOUR OF PEROVSKITE TYPE FERROELECTRICS  
A.Yu. Belov and W. Kreher, Technical University of Dresden, Hallwachsstr. 3, 01069 Dresden, Germany
- D-II.2** 11:15 ACCURACY OF PREDICTED DIELECTRIC CONSTANTS: THE CASE OF LAALO<sub>3</sub>  
Vincenzo Fiorentini and Alessio Filippetti, Dept. of Physics, University of Cagliari, Italy
- D-II.3** 11:30 SELF-ORGANIZATION OF FERROELECTRIC DOMAINS IN FREESTANDING FERROELECTRIC FILMS  
I. Ebralidze, V. Lyahovitskaya, E. Wachtel, I.Zon, I. Feldman, and Igor Lubomirsky, Weizmann Institute of Science, Rehovot, 76100, Israel, A.L.Roytburd University of Maryland, College Park MD 20742, USA
- D-II.4** 11:45 AB INITIO CALCULATIONS OF THE ATOMIC AND ELECTRONIC STRUCTURE OF BaSrTiO<sub>3</sub> (BST) SOLID SOLUTIONS  
S. Dorfman, Dept of Physics, Technion-Israel Institute of Technology, Haifa 32000, Israel, S. Piskunov, Inst. of Solid State Physics, University of Latvia, Kengaraga 8, 1063 Riga, Latvia, E.A. Kotomin, Max Planck Institut fuer Festkoerperforschung, Heisenbergstrasse 1, 70569 Stuttgart, Germany, D. Fuks, Materials Eng. Dept, Ben-Gurion University of the Negev, POB 653, Beer-Sheva, Israel
- D-II.5** 12:00 ENHANCEMENT OF THE CURIE TEMPERATURE IN A-SITE DEFICIENT Pr<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub> THICK RELAXED FILMS  
A.-M. Haghiri-Gosnet(a), W. Prellier(b), M. Koubaa(a), R. Soulimane(a), W. Boujelben(c), A. Cheikh-Rouhou(c) and Ph. Lecoeur(a), (a)Institut d'Electronique Fondamentale, IEF, UMR 8622 CNRS, Bâtiment 220, Université Paris-Sud, 91405 Orsay Cedex, France, (b)Laboratoire de Cristallographie et Sciences des Matériaux, CRISMAT-ISMRA, CNRS UMR 6508, 6 bd du Maréchal Juin, 14050 Caen Cedex, France, (c)Laboratoire de Physique des Matériaux, Faculté des Sciences de Sfax, B.P.802, Sfax, Tunisia
- D-II.6** 12:15 HIGH REACTIVITY OF PR ON OXIDE COVERED 4H-SiC  
Dieter Schmeisser, Angewandte Physik - Sensorik, BTU Cottbus, Postfach 10 13 44, 03044 Cottbus, Germany, G. Lupina, H.J. Muessig, IHP, Im Technologiepark 25, 15236 Frankfurt (Oder), Germany
- 12:30 **LUNCH**

Tuesday, May 25, 2004

Afternoon

Session III: Ferroelectric

Session chairs: M. Alexe

- D-III.1** 14:00 -Invited- PERFORMANCE COMPARISON OF PZT AND  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ -BASED FERROELECTRIC THIN FILMS FOR FERAM APPLICATION  
**H. Funakubo**(a), T. Watanabe(a), H. Morioka(a), H. Uchida(b), S. Koda(b) and K. Saito(c), (a)Tokyo Tech., Midori-ku, Yokohama, 226-8502, Japan, (b)Sophia Univ., Chiyoda-ku, Tokyo, 102-8554, Japan, (c)Bruker AXS, Moriya-cho, Kanazawa-ku, Yokohama, 221-0022, Japan
- D-III.2** 14:40 -Invited- ELECTRICAL TESTING OF FERROELECTRIC NANOSTRUCTURES  
**S. Tiedke**, AIXACCT
- D-III.3** 15:05 MOCVD OF SBT FROM FLUORINE CONTAINING PRECURSOR SYSTEM: MICROSTRUCTURE OPTIMIZATION AND FLUORINE ELIMINATION **G.G. Condorelli**(a), G. Anastasi(a), C. Bedoya(a), M. Favazza(a), A. Baeri(a), R. Lo Nigro(d), N. Menou(b), Ch. Muller(b), J. Lisoni(c), D. Wouters(c), I.L. Fragalà(a), (a)Dipartimento di Scienze Chimiche, Università di Catania, Italy, (b)L2MP, CNRS UMR 6137, Université de Toulon et du Var, (c)IMEC, Belgium, (d)IMM sezione di Catania, CNR Italy
- D-III.4** 15:20 ENHANCEMENT OF THE FERROELECTRIC PROPERTIES USING  $(\text{Pb}_{0.72}\text{La}_{0.28})\text{Ti}_{0.93}\text{O}_3/\text{Pb}(\text{Zr}_{0.53}\text{Ti}_{0.47})\text{O}_3/(\text{Pb}_{0.72}\text{La}_{0.28})\text{Ti}_{0.93}\text{O}_3$  HETEROSTRUCTURES FABRICATED BY PULSED LASER DEPOSITION  
**Eun Sun Lee**, Hyun Woo Chung, Sung Hoon Lim, and Sang Yeol Lee, Department of Electrical and Electronic Engineering, Yonsei University, 134, Shinchon-dong, Seodaemoon-ku, 120-749, Seoul, Korea
- D-III.5** 15:35 WAFER LEVEL RELIABILITY OF PZT CAPACITORS: LEAKAGE CURRENT MODELING AND LIFETIME EXTRAPOLATION  
**E. Bouyssou**(a,b), R. Jérísian(a), N. Cézac(a), P. Leduc(b), G. Guégan(b), C. Anceau(b), (a)Laboratoire de Microélectronique de Puissance (LMP), Université de Tours, 16 rue Pierre et Marie Curie, 37071 Tours, France, (b)STMMicroelectronics, 16 rue Pierre et Marie Curie, 37071 Tours, France
- D-III.6** 15:50 SYNTHESIS, DEPOSITION AND CRYSTALLIZATION OF AN AQUEOUS  $\text{Pb}(\text{Zr}_{0.5}\text{Ti}_{0.7})\text{O}_3$  PRECURSOR SOLUTION FOR FERROELECTRIC THIN FILMS  
**D. Van Genechten**, G. Vanhoyland, M.K. Van Bael, H. Van den Rul, J. Mullens, L.C. Van Poucke, Laboratory of Inorganic and Physical Chemistry, IMO, Limburgs Universitair Centrum, 3590 Diepenbeek, Belgium and J. D'Haen, IMO-IMOMEC, Limburgs Universitair Centrum, 3590 Diepenbeek, Belgium and D.J. Wouters, IMEC, 3001 Heverlee Leuven, Belgium
- 16:05 **BREAK**

Session IV: Ferroelectric  
Session chairs: Kohlstedt

- D-IV.1** 16:30 -Invited- AQUEOUS CHEMICAL SOLUTION SYNTHESIS AND DEPOSITION OF FERROELECTRICS  
**M.K. Van Bael**, Laboratory of Inorganic and Physical Chemistry, IMO, Limburgs Universitair Centrum, 3590 Diepenbeek, Belgium Laboratory of Inorganic and Physical Chemistry, IMO, Limburgs Universitair Centrum, 3590 Diepenbeek, Belgium
- D-IV.2** 16:55 EVIDENCE OF AN INTERFACE LAYER WITH HIGH SPACE CHARGE DENSITY IN FERROELECTRIC-BASED CAPACITORS  
L. Pintilie, M. Alexe, Max Planck Institute für Mikrostrukturphysik, Weinberg 2, 06120 Halle, Germany
- D-IV.3** 17:10 HIGH RESOLUTION X-RAY DIFFRACTION STUDY OF ELECTRIC FIELD INDUCED FATIGUE IN PZT-BASED FECAPS  
N. Menou(a), I. Baturin(b), Ch. Muller(a), V. Ya. Shur(b), J-L. Hodeau(c), (a)Laboratoire Materiaux et Microelectronique de Provence (L2MP), UMR CNRS 6137 Universite de Toulon et du Var, BP 132, 83957 La Garde Cedex, France, (b)Institute of Physics & Applied Mathematics, Ural State University, Lenin Ave. 51, 620083 Ekaterinburg, Russia, (c)Laboratoire de Cristallographie, CNRS, BP 166, 38042 Grenoble Cedex, France
- D-IV.4** 17:25 DEPENDENCY OF THE PROPERTIES OF  $Sr_xBi_yTa_2O_9$  THIN FILMS ON THE Sr AND Bi STOICHIOMETRY  
Matteo Viapiana(a,b), Michael Schwitters(a), Dirk J. Wouters(a), Herman E. Maes(b,d), Omer Van der Biest(c), (a)SPDT, IMEC vzw, Kapeldreef 75, 3001 Leuven, Belgium, (b)ESAT-INSYS, Katholieke University van Leuven Belgium, (c)MTM, Katholieke University van Leuven, Kasteelpark Arenberg 44, 3001 Leuven Belgium, (d)IMEC vzw, Kapeldreef 75, 3001 Leuven, Belgium
- D-IV.5** 17:40 GENERALIZED MODEL FOR LEAKAGE IN HIGH PERMITTIVITY THIN FILMS - COMPARISON OF SIMULATION AND EXPERIMENT  
Herbert Schroeder, Institut für Elektronische Materialien am Institut für Festkörperforschung and cni - Center of Nanoelectronic Systems for Information Technology, Forschungszentrum Jülich GmbH, D-52425 Jülich, Germany
- D-IV.6** 17:55 THE CONTRIBUTION OF STRAIN FIELDS IN EPITAXIAL  $Pb(Zr_{0.52}Ti_{0.48})O_3$  NANOISLANDS TO FERROELECTRIC SIZE EFFECTS  
M.-W. Chu, I. Szafraniak, R. Scholz, D. Hesse, M. Alexe, and U. Gösele, Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, 06120 Halle (Saale), Germany
- D-IV.7** 18:10 ON A NOVEL LOW RESISTIVE NONVOLATILE RANDOM ACCESS CONCEPT BASED ON FRAM TECHNOLOGY  
Rene Meyer, Hermann Kohlstedt, Institut fuer Festkoerperforschung (IFF) and CNI, The Center of Nanoelectronic Systems for Information Technology Forschungszentrum Juelich, 52425 Juelich, Germany
- D-IV.8** 18:25 DEPOSITION, CHARACTERIZATION AND PROPERTIES OF La AND Nb-MODIFIED PZT THIN FILMS  
P. Verardi(a), F. Craciun(a), M. Dinescu(b), N. Scarisoreanu(b), C. Galassi(c), (a)CNR-Istituto di Acustica, Via del Fosso del Cavaliere 100, 00133 Rome, Italy, (b)NILPRP, PO Box MG-16, 76900 Bucharest, Romania, (c)CNR-ISTEC, Via Granarolo 64, 48018 Faenza, Italy

Wednesday, May 26, 2004

Afternoon

Session V: New device & adv. Sem.integr.

Session chairs: R. Zambrano

- D-V.1** 14:00 -Invited- INTEGRATION OF SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub> (SBT) BASED FRAM CAPACITORS : PLASMA ETCH ISSUES AND SOLUTIONS  
**V. PARASCHIV**, W. Boullart, S. Vanhaelemeersch, J.G. Lisoni, M. Schwitters, D. Maes, D.J. Wouters, IMEC, Kapeldreef 75, B-3001 Leuven, Belgium ; P. Casella, R. Zambrano STMicroelectronics, Stradale Primosole, 95121 Catania-Italy ; G. Vecchio, L. Van Autryve AMAT France, 11B Chemin de la Dhuy, 38246 Meylan Cedex, France
- D-V.2** 14:40 -Invited- WAFER BONDING- KEY ENABLING TECHNOLOGY FOR FUNCTIONAL MATERIALS INTEGRATION  
**D. VIOREL**, EVGroup
- D-V.3** 15:05 SILICON INTEGRATED FERROELECTRIC TRILAYER VARACTORS WITH METAL BOTTOM ELECTRODES  
**A. Vorobiev**, D. Kuylenstierna, P. Rundqvist, K. Khamchane, S. Gevorgian Department of Microtechnology and Nanoscience, Chalmers University of Technology, 41296 Gothenburg, Sweden
- D-V.4** 15:20 OPTIMIZED TECHNOLOGY FOR A MAGNETIC OXIDE MOTT-FET ETCHED IN FERROELECTRIC/MANGANITE BILAYER  
**R. Soulimane**(a), B. Mercey(b), G. Poullain(b), R. Bouregba(b), W. Prellier(b), Ph. Lecoeur(a), M. Bibès(a) and A. M. Haghiri-Gosnet(a), (a)Institut d'Electronique Fondamentale, IEF, CNRS UMR 8622, Université Paris Sud, Bâtiment 220, 91405 Orsay Cedex, France, (b)Laboratoire de Cristallographie et de Sciences des Matériaux, CRISMAT-ISMRA, UMR6508, 6 Boulevard du Maréchal Juin, 14050 Caen Cedex, France
- D-V.5** 15:35 DEVELOPMENT OF A NOVEL GAS SENSOR BASED ON OXIDE THICK FILMS  
**K. Arshak** and I. Gaidan, Microelectronic and semiconductor Research Group, ECE Department, University of Limerick National Technological Park, Limerick, Ireland
- D-V.6** 15:50 STABILITY OF SrRuO<sub>3</sub> AND RuO<sub>2</sub> METAL GATE ELECTRODES OF VARIOUS MORPHOLOGIES DURING FORMING-GAS ANNEAL TREATMENT  
**C. Rossel** (a), C. Cabral, Jr.(b), D. Halley(a), K. Fröhlich(c), K. Husekova(c), D. Widmer(a) and C. Detavernier(b), (a)IBM Research, Zurich Research Laboratory, CH-8803 Rüschlikon, Switzerland, (b)IBM Research, T.J. Watson Research Center, Yorktown Heights NY 10598, USA, (c)Institute of Electrical Engineering, SAS, 841 04 Bratislava, Slovak Republic
- 16:05 **BREAK**

Session VI: New device & adv. Sem.integr.

Session chairs: C. Gerardi

- D-VI.1** 16:30 METAL CHARACTERIZATION OF 0.13µM AND BEYOND CMOS DEVICES BY DEFECTIVITY ANALYSIS FOR TECHNOLOGY MANUFACTURING  
**A. Carnabuci**, **A. Scanni**, C. Consalvo, M. Padalino, D. Mello, M. Vulpio, ST Microelectronics, Str.le Primosole 50, 95121 Catania, Italy
- D-VI.2** 16:45 STUDY OF NITRIDATION KINETICS BY RTO IN TERMS OF KEY PROCESS PARAMETERS  
**D. Fazio**, G. Bimbo, G. Renna, M. Vulpio, ST Microelectronics, Stradale Primosole 50, 95121 Catania, Italy
- D-VI.3** 17:00 IMPACT OF PHYSICAL AND ELECTRICAL THICKNESS SCALING ON THE RELIABILITY OF PLASMA-NITRIDED GATE-DIELECTRICS IN A 90 nm SOI MANUFACTURING TECHNOLOGY  
**R. Geilenkeuser**, K. Wiczorek, T. Mantei, F. Grätsch, L. Herrmann, J.-O. Weidner, AMD Saxony LLC & Co KG, Wilschdorfer Landstr. 101, 01109 Dresden, Germany
- D-VI.4** 17:15 NH<sub>3</sub>-RTP GROWN ULTRA THIN OXYNITRIDE LAYERS FOR MOS GATE APPLICATIONS  
**H.Y.A. Chung**, W. Dietl, J. Niess, Z. Nényei, W. Lerch, Mattson Thermal Products GmbH, Daimlerstr. 10, 89160 Dornstadt, Germany, K. Wiczorek, N. Krumm, AMD Saxony LLC & Co. KG, Wilschdorfer Landstr. 101, 01109 Dresden, Germany
- 17:30 – 19:00 POSTER SESSION I

- D/PI.01** EFFECT OF CHEMICALLY ABSORBED ATMOSPHERIC OXYGEN ON ELECTRIC AND PHOTOLUMINESCENT CHARACTERISTICS OF A2B6-MONOCRYSTAL/NATIVE OXIDE STRUCTURES  
C. Khlyap, P. Sydorchuk, V. Blashkiv, State Pedagogical University, 24 Franko str., Drogobych 82100, Ukraine
- D/PI.02** MECHANISM OF CARRIER TRANSPORT FOR DARK- AND PHOTOCONDUCTIVITY IN LITHIUM DOPED ZnO FILMS  
N.R. Aghamalyan and R.K. Hovsepyan, Institute for Physical Research NAS of Armenia, 378410 Ashtarak-2, Armenia
- D/PI.03** STUDY OF ROOM TEMPERATURE DC RESISTIVITY IN COMPARISON WITH ACTIVATION ENERGY AND DRIFT MOBILITY OF NiZn FERRITES  
Uzma Ghazanfar, Centre for Excellence in Solid State Physics, Punjab University, Lahore, Pakistan, S.A. Siddiqui, Centre for Excellence in Solid State Physics, Punjab University, Lahore, Pakistan and G. Abbas, Department of Mechanical, Aerospace and Manufacturing Engineering, UMIST, Manchester, U.K.
- D/PI.04** EFFECT OF IRON SUBSTITUTION ON THE STRUCTURE, MICROHARDNESS AND RESISTIVITY OF Zn<sub>1-x</sub>Fe<sub>2x</sub>O<sub>4</sub> COMPOUNDS  
E.M. El-Maghraby, Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt
- D/PI.05** MICROSCOPIC ANALYSIS OF ULTRAVIOLET PHOTOCONDUCTIVITY IN ZnO FILMS DEPOSITED BY RF MAGNETRON SPUTTERING  
E. Fortunato, A. Pimentel, L. Pereira, A. Gonçalves, H. Águas, I. Ferreira and R. Martins, CENIMAT, Caparica, Portugal
- D/PI.06** DOPED VERSUS PURE TGS CRYSTALS  
C. Berbecaru, H. Alexandru, B. Logofatu, Bucharest University, L. Pintilie, National Institute of Materials Physics Bucharest-Magurele, Romania, R.C. Radulescu, Galway-Mayo Institute of Technology, Dublin Road, Galway, Ireland
- D/PI.07** MAGNETOOPTICAL STUDY OF OXIDE - BASED SEMIMAGNETIC SEMICONDUCTORS  
A.I. Savchuk, V.I. Fediv, P.P. Vatamanyuk, V.M. Frasunyak, K.S. Ulyanytsky, Department of Physical Electronics and Non-Traditional Energy Sources, Chernivtsi National University, 58012 Chernivtsi, Ukraine, A. Perrone, Physics Department and National Nanotechnology Laboratory of National Institute of Matter Physics, University of Lecce, 73100 Lecce, Italy, P.I. Nikitin, General Physics Institute, 117942 Moscow, Russia
- D/PI.08** GAMMA RADIATION INFLUENCE ON THE PHOTOELECTRICAL PROPERTIES OF OXIDE - p-InSe HETEROSTRUCTURE  
Z.D. Kovalyuk, Y.M. Katerynychuk, I.V. Mintyanskii, O.M. Sydor, Chernivtsi Department of the Institute of Materials Science Problems, The National Academy of Sciences of Ukraine, 5 Iryna Vilde St., 58001 Chernivtsi, Ukraine and A.I. Savchuk, Dept. of Phys. Electronics and Non-traditional Energy Sources, Chernivtsi National University, 58012 Chernivtsi, Ukraine
- D/PI.09** ON THE DYNAMICS OF PERIODICALLY POLED LITHIUM NIOBATE CRYSTALS FORMATION BY OFF-CENTER CZOCHRALSKI TECHNIQUE  
M. Bazzan, N. Argiolas, C. Sada, E. Cattaruzza, S. Padovani and P. Mazzoldi, INFN and Dipartimento di Fisica, Università di Padova, Via Marzolo 8, 35131 Padova, Italy
- D/PI.10** UNEXPECTED PHENOMENA IN FE:LiNbO<sub>3</sub> AND TI:Fe:LiNbO<sub>3</sub> OPTICAL WAVEGUIDES  
C. Sada, M. Bazzan, E. Cattaruzza, N. Argiolas, S. Padovani and P. Mazzoldi, INFN and Dipartimento di Fisica, Università di Padova, Via Marzolo 8, 35131 Padova, Italy, L.D. Bogomolova, N.A. Ktasil'nikova, and V.V. Tarasova, Institute of Nuclear Physics, Moscow State University, 119899 Moscow, Russia Yu.N. Korkishko, V.A. Fedorov, and M.Kostritskii, Department of Materials and Technology, Moscow Institute of Electronic Technology, Technical University, 103498 Moscow, Zelenograd, Russia
- D/PI.11** A STUDY OF PHYSICAL PROPERTIES OF Al DOPED ZnO ON THE POLYMER  
Yun M. Chung, Min J. Jung, Hyun S. Myung, Jeon G. Han, Center for Advanced Plasma Surface Technology (CAPST), Sungkyunkwan University, 300 Chunchun-dong, Jangan-gu, Suwon, Korea
- D/PI.12** SnO<sub>2</sub> FILMS: FORMATION, ELECTRICAL AND OPTICAL PROPERTIES  
P.M. Gorley, V.V. Khomyak, S.V. Bilichuk, I.G. Orletsky, P.P. Horley, V.O. Grechko, Yuri Fedkovych Chernivtsi National University, 2 Kotsyubynsky Str., 58012, Chernivtsi, Ukraine
- D/PI.13** PHYSICAL PROPERTIES OF ZnO THIN FILMS ON MgO (100) SUBSTRATES DEPOSITED BY PLD  
F.K. Shan, W.J. Lee, G.H. Lee, I.S. Kim, B.C. Shin, Y.S. Yu, Electronic ceramics center, Donggeui University, Busan, Korea
- D/PI.14** INFLUENCE OF STRUCTURE CHANGES OF OXIDE FILMS ON THEIR PHYSICAL PROPERTIES  
B.N. Mukashev, S.Zh. Tokmoldin, N.B. Beisenkhanov, I.V. Ovcharenko, V.B. Glazman, A.B. Aimagambetov, E.A. Dmitrieva, Institute of Physics and Technology, Ibragimov Street 11, Almaty 480082, Kazakhstan
- D/PI.15** IMAGING AND INVESTIGATION OF NON-UNIFORM DISTRIBUTIONS OF ELECTROPHYSICAL PROPERTIES OF INSULATOR-SEMICONDUCTOR STRUCTURES WITH THIN OXIDES  
V.M. Popov, A.S. Klimenko, A.P. Pokanevich, Research Institute for Microdevices, Physical & Technol. Res.Certif. Center "Microanalytics", 3, Severo-Syretskaya, 04136 Kiev, Ukraine
- D/PI.16** STRUCTURAL, ELECTRONIC TRANSPORT AND OPTICAL PROPERTIES OF CDO THIN FILMS  
G.I. Rusu, A.I. Cuza University, Iassy, Romania, C. Gheorghies, Dunarea de Jos University, Galati, Romania, R.S. Rusu, D. Mangeron High School, Iassy, Romania

- D/PI.17** GAMMA RADIATION INDUCED EFFECTS ON THE OPTICAL CONSTANTS NEAR THE FUNDAMENTAL EDGE OF Li- DOPED ZnO FILMS  
E.M. El-Maghraby, A. Abu EL-Fadl and Galal A. Mohamed, Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt
- D/PI.18** THE EFFECT OF THE HEAT TREATMENT ON ELECTRONIC TRANSPORT AND OPTICAL PROPERTIES OF  $\text{SnO}_2$ :F THIN FILMS DEPOSITED BY SPRAY PYROLYSIS TECHNIQUE  
Mihaela Girtan, I. Preda, Alina I. Ionel, G.I.Rusu, "A.I.Cuza" University, Faculty of Physics, Bd.Carol I, 11, Iassy 700506, Romania, G. Folcher, UPR15-CNRS, "Pierre et Marie Curie" University of Paris, France
- D/PI.19** INVESTIGATIONS ON THE OPTICAL CONSTANTS AND URBACH TAIL PARAMETER OF INDIUM OXIDE THIN FILMS PREPARED BY ULTRASONIC SPRAY PYROLYSIS  
Mihaela Girtan, Solid State Department, "A.I.Cuza" University, Bd. Carol I no 11, Iasi 6600, Romania
- D/PI.20** EXTRINSIC CONDUCTION OF ZnO FILM BY Ti DOPING  
Yang-Ming Lu, Chen-Min Chang and Shu-I Tsai and Tzuu-shaang Wey, Kun shan University of Technology, Yang-Kang City, Taiwan, R.O.C.
- D/PI.21** KINETICS OF RESIDUAL STRESSES IN ELECTROCHEMICALLY DOPED ITO THIN FILMS  
A. Užupis(a), B. Vengalis(b), V. Lissauskas(b), S. Tamulevicius(c), L. Augulis(d), (a)Lithuanian University of Agriculture, Faculty of Water and Land Management, Department of Physics Universiteto 10, Akademija, 4324 Kaunas, Lithuania, (b)Semiconductor Physics Institute, Goštauto 11, 2600 Vilnius, Lithuania, (c)Institute of Physical Electronics of Kaunas University of Technology, Savanorių 271, 3009 Kaunas, Lithuania, (d)Institute of Materials Science, Kaunas University of Technology, Studentų 50, 3031 Kaunas, Lithuania
- D/PI.22** ITO PROPERTIES ON ANISOTROPIC FLEXIBLE TRANSPARENT CELLULOSIC SUBSTRATES UNDER DIFFERENT STRESS CONDITIONS  
A. Amaral(a,b), C. Nunes de Carvalho(a,c), P. Brogueira(b), G. Lavareda(c), L. V. Melo(b), M. H. Godinho(c), (a)CFM, Complexo I, IST, Av. Rovisco Pais, 1049-001 Lisboa, Portugal, (b)Dept de Física, IST, Av. Rovisco Pais, 1049-001 Lisboa, Portugal, (c)Dept. de C. dos Materiais, FCT-UNL, Quinta da Torre, 2825-114 Caparica, Portugal
- D/PI.23** CHROMIUM DOPED TITANIUM OXIDE THIN FILMS  
Diana Mardare(a), G.I. Rusu(a), Felicia Iacomi(a), Mihaela Girtan(a), Ioan Vida-Simiti(b), (a)A.I.Cuza University, Faculty of Physics, 11 Carol I Blvd., 700506 Iasi, Romania, (b)Technical University, Department of Materials Science and Technology, Cluj-Napoca, Romania
- D/PI.24** CHANGEOVER FROM STRONG TO WEAK ELECTRON - PHONON COUPLING IN K- DOPED  $\text{La}_{0.7}\text{Ca}_{0.73}\text{K}_y\text{MnO}_3$  SYSTEM  
Sayani Bhattacharya and R.K. Mukherjee, Indian Association for the Cultivation of Science, Department of Solid State Physics, Jadavpur Kolkata 700032, India
- D/PI.25** EFFECTS OF ANNEALING PROCESS ON HIGH-k PRASEODYMIUM OXIDE FILMS  
Raffaella Lo Nigro(a), Roberta G. Toro(b), Graziella Malandrino(b), Vito Raineri(a) and Ignazio L. Fragalà(b), (a)IMM, sezione di Catania, CNR, Stradale Primo Sole n 50, 95121 Catania, Italy, (b)Dipartimento di Scienze Chimiche, Università di Catania, and INSTM, udr Catania, Viale Andrea Doria n 5, 95125 Catania, Italy
- D/PI.26** ON RADIATION STABILITY OF SEVERAL CHARACTERISTICS OF OXIDE DIELECTRICS  
I.Kh. Abdulkadirova, Tashkent, Uzbekistan
- D/PI.27** CONDUCTIVITY OF HIGH-DIELECTRIC CONSTANT  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  FILMS  
E.A. Kafadaryan(a), Kyuho Cho(b), Naijuan Wu(b), (a)Institute for Physical Research, NAS, 378410 Ashtarak-2, Armenia, (b)Texas Center for Superconductivity and Advanced Materials, University of Houston, Houston TX 77204-5007, USA
- D/PI.28** EFFECT OF DEPOSITION PROCESS ON PASSIVATION OF (100)Si/  $\text{HfO}_2$  INTERFACE STATES BY HYDROGEN  
L. Truong, Y. Fedorenko, V. Afanas'ev and A. Stesmans, University of Leuven, Belgium
- D/PI.29** ETCHING PROPERTIES OF  $\text{Al}_2\text{O}_3$  THIN FILMS IN  $\text{CF}_4/\text{Cl}_2/\text{Ar}$  PLASMA  
Seong-Mo Koo, Kyoung-Tae Kim, Dong-Pyo Kim, and Chang-Il Kim, School of Electrical and Electronic Engineering, Chung-Ang University, 221 Huksuk-dong, Dongjak-gu, Seoul 156-756, Korea
- D/PI.30** NICKEL - DOPED ( $\text{Zr}_{0.8}\text{Sn}_{0.2}$ ) $\text{TiO}_4$  FOR MICROWAVES AND MILLIMETER WAVES APPLICATIONS  
A. Ioachim, M.G. Banciu, M.I. Toacsen, L. Nedelcu, D. Ghetu, National Institute of Materials Physics, Bucharest-Magurele, H.V. Alexandru, University of Bucharest, G. Stoica I.P.E.E. Curtea de Arges, Romania, G. Annino, M. Cassettari, M. Martinelli, I.P.C.F.-C.N.R., Pisa, Italy
- D/PI.31** INFLUENCE OF THE OXYGEN/ARGON RATIO ON THE PROPERTIES OF SPUTTERED HAFNIUM OXIDE  
L. Pereira, P. Barquinha, E. Fortunato, R. Martins, Departamento de Ciência dos Materiais, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa and CEMOP, Campus da Caparica, 2829-516 Caparica, Portugal

Thursday, May 27, 2004

Morning

Session VII: Deposition process

Session chairs: D. Wouters

- D-VII.1** 08:30 -Invited- PROCESSING ISSUES OF CSD FERROELECTRIC THIN FILMS  
**M. Kosec**, Jozef Stefan Institute
- D-VII.2** 09:10 -Invited- NANO-LAYER DEPOSITION FOR THIN CONFORMAL FILM DEPOSITION  
**T. Nguyen**, TEGAL
- D-VII.3** 09:35 EPITAXIAL GROWTH AND MICROSTRUCTURE OF (110)-ORIENTED SrRuO<sub>3</sub> THIN FILMS ON OFF-CUT SINGLE CRYSTAL SUBSTRATES  
X.H. Zhu, S.K. Lee, D. Hesse and U. Gösele, Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, 06120 Halle, Germany
- D-VII.4** 09:50 ITO THIN FILMS DEPOSITED ON UNHEATED ZnO COATED POLYMER SUBSTRATES WITH ENHANCED ELECTRICAL PROPERTIES  
C. Nunes de Carvalho(a,b), E. Fortunato(a), G. Lavareda(a,b), H. Alves(a), J. Varela(a), R. Nascimento(a), A. Amaral(b,c), (a)Departamento de Ciência dos Materiais, FCT-UNL, Quinta da Torre, 2825-114 Caparica, Portugal, (b)Centro de Física Molecular, Complexo I, (c)Departamento de Física, IST-UTL, Av. Rovisco Pais, 1049-001 Lisboa, Portugal
- D-VII.4** 10:05 DEPENDENCE OF OXYGEN FLOW RATE ON PIEZOELECTRIC PHOTOTHERMAL SPECTRA OF ZnO THIN FILMS GROWN BY REACTIVE PLASMA DEPOSITION  
K. Yoshino, H. Kakeno, T. Ikari, H. Sakemi, K. Awai and T. Yamamoto, Miyazaki University, Japan
- D-VII.6** 10:20 INNOVATIVE APPROACH TO LaCoO<sub>3</sub> NANOSYSTEMS: A COMBINED CVD/Sol-Gel ROUTE  
Lidia Armelao, Davide Barreca, ISTM-CNR and INSTM, Padova University, Padova, Italy, Gregorio Bottaro, Alberto Gasparotto, Cinzia Maragno, Eugenio Tondello, INSTM and Department of Chemistry, Padova University, Padova, Italy
- 10:35 **BREAK**

Session VIII: Deposition process

Session chairs: A.C. Jones

- D-VIII.1** 11:00 -Invited- NONVOLATILE NANOCRYSTAL MEMORIES OBTAINED BY CVD DEPOSITION OF SILICON NANOCRYSTALS  
**C. Gerardi**, St-Microelectronics
- D-VIII.2** 11:25 NITROGEN DOPING OF ZNO AND POST-GROWTH RAPID THERMAL ANNEALING  
N. Oleynik, A. Dadgar, S. Deiter, F. Bertram, J. Bläsing, A. Krtschil, A. Diez, J. Christen, and A. Krost, Otto-von-Guericke-Universität Magdeburg, Institut für Experimentelle Physik, Fakultät für Naturwissenschaften, Postfach 4120, 39016 Magdeburg, Germany, M. Seip and A. Greiling, Mochem GmbH, Marburg, Germany
- D-VIII.3** 11:40 OPTIMISATION OF PULSED LASER ABLATED BARIUM AND STRONTIUM TITANATE THIN FILMS USING MULTIVARIATE ANALYSIS (PCA) AND DOEHLERT EXPERIMENTAL DESIGN  
S. Karam, S. Liebus, A. Bessadou, F. Cosset, C. Dibin, IRCOM, Limoges, France
- D-VIII.4** 11:55 CHROMIUM OXIDES THIN FILMS PREPARED AND COATED IN SITU WITH GOLD BY PULSED LASER DEPOSITION  
D. Stanoi, G. Socol, C. Ristoscu, E. Axente, I.N. Mihailescu, National Institute for Laser, Plasma and Radiation Physics -Laser Department, P.O. Box MG-36, 77125 Bucharest, Romania, C. Grigorescu, National Institute of Research and Development for Optoelectronics, Bucharest, Romania, F. Guinneton, O. Monnereau, L. Tortet, Laboratoire MADIREL équipe Elaboration (UMR 6121: CNRS-Univ. de Provence), Centre de St-Jérôme, Avenue Escadrille-Normandie-Niémen, 13397 Marseille Cedex 20, France
- D-VIII.5** 12:10 FERROMAGNETISM IN Zn<sub>1-x</sub>CoxO THIN FILMS GROWN BY PULSED LASER DEPOSITION ON (0001) SAPPHIRE  
K. Rode, A. Anane, J.-P. Contour, J.-L. Maurice and A. Fert, Unité Mixte de Physique CNRS/Thales, Domaine de Corbeville, 91404 Orsay Cedex, France and Université Paris-Sud, 91405 Orsay Cedex, France
- D-VIII.6** 12:25 CONDUCTIVE OXIDES (RUO<sub>2</sub>, SRRUO<sub>3</sub>, LA<sub>1-x</sub>SRXCOO<sub>3</sub>) THIN FILMS BY MEANS OF AQUEOUS CSD  
J. Pagnaer(a), G. Vanhoyland(a), J. D'Haen(b), M. K. Van Bael(a), H. Van den Rul(a,b), J. Mullens(a), L.C. Van Poucke(a), (a)Laboratory of Inorganic and Physical Chemistry, IMO, Limburgs Universitair Centrum, Building D, 3590 Diepenbeek, Belgium, (b)IMO-IMOMECE, Limburgs Universitair Centrum, 3590 Diepenbeek, Belgium
- 12:40 **LUNCH**

Thursday, May 27, 2004

Afternoon

Session IX: Characterization

Session chairs: D. Wouters

- D-IX.1** 14:00 -Invited- SIZE EFFECTS IN EPITAXIAL FERROELECTRIC HETEROSTRUCTURE  
**H. Koklstedt**, Institut fuer Festkoerperforschung (IFF), Germany
- D-IX.2** 14:40 -Invited- SIDE WALLS CONTRIBUTION IN INTEGRATED 3D SBT-BASED CAPACITORS: ELECTRICAL AND MICROSTRUCTURAL POINT OF VIEW  
**Ch. Muller**, L2MP-CNRS, France
- D-IX.3** 15:05 THE AC ELECTRICAL CHARACTERIZATION OF THE LITHIUM NIOBATE CRYSTALS  
T. Gebre(a), A.K. Batra(a), P. Guggilla(a), M.A. Alim(b), M.D. Aggarwal(a) and R.B. Lal(a), (a)Department of Physics, Alabama A & M University, P.O. Box 1268, Normal, Alabama 35762, USA, (b)Department of Electrical Engineering, Alabama A & M University, P.O. Box 297, Normal, Alabama 35762, USA
- D-IX.4** 15:20 YTTRIUM OXIDE,  $Y_2O_3$ , THIN FILMS: ORDER-DISORDER TRANSITION OF THE CUBIC-C STRUCTURE  
F. Paumier, R.J. Gaboriaud, F.P. Pailloux, Laboratoire de Métallurgie Physique, Université de Poitiers, CNRS-SP2MI, BP 30179, 86962 Chasseneuil-Futroscope cedex, France
- D-IX.5** 15:35 STRUCTURAL ANALYSIS OF Mn-Zn FERRITES USING XRD TECHNIQUE  
Uzma Ghazanfar, Centre for Excellence in Solid State Physics, Punjab University, Lahore, Pakistan, S.A. Siddiqui, Centre for Excellence in Solid State Physics, Punjab University, Lahore, Pakistan and G. Abbas, Department of Mechanical, Aerospace and Manufacturing Engineering, UMIST, Manchester, U.K.
- D-IX.6** 15:50 OPTICAL STUDY OF  $0.65PbMg_{1/3}Nb_{2/3}O_3-0.35PbTiO_3$  THIN FILMS  
K.Y. Chan, W.S. Tsang, C.L. Mak and K.H. Wong, The Hong Kong Polytechnic University, Kwloon, Hong Kong, China
- 16:05 **BREAK**

Session X: Characterization

Session chairs: M. Kosec

- D-X.1** 16:30 -Invited- NANOLITHOGRAPHY AND NANOMANIPULATION FACILITIES BY SCANNING PROBE MICROSCOPY  
**S. Lemeshko**, PRAMA – MTNDT
- D-X.2** 16:55 STRUCTURAL AND DIELECTRICAL PROPERTIES OF  $ZrTiO_4$  AND  $Zr_{0.8}Sn_{0.2}TiO_4$  DEPOSITED BY PULSED LASER DEPOSITION  
M. Viticoli(a), G. Padeletti(a), S. Kaciulis(a), G.M. Ingo(a), L.Pandolfi(a) and C. Zaldo(b), (a)Istituto per lo Studio dei Materiali Nanostrutturati, CNR, Monterotondo (RM), Italy, (b)Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco (Madrid), Spain
- D-X.3** 17:10 FERROELECTRIC SOLID SOLUTIONS  $(Ba,Sr)TiO_3$  FOR MICROWAVE APPLICATIONS  
H.V. Alexandru, C. Berbecaru, F. Stanculescu, Faculty of Physics, University of Bucharest, A. Ioachim, M.G. Banciu, M.I. Toacsen, L. Nedelcu, D. Ghetu, National Institute of Materials Physics, Bucharest-Magurele, Romania
- D-X.4** 17:25 OPTICAL STUDY OF A 40nm-THICK STRAINED HALF-METALLIC  $La_{2/3}Sr_{1/3}MnO_3$  FILM  
M. Koubaa(a), A. Santander(b), B. Mercey(c), Ph. Lecoeur(a), A.M. Haghiri-Gosnet(a), J.P. Renard(a) and N. Bontemps(b), (a)Institut d'Electronique Fondamentale, IEF, UMR 8622 CNRS, Bâtiment 220, Université Paris-Sud, 91405 Orsay Cedex, France, (b)Laboratoire de Physique du Solide, Ecole supérieure de physique et chimie industrielle de la ville de Paris, CNRS UPR 5, 75231 Paris Cedex 5, France, (c)Laboratoire de Cristallographie et Sciences des Matériaux, CRISMAT-ISMRA, CNRS UMR 6508, 6 bd du Maréchal Juin, 14050 Caen Cedex, France
- D-X.5** 17:40 INVISIBLE THIN FILM TRANSISTORS BASED ON ZINC OXIDE  
E. Fortunato, P. Barquinha, A. Pimentel, L. Pereira, A. Gonçalves, G. Lavareda, H. Águas, I. Ferreira, C.N. Carvalho and R. Martins, Department of Materials Science/CENIMAT, Faculty of Sciences and Technology, New University of Lisbon and CEMOP-UNINOVA, Campus da Caparica, 2829-516 Caparica, Portugal
- 17:55 – 19:30 POSTER SESSION II

- D/PII.01** MICROWAVE LOSS MECHANISMS IN  $\text{Ba}_{0.25}\text{Sr}_{0.75}\text{TiO}_3$  FILMS  
A. Vorobiev, D. Kuylenstierna, P. Rundqvist, K. Khamchane, S. Gevorgian, Department of Microtechnology and Nanoscience, Chalmers University of Technology, 41296 Gothenburg, Sweden
- D/PII.02** STUDY OF SURFACE CHARGE AND TRANSPORT PROPERTIES OF PZT/(La,Ce)B<sub>6</sub>/Al<sub>2</sub>O<sub>3</sub> STRUCTURE  
E.A. Kafadaryan(a), N.R. Aghamalyan(a), M.V. Simonyan(a), A.G. Hayrapetyan(a), A.L. Manukyan(a), S.N. Nikogosyan(a), G.R. Badalyan(a), Naijuan Wu(b), (a)Institute for Physical Research, NAS, 378410 Ashtarak-2, Armenia, (b)Texas Center for Superconductivity and Advanced Materials, University of Houston, Houston TX 77204-5007, USA
- D/PII.03** DIELECTRIC PROPERTIES AND MICROSTRUCTURE OF COMPOSITIONALLY-GRADED  $(\text{Ba}_{1-x}\text{Sr}_x)\text{TiO}_3$  THIN FILMS  
X.H. Zhu, Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, 06120 Halle, Germany, J.M. Zhu, S.H. Zhou, Z.G. Liu and N.B. Ming, National Laboratory of Solid State Microstructures, Department of Physics, Nanjing University, Nanjing 210093, China, H.L.W. Chan, C.L. Choy and K.H. Wong, Department of Applied Physics and Materials Research Center, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China
- D/PII.04** TEMPERATURE-DEPENDENT FATIGUE BEHAVIORS OF FERROELECTRIC ABO<sub>3</sub>-TYPE AND LAYERED PEROVSKITE OXIDE THIN FILMS  
G.L. Yuan, J.-M. Liu, Y.P. Wang, D. Wu, S.T. Zhang, Q.Y. Shao, Laboratory of Solid State Microstructures, Nanjing University, Nanjing 210093, China
- D/PII.05** CHEMICAL MECHANICAL POLISHING CHARACTERISTICS OF FERROELECTRIC FILMS USING SELF-DEVELOPED TITANIA SLURRY  
Yong-Jin Seo, Department of Electrical Engineering, Daebul University, Chonnam-do 526-702, Korea, Woo-Sun Lee Department of Electrical Engineering, CHOSUN University, Gwangju 501-759, Korea
- D/PII.06** EFFECT OF LANTHANIDES-SUBSTITUTED ON FERROELECTRIC PROPERTIES OF BISMUTH TITANATE THIN FILMS PREPARED BY METALORGANIC DECOMPOSITION  
Kyoung-Tae Kim(a), Chang-Il Kim(a), and Tae-Hyung Kim(b), (a)School of Electrical and Electronic Engineering, Chungang University, 221, Huksuk-Dong, Dongjak-Gu, Seoul 156-756, Korea, (b)Department of Electrical Engineering, Yeojoo Technical College, 454-5, Gyo-Ri, Yeojoo-Eup, Yeojoo-Gun, Kyunggi-Do, 469-800, Korea
- D/PII.07** PLASMA INDUCED DAMAGE ON THE SBT ETCHED IN Cl<sub>2</sub>/BCl<sub>3</sub>/Ar  
J.W. Yeo, D.P. Kim and C.I. Kim, School of Electrical and Electronics Engineering, Chung-Ang Univ., 221 Huksuk-dong, Dongjak-gu, Seoul 156-756, Korea
- D/PII.08** CHAOS-TYPE CHARACTERISTICS IN METAL-FERROELECTRIC-SEMICONDUCTOR HETEROSTRUCTURES  
B. Merou, Max-Planck-Institut für Mikrostrukturphysik, 06120 Halle, Germany, National Institute of Materials Physics, P.O. Box MG-7, Bucharest-Magurele 76900, Romania, C.P. Cristescu, University Politehnica of Bucharest, Splaiul Independentei 313, Bucharest 060032, Romania, M. Alexe, Max-Planck-Institut für Mikrostrukturphysik, 06120 Halle, Germany
- D/PII.09** BLTO FERROELECTRIC FILMS DEPOSITED BY MAGNETRON SPUTTERING TECHNIQUE  
M.P. Besland, P.Y. Tessier, B. Angleraud, L. Brohan, M.A. Djouadi and J.P. Landesman Institut des Matériaux Jean Rouxel, UMR 6502, 2 rue de la Houssinière, B.P. 3222,44322, Nantes cedex 3, France
- D/PII.10** DIELECTRIC AND PIEZOELECTRIC PROPERTIES OF SILVER DOPED  $\text{Pb}(\text{Zr,Ti})\text{O}_3$ - $\text{Pb}(\text{Mn,W,Sb,Nb})\text{O}_3$  THIN FILMS  
Hyun Woo Chung, Eun Sun Lee, Sung Hoon Lim, and Sang Yeol Lee, Department of Electrical and Electronic Engineering, Yonsei University, 134, Shinchon-dong, Seodaemooon-ku, 120-749, Seoul, Korea
- D/PII.11** EVOLUTIONS OF RESIDUAL STRESS AND OPTICAL PROPERTIES IN  $\text{Ta}_2\text{O}_5$  THIN FILMS DEPOSITED AT DIFFERENT SUBSTRATE TEMPERATURES WITH ION-BEAM DEPOSITION  
S.G. Yoon(a), H.K. Kim(b), M.J. Kim(b), H.M. Lee(b) and D.H. Yoon(a), (a)Department of Advanced Materials Engineering, Sungkyunkwan University, Suwon 440-746, Korea, (b) Optical Telecommunication Research Center, Korea Electronics Technology Institute, Pyungtaek 451-865, Korea
- D/PII.12** DEPOSITION OF NANOCOMPOSITE Zr-ZrO<sub>2</sub> FILMS BY REACTIVE CATHODIC VACUUM ARC EVAPORATION  
J. Cyviene(a), M. Laurikaitis(a), J. Dudonis(a), D. Milcius(b), (a)Kaunas University of Technology, Faculty of Fundamental Sciences, Department of Physics, Studentu st. 50, 51368 Kaunas, Lithuania, (b)Lithuanian Energy Institute, Breslaujos st. 3, 44403 Kaunas, Lithuania
- D/PII.13** CHARACTERISATION OF THE GASEOUS PHASE PRODUCED BY FEMTOSECOND LASER ABLATION OF SmBaCuO  
A. Morone, A. Santagata, CNR, Istituto Metodologie Inorganiche e Plasmi, Sez. Potenza, Tito Scalo (PZ), Italy, L. D'Alessio, A. De Bonis, A. Galasso, P. Villani, R. Teghil, M. Zaccagnino, Dipartimento di Chimica, Università della Basilicata, Potenza, Italy
- D/PII.14** SiN/SiO<sub>2</sub> MULTILAYER DEPOSITED BY PECVD FOR PLANAR LIGHTWAVE CIRCUITS  
Y.T. Kim, D.S. Kim and D.H. Yoon, Department of Advanced Materials Engineering, Sungkyunkwan University, Suwon 440-746, Korea
- D/PII.15** UV PULSED LASER DEPOSITION OF MAGNETITE THIN FILMS  
M.L. Paramês(a), J. Mariano(b), N. Popovici(a), M.S. Rogalski(c) and O. Conde(a), (a)Dep. Física, Universidade de Lisboa, 1749-016 Lisboa, Portugal, (b)FCT, Universidade do Algarve, 8000-117 Faro, Portugal, (c)Dep. Física, Inst. Superior Técnico, 2780-990 Taguspark Oeiras, Portugal

- D/PII.16** COMPOSITION CONTROL OF TI ALUMINATES THIN FILMS DEPOSITED BY PHOTO-INDUCED CHEMICAL VAPOR DEPOSITION  
Z.M. Wang(a), J.-Y. Zhang(a), Q. Fang(b), M.L. Chen(a), Ian W. Boyd(b), (a)Structure Research Laboratory, University of Science and Technology of China, Hefei 230026, P.R. China, (b)Electronic and Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, U.K.
- D/PII.17** RF MAGNETRON SPUTTERED TRANSPARENT ZnO:F THIN FILMS ON POLYMERS  
 Jae-Wan Park and Jeon-Kook Lee, Thin Film Materials Research Center Korea Institute of Science and Technology, Seoul 136-791, Korea
- D/PII.18** MIXED TRANSITION-METAL MANGANOXIDES IN THICK-FILM PERFORMANCE: NEW POSSIBILITIES OF TECHNOLOGICAL DEVELOPMENT  
O. Shpotyuk(a,b), I. Hadzaman(b) and I. Brunets(b,c), (a)Pedagogical University of Czestochowa, 13/15. al.Armi Krajowej, 42201 Czestochowa, Poland, (b)Institute of Materials of SCR "Carat", 202, Stryjska str., 79031 Lviv, Ukraine, (c)Fachhochschule Münster/University of Applied Sciences, 39, Stegerwaldstrasse,48565 Steinfurt, Germany
- D/PII.19** ON THE DYNAMICS OF PERIODICALLY POLED LITHIUM NIOBATE CRYSTALS FORMATION BY OFF-CENTER CZOCHRALSKI TECHNIQUE  
M. Bazzan, N. Argiolas, C. Sada, E. Cattaruzza, S. Padovani and P. Mazzoldi, INFN and Dipartimento di Fisica, Università di Padova, Via Marzolo 8, 35131 Padova, Italy
- D/PII.20** METHOD OF ORIENTATION CONTROL AND IMPROVEMENT OF STRUCTURE OF FUNCTIONAL THIN FILM SYSTEMS BASED ON INTEREPITAXY  
V. Bondar, L. Akselrud, V. Davydov, I. Kuharski, Y. Dubov, Ivan Franko National University of Lviv, Department of Physics, 50 Dragomanov Str., 79005 Lviv, Ukraine
- D/PII.21** POROGEN DESORBING TEMPERATURE DEPENDENCE OF LOW-K FILMS WITH ETHYLENE GROUPS  
 Y. Uchida, Y. Ito and K. Ishida, Teikyo Univ. of Sci. & Tech, Japan
- D/PII.22** REACTION MECHANISM OF A LANTHANUM PRECURSOR IN LIQUID SOURCE METALORGANIC CHEMICAL VAPOR DEPOSITION  
Toshihiro Nakamura, Takuro Nishimura, Ryusuke Tai, and Kunihide Tachibana, Department of Electronic Science and Engineering, Kyoto University, Kyotodaigaku-Katsura, Nishikyō-ku, Kyoto 615-8510, Japan
- D/PII.23** FABRICATION AND CHARACTERIZATION OF CUALO<sub>2</sub> TRANSPARENT THIN FILMS PREPARED BY SPRAY TECHNIQUE  
 C. Bouzidi, H. Bouzouita, A. Timoumi and B. Rezig, Laboratoire de Photovoltaïque et Matériaux Semi-conducteurs, Ecole Nationale d'Ingénieurs de Tunis (E.N.I.T), BP 37, Belvédère 1002 Tunis, Tunisia
- D/PII.24** SYNTHESIS OF THIN SEMICONDUCTOR FILMS AT LASER CHEMICAL VAPOR DEPOSITION OF ELEMENTS FROM IRON CARBONYL  
S.A. Mulyenko, A.V. Izvekov, Institute for Metal Physics NAS of Ukraine, Kiev, Ukraine
- D/PII.25** FLUORINE-FREE AND FLUORINE CONTAINING MOCVD PRECURSORS FOR ELECTRONIC OXIDES: A COMPARISON  
C. Bedoya(a), G. G. Condorelli(a), G. Anastasi(a), J. Lisoni(b), D. Wouters(b), I.L. Fragalà(a), (a)Dipartimento di Scienze Chimiche, Università di Catania, Italy, (b)IMEC, Belgium
- D/PII.26** PULSED LASER DEPOSITION OF Zr<sub>1-x</sub>Ce<sub>x</sub>O<sub>2</sub> BUFFER LAYER ON Si (100)  
 J.-P. Contour, E. Jacquet, J.-L. Maurice, Unité Mixte de Physique CNRS/Thales, 91404 Orsay cedex, France and Université Paris-Sud, 91405 Orsay Cedex, France and A.N. Khodan, Institute of Physical Chemistry, Russian Academy of Sciences, 117915 Moscow, Russia
- D/PII.27** OXYNITRIDES ON 4H-SiC(0001)  
P. Hoffmann, A. Goryachko, D. Schmeißer, BTU Cottbus, Lehrstuhl Angewandte Physik II / Sensorik, Universitätsplatz 3-4, 03044 Cottbus, Germany
- D/PII.28** CONTROLLED SYNTHESIS OF CuO NANORIBBONS IN HIGH CONCENTRATION OF NaOH  
Yu Chang and Hua Chun Zeng, Department of Chemical and Environmental engineering, Faculty of Engineering National University of Singapore, 10 Kent Ridge Crescent, 119260 Singapore
- D/PII.29** THE ROLE OF POST-SINTERING HEAT-TREATMENT ON THE CURRENT-VOLTAGE BEHAVIOR OF THE ZnO BASED VARISTORS  
 Jianying Li, Shengtao Li and Fuyi Liu, State Key Laboratory of Electrical Insulation for Power Equipment, Department of Electrical Engineering, Xi'an Jiatong University, Xi'an 710049, China and M.A. Alim, Department of Electrical Engineering, Alabama Agricultural and Mechanical University, P.O. Box 297, Huntsville Alabama 35762, USA
- D/PII.30** MIXED AND CARBON FILLED OXIDE MATERIALS AS GAMMA RADIATION SENSORS  
K. Arshak, O. Korostynska, Electronic & Computer Engineering Department, University of Limerick, Limerick, Ireland
- D/PII.31** DESIGN OF A NEW THICK FILM CAPACITIVE PRESSURE AND CIRCUITRY INTERFACE  
K. Arshak and E. Jafer, University of Limerick, Computer and Electronic Engineering Dept, Plassey Technological Park, Limerick, Ireland

- D/PII.32** DESIGN AND CHARACTERIZATION OF THE PIEZOELECTRIC TRANSFORMERS  
A.K. Batra(a), M.A. Alim(b), M.D. Aggarwal(a) and R.B. Lal(a), (a)Department of Physics, Alabama A & M University, P.O. Box 1268, Normal Alabama 35762, USA, (b)Department of Electrical Engineering, Alabama A & M University P.O. Box 297, Normal, Alabama 35762, USA
- D/PII.33** EFFECTS OF DIFFERENT OXIDIZERS ON THE W-CMP PERFORMANCE  
Yong-Jin Seo, Department of Electrical Engineering, Daebul University, Chonnam, 526-890, Korea, Woo-Sun Lee, Department of Electrical Engineering, Chosun University, Gwangju, 501-759, Korea
- D/PII.34** APPLICATION OF TUNGSTEN SLURRY FOR COPPER-CHEMICAL MECHANICAL POLISHING  
Woo-Sun Lee(a), Yong-Jin Seo(b), (a)Department of Electrical Engineering, CHOSUN University, Gwang-Ju 501-759, Korea, (b)Department of Electrical Engineering, DAEBUL University, Chonnam-do 526-702, Korea
- D/PII.35** IMMERSION PLATING STUDY OF COPPER INTO POROUS SILICON  
S. Sam(a), N. Gabouze(a), K. Henda(b) and S.Belhoussse(a), (a)UDTS, 2 Bd Frantz-Fanon, B.P. 399 Alger-Gare, Algiers, Algeria, (b)CDTA, Haouche Loukil B.P 17 Baba-Hassen, Algiers, Algeria
- D/PII.36** OXIDATION OF MACROPOROUS SILICON FOR THICK THERMAL INSULATION  
P.Y.Y. Kan and T.G. Finstad, Dept of Physics, University of Oslo, PO Box 1048, Blindern, Oslo 0316, Norway
- D/PII.37** CHARACTERISTICS OF ALUMINA SLURRY ON VARIATION OF pH VALUE AND NON-IONIC SURFACTANTS FOR Cu CMP  
Do-Won Lee(a), Nam-Hoon Kim(a), Joon-Chul Eom(a), Yong-Jin Seo(b) and Eui-Goo Chang(a), (a) Chung-Ang University, Seoul 156-756, Korea, (b) Daebul University, Chonnam 526-890, Korea
- D/PII.38** INFRARED SPECTRA OF PROTON-EXCHANGED WAVEGUIDES IN  $\text{LiNbO}_3$  AND  $\text{LiTaO}_3$   
Mariana Kuneva and Svetlen Tonchev, Bulgarian Academy of Sciences, Institute of Solid State Physics, Sofia, Bulgaria
- D/PII.39** AGGLOMERATION OF PARTICLES IN ALUMINA SLURRY BY ADDITION OF CHEMICALS IN COPPER CMP  
Min-Ho Choi(a), Nam-Hoon Kim(a), Sang-Yong Kim(b), Tae-Hyung Kim(c), Eui-Goo Chang(a), (a)Chung-Ang University, Seoul 156-756, Korea, (b)DonbuAnam Semiconductor, Inc., Kyunggi 420-712, Korea, (c)Yeojuo Institute of Technology, Kyunggi 469-705, Korea

Friday, May 28, 2004

Morning

Session XI: High-k

Session chairs: P. Rabinzohn

- D-XI.1** 08:30 -Invited- PRECURSORS FOR THE MOCVD AND ALD OF HIGH-K DIELECTRIC OXIDES  
**A.C. Jones**, Inorgtech Limited
- D-XI.2** 09:10 -Invited- PULSED LIQUID-INJECTION MOCVD OF HIGH-K OXIDES FOR ADVANCED SEMICONDUCTOR TECHNOLOGIES  
**C. Dubourdieu**, S. Lhostis, L. Auvray, M. Audier, H. Roussel, C. Jimenez, J.P. Sénateur, F. Weiss, LMGP, UMR CNRS, ENSPG BP46, 38402 St Martin d'Hères, France, and F. Ducroquet, LPM, INSA Lyon, 69 621 Villeurbanne, France
- D-XI.3** 09:35 FACTORS INFLUENCING ATOMIC LAYER DEPOSITION RATE AND PHASE COMPOSITION OF HIGH PERMITTIVITY OXIDE LAYERS  
**Kaupo Kukli**(a,\*), Mikko Ritala(a), Tero Pilvi(a), Titta Aaltonen(a), Jaan Aarik(b), Markku Leskelä(a), (a)University of Helsinki, Department of Chemistry, P.O.Box 55, 00014 Univ. Helsinki, Finland, (b)University of Tartu, Institute of Physics, Tähe 4, 51010 Tartu, Estonia, (\*)Also at: University of Tartu, Institute of Experimental Physics and Technology, Tähe 4, 51010 Tartu, Estonia
- D-XI.4** 09:50 STUDY OF THE MOCVD PROCESS OF Pr-BASED HIGH k DIELECTRIC FILMS  
**Raffaella Lo Nigro**(a), Roberta Toro(b), Graziella Malandrino(b), Vito Raineri(a) and Ignazio Fragalà(b), (a)IMM, sezione di Catania, CNR, Stradale Primo Sole n 50, 95121 Catania, Italy, (b)Dipartimento di Scienze Chimiche, Università di Catania, and INSTM, UdR Catania, Viale A. Doria 6, 95125 Catania, Italy
- D-XI.5** 10:05 THE EPITAXIAL ZRO<sub>2</sub> ON SILICON AS ALTERNATIVE GATE DIELECTRIC: FILM GROWTH, CHARACTERIZATION AND ELECTRIC STRUCTURE CALCULATIONS  
**S.J. Wang** and C.H.A. Huan, Institute of Materials Research & Engineering, 3 Research Link, Singapore 117602, Y.P. Feng, Y.F. Dong and C.K. Ong, Department of Physics, National University of Singapore, 2 Science Drive 3, Singapore 117542
- D-XI.6** 10:20 ATOMIC LAYER DEPOSITION OF HIGH K GATE DIELECTRIC MATERIALS  
**Shreyas S. Kher**, Rahul Sharangpani, Pravin Narwankar, Gregg Higashi, Applied Materials, Sunnyvale CA 94086, USA
- D-XI.7** 10:35 CRYSTALLINE LA<sub>2</sub>HF<sub>2</sub>O<sub>7</sub> HIGH-K GATE DIELECTRICS ON SI(001) BY MBE  
**G. Mavrou**(a), G. Vellianitis(a), A. Travlos(a), A. Dimoulas(a), Z.M. Rittersma(b), (a)MBE Lab, Institute of Materials Science, NCSR "DEMOKRITOS", Athens, Greece (b)Philips Research, Leuven, Belgium
- 10:50 **BREAK**

## Session XII: High-k

Session chairs: G. Malandrino

- D-XII.1** 11:00 MOCVD GROWTH OF BaTiO<sub>3</sub>- BaZrO<sub>3</sub> THIN FILMS FOR HIGH-K DIELECTRICS APPLICATIONS  
Jochem Puchalla, Susanne Hoffmann-Eiefert, Ralf Ganster, and Rainer Waser, IFF / IEM, Forschungszentrum Juelich, Juelich, Germany
- D-XII.2** 11:15 SEQUENTIAL GRAFTING OF BIDIMENSIONAL PHOSPHATES ONTO SILICON FOR HIGH-K DIELECTRIC APPLICATIONS  
G. Freiman(a,b) A. Faucheux(a,b), P. Barboux(a), N. Sanz(a), J.-N. Chazalviel(a), F. Ozanam(a), (a)LPMC, Ecole Polytechnique, 91128 Palaiseau Cedex, France, (b)STMicroelectronics, 850 rue Jean Monnet, 38926 Crolles Cedex, France
- D-XII.3** 11:30 NOVEL GATE OXIDES ON SILICON AND GERMANIUM: PASSIVATION AND GROWTH CHEMISTRY  
M.M. Frank, H. Shang, E.P. Gousev, R.T. Mo, V.K. Paruchuri, P.C. Jamison, M.A. Gribelyuk, M. Copel, IBM T.J. Watson Research Center, P.O. Box 218, Yorktown Heights NY 10598, USA and M.-T. Ho, C.-L. Hsueh, S. Rivillon, R.T. Brewer, Y.J. Chabal, Rutgers University, Department of Chemistry and Chemical Biology, 610 Taylor Road, Piscataway NJ 08854, USA
- D-XII.4** 11:45 TOWARD AN ALL OXIDE PULSED LASER DEPOSITED THIN FILM CAPACITOR BASED ON CaCu<sub>3</sub>Ti<sub>4</sub>O<sub>12</sub> WITH VERY HIGH AERIAL CAPACITANCE  
J. Wolfman(a) , V. Brizé(b) , M. Gervais(a), F. Gervais(a), (a)Laboratoire LEMA, UMR 6157 CNRS-CEA, membre du CNRT «Microélectronique de puissance»; Université François Rabelais, Faculté des Sciences & Techniques, Parc de Grandmont, 37200 Tours, France, (b)STMicroelectronics, membre du CNRT «Microélectronique de puissance», 16 rue Pierre et Marie Curie, BP 7155, 37071 TOURS Cedex 2, France
- D-XII.5** 12:00 SOLID PHASE CRYSTALLISATION OF HfO<sub>2</sub> THIN FILMS  
M. Modreanu, B. O’Looney, D. O’Connell, J. Justice, NMRC, Prospect Row, Cork, Ireland, O. Durand, B. Servet, Thales R&T, Orsay, France
- D-XII.6** 12:15 CeO<sub>2</sub> – MATERIAL FOR ADVANCED CMOS SOURCE-DRAIN ENGINEERING, TWO TECHNOLOGY OF DEPOSITION, OPTICAL AND ELECTRICAL PROPERTIES  
A.N. Shmyryeva(a), T.V. Semikina(a), M. Friedrich(b), D. Zahn(b), (a)National Technical University of Ukraine “KPI”, Faculty of Electronics, Microelectronics Dept., Prospect Peremogy 27, app.80, 03055 Kiev, Ukraine, (b)TU-Chemnitz, Institute of Physics, Chemnitz, Germany
- D-XII.7** 12:30 STUDY OF THE INITIAL STAGES OF THE GROWTH OF YTTRIUM OXIDE DEPOSITED BY PULSED LIQUID-INJECTION PE-MOCVD  
C. Durand(a), C. Dubourdieu(b), C. Vallée(a), M. Derivaz(a), M. Bonvalot(a), O. Joubert(a), (a)LTM/CNRS, Grenoble, France, (b)LMGP/CNRS, Grenoble, France
- 12:45 **LUNCH**