



E-MRS – IUMRS – ICEM 2000



SYMPOSIUM C

Group III Nitrides

May 30 – June 2, 2000

Symposium Organizers:

Axel Hoffmann, Technical University Berlin, Germany

Bernard Gil, Université de Montpellier II, France

Kazumasa Hiramatsu, Mie University, Japan

Kevin P. O'Donnell, University of Strathclyde, Glasgow, Scotland, U.K.

Steve P. Den Baars, University of California, Santa Barbara, USA

Gou Chung Chi, National Central University, Chung-Li, Taiwan

Symposium support:

AIXTRON, Germany
EMCORE, USA

Papers will be published in **Materials Science & Eng B**

E-MRS 2000 SPRING MEETING

SYMPOSIUM C

Tuesday May 30, 2000

Mardi 30 mai 2000

Morning

Matin

Session I

C-I.1 09:30 **-Invited-** PROPERTIES OF NITRIDES GROWN BY MBE ON VARIOUS SUBSTRATES, **F. Semond**, B. Damilano, S. Vézian, N. Grandjean, and J. Massies, Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, Centre National de la Recherche Scientifique, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France

C-I.2 10:00 **-Invited-** MBE GROWTH AND DOPING OF III-NITRIDES ON Si(111): LAYER MORPHOLOGY AND DOPING EFFICIENCY, **E. Calleja**, M.A. Sanchez-Garcia, F. Calle, F.B. Naranjo and E.Munoz, Dpt. Ing. Electronica, ETSI Telecomunicacion, Univ. Politecnica, Madrid, Spain, U. Jahn and K. Ploog, Paul Drude Institute, 10117 Berlin, Germany, J. Sanchez and J.M. Calleja, Dpt. Fisica de Materiales, Univ. Autonoma, 28045 Madrid, Spain

10:30

BREAK

Session II

C-II.1 11:00 EVOLUTION OF GaN LAYERS IN DEPENDENCE ON GROWTH TECHNIQUE **V. Kirchner**, H. Heinke, S. Einfeldt, D. Hommel, Institute of Solid State Physics, University of Bremen, Kufsteiner Str. NW1, 28359 Bremen, Germany

C-II.2 11:15 STRUCTURE QUALITY AND ORDERING OF MBE GROWN $\text{Al}_x\text{Ga}_{(1-x)}\text{N}$ -LAYERS, **D.G. Ebling**⁽¹⁾, L. Kirste⁽¹⁾, Ch. Haug⁽¹⁾, R. Brenn⁽¹⁾, K.W. Benz⁽¹⁾, & K. Tillmann⁽²⁾, ⁽¹⁾Freiburg Materials Research Centre, University of Freiburg, Stefan-Meier-Str. 21, 79104 Freiburg, Germany, ⁽²⁾Centre for Microanalysis, University of Kiel, Kaiserstr.2, 24143 Kiel, Germany

C-II.3 11:30 GROWTH OF c-GaN ON Si(100), **S. Nishimura** and K. Terashima, Department of Materials Science, Shonan Institute of Technology, 1-1-25 Tsujido-Nishikaigan, Fujisawa, Kanagawa 251-8511 Japan

C-II.4 11:45 P AND N TYPE DOPING OF CUBIC GaN, **E. Martinez-Guerreo** et al., Département de Recherche Fondamentale sur la Matière Condensée, SPM/SC, CEA-Grenoble, France, P. Aboughe-Nze et al., Laboratoire des Mutimatériaux et Interfaces, Université C. Bernard, Lyon I, CNRS, France, C. Dubois et al., Laboratoire de Physique de la Matière, CNRS, INSA Lyon, France, H. Gamez et al., Laboratoire d'Electronique Optoélectronique et Microsystèmes, Ecole Centrale de Lyon, France

12:00

LUNCH

Tuesday May 30, 2000

Mardi 30 mai 2000

Afternoon

Après-midi

Session III

- C-III.1** 14:00 **-Invited-** ANTI-SURFACTANT IN NITRIDE EPITAXIAL GROWTH-QUANTUM DOT FORMATION AND DISLOCATION TERMINATION, **Satoru Tanaka**, Research Institute for Electronic Science, Hokkaido University, Sapporo 060-0812, Japan, Misaichi Takeuchi, Hideki Hirayama, and Yoshinobu Aoyagi, The Institute of Physical and Chemical Research (RIKEN), Wako 351-0198, Japan
- C-III.2** 14:30 **-Invited-** STRAIN RELAXATION PROCESSES IN NITRIDE EPILAYERS AND HETEROSTRUCTURES, **G. Feuillet**, R. Langer, B. Daudin, A. Bourret, J.L. Rouvière, CEA/Grenoble, DRFMC/SP2M/Physique des Semi-Conducteurs, 17 rue des Martyrs, 38041 Grenoble Cedex, France
- C-III.3** 15:00 DEPTH PROFILING OF STRAIN AND ALLOY CONCENTRATIONS IN NITRIDE THIN FILMS USING CATHODOLUMINESCENCE AND ELECTRON BACKSCATTERED DIFFRACTION, **C. Trager-Cowan**, A. Mohammed, S.K. Manson-Smith, K.P. O'Donnell, Dept. Physics and Applied Physics, University of Strathclyde, Glasgow G4 0NG, UK, K. Jacobs, I. Moerman and P. Demeester, IMEC-INTEC, University of Gent, Gent 9000, Belgium, M.F. Wu, A. Vantomme, KU Leuven, Leuven, Belgium, D. Zubia and S.D. Hersee, University of New Mexico, Center for High Technology Materials, 1313 Goddard, SE Albuquerque NM, USA
- C-III.4** 15:15 GROUP III DROPLET FORMATION DURING MOVPE GROWTH AND THERMAL ANNEALING OF III-NITRIDES, O.V. Bord, A.F.Ioffe Physical Technical Institute, St.Petersburg, Russia, **S.Yu. Karpov**, R.A. Talalaev, Soft-Impact Ltd, St.Petersburg, Russia, Yu.N. Makarov, Lehrstuhl fuer Stroemungsmechanik, Universitaet Erlangen-Nuernberg, Erlangen, Germany
- C-III.5** 15:30 PHONONS AND FREE CARRIERS IN STRAINED HEXAGONAL GaN/AlGaN SUPERLATTICES MEASURED BY INFRARED ELLIPSOMETRY AND RAMAN SPECTROSCOPY, M. Schubert^(1,2), **A. Kasic**⁽¹⁾, J. Jik⁽³⁾, S. Einfeldt⁽⁴⁾, D. Hommel⁽⁴⁾, V. Härle⁽⁵⁾, J. Off⁽⁶⁾, F. Scholz⁽⁶⁾, ⁽¹⁾Fakultät fuer Physik und Geowissenschaften, Universität Leipzig, 04103 Leipzig, Germany; ⁽²⁾Center for Microelectronic and Optical Materials Research, University of Nebraska, Lincoln 68588, USA; ⁽³⁾Department of Solid State Physics, Faculty of Science, Masaryk University Brno, Kotlarska 2, 611 37 Brno, Czech Republic; ⁽⁴⁾Institut fuer Festkörperphysik, Universität Bremen, Fachbereich 1, 28359 Bremen, Germany; ⁽⁵⁾Osram Opto Semiconductors, Wernerwerkstrasse, 93049 Regensburg, Germany; ⁽⁶⁾4. Physikalisches Institut, Universität Stuttgart, 70550 Stuttgart, Germany
- C-III.6** 15:45 ANGULAR DISPERSION OF POLAR PHONONS IN AN HEXAGONAL GaN/AlN SUPERLATTICE, J. Gleize, **J. Frandon**, F. Demangeot*, and M.A. Renucci, Laboratoire de Physique des Solides (ESA 5477 CNRS), 31062 Toulouse Cedex 04, France, M. Kuball and J. Hayes, H.H. Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, UK, F. Widmann and B. Daudin, CEA Grenoble, France; *Present address: Department of Physics and Astronomy, University of Leeds, Leeds LS2 9JT, UK
- 16:00 **BREAK**

Session IV

- C-IV.1** 16:30 **-Invited-** DIRECT IMAGING OF GROWTH DOMAINS IN EPITAXIAL LATERAL OVERGROWTH GaN BY CATHODOLUMINESCENCE MICROSCOPY, **J. Christen**, Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, PO Box 4120, 39016 Magdeburg, Germany
- C-IV.2** 17:00 GROWTH AND CHARACTERIZATION OF GaN FILMS ON POROUS SILICON, A. Missaoui⁽¹⁾, H. Ezzaouia⁽²⁾, M. Saadoun⁽²⁾, T. Boufaden⁽¹⁾, A. Rebey⁽¹⁾ and B. El Jani⁽¹⁾, ⁽¹⁾Laboratoire de Physique des Matériaux, Faculté des Sciences de Monastir, 5000 Monastir, Tunisia, ⁽²⁾Laboratoire des Applications Solaires, Institut National de Recherche Scientifique et Technique, Route Touristique, Soliman, B.P. 95, 2050 Hamman-Lif, Tunisia
- C-IV.3** 17:15 **-Invited-** THE ATOMIC STRUCTURE OF EXTENDED DEFECTS AND THE OPTOELECTRONIC PROPERTIES OF WURTZITE GaN, **P. Ruterana**, Laboratoire d'Etude et de Recherche sur les Matériaux LERMAT- ISMRA, CNRS, UPRESA 6004, Bd Maréchal Juin, 14050 Caen Cedex, France
- C-IV.4** 17:45 **-Invited-** COMPOSITIONAL FLUCTUATIONS AND LUMINESCENCE PROPERTIES OF InGaN QUANTUM WELLS GROWN ONTO SINGLE CRYSTAL GaN(0001) SUBSTRATES: A TEM STUDY, **M. Albrecht**, V. Grillo*, H.P. Strunk, Universitaet Erlangen-Nuernberg, Institut fuer Werkstoffwissenschaften, Mikrocharakterisierung, Cauerstr.6, 91058 Erlangen, Germany, *also CNR-MASPEC, Parco area delle Scienze 37A, 43101 Fontanini-Parma, Italy, P. Prystawko, M. Leszczynski, I. Grzegory and S. Porowski, High Pressure Research Centre, Polish Academy of Sciences, ul. Sokolowska 29/37, 01-142 Warsaw, Poland
- C-IV.5** 18:15 MODELISATION OF ABSORPTION AND EMISSION SPECTRA OF $\text{In}_x\text{Ga}_{1-x}\text{N}$ LAYERS GROWN BY MBE, **L. Siozade**⁽¹⁾, J. Leymarie⁽¹⁾, P. Disseix⁽¹⁾, A. Vasson⁽¹⁾, M. Mihailovic⁽¹⁾, N. Grandjean⁽²⁾, M. Leroux⁽²⁾ and J. Massies⁽²⁾, ⁽¹⁾LASMEA, UMR-CNRS 6602, 24 av. des Landais, 63177 Aubière Cedex, France; ⁽²⁾CRHEA-CNRS, rue B. Gregory, Parc Sophia Antipolis, 06560 Valbonne, France
- C-IV.6** 18:30 CONDUCTION-BAND DISCONTINUITIES OF HIGH INDIUM COMPOSITION InGaN/GaN MULTIPLE QUANTUM WELL STRUCTURES MEASURED BY OPTICAL PUMPING, **Chii-Chang Chen**, Hui-Wen Chuang, Gou-Chung Chi, Department of Physics, National Central University, Chung-Li, Taiwan, R.O.C., Chang-Cheng Chuo, and Jen-Inn Chyi, Department of Electrical Engineering, National Central University, Chung-Li, Taiwan, R.O.C.

Session V

- C-V.1** 14:00 **-Invited-** PUMP & PROBE SPECTROSCOPY OF InGaN MULTI QUANTUM WELL BASED LASER DIODES, **Y. Kawakami**, Y. Narukawa, K. Omae, Sg. Fujita, Department of Electronic Science and Engineering, Kyoto University, Kyoto 606-8501, S. Nakamura, Department of Research and Development, Nichia Chemical Industries Ltd., 491 Oka, Kaminaka, Anan, Tokushima 774-8601, Japan
- C-V.2** 14:30 **-Invited-** RESONANT RAYLEIGH SCATTERING OF EXCITON-POLARITONS IN NITRIDE-BASED MULTIPLE QUANTUM WELLS, **G. Malpuech** and A. Kavokin, LASMEA, UMR 6602 du CNRS, Université Blaise Pascal, Clermont-Ferrand II, 63177 Aubière Cedex, France
- C-V.3** 15:00 TIME-RESOLVED OPTICAL PROPERTIES OF GaN GROWN BY METALORGANIC VAPOR PHASE EPITAXY WITH INDIUM SURFACTANT, **G. Pozina**⁽¹⁾, J.P. Bergman⁽¹⁾, B. Monemar⁽¹⁾, H. Amano⁽²⁾ and I. Akasaki⁽²⁾, ⁽¹⁾Department of Physics and Measurement Technology, Linköping University, 581 83 Linköping, Sweden; ⁽²⁾Department of Electrical Engineering and Electronics and High-Tech Research Center, Meijo University, 1-501 Shiogamaguchi, Tempaku-ku, Nagoya 468-8502, Japan
- C-V.4** 15:15 TIME RESOLVED SPECTROSCOPY OF MBE-GROWN GaN / AlGaIn HETERO- AND HOMO-EPITAXIAL QUANTUM WELLS., **M. Gallart**⁽¹⁾, A. Morel⁽¹⁾, T. Taliercio⁽¹⁾, P. Lefebvre⁽¹⁾, B. Gil⁽¹⁾, J. Allegre⁽¹⁾, H. Mathieu⁽¹⁾, N. Grandjean⁽²⁾, M. Leroux⁽²⁾, J. Massies⁽²⁾, I. Grzegory⁽³⁾ and S. Porowski⁽³⁾, ⁽¹⁾Groupe d'Etude des Semiconducteurs, CNRS, Université Montpellier II, CC 074, 34095 Montpellier Cedex 5, France, ⁽²⁾Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, CNRS, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France, ⁽³⁾High Pressure Research Center, Polish Academy of Sciences, ul. Sokolowska 29, 01-141 Warsaw, Poland
- 15:30 **BREAK**

Session VI

- C-VI.1** 16:00 **-Invited-** OPTICAL PROPERTIES OF GaNAs/GaAs STRUCTURES, **I.A. Buyanova**, W.M. Chen, G. Pozina, P.N. Hai and B. Monemar, Linköping University, Sweden, H.P. Xin and C.W. Tu, University of California at San Diego, USA
- C-VI.2** 16:30 **-Invited-** HIGH NITROGEN PRESSURE GROWTH OF GAN CRYSTALS AND THEIR APPLICATIONS FOR EPITAXY OF GAN – BASED STRUCTURES, **I. Grzegory**, High Pressure Research Center Polish Academy of Sciences, Sokolowska 29/37, 01-142 Warsaw, Poland
- C-VI.3** 17:00 THE DEPENDENCE OF THE OPTICAL ENERGIES ON InGaN COMPOSITION, **K.P. O'Donnell**⁽¹⁾, R.W. Martin⁽¹⁾, M.E. White⁽¹⁾, K. Esona⁽¹⁾, C. Trager-Cowan⁽¹⁾, K. Jacobs⁽²⁾, W. Van der Stricht⁽²⁾, I. Moerman⁽²⁾, P. Demeester⁽²⁾, C. Merlet⁽³⁾, B. Gil⁽³⁾, A. Vantomme⁽⁴⁾, M.F. Wu⁽⁴⁾ and J.F.W. Mosselmans⁽⁵⁾; ⁽¹⁾Department of Physics, University of Strathclyde, Glasgow, G4 0NG, UK; ⁽²⁾INTEC-IMEC, University of Gent, Gent 7500, Belgium; ⁽³⁾University of Montpellier II, 34095 Montpellier Cedex 5, France; ⁽⁴⁾Inst. Kern- en Stralingsfysica, KU Leuven, 3001 Leuven, Belgium; ⁽⁵⁾CLRC Daresbury Laboratories, Warrington, WA4 4AD, UK
- C-VI.4** 17:15 PHOTOLUMINESCENCE OF Ga-FACE AlGaIn/GaN SINGLE HETEROSTRUCTURES, **G. Martinez-Criado**, A. Cros and A. Cantarero, Materials Science Institute and Department of Applied Physics, University of Valencia, Dr. Moliner 50, 46100 Burjassot (Valencia), Spain, C.R. Miskys, R. Dimitrov, O. Ambacher and M. Stutzmann, Walter Schottky Institute, Technical University of Munich, Am Coulombwall, 85748 Garching (Munich), Germany
- C-VI.5** 17:30 **-Invited-** DEFECTS IN UNDOPED AND Mg-DOPED AlGaIn: STUDY WITH OPTICALLY DETECTED MAGNETIC RESONANCE, **B.K. Meyer**, D.M. Hofmann, F.H. Leiter, N. Romanov and H. Alves, I. Physics Institute, Justus Liebig University, 35592 Giessen, Germany
- C-VI.6** 18:00 ELECTRICAL CHARACTERIZATION OF DEFECTS IN GALLIUM NITRIDE GENERATED BY ION IMPLANTATION, **A. Krtschil**, A. Kielburg, J. Christen, A. Krost, Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, PO Box 4120, 39016 Magdeburg, Germany; A. Wenzel, B. Rauschenbach, Institute of Physics, University of Augsburg, 86135 Augsburg, Germany
- C-VI.7** 18:15 LATTICE LOCATION OF IMPLANTED Fe IN GaN, **U. Wahl**, A. Vantomme, G. Langouche, University of Leuven, Instituut voor Kern- en Stralingsfysica, Celestijnenlaan 200 D, 3001 Leuven, Belgium, J.G. Correia and the ISOLDE Collaboration, CERN, 1211 Genève 23, Switzerland

Thursday June 1, 2000

Jeudi 1^{er} juin 2000

Morning

Matin

Session VII

- C-VII.1** 09:00 SYNTHESIS, STRUCTURE AND OPTICAL PROPERTIES OF GaN NANOCRYSTALS PREPARED BY SEQUENTIAL ION IMPLANTATION IN DIELECTRICS, E. Borsella, S. Dal Toè, G. Mattei, C. Maurizio, P. Mazzoldi, A. Saber, INFN Dept. of Physics, University of Padua, via Marzolo 8, 35131 Padova, Italy; G. Battaglin, E. Cattaruzza, F. Gonella, INFN Dept. of Physical Chemistry, University of Venice, Dorsoduro 2137, 30123 Venezia, Italy; A. Quaranta, INFN Dept. of Materials Engineering, University of Trento, via Mesiano 77, 38050 Trento, Italy and F. D'Acapito, INFN GILDA-CRG, ERSF, B.P. 220, 38043 Grenoble, France
- C-VII.2** 09:15 GROWTH AND CHARACTERIZATION OF CUBIC AND HEXAGONAL SELF-ASSEMBLED GaN QUANTUM DOTS, C. Adelman et al., DRFMC, CEA/Grenoble, 38054 Grenoble, France and Laboratoire de Spectrométrie Physique, CNRS, 38402 Saint Martin d'Hères, France
- C-VII.3** 09:30 **-Invited-** OPTICAL PROPERTIES OF SELF-ASSEMBLED InGaN/GaN QUANTUM DOTS, **T. Taliercio**⁽¹⁾, P. Lefebvre⁽¹⁾, A. Morel⁽¹⁾, M. Gallart⁽¹⁾, J. Allegre⁽¹⁾, B. Gil⁽¹⁾, H. Mathieu⁽¹⁾, N. Grandjean⁽²⁾ and J. Massies⁽²⁾; ⁽¹⁾Groupe d'Etude des Semiconducteurs, CNRS, Université Montpellier II, CC 074, 34095 Montpellier Cedex 5, France; ⁽²⁾Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, CNRS, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France
- C-VII.4** 10:00 SIZE AND SHAPE EFFECTS IN ELECTROMAGNETIC RESPONSE OF QUANTUM DOTS AND QUANTUM DOT ARRAYS, S.A. Maksimenko, G.Ya. Slepyan, V.P. Kalosha, Institute for Nuclear Problems, Belarus State University, Bobruiskaya 11, 220050 Minsk, Belarus, N.N. Ledentsov, A.F.Ioffe Physical Technical Institute, Politekhnicheskaya 26, 194021 St.Peterburg, Russia, A. Hoffmann, and D. Bimberg, Institut für Festkörperphysik, Technische Universität Berlin, Hardenbergstr. 36, 10623 Berlin, Germany
- C-VII.5** 10:15 THEORY OF THE ELECTRONIC STRUCTURE OF GaN/AlN QDs, A.D. Andreev⁽¹⁾, E.P. O'Reilly⁽²⁾; ⁽¹⁾A.F. Ioffe Institute, 194021 St. Petersburg, Russia; ⁽²⁾University of Surrey, Guildford GU2 5XH, UK
- 10:30 **BREAK**
- 11:00- 12 :30 **POSTER SESSION**

- C/P1** NONLINEAR SPECTROSCOPY OF HOMOEPITAXIAL GaN, D. Fröhlich, C. Schweitzer, Institut für Physik, Universität Dortmund, 44221 Dortmund, Germany, K. Reimann, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie, Max-Born-Strasse 2A, 12489 Berlin, Germany, P. Prystawko, M. Leszczynski, T. Suski, High Pressure Research Center, Polish Academy of Sciences, 01-142 Warsaw, Poland
- C/P2** INFLUENCE OF THE NATURE OF CARRIER GAS ON THE PROPERTIES OF EPITAXIAL GaN ON SAPPHIRE BY HVPE, E. Aujol, A. Trassoudaine, D. Castelluci And R. Cadoret, LASMEA, UMR CNRS 6602, Université Blaise Pascal, Les Cezeaux, 63177 Aubiere Cedex, France
- C/P3** SHORT-CHANNEL EFFECTS IN AlGaIn/GaN HEMTs, O. Breitschaedel, H. Graebeldinger, J.T. Hsieh, B. Kuhn, F. Scholz, H. Schweizer; 4. Physikalisches Institut/MSL, Universität Stuttgart, Pfaffenwaldring 57, 70550 Stuttgart, Germany
- C/P4** SYNTHESIS AND CHARACTERIZATION OF A BULK CRYSTALLINE CARBON-NITRIDE PHASE, V. P. Dymont, Institute of Solid State and Semiconductor Physics Academy of Sciences of Belarus, 220072 Minsk, Belarus, I. Smurov, Ecole Nationale d'Ingénieurs de Saint-Etienne, 58 rue Jean Parot, 42023 Saint-Etienne Cedex 2, France
- C/P5** MICROSTRUCTURE OF GaN NUCLEATION LAYER DURING INITIAL STAGE MOCVD GROWTH, Chong Cook Kim⁽¹⁾, Jung Ho Je⁽¹⁾, Min-Su Yi⁽¹⁾, Do Young Noh⁽¹⁾, F. Degave⁽²⁾ and P. Ruterana⁽²⁾; ⁽¹⁾Pohang University of Science and Technology, Materials Science and Engineering Dept, Hyoja-dong, 790-784 Pohang, Korea; ⁽²⁾Laboratoire d'Etude et de Recherche sur les Matériaux LERMAT-ISMRA, CNRS, UPRESA 6004, Bd Maréchal Juin, 14050 Caen Cedex, France
- C/P6** INVESTIGATION OF BERYLLIUM IMPLANTED P-TYPE GaN, Chang-Chin Yu, C.F. Chu, J.Y. Tsai, S.C. Wang, W. H. Lan, C. I. Ching; National Chiao Tung University, Institute of Electro-Optical Engineering, 1001 Ta Hsueh Road, Hsinchu 30050, Taiwan, R.O.C.
- C/P7** HIGH ETCHING RATE OF GaN FILMS BY KrF EXCIMER LASER, Chen-Fu Chu, C. K. Lee, C. C. Yu, Y. K. Wang, J. Y. Tasi, S. C. Wang and C. R. Yang; National Chiao Tung University, Institute of Electro-Optical Engineering, 1001 Ta Hsueh Road, Hsinchu 30050, Taiwan, R.O.C.
- C/P8** THE CHARACTERIZATION OF GALLIUM NITRIDE USING THE Hi-PREXX FACILITY, D. Russell, S. Bayliss, A.V Sapelkin, De Montfort University, Leicester, UK; A. Dent, S. Clark, Daresbury Laboratories, Warrington, UK
- C/P9** A COMPARATIVE STUDY OF THE INFLUENCE OF THE LDA AND GGA APPROXIMATION ON THE CALCULATED PROPERTIES OF III-NITRIDES (110) SURFACES, H. W. Leite Alves, J. L. A. Alves, DCNAT-FUNREI, CP 110, 36.300-000 Sao Joao del Rei MG, Brazil, R. A. Nogueira, DF-ICEx-UFMG, CP 702, 30161-970 Belo Horizonte MG, Brazil and J. R. Leite, DFMM-IF-USP, CP 66.318, 05389-970 Sao Paulo SP, Brazil
- C/P10** DONOR BINDING ENERGIES IN GROUP III-NITRIDE-BASED QUANTUM WELLS: INFLUENCE OF INTERNAL ELECTRIC FIELDS, A. Morel, P. Lefebvre, T. Taliencio, M. Gallart, B. Gil and H. Mathieu, Groupe d'Etude des Semiconducteurs, CNRS, Université Montpellier II, CC 074, 34095 Montpellier Cedex 5, France
- C/P11** RAMAN SCATTERING STUDY OF GALLIUM NITRIDE HEAVILY DOPED WITH MANGANESE, W. Gebicki, L. Adamowicz, J Strzeszewski, Faculty of Physics, Warsaw University of Technology, Koszykowa 75, 00-661 Warszawa, Poland, S. Podsiadlo, T. Szyszko and G. Kamler, Faculty of Chemistry, Warsaw University of Technology, Noakowskiego 3, 00-661 Warszawa, Poland
- C/P12** THE EFFECT OF OXYGEN ON REACTIVE ION BEAM ETCHING OF GaN IN O₂/Ar PLASMAS, J. T. Hsieh, O. Breitschaedel and H. Schweizer, 4. Physikalisches Institut, Universität Stuttgart, 70550 Stuttgart, Germany
- C/P13** DETAILED DEEP TRAP ANALYSIS IN MG-DOPED P-TYPE GaN LAYERS GROWN BY MOVPE, H. Witte, A. Krtschil, M. Lisker, J. Christen, A. Krost, Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg, 39106 Magdeburg, Germany, B. Kuhn, F. Scholz, 4th Institute of Physics, University of Stuttgart, 70550 Stuttgart, Germany

- C/P14** OPTICAL STUDIES OF GaN THIN FILMS, R. Kudrawiec, L. Bryja, J. Misiewicz, Institute of Physics Wroclaw University of Technology, Wyb. Wyspianskiego 27, 50-370 Wroclaw, Poland and R. Paszkiewicz, R. Korbutowicz, M. Panek, B. Paszkiewicz, M. Tlaczala, Institute of Microsystem Technology, Wroclaw University of Technology
- C/P15** CONFINED EXCITON-POLARITONS IN HIGH-QUALITY HOMOEPITAXIAL GaN THIN EPILAYER, P. Lefebvre⁽¹⁾, A. Morel⁽¹⁾, T. Taliercio⁽¹⁾, M. Gallart⁽¹⁾, B. Gil⁽¹⁾, H. Mathieu⁽¹⁾, N. Grandjean⁽²⁾, J. Massies⁽²⁾, I. Grzegory⁽³⁾ and S. Porowski⁽³⁾, ⁽¹⁾Groupe d'Etude des Semiconducteurs, CNRS, Université Montpellier II, CC 074, 34095 Montpellier Cedex 5, France, ⁽²⁾Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, CNRS, Rue Bernard Gregory, Sophia Antipolis, 06560 Valbonne, France, ⁽³⁾High Pressure Research Center, Polish Academy of Sciences, ul. Sokolowska 29, 01-141 Warsaw, Poland
- C/P16** PROSPECTIVE INVESTIGATIONS OF ORTHORHOMBIC ZnGeN₂: GROWTH, LATTICE DYNAMICS AND OPTICAL PROPERTIES, R. Viennois, T. Taliercio, V. Potin, B. Gil and S. Charar, Groupe d'Etude des Semiconducteurs, Université de Montpellier II, case courrier 074, 34095 Montpellier cedex 5, France, A. Haidoux and J.C. Tédénac, Laboratoire de Physico-Chimie de la Matière Condensée, Université de Montpellier II, case courrier 003, 34095 Montpellier cedex 5, France
- C/P17** DISTRIBUTION AND DIFFUSION OF In AND N IN InGaAsN/GaAs MQWs, L. Gorgens, A. Bergmaier, G. Dollinger, Technische Universitaet Muenchen, Physik Department E12, 85747 Garching, Germany, P. Koch, Technische Universitaet Muenchen, Physik Department E16, 85747 Garching, Germany, H. Riechert, A. Egorov, Infineon Technologies AG, Corporate Research, 81739 Muenchen, Germany
- C/P18** THE INFLUENCE OF GROWTH CONDITIONS IN THE METALORGANIC CHEMICAL VAPOR DEPOSITION ON THE PHOTOLUMINESCENCE PROPERTIES OF GaN EPILAYERS, Fuh-Shyang Juang⁽¹⁾, Yan-Kuin Su⁽²⁾, Shouu-Jinn Chang⁽²⁾ T. K. Chu⁽²⁾, ⁽¹⁾Department of Electro-Optics Engineering, National Huwei Institute of Technology, Huwei, Yunlin 632, Taiwan; ⁽²⁾Department of Electrical Engineering, National Cheng Kung University, Tainan 70101, Taiwan
- C/P19** FABRICATION OF GaN FILMS BY METALORGANIC CHEMICAL VAPOR DEPOSITION USING ZnO BUFFER LAYERS, W.P.Li, R.Zhang, H.Q.Yu, J. Yin, B. Shen, Y.G.Zhou, Z.G.Liu, Y.D.Zheng, Department of Physics & National Laboratory of Solid State Microstructures, Nanjing University, Nanjing 210093, P.R.China
- C/P20** INVESTIGATION ON InGaN/GaN/Al/sub2/O/sub3/HETEROSTRUCTURE GROWN BY METAL-ORGANIC VAPOR PHASE EPITAXY, Peide Han, Xianglin Liu, Xiaohui Wang, Hairong Yuan, Du Wang, Dacheng Lu, Zhangguo Wang, Laboratory of Semiconductor Materials Science, Institute of Semiconductors, Chinese Academy of Sciences, P.O.Box 912, Beijing 100083, P.R.China
- C/P21** ETCH END-POINT DETECTION OF GaN-BASED DEVICES USING OPTICAL EMISSION SPECTROSCOPY, D.W. Kim⁽¹⁾, H.S. Kim⁽²⁾, Y.J. Sung⁽¹⁾, T. Kim⁽²⁾, M. Dawson⁽²⁾ and G.Y. Yeom⁽¹⁾, ⁽¹⁾Dept. of Materials Engineering, Sungkyunkwan University, Suwon, Korea, ⁽²⁾Institute of photonics, University of Strathclyde, Scotland, UK
- C/P22** HIGH RATE ETCHING OF SAPPHIRE WAFER USING Cl₂/BCl₃/Ar INDUCTIVELY COUPLED PLASMAS, Y.J. Sung⁽¹⁾, H.S. Kim⁽²⁾, Y.H. Lee⁽¹⁾, J.W. Lee⁽³⁾, S.H. Chae⁽³⁾ and G.Y. Yeom⁽¹⁾, ⁽¹⁾Dept. of Materials Engineering, Sungkyunkwan University, Suwon, Korea, ⁽²⁾Institute of photonics, University of Strathclyde, Scotland, UK, ⁽³⁾Nitrides Research Teams, Samsung Advanced Institute of Technology, Suwon, Korea
- C/P23** PHOTOLUMINESCENCE STUDY OF HIGH QUALITY GaN GROWN BY PULSED LASER DEPOSITION IN NITROGEN ATMOSPHERE, K.W.Mah, E.McGlynn, M.O.Henry and J-P. Mosnier, School of Physical Science, Dublin City University, Dublin-9, Ireland, J.Castro and J.G.Lunney, Department of Physics, Trinity College, Dublin-2, Ireland
- C/P24** ELECTRONIC AND VIBRATIONAL PROPERTIES OF Mg- AND O-RELATED COMPLEXES IN GaN, C.J. Fall and R. Jones, School of Physics, University of Exeter, Exeter EX4 4QL, United Kingdom, P.R. Briddon, Department of Physics, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, UK, S. Oberg, Department of Mathematics, University of Lulea, 95187 Lulea, Sweden
- C/P25** OPTICAL PROPERTIES OF InGaN QUANTUM DOTS GROWN BY MBE, B. Damilano, N. Grandjean, and J. Massies, Centre National de la Recherche Scientifique, Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, Rue B. Grégory, 06560 Sophia Antipolis, France

- C/P26** PATTERNING OF GaN BY ION IMPLANTATION-DEPENDENT ETCHING, S. Schiestel, George Washington University, Washington, D.C., USA, B. Molnar, C.A. Carosella, D. Kniess, Naval Research Laboratory, Washington, D.C., USA and K. Edinger, University of Maryland, College Park, USA
- C/P27** HREM STUDY OF BASAL STACKING FAULTS IN GaN/AlN LAYERS GROWN OVER SAPPHIRE SUBSTRATE, V. Potin⁽¹⁾, P. Ruterana⁽²⁾ and G. Nouet⁽²⁾, ⁽¹⁾Groupe d'Etudes des Semiconducteurs, CC074, Université Montpellier II, Place Eugène Bataillon, 34095 Montpellier Cedex 5, France, ⁽²⁾Laboratoire d'Etudes et de Recherches sur les Matériaux, Institut des Sciences de la Matière et du Rayonnement, 6 Boulevard Maréchal Juin, 14050 Caen Cedex, France
- C/P28** EVALUATION OF SiC AS A SUBSTRATE MATERIAL FOR NITRIDE MATERIALS HETEROEPITAXY P. Masri, M. Rouhani Laridjani, G. Breton, M. Averous, Groupe d'Etude des Semiconducteurs, CNRS, UMR 5650, Université de Montpellier 2, 12 Place Eugène Bataillon, 34095 Montpellier CEDEX 5, France
- C/P29** THE MULTIPLE ATOMIC CONFIGURATIONS OF THE EDGE THREADING DISLOCATIONS IN GaN, J. Chen, N. Aïchoune, P. Ruterana, G. Nouet, Laboratoire d'Etude et de Recherche sur les Matériaux (LERMAT - CNRS), ISMRA, Bd Maréchal Juin, 14050 Caen Cedex, France and D. Boucher, Physics Department, 6 Memorial Drive East, Lehigh University, Bethlehem, Pennsylvania 18015 USA
- C/P30** NEW FORM OF ORDERING IN AlGaIn, P. Ruterana⁽¹⁾, S.M. Lauegt⁽²⁾, G. de Saint-Jores⁽¹⁾, D. Schenck⁽²⁾, F. Omnes⁽²⁾, ⁽¹⁾Laboratoire d'Etude et de Recherche sur les Matériaux (LERMAT - CNRS), ISMRA, Bd Maréchal Juin, 14050 Caen Cedex, France, ⁽²⁾Centre de Recherche sur l'Hétéroépitaxie et ses Applications (CRHEA - CNRS), rue Bernard Gregory Sophia-Antipolis, Valbonne 06560, France
- C/P31** A TIGHT BINDING STUDY OF THE PLANAR DEFECTS IN GaN, AlN and InN, N. Aïchoune, J. Chen, P. Ruterana, G. Nouet, Laboratoire d'Etude et de Recherche sur les Matériaux (LERMAT - CNRS), ISMRA, Bd Maréchal Juin, 14050 Caen Cedex, France and D. Boucher, Physics Department, 6 Memorial Drive East, Lehigh University, Bethlehem, Pennsylvania 18015, USA
- C/P32** IN SITU SCANNING TUNNELING MICROSCOPY OF GaN GROWN BY MOLECULAR BEAM EPITAXY ON Si(111) AND SAPPHIRE SUBSTRATES, S. Veizian, J. Massies, F. Sémont and N. GRANDJEAN, CRHEA/CNRS Rue B. Gregory Sophia Antipolis 06560 Valbonne, France
- C/P33** DENSITY-OF-STATES DISTRIBUTION IN AlGaIn OBTAINED FROM TRANSIENT PHOTOCURRENT ANALYSIS, M. Niehus, R. Schwarz, S. Koynov, Physics Department, Instituto Superior Técnico, Lisbon, Portugal; M. Heuken, Aixtron GmbH, Aachen, Germany; D. Meister, B.K. Meyer, I. Physics Department, University of Giessen, Giessen, Germany; C. Main and S. Reynolds, School of Science and Engineering, University of Abertay Dundee, Dundee, UK
- C/P34** CHARACTERISATION BY LOW TEMPERATURE CATHODOLUMINESCENCE OF GaN OBTAINED BY ELO-HVPE (EPITAXIAL LATERAL OVERGROWTH - HYDRIDE VAPOR PHASE EPITAXY) TECHNIQUE, M. Gjoni, D Ganière, K. Leifer, O. Parillaud, V. Wagner, B. Deveaud and M. Illegems, Institut de Micro-et Optoélectronique, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne EPFL, Switzerland
- C/P35** PHOTOLUMINESCENCE AND ABSORPTION SPECTROSCOPY OF EPITAXIAL InGaIn LAYERS, H. P. D. Schenk, M. Leroux, P. de Mierry, S. Lauegt, F. Omnès, and P. Gibart, CNRS-CRHEA, Rue Bernard Grégory, Sophia Antipolis, 06560 Valbonne, France
- C/P36** EFFECTS OF THE OPTICAL PUMPING INTENSITY AND TEMPERATURE ON GaN-BASED QUANTUM WELLS, P. Bigenwald⁽¹⁾, A. Kavokin⁽²⁾ P. Christol⁽¹⁾, P. Lefebvre⁽³⁾ and B. Gil⁽³⁾, ⁽¹⁾Dpt de Physique - UFR Sciences, 33 rue Pasteur, 84000 Avignon, France ; ⁽²⁾LASMEA, Université Blaise Pascal, 24 Avenue des Landais, 63177 Aubière, France ; ⁽³⁾GES, Université de Montpellier II, Place Eugène Bataillon, 34095 Montpellier, France
- C/P37** WURTZITE GaN EPITAXIAL GROWTH ON Si(111) USING SILICON NITRIDE AS AN INITIAL LAYER, Hongxue Liu, Zhizhen Ye, Haoxiang Zhang, Binghui Zhao, State Key Laboratory of Silicon Materials, Zhejiang University, Hangzhou, 310027, P.R. China
- C/P38** VERTICAL MOTIONAL NARROWING OF EXCITON-POLARITONS IN GAN-BASED MULTIPLE QUANTUM WELLS, G. Malpuech and A. Kavokin, LASMEA, UMR 6602 du CNRS, Université Blaise Pascal - Clermont-Ferrand II, 63177 Aubière Cedex, France

- C/P39** GROWTH AT GaN/AlN HETEROSTRUCTURES: A LOCAL VIEW, F. Boscherini⁽¹⁾, R. Lantier⁽²⁾, A. Rizzi⁽³⁾, F. D'Acapito⁽⁴⁾ and S. Mobilio⁽⁵⁾, ⁽¹⁾INFM, Dipartimento di Fisica, Universita' di Bologna, Italy; ⁽²⁾ISI, Forschungszentrum Juelich, Germany; ⁽³⁾INFM, Dipartimento di Fisica, Universita' di Modena, Italy; ⁽⁴⁾ISI, Forschungszentrum Juelich, Germany; ⁽⁵⁾INFM, Grenoble, France; ⁽⁵⁾Dipartimento di Fisica, Universita' di Roma Tre, via della Vasca Navale 84, 00146 Rome, Italy
- C/P40** HIGH RESOLUTION NEAR-FIELD CATHODOLUMINESCENCE IMAGING AND SPECTROSCOPY ON AlGaIn/GaN QUANTUM WELLS, J. L. Bubendorff, M. Troyon, Université de Reims-Champagne-Ardenne, UTAP-LMET, 21 rue Clément Ader, 51685 Reims Cedex, France
- C/P41** DEEP LEVELS IN MOCVD n-TYPE HEXAGONAL GALLIUM NITRIDE STUDIED BY HIGH RESOLUTION DEEP LEVEL TRANSIENT SPECTROSCOPY, P. Muret, A. Philippe, LEPES-CNRS, BP166, 38042 Grenoble Cedex 9, France, E. Monroy, E. Muñoz, Universidad Politecnica de Madrid, E.S.T.I., Ciudad Universitaria, Madrid, Spain, B. Beaumont, F. Omnès, P. Gibart, CRHEA-CNRS, Parc Sophia Antipolis, 06560 Valbonne, France
- C/P42** DETERMINATION OF STRAIN, COMPOSITION AND LAYER THICKNESS OF QUATERNARY (GaInAs)-NITRIDE FILMS AND SUPERLATTICES GROWN EPITAXIALLY ONTO GaAs (001), N. Herres, H. Güllich, M. Maier, C. Manz, P. Ganser, K. Köhler, Fraunhofer-Institut für Angewandte Festkörperphysik, Tullastrasse 72, 79108 Freiburg, Germany
- C/P43** EPITAXIAL GROWTH OF GaN THIN FILMS ON SAPPHIRE BY PULSED LASER DEPOSITION: INFLUENCE OF SURFACE PREPARATION AND NITRIDATION, D. Ohlmann, J.L. Loison, M. Robino, G. Versini and J. Werckmann, Institut de Physique et Chimie des Matériaux de Strasbourg, UMR 7504 CNRS-ULP-ECPM, 23 rue du Loess, 67037 Strasbourg Cedex, France
- C/P44** INVESTIGATIONS OF Si AND P SINGLE- AND DUAL-IMPLANTATIONS IN MOVPE-GROWN GaN FILMS, J. Ou, C.Y. Huang, Y.C. Pan, M.C. Lee, W.H. Chen and W.K. Chen, Department of Electrophysics, National Chiao-Tung University, Hsin-Chu, Taiwan 300, R.O.C.
- C/P45** OPTICAL PROPERTIES OF BORON NITRIDE THIN FILMS DEPOSITED BY MICROWAVE PECVD, A. Soltani, P. Thévenin, O. Baehr, A. Bath, LICM/CLOES, Université de Metz & Supélec, 2 rue Edouard Belin, 57078 Metz Cedex 03, France
- C/P46** COMPENSATION IN HIGHLY Mg DOPED GaN:Mg, U. Kaufmann, P. Schlotter, H. Obmph, N. Herres and K. Köhler, Fraunhofer Institut für Angewandte Festkörperphysik, Tullastrasse 72, 79108 Freiburg, Germany
- C/P47** IMPROVEMENT OF DIODES PERFORMANCE WITH MULTIPLE-PAIR BUFFER LAYER BY MOCVD, Chien-Chen Yang^(1,2), Meng-Chyi Wu⁽²⁾, Gou-Chung Chi⁽³⁾, Chang-Cheng Chuo⁽⁴⁾, Jen-Inn Chyi⁽⁴⁾, Chen-Kuei Chung⁽¹⁾, Ten-Hsing Jaw⁽¹⁾ and Ching-Yi Wu⁽¹⁾, ⁽¹⁾Microsystems Laboratory, Industrial Technology Research Institute, Hsinchu 310, Taiwan, ⁽²⁾Department of Electrical Engineering, National Tsing Hua University, Hsinchu 300, Taiwan, ⁽³⁾Optical Science Center, National Central University, Chung-Li 320, Taiwan, ⁽⁴⁾Department of Electrical Engineering, National Central University, Chung-Li 32054, Taiwan
- C/P48** MBE GROWTH OF DIFFERENT GaN CRYSTAL STRUCTURES ON VICINAL (100) GaAs SUBSTRATES, A. Georgakilas, K. Amimer, FORTH/IESL, P.O. Box 1527, 71110 Heraklion, Greece, V.Yu. Davydov, M.V. Baidakova, Ioffe Phys.-Techn. Inst., St. Petersburg, Russia, Zs. Czigan and B. Pecz, Res. Inst. Techn. Phys. and Mat. Sci., Budapest, Hungary
- C/P49** PHOTOREFLECTANCE INVESTIGATIONS OF GaN, AlGaIn AND InGaIn EPITAXIAL LAYERS, P. Sitarek, R. Kudrawiec, G. S_k, J. Misiewicz, Institute of Physics Wrocław University of Technology, Wyb. Wyspiańskiego 27, 50-370 Wrocław, Poland, R. Paszkiewicz, R. Korbutowicz, M. Panek, B. Paszkiewicz, M. T_acza_a, Institute of Microsystem Technology, Wrocław University of Technology, Wrocław, Poland
- C/P50** MBE GROWN InGaIn QUANTUM DOTS: LED RESULTS AND GAIN MEASUREMENTS, S. Dalmaso, B. Damilano, N. Grandjean, J. Massies, M. Leroux, J-L Reverchon* and J-Y Duboz*, Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications, Centre National de la Recherche Scientifique, Rue Bernard Grégory, Sophia Antipolis, 06560 Valbonne, France, *LCR Thomson, Domaine de Corbeville, 91404 Orsay Cedex France
- C/P51** DEEP LEVELS INTRODUCED IN N-GAN GROWN BY THE ELOG TECHNIQUE BY HIGH-ENERGY ELECTRON IRRADIATION, S.A. Goodman, F.D. Auret, G. Myburg and M.J. Legodi, University of Physics, University of Pretoria, Pretoria 0002, South Africa, B. Beaumont and P. Gibart, CRHEA-CNRS Valbonne, France

C/P52 DEVELOPMENT OF SOLAR-BLIND PHOTODETECTOR BASED ON AlGaN HETEROJUNCTION, C. Pernot, GES, Université Montpellier II, France, A. Hirano, Fundamental Research Laboratories, Osaka Gas Co., Ltd, Japan, M. Iwaya, T. Detchprohm, H. Amano, and I. Akasaki, Dept. of Electrical and Electronic Engineering., Meijo university, Japan

Thursday June 1, 2000

Jeudi 1^{er} juin 2000

Afternoon

Après-midi

Session VIII

- C-VIII.1** 14:00 **-Invited-** GaN HIGH POWER ELECTRONICS, S.J. Pearton, F. Ren, A.P. Zhang, G. Dang, X.A. Cao, H. Cho, B.P. Gila, C. Monier and C.R.Abernathy, University of Florida, Gainesville FL 32611,USA; J. Han and A.G.Baca, Sandia National Laboratories, Albuquerque NM 87185, USA; J.-I. Chyi, C.-M.Lee,T.-E. Nee, C.-C. Chuo and G.C. Chi, National Central University, Chung-Li, Taiwan 32054; S.N.G. Chu, Bell Laboratories, Lucent Technologies, Murray Hill NJ 07974, USA
- C-VIII.2** 14:30 PHOTOCONDUCTANCE MEASUREMENTS AND STOKES SHIFT IN InGaN ALLOYS, J.-L. Reverchon, F. Huet, M.-A. Poisson, J.-Y. Duboz, Laboratoire Central de Recherches, Thomson-CSF, 91404 Orsay Cedex, France
- C-VIII.3** 14:45 FORMATION OF OHMIC CONTACTS TO MOCVD GROWN p-GaN BY CONTROLLED ACTIVATION OF Mg, E. Kaminska, A. Piotrowska, A. Barcz, Institute of Electron Technology, Warsaw, Poland, D. Bour, Agilent Laboratories, Palo Alto, USA, M. Zielinski, Institute of Physics PAS, Warsaw, Poland, J. Jasinski, Lawrence Berkeley Laboratory, USA
- C-VIII.4** 15:00 **-Invited-** TWO-DIMENSIONAL ELECTRON GAS TRANSPORT PROPERTIES IN AlGaIn/GaN SINGLE- AND DOUBLE-HETEROSTRUCTURE FIELD EFFECT TRANSISTORS, **Narihiko Maeda**, Tadashi Saitoh, Kotaro Tsubaki, Toshio Nishida, Naoki Kobayashi, NTT Basic Research Laboratories, Physical Science Laboratory, Kanagawa, Japan

15:30

BREAK

Session IX

- C-IX.1** 16:00 **-Invited-** GaN-BASED TRANSISTORS FOR MICROWAVE AND POWER SWITCHING APPLICATIONS, **U.K. Mishra**, R. Vetry, L. McCarthy, N. Zhang, H. Xing, S. Keller, Y. Smorchkova, S. DenBaars, J. Speck, ECE Department, UCSB, Santa Barbara CA 93106, USA, Y.-F. Wu, P. Kozodoy, P. Parikh, Nitres Inc., 10 S. Patera Lane, Goleta CA 93177, USA
- C-IX.2** 16:30 ELECTRON TRAPS INTRODUCED IN N-TYPE GaN DURING DIFFERENT METALLISATION METHODS, **F.D. Auret**, S.A. Goodman and G. Myburg, Department of Physics, University of Pretoria, Pretoria 0002, South Africa; S.E. Mohny and J.M. de Lucca, Department of Materials Science and Engineering, The Pennsylvania State University PA, USA
- C-IX.3** 16:45 STRUCTURAL EVOLUTION OF Pd/GaN(0001) FILMS DURING POST-ANNEALING, **Chong Cook Kim**, Jung Ho Je, Dae-Woo Kim, Hong Koo Baik, Sung-Man Lee, and P. Ruterana
- C-IX.4** 17:00 QUENCHING OF DC- AND PERSISTENT PHOTOCONDUCTIVITY IN p-TYPE GaN LAYERS GROWN BY MOVPE, **M. Lisker**, H. Witte, A. Krtshil, J. Christen, Institute of Experimental Physik, Otto-von-Guericke University Magdeburg, 39016 Magdeburg, Germany, B. Kuhn and F.Scholz, 4. Physikalisches Institut, University of Stuttgart, 70550 Stuttgart, Germany
- C-IX.5** 17:15 OHMIC PERFORMANCE OF ZnO AND ITO/ZnO CONTACTED WITH N-TYPE GaN Layer, **Ching-Ting Lee**, Bang-Tai Tong, Hsin-Ying Lee and Chang-Da Tsai, Institute of Optical Sciences, National Center University Chung-Li, Taiwan, Republic of China
- C-IX.6** 17:30 FEMTOSECOND LASER MICROMACHINING OF GALLIUM NITRIDE, **T. Kim⁽¹⁾**, H.-S. Kim⁽¹⁾, D. Jones⁽²⁾, J.M. Girkin⁽¹⁾, E. Bente⁽¹⁾, and M.D. Dawson⁽¹⁾, ⁽¹⁾Institute of Photonics, University of Strathclyde, Wolfson Centre, 106 Rottenrow, Glasgow G4 0NW, UK, ⁽²⁾Department of Physics & Applied Physics
- C-IX.7** 17:45 ELECTRON AND HOLE DYNAMICS IN GaN, H. Ye, G. Wicks, and **P.M. Fauchet**, University of Rochester, Rochester NY 14627, USA
- C-IX.8** 18:00 EFFECTIVE CARRIER MASS AND MOBILITY VERSUS CARRIER CONCENTRATION IN P- AND N-TYPE HEXAGONAL GaN DETERMINED BY INFRARED ELLIPSOMETRY AND HALL RESISTIVITY MEASUREMENTS, **A. Kasic⁽¹⁾**, M. Schubert^(1,2), B. Rheinländer⁽¹⁾, V. Riede⁽¹⁾, S. Einfeldt⁽³⁾, D. Hommel⁽³⁾, B. Kuhn⁽⁴⁾, J. Off⁽⁴⁾, F. Scholz⁽⁴⁾; ⁽¹⁾Fakultät fuer Physik und Geowissenschaften, Universität Leipzig, 04103 Leipzig, Germany, ⁽²⁾Center for Microelectronic and Optical Materials Research, University of Nebraska, Lincoln, 68588, USA, ⁽³⁾Institut fuer Festkoerperphysik, Universität Bremen, Fachbereich 1, 28359 Bremen, Germany, ⁽⁴⁾4. Physikalisches Institut, Universität Stuttgart, 70550 Stuttgart, Germany

Session X

- C-X.1** 08:30 INFLUENCE OF HYDROGEN VERSUS NITROGEN AS CARRIER GAS ON THE SELECTIVE EPITAXY OF GaN BY HVPE AND ITS USE FOR A TWO-STEP ELO PROCESS, V. Wagner, O. Parillaud, H.J. Buehlmann, J.D. Ganière and M. Ilegems, Institut de Micro- et Optoélectronique, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne EPFL, Switzerland
- C-X.2** 08:45 TEMPERATURE DEPENDENT ELECTROLUMINESCENCE IN GaN AND InGaN/AlGaIn LEDs, D. Lancefield⁽¹⁾, A. Crawford⁽¹⁾, B. Beaumont⁽²⁾, P. Gibart⁽²⁾, M. Heuken⁽³⁾ and M. Di Forte-Poission⁽⁴⁾, ⁽¹⁾Department of Physics, University of Surrey, Guildford, Surrey, GU2 5XH, UK, ⁽³⁾CRHEA-CNRS, Parc Sophia Antipolis, 06560 Valbonne, France, ⁽³⁾Aixtron AG, Kackertstr. 15-17, 52072 Aachen, Germany, ⁽⁴⁾Thomson-CSF/Laboratoire Central de Recherches, Domaine de Corbeville, 91404 Orsay Cedex, France
- C-X.3** 09:00 **-Invited-** ADVANCED CHARACTERIZATION OF GaN-BASED LEDs, M. Kamp, V. Schwegler, C. Kirchner, M. Seyboth, M. Scherer, University of Ulm, Dept. of Optoelectronics, 89069 Ulm, Germany
- C-X.4** 09:30 PATTERNED DIELECTRIC MIRRORS FOR LATERAL OVERGROWTH OF GaN-BASED LASERS, Taek Kim⁽¹⁾, R.W. Martin⁽²⁾, I.M. Watson⁽¹⁾, M.D. Dawson⁽¹⁾, T.F. Krauss⁽³⁾, J.H. Marsh⁽³⁾ and R.M. De La Rue⁽³⁾; ⁽¹⁾Institute of Photonics, University of Strathclyde, Glasgow, G4 0NW, UK; ⁽²⁾Department of Physics, University of Strathclyde, Glasgow, G4 0NG, UK; ⁽³⁾Department of Electronics & Electrical Engineering, Glasgow University, Glasgow, G12 8LT, UK
- C-X.5** 09:45 GaN LAYER STRUCTURES WITH BURIED TUNGSTEN NITRIDES (WN) USING EPITAXIAL LATERAL OVERGROWTH (ELO) VIA MOVPE, K. Hiramatsu⁽¹⁾, M. Haino⁽¹⁾, M. Yamaguchi⁽¹⁾, H. Miyake⁽¹⁾, S. Nambu⁽²⁾, Y. Kawaguchi⁽²⁾, N. Sawaki⁽²⁾, Y. Iyechika⁽³⁾, and T. Maeda⁽³⁾, ⁽¹⁾Dept of Electrical & Electronic Engineering, Mie University, Tsu, Japan, ⁽²⁾Dept of Electronics, Nagoya University, Nagoya, Japan, ⁽³⁾Sumitomo Chemical Co Ltd, Tsukuba, Japan
- C-X.6** 10:00 IMPROVEMENT OF ELECTRICAL PROPERTY AND SURFACE MORPHOLOGY OF GaN GROWN BY RF-PLASMA ASSISTED MOLECULAR BEAM EPITAXY BY INTRODUCTION OF MULTIPLE AlN INTERMEDIATE LAYER, Akihiko Kikuchi, Takayuki Yamada, Shinichi Nakamura, Kazuhide Kusakabe, Daisuke Sugihara and Katsumi Kishino, Department of Electrical & Electronics Engineering, Sophia University, 7-1, Kioi-cho, Chiyoda-ku, Tokyo 102-8554, Japan
- C-X.7** 10:15 **-Invited-** GaN-BASED HIGH-POWER LASER DIODES WITH BURIED-RIDGE STRUCTURE, Takao Miyajima⁽¹⁾, Tsunenori Asatsuma⁽¹⁾, Hiroshi Nakajima⁽¹⁾, Shigeki Hashimoto⁽¹⁾, Takashi Yamaguchi⁽¹⁾, Hiroshi Yoshida⁽¹⁾, Shigetaka Tomiya⁽²⁾, Takeharu Asano⁽³⁾, Tomonori Hino⁽³⁾, Masafumi Ozawa⁽¹⁾, Toshimasa Kobayashi⁽¹⁾, and Masao Ikeda⁽³⁾, ⁽¹⁾Sony Corporation Core Technology & Network Company, 2-1-1 Shinsakuragaoka, Hodogaya, Yokohama 240-0036, Japan, ⁽²⁾Technical Support Center, Sony Corporation, ⁽³⁾Sony Shiroishi Semiconductor Incorporation
- 10:45 **BREAK**

Session XI

- C-XI.1** 11:00 UNIFORMITY OF AlGaIn/GaN LASER STRUCTURES GROWN BY MOVPE, O. Schoen⁽¹⁾, A. Alam⁽¹⁾, J. Holst⁽²⁾, A. Hoffmann⁽²⁾, J. Blaesing⁽³⁾, A. Krost⁽³⁾, M. Heuken⁽¹⁾, H. Juergensen⁽¹⁾ and R. Beccard⁽¹⁾, ⁽¹⁾AIXTRON AG, Kackertstr. 15-17, 52072 Aachen, ⁽²⁾Inst. f. Festkörperphysik, Technische Universität Berlin, Germany, ⁽³⁾Inst. f. Experimentelle Physik, Magdeburg, Germany
- C-XI.2** 11:15 THE THERMAL ANNEALING EFFECT AND ELECTRON BEAM IRRADIATION EFFECT ON HIGH QUALITY MULTIPLE QUANTUM STRUCTURE InGaIn, C.Y. Fang, Department of Materials Science and Engineering, NCTU, Taiwan, ROC ; Shih-Chang Lee, Department of Electrophysics, NCKU, Taiwan, ROC; Wei-I Lee, Department of Electrophysics, NCTU, Taiwan, ROC; S.C. Wang, Institute of Electro-Optical Engineering, NCTU, Taiwan, ROC; M.S. Feng, Department of Materials Science and Engineering, NCTU, Taiwan, ROC
- C-XI.3** 11:30 IMPACT OF THE MOVPE-GaN 'TEMPLATES' ON SPATIAL NONUNIFORMITIES OF STRAIN AND DOPING DISTRIBUTION IN HVPE-GaN, E. Valcheva⁽¹⁾, T. Paskova⁽¹⁾, M.V. Abrashev⁽²⁾, P.O.Å. Persson⁽²⁾, E. Goldys⁽³⁾, R. Beccard⁽⁴⁾, M. Heuken⁽⁴⁾ and B. Monemar⁽¹⁾; ⁽¹⁾IFM, Linköping University, 581 83 Linköping, Sweden; ⁽²⁾Faculty of Physics, Sofia University, 1164 Sofia, Bulgaria; ⁽³⁾Semiconductor Science and Technology Laboratories, Macquarie University, Sydney, NSW 2109, Australia; ⁽⁴⁾Aixtron AG, 52072 Aachen, Germany
- C-XI.4** 11:45 PROPERTIES OF GaNAs/GaAs QUANTUM WELLS STUDIED BY OPTICAL DETECTION OF CYCLOTRON RESONANCE, P.N. Hai, W.M. Chen, I.A. Buyanova, B. Monemar, Dept of Physics and Measurement Technology, Linköping University, Sweden, H.P. Xin and C.W. Tu, Dept of Electrical and Computer Engineering, University of California at San Diego, USA
- C-XI.5** 12:00 DIRECT IMAGING OF IMPURITY INCORPORATION AND STRAIN RELAXATION IN EPITAXIAL LATERAL OVERGROWTH GaN STRUCTURES ON SILICON SUBSTRATE, T. Riemann, J. Christen, Otto-von-Guericke-University Magdeburg, PO Box 4120, 39016 Magdeburg, Germany, A. Kaschner, A. Hoffmann, C. Thomsen, TU Berlin, Hardenbergstr. 36, 10623 Berlin, Germany, K. Hiramatsu, Mie University, Mie, Japan

END SYMPOSIUM C