SYMPOSIUM M

Progress in Semiconductor Materials II—Electronic and Optoelectronic Applications

December 2 – 5, 2002

Chairs

Brad D. Weaver — Naval Research Laboratory
M. Omar Manasreh — Univ of New Mexico
Chennupati Jagadish — Australian National Univ
Stefan Zollner — Motorola, Inc

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* Invited paper

SESSION M1: ELECTRONIC DEVICES
Chairs: Charles W. Tu and Shawn G. Thomas
Monday Morning, December 2, 2002
Room 210 (Hynes)

8:30 AM *M1.1
PERFORMANCE CHARACTERISTICS OF InGaP/GaAs HBTs. B.E. Landini, C.R. Lutz, K.S. Stevens, P.M. DeLuca, E.M. Rehder, R.E. Welser, Kopin Corporation, Taunton, MA.

9:00 AM *M1.2
LOW-BANDGAP NITRIDES FOR ELECTRONIC AND OPTOELECTRONIC APPLICATIONS. Charles W. Tu, Dept of Electrical and Computer Engineering, University of California-San Diego, La Jolla, CA.

9:30 AM M1.3
CONTROL OF INDIUM SURFACE SEGREGATION IN GaAs LAYER ON InGaP GROWN BY MOVPE. Yasuyuki Fukushima, Yoshiaki Nakano, Yukihiro Shimogaki, Univ Tokyo, School of Engineering, Tokyo, JAPAN.

9:45 AM M1.4
LATERAL EPITAXIAL OVERGROWTH OF InAs ON GaAs SUBSTRATES. A. Khandekar, Dept of Chemical Engineering, S. Ganesan, Materials Science Program, B. Hawkins, Dept of Chemical Engineering, S.E. Babcock, Dept Materials Science and Engineering, T.F. Kuech, Dept of Chemical Engineering, University of Wisconsin, Madison, WI.

10:00 AM BREAK

10:30 AM *M1.5
EPITAXIAL PRASEODYMIUM OXIDE: A NEW HIGH-K DIELECTRIC. H. Jörg Osten, Institute for Semiconductor Devices and Electronic Materials, University of Hannover, GERMANY.

11:00 AM M1.6
Z-CONTRAST IMAGING OF DISLOCATION CORES AT THE Si/SEMICONDUCTOR INTERFACES. S. Lopatin[a], G. Duscher[a,b], and M.F. Chisholm[b]; [a]Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC; [b]Oak Ridge National Laboratory, Solid State Division, Oak Ridge, TN.

11:15 AM M1.7
Ge/Si WAFER BONDED EPITAXIAL TEMPLATES FOR GaAs/Si HETEROSTRUCTURES. James M. Zahler, Chang-Geun Ahn, Anna Fontcuberta i Morral, Harry A. Atwater, California Institute of Technology, Thomas J. Watson Laboratory of Applied Physics, Pasadena, CA; Richard R. King, Spectrolab Inc., Sylmar, CA.

11:30 AM M1.8
FRACTURE MECHANICAL EVALUATION OF GaAs WAFERS BY MICRO- AND NANOHARDNESS TESTING. M. Schaper, F. Bergner, Institute of Materials Research, Univ. of Technology Dresden, GERMANY; H. Hammer, M. Jurisch, Freiberger Compound Materials GmbH, GERMANY.

11:45 AM M1.9
PHONON FREQUENCIES AND THERMAL EXPANSION OF III-V COMPOUNDS. Robert Reeber, North Carolina State Univ, Dept of Materials Science and Engineering, Raleigh, NC.

SESSION M2: Si/Ge DEVICES AND TECHNOLOGY
Chairs: H. Joerg Osten and Barbara E. Landini
Monday Afternoon, December 2, 2002
Room 210 (Hynes)

1:30 PM *M2.1
SiGe BiCMOS: MATERIALS AND DEVICE DESIGN FOR ELECTRONIC AND OPTOELECTRONIC APPLICATIONS. Shawn G. Thomas, Francis Chai, Jay P. John, Dave Morgan, Theresa Keller, Jim Kirchgessner, Hernan Rueda, Jim Teplik, Jan White, Sandy Wipf, Dragan Zupac and Vida Ilderem, Digital DNA^{TM} Laboratories, Semiconductor Products Sector, Motorola Inc, Tempe, AZ.

2:00 PM M2.2
SiC PRECIPTATION DURING ANNEALING OF $Si_{1-x-y}Ge_xC_y$ EPILAYERS. D. Gruber, M. Mühlberger, T. Fromherz, F. Schäffler, Inst. Halbleiterphysik, Univ Linz, AUSTRIA; M. Schatzmayr, Austria Microsys. Int., Unterpremstätten, AUSTRIA.

2:15 PM M2.3
SILICON-BASED ULTRAFAST INFRARED Ge PHOTO-DETECTORS. Dan M. Buca, S. Winnerl, Chris Buchal, Institut fuer Schichten und Grenzflaechen, Forschungszentrum Juelich, Juelich, GERMANY.

2:30 PM M2.4
TERAHERTZ-EMITTING SILICON-GERMANIUM SUPERLATTICES BASED ON HOLE-LEVEL INTERSUBBAND TRANSITIONS. R.T. Troeger, T.N. Adam, S.K. Ray, P.C. Lv, U. Lehmann and J. Kolodzey, Dept of Electrical and Computer Engineering, Univ of Delaware, Newark, DE.

2:45 PM M2.5
NEW Ge-Sn SEMICONDUCTORS FOR BANDGAP AND LATTICE ENGINEERING. Matthew Bauer, Jennifer Taraci, John Tolle, Andrew V.G. Chizmeshya, Changwu Hu, David J. Smith, Peter A. Crozier, Jose Menendez, John Kouvetakis, Arizona State University, Tempe, AZ; Stefan Zollner, Motorola SPS, Process and Materials Characterization Laboratory, Mesa, AZ.

3:00 PM BREAK

3:30 PM M2.6
LOW VISCOSITY SiO_2 INTERFACIAL LAYER FOR FULLY RELAXED SiGe LAYERS WITH HIGH Ge CONTENT ON COMPLIANT SUBSTRATE. Haizhou Yin, Center for Photonics and Optoelectronic Materials, Princeton University, Princeton, NJ; Karl D. Hobart, Naval Research Laboratory, Washington, DC; Sean R. Shieh, Thomas S. Duffy, Department of Geosciences, Princeton University, Princeton, NJ; James C. Sturm, Center for Photonics and Optoelectronic Materials, Princeton University, Princeton, NJ.

3:45 PM M2.7
SELECTIVE EPITAXIAL GROWTH OF Si/SiGe HETERO-STRUCTURES FOR pMOS DEVICES. J.M. Hartmann, V. Loup, G. Rolland, P. Besson and M.N. Semeria, CEA-DRT, LETI/DTS, CEA/GRE, Grenoble, FRANCE.

4:00 PM M2.8
METAL-INDUCED LOW-TEMPERATURE CRYSTALLIZATION OF AMORPHOUS SiGe ON INSULATING FILMS. M. Miyao, H. Kanno, I. Tsunoda, T. Sadoh, A. Kenjo, Depart. of Electronics, Kyushu University, Fukuoka, JAPAN.

4:15 PM M2.9
PROCESS CONTROL OF EPI-LAYERS FOR SiGe:C HETERO-JUNCTION BIPOLAR TRANSISTORS. Qianghua Xie, Erika Duda, Mike Kottke, Wentao Qin, Xiangdong Wang, Shifeng Lu, Martha Erickson, Process and Materials Characterization Laboratory, Semiconductor Products Sector, Motorola Inc., Mesa, AZ; Heather B. Kretzschmar, MOS11, Semiconductor Products Sector, Motorola Inc., Austin, TX.

4:30 PM M2.10
MODELING THE OPTICAL PARAMETERS OF SiGe MATERIALS FOR PROCESS CONTROL IN SEMICONDUCTOR MANUFACTURING. M. Dobler, M. Slodowski, Leica Microsystems Semiconductor GmbH, Wetzlar, GERMANY; U. Richter, B. Gruska, Sven Peters, SENTECH Instruments GmbH, Berlin, GERMANY.

4:45 PM M2.11
RAMAN SCATTERING STUDY FOR SELF-ORGANIZED Ge QUANTUM DOTS FORMED ON Si SUBSTRATE. T.R. Yang, National Taiwan Normal University, Dept of Physics, Taipei, ROC; Z.C. Feng and I. Ferguson, Georgia Institute of Technology, School of Electrical & Computer Engineering, Atlanta, GA.

SESSION M3: ZINC OXIDE AND RELATED COMPOUNDS
Chairs: Chennupati Jagadish and David Paul Norton
Tuesday Morning, December 3, 2002
Room 210 (Hynes)

8:30 AM *M3.1
ZnO AND ZnMgO GROWTH BY MBE AND PLD. M. Yano, K. Ogata, F.P. Yan, K. Koike, S. Sasa, and M. Inoue, Osaka Institute of Technology, New Materials Research Center and Bio Venture Center, Osaka, JAPAN.

9:00 AM M3.2
PHOTOLUMINESCENCE AND RAMAN SPECTROSCOPY OF ZnO FILMS GROWN ON Si(111). Ashutosh Tiwari, Minseo Park, C. Jin, Amit Chugh, D. Kumar and J. Narayan, Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC.

9:15 AM M3.3
SYNTHESIS OF P-TYPE ZINC OXIDE (ZnO) FILM BY USING ARSENIC (As) DOPANT. Yungryel Ryu, Tae-seok Lee, MOXtronics, Columbia, MO; Henry W. White, Univ of Missouri, Dept of Physics, Columbia, MO.

9:30 AM M3.4
MBE GROWTH AND OPTICAL PROPERTIES OF ZnSeO. Y. Nabetani, T. Mukawa, Y. Ito, T. Kato, and T. Matsumoto, Department of Electrical Engineering, Yamanashi University, Kofu, JAPAN.

9:45 AM M3.5
IMPLANT ISOLATION OF ZnO EPITAXIAL LAYERS. S.O. Kucheyev, C. Jagadish, J.S. Williams, and P.N.K. Deenapanray, Australian National Univ., Dept of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, Canberra, AUSTRALIA; Mitsuaki Yano, Kazuto Koike, Shigehiko Sasa, Masataka Inoue, and Ken-ichi Ogata, New Materials Research Center and Bio-Venture Center, Osaka Institute of Technology, Asahi-ku, Ohmiya, Osaka, JAPAN.

10:00 AM BREAK

10:30 AM *M3.6
SPIN AND CHARGE FUNCTIONALITY IN DOPED ZnO. David Norton, Stephen Pearton, Mat Ivil, Young Woo Heo, Univ. of Florida, Dept of Materials Science and Engr, Gainesville, FL; Arthur Hebard, N. Theodoropoulou, Univ. of Florida, Dept of Physics, Gainesville, FL; Lynn Boatner, Solid State Div., Oak Ridge National Laboratory, Oak Ridge, TN; Y. Park, Seoul National University, Seoul, SOUTH KOREA; R.G. Wilson, Stevenson Ranch, CA.

11:00 AM M3.7
LATTICE SITE LOCATION STUDIES OF RARE EARTHS IMPLANTED IN ZnO SINGLE CRYSTALS. E.M.C. Rita, U. Wahl, ITN, Sacavem, PORTUGAL; A.M.L. Lopes, J.P. Araujo, University of Aveiro, Dept of Physics, Aveiro, PORTUGAL; J.G. Correia, ITN, Sacavem, PORTUGAL, CERN-EP, Geneva, SWITZERLAND; E. Alves, J.C. Soares, ITN, Sacavem, PORTUGAL; The ISOLDE collaboration, CERN-EP, Geneva, SWITZERLAND.

11:15 AM M3.8
PHASE EVOLUTION MAPPING AND FABRICATION OF UV DETECTOR ARRAYS ON $Mg_xZn_{1-x}O$ COMPOSITION SPREADS. I. Takeuchi, W. Yang, K.-S. Chang, M. Aronova, R.D. Vispute, T. Venkatesan, L.A. Bendersky, Jungsik Bang, Paul H. Holloway.

11:30 AM M3.9
EFFECT OF REMOTE HYDROGEN PLASMA TREATMENT ON ZnO SINGLE CRYSTAL SURFACES. Yuri M. Strzhemechny, The Ohio State Univ, Center for Materials Research, Columbus, OH; Junjik Bae, The Ohio State Univ, Dept of Physics, Columbus, OH; Leonard J. Brillson, The Ohio State Univ, Dept of Electrical Engineering and Center for Materials Research, Columbus, OH; David C. Look, Wright State University, Semiconductor Research Center, Dayton, OH.

11:45 AM M3.10
PHONONS, EXCITONS, BAND-TO-BAND TRANSITIONS AND OPTICAL CONSTANTS OF MgZnO. R. Schmidt, C. Bundesmann, N. Ashkenov, B. Rheinländer, M. Schubert, M. Lorenz, Fakultät für Physik und Geowissenschaften, Universität Leipzig, GERMANY; E.M. Kaidashev, Mechanics and Applied Mathematics Research Institute, Rostov State University, RUSSIA; D. Spemann, T. Butz, Fakultät für Physik und Geowissenschaften, Universität Leipzig, GERMANY; G. Wagner, Institut für Nichtklassische Chemie e.V. an der Universität Leipzig, GERMANY; C.M. Herzinger, J.A. Woollam Co., Inc., Lincoln, NE; M. Grundmann, Fakultät für Physik und Geowissenschaften, Universität Leipzig, GERMANY.

SESSION M4: EMITTERS, LASERS AND PHOTOVOLTAICS
Chairs: Brad D. Weaver and Robert M. Biefeld
Tuesday Afternoon, December 3, 2002
Room 210 (Hynes)

1:30 PM *M4.1
ULTRAVIOLET EMITTING SrS:Te THIN FILMS. J.M. Fitz-Gerald, University of Virginia, Dept of Materials Science and Engineering; P.D. Rack, University of Tennessee, Department of Materials Science and Engineering.

2:00 PM M4.2
BONDING AND LAYER TRANSFER PROCESSES OF InP ON SILICON FOR THE ELABORATION OF THE BOTTOM DOUBLE HETEROSTRUCTURE OF 4-JUNCTION HIGH EFFICIENCY SOLAR CELLS. Anna Fontcuberta i Morral, Thomas J. Watson Laboratory of Applied Physics, California Institute of Technology, Pasadena, CA; Mark Wanlass, National Renewable Energy Laboratory, Golden, CO; Harry A. Atwater, Thomas J. Watson Laboratory of Applied Physics, California Institute of Technology, Pasadena, CA.

2:15 PM M4.3
INTENSE MECHANOLUMINESCENT PHASE OF ZnMnTe. D. Raja Reddy, K. Veerabramham, B. Krishnamma, Department of Physics, Sri Venkateswara University, Tirupati, INDIA.

2:30 PM M4.4
THERMALLY EVAPORATED $AgGaTe_2$ THIN FILMS FOR LOW-COST p-$AgGaTe_2$/n-Si HETEROJUNCTION SOLAR CELLS. Krishna C Mandal, Anton Smirnov, EIC Laboratories, Inc.; Utpal N Roy, Arnold Burger, Dept of Physics, Fisk University, Nashville, TN.

2:45 PM BREAK

3:15 PM *M4.5
SUBPICOSECOND SELF-MODE-LOCKED SUPERCONTINUUM QUANTUM CASCADE LASER. Alex Soibel, Federico Capasso, Claire Gmachl, Harold Y. Hwang, Deborah L. Sivco, Alfred Y. Cho, Bell Laboratories, Lucent Technologies, Murray Hill, NJ; H.C. Liu, Institute of Microstructurial Science, National Research Council, Ottawa, Ontario, CANADA.

3:45 PM M4.6
PROPERTIES OF GaAsSb QW HETEROSTRUCTURES HAVING VARIOUS BARRIER MATERIALS GROWN BY METALORGANIC CHEMICAL VAPOR DEPOSITION. Min Soo Noh, Jae Hyun Ryou, Russell D. Dupuis, The University of Texas at Austin, Microelectronics Research Center, Austin, TX; Ying-Lan Chang, Agilent Laboratories, Agilent Technologies Inc., Palo Alto, CA; Robert Weissman, Agilent Technologies Inc., San Jose, CA.

4:00 PM M4.7
HIGH EFFICIENCY BULK CRYSTALLINE SILICON LIGHT EMITTING DIODES. Jianhua Zhao, Aihua Wang and Martin A. Green, Centre for Photovoltaic Engineering, University of New South Wales, Sydney, AUSTRALIA.

4:15 PM M4.8
EXTREMELY LARGE Er EXCITATION CROSS SECTION IN Er,O-CODOPED GaAs LIGHT EMITTING DIODES GROWN BY ORGANOMETALLIC VAPOR PHASE EPITAXY. Yasufumi Fujiwara, Atsushi Koizumi, Kentaro Inoue, Akira Urakami, Taketoshi Yoshikane, Yoshikazu Takeda, Nagoya Univ, Dept of Materials Science and Engineering, Nagoya, JAPAN.

4:30 PM M4.9
2-DIMENSIONAL CONJUGATED OLIGOMERS FOR LIGHT EMITTING DIODES. Hermona Y. Christian, Zukhra I. Niazimbetova, Mary E. Galvin, University of Delaware, Dept of Materials Science and Engineering, Newark, DE.

4:45 PM M4.10
HIGH-RESOLUTION STUDY OF LIGHT AND HEAT PATTERNS IN IR EMITTING DEVICES. Volodymyr Malyutenko, Institute of Semiconductor Physics, Kiev, UKRAINE.

SESSION M5: POSTER SESSION
Chairs: Brad D. Weaver, M. Omar Manasreh, and Chennupati Jagadish
Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

M5.1
ELECTRIC AND OPTICAL PROPERTIES OF ZINC OXIDE THIN FILMS AND HEAVILY ALMINUM-DOPED ZINC OXIDE THIN FILMS PREPARED BY MOLECULAR BEAM EPITAXY. Takeshi Ohgaki, Adv. Mater. Lab., Natl. Inst. Mater. Sci., Tsukuba, JAPAN; Yuji Kawamura, Graduate School of Sci. and Eng., Tokyo Inst. Tech., Tokyo, JAPAN; Naoki Ohashi, Adv. Mater. Lab., Natl. Inst. Mater. Sci., Tsukuba, JAPAN; Hirofumi Kakemoto, Satoshi Wada, Graduate School of Sci. and Eng., Tokyo Inst. Tech., Tokyo, JAPAN; Yutaka Adachi, Hajime Haneda, Adv. Mater. Lab., Natl. Inst. Mater. Sci., Tsukuba, JAPAN; Takaaki Tsurumi, Graduate School of Sci. and Eng., Tokyo Inst. Tech., Tokyo, JAPAN.

M5.2
INFLUENCE OF SAPPHIRE NITRIDATION ON PROPERTIES OF ZINC OXIDE GROWN BY RF SPUTTER DEPOSITION. S.-Q. Wang, A.J. Drehman, L.O. Bouthillette, K. Vaccaro and D. Schwall, Air Force Research Laboratory, Hanscom AFB, MA.

M5.3
PASSIVATION OF DEFECTS IN ZnO BY HYDROGEN PLASMA IRRADIATION. Naoki Ohashi, Takamasa Ishigaki, Takashi Sekiguchi, Isao Sakaguchi and Hajime Haneda, National Institute for Materials Science, Tsukuba, JAPAN.

M5.4
CO-DOPING EFFECTS ON ELECTRIC AND LUMINESCENCE PROPERTIES OF ZnO. Naoki Ebisawa, Naoki Ohashi, Yutaka Adachi, Isao Sakaguchi, Takeshi Ohgaki, Takashi Sekiguchi, Hajime Haneda, Natioanl Institute for Materials Science, Tsukuba, JAPAN.

M5.5
STRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF THE NOVEL SEMICONDUCTOR ALLOY $ZnO_xTe_{(1-x)}$. H.L. Porter, C. Jin, J. Narayan, Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC; A.L. Cai, J.F. Muth, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC.

M5.6
THE GROWTH AND CHARACTERIZATION OF ZINC OXIDE THIN FILMS ON FUSED QUARTZ AND SiO_2/Si(111) SUBSTRATES BY PULSED LASER DEPOSITION. C. Jin, A. Tiwari, H. Porter, M. Park, A. Kvit, J. Narayan, Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC.

M5.7
PHOTOLUMINESCENCE AND EPR STUDY OF THERMALLY ANNEALED BULK ZINC OXIDE CRYSTALS. Lijun Wang, N.Y. Garces, L.E. Halliburton, N.C. Giles, West Virginia Univ., Dept. of Physics, Morgantown, WV.

M5.8
A DIFFERENTIAL SCANNING CALORIMETRY (DSC) STUDY ON THE PYROLYSIS MECHANISM OF ZINC OXIDE CVD PRECURSOR, ZINC ACETYLACETONATE. Yuneng Chang, Junghsuan Hsieh, Jaowhei Lin, Chong An Wang, Zhifeng Shen, Liting Hong, Lunghwa University of Science and Technology, Dept. of Chemical Engineering, Gueishan, Taoyuan, TAIWAN, R.O.C.

M5.9
FABRICATION AND CHARACTERIZATION OF SCHOTTKY BARRIER PHOTODETECTORS BASED ON PULSE LASER DEPOSITED $Mg_xZn_{1-x}O$ FILMS. B. Nagaraj, S.S. Hullavarad, R.D. Vispute, Dagon Yuan, N. Reeves and T. Venkatesan CSR, Department of Physics, University of Maryland, College Park, MD.

M5.10
PULSED LASER DEPOSITION OF STABLE CUBIC ZnO/MgO MULTILAYERS. P. Bhattacharya, Rasmi R. Das, and Ram S. Katiyar, Department of Physics, University of Puerto Rico, San Juan, PR.

M5.11
SYNTHESIS AND CHARACTERIZATION OF Zn(Mn,Co)O FILMS FOR OPTOELECTRONIC APPLICATION. A. Hidalgo, R.E. Melgarejo, M.S. Tomar, University of Puerto Rico, Physics Department, Mayaguez, PR; R.S. Katiyar, University of Puereto Rico, San Juan, PR.

M5.12
A STUDY ON IMPACT OF PROCESS PARAMETERS TO METAL ORGANIC CHEMICAL VAPOR DEPOSITION GROWN (002) ZINC OXIDE THIN FILMS, AT 320°C. Yuneng Chang, Hengchuan Lu, Yumeng Hung, and Chunsung Lee, Jianming Chen, Yichang Jian, Lunghwa University of Science and Technology, Dept. of Chemical Engineering, Gueishan, Taoyuan, TAIWAN, R.O.C.

M5.13
EFFECT OF GROWTH TEMPERATURE AND ANNEALING ON ZnO. A.L. Cai, J.F. Muth, M.J. Reed, ECE Dept. North Carolina State University, Raleigh, NC; H.L. Porter, C. Jin, J. Narayan, Materials Science and Engineering Dept., North Carolina State University, Raleigh, NC.

M5.14
QUANTUM EFFICIENCY MODELING OF AMORPHOUS/ CRYSTALLINE SILICON HETEROJUNCTION PHOTOVOLTAIC DEVICES. F. Khalvati, S. Sivoththaman, University of Waterloo, Dept of Electrical and Computer Engineering, Waterloo, Ontario, CANADA.

M5.15
A CVD PROCESS FOR BULK POLYSILICON PRODUCTION FOR THE SOLAR CELL INDUSTRY. Carmela C. Amato-Wierda, Edward T. Norton Jr., Kristen A. Moylan, University of New Hampshire, Materials Science Program, Durham, NH; Mohan Chandra, A.V. Hariharan, Yuepeng Wan, GT Equipment Technologies Inc, Nashua, NH.

M5.16
A SINGLE SOURCE APPROACH TO DEPOSITION OF NICKEL SULFIDE AND SELENIDE AND PALLADIUM SULFIDE BY LP-MOCVD. Paul O'Brien, Jin-Ho Park and John Waters, The Manchester Material Science Centre and Department of Chemistry, University of Manchester, Manchester, UNITED KINGDOM.

M5.17
SCREEN PRINTABLE DOPED SELF-ALIGNED METALLIZATION FOR SOLAR CELLS. Ernest Addo, Shah Ismat, Univ of Delaware, Dept of Material Science and Engineering, Newark, DE; Bob Opila, Univ of Delaware, Dept of Material Science and Engineering, Newark, DE; Allan Barnett, AstroPower Inc, Newark, DE; Kevin Allison, AstroPower Inc, Newark, DE; Oleg Sulima, AstroPower Inc, Newark, DE.

M5.18
SODIUM DIFFUSION THROUGH Mo AND CIGS THIN FILM SOLAR CELLS LAYERS. Michael Zellner, Jingguang Chen, University of Delaware, Dept of Materials Science and Engineering; Robert Birkmire, William Shafarman, Erten Eser, University of Delaware, Institute of Energy Conversion.

M5.19
Abstract Withdrawn

M5.20
PHOTOSENSITIVE AMORPHOUS Si THIN FILMS PREPARED BY MAGNETRON TECHNOLOGY. Galina Khlyap, Larisa Bochkareva, Victor Brytan, Petr Shkumbatiuk, State Pedagogical Univ, Drogobych, UKRAINE.

M5.21
DEPOSITION OF II/VI THIN FILMS FROM NOVEL SINGLE-SOURCE PRECURSORS. Mohammad Afzaal, David Crouch, Azad Malik, Paul O'Brien, Jin-Ho Park, The University of Manchester, Department of Chemistry and The Manchester Materials Science Centre, Manchester, UNITED KINGDOM.

M5.22
MICROCRYSTALLINE SILICON FILMS OBTAINED USING HYDROGEN DILUTION IN A D.C. SADDLE-FIELD GLOW DISCHARGE. D. Yeghikyan, F. Gaspari, N.P. Kherani, T. Kosteski,

I. Milostnaya, S. Zukotynski, University of Toronto, Dept of Electrical and Computer Engineering, Toronto, Ontario, CANADA; Tatiana Allen, University of Tennessee at Chattanooga, Dept of Physics, Geology, and Astronomy, Chattanooga, TN.

M5.23
THE ROLE OF HYDROGEN IN LASER CRYSTALLIZED POLYCRYSTALLINE SILICON. N.H. Nickel and K. Brendel, Hahn-Meitner-Institut Berlin, Berlin, GERMANY.

M5.24
THE ENERGY BAND STRUCTURES OF $Cd_{1-x}Zn_xTe$ POLYCRYSTALLINE THIN FILMS AND THEIR APPLICATIONS FOR PHOTOVOLTAIC DEVICES. Jiagui Zheng, Lianghuan Feng, Ye Shao, Yaping Cai, Jingquan Zhang, Wei Cai, Lili Wu, Daolin Cai, Wenjian Len, Department of Materials Science, Sichuan University, Chengdu, P.R. CHINA.

M5.25
TUNNEL CURRENTS IN THE PHOTO-FIELD DETECTOR AND THE AUGER TRANSISTOR UNDER STRONG ELECTRIC FIELD. Vladimir D. Kalganov, Nina V. Mileshkina, Institute of Physics, St.-Petersburg State University, Petrodvoretz, RUSSIA; Elena V. Ostroumova, Ekaterina A. Rogacheva, Ioffe Physical-Technical Institute of RAS, St.-Petersburg, RUSSIA.

M5.26
A BORON-DOPED AMORPHOUS SILICON THIN-FILM BOLOMETER FOR LONG-WAVELENGTH DETECTION. A. Heredia-J, Universidad Juarez Autonoma de Tabasco (DACB), Tabasco, MEXICO, and INAOE, Optcis Department, Puebla, MEXICO; A. Torres-J, A. Jaramillo-N†, F.J. De la Hidalga-W, and C. Zúñiga-I, INAOE; †Optics and Electronics Departments, Puebla, MEXICO.

M5.27
RECENT DEVELOPMENTS IN FIELD ENHANCED DIFFUSION BY OPTICAL ACTIVATION: APPLICATIONS IN RADIATION DETECTION. Dickerson C. Moreno, Mark A. Prelas, Tushar K. Ghosh, University of Missouri-Columbia, Nuclear Sciences and Engineering Institute, Columbia, MO.

M5.28
SiGe/Si NORMAL INCIDENCE INFRARED MULTISPECTRAL DETECTORS. V.A. Yuryev, M.G. Voitik, D.B. Stavrovskiy, L.V. Arapkina, O.V. Uvarov, V.P. Kalinushkin, A.M. Prokhorov General Physics Institute of RAS, Natural Science Center, Moscow, RUSSIA; V.S. Avrutin, N.F. Izyumskaya, Institute of Microelectronics Technology of RAS, Chernogolovka, Moscow District, RUSSIA; S.I. Lyapunov, N.V. Komarov, V.A. Chapnin, Matrix Technology Corp, Zelenograd, Moscow, RUSSIA.

M5.29
CHARACTERIZATION OF SPUTTER DEPOSITED PbTe ON Si (111) FOR OPTOELECTRONIC APPLICATIONS. Alexey Jdanov, Zinovi Dashevsky, Joshua Pelleg and Roni Shneck, Ben Gurion University, Materials Engineering Dept., Beer Sheva, ISRAEL.

M5.30
REALIZATION OF ULTRAVIOLET PHOTO DETECTORS FROM EPITAXIAL CUBIC-$Mg_{0.4}Zn_{0.6}O$ FILM GROWN ON Si. R.D. Vispute, W. Yang, S.S. Hullavarad, B. Nagaraj, V.N. Kulkarni, I. Takeuchi and T. Venkatesan, CSR, Physics Department, University of Maryland, College Park, MD; H. Shen United States Army Research Laboratory, Sensors and Electron Devices Directorate, Adelphi, MD.

M5.31
Abstract Withdrawn

M5.32
FAR-INFRARED MAGNETO-OPTICAL GENERALIZED ELLIPSOMETRY DETERMINATION OF FREE-CARRIER PARAMETERS IN SEMICONDUCTOR THIN FILM STRUCTURES. Tino Hofmann, Solid States Physics Group, Faculty of Physics and Geosciences, University of Leipzig, GERMANY; Craig M. Herzinger, J.A. Woollam Co., Lincoln, NE; Mathias Schubert, Center for Microelectronic and Optical Materials Research, Department of Electrical Engineering, University of Nebraska-Lincoln, NE, and Solid States Physics Group, Faculty of Physics and Geosciences, University of Leipzig, GERMANY.

M5.33
FAR-INFRARED DIELECTRIC FUNCTION AND PHONON MODES OF SPONTANEOUSLY ORDERED $(Al_xGa_{1-x})_{0.52}In_{0.48}P$. Tino Hofmann, Solid States Physics Group, Faculty of Physics and Geosciences, University of Leipzig, GERMANY; Volker Gottschalch, Faculty of Chemistry and Mineralogy, University of Leipzig, GERMANY; Mathias Schubert, Center for Microelectronic and Optical Materials Research, Department of Electrical Engineering, University of Nebraska-Lincoln, NE, and Solid States Physics Group, Faculty of Physics and Geosciences, University of Leipzig, GERMANY.

M5.34
QUANTUM CONFINEMENT IN PbSe THIN FILMS BY ELECTROCHEMICAL ATOMIC-LAYER EPITAXY. Raman Vaidyanathan, John L. Stickney, Department of Chemistry, University of Georgia, Athens, GA; Uwe Happek, Department of Physics and Astronomy, University of Georgia, Athens, GA.

M5.35
OPTICAL ABSORPTION OF LARGE BAND GAP SbBiI3 ALLOYS. C. Persson, R. Ahuja, J. Souza de Almeida, and B. Johansson, Uppsala University, Department of Physics, Uppsala, SWEDEN; A. Ferreira da Silva and I. Pepe Universidade Federal da Bahia, Instituto de Fisica, Bahia, BRAZIL; C.Y. An, Instituto Nacional de Pesquisas Espaciais, INPE/LAS, SP, BRAZIL.

M5.36
CHARACTERIZATION OF THE PARTIAL DENSITIES OF STATES OF THIN FILMS OF SILICON OXYNITRIDES BY SOFT X-RAY EMISSION AND ABSORPTION SPECTROSCOPIES. Cormac McGuinness, Dongfeng Fu, James E. Downes, Kevin E. Smith, Boston University, Physics Dept., Boston, MA; Greg Hughes, Jason Roche, Dublin City University, School of Physical Sciences, Dublin, IRELAND.

M5.37
INTERSUBBAND TRANSITIONS IN PROTON IRRADIATED InGaAs/InAlAs MULTIPLE QUANTUM WELLS GROWN ON LATTICE MATCHED InP SUBSTRATE. Qiaoying Zhou, and M.O. Manasreh, Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM; B.D. Weaver, Naval Research Lab, Washington, DC; M. Missous, Department of Electrical Engineering and Electronics, UMIST, Manchester, UNITED KINGDOM.

M5.38
β-$FeSi_2$ THIN-FILMS COMPOSITION GROWN BY A PULSED LASER DEPOSITION METHOD. Sin-ichiro Uekusa, Masahiro Yamamoto, Keiichi Tsuchiya, Noboru Miura, School of Sci. & Tech., Meiji University, Kanagawa, JAPAN.

M5.39
AUTOCORRELATION EFFECTS IN SILICON NATIVE DEFECTS DIFFUSION. Marco Cogoni, Luciano Colombo, INFM and Department of Physics, University of Cagliari, Monserrato (CA), ITALY.

M5.40
NATIVE POINT DEFECTS INTERACTION IN ZGP CRYSTALS UNDER INFLUENCE OF E-BEAM IRRADIATION. A.I. Gribenyukov, G.A. Verozubova, A.Yu. Trofimov, Institute for Optical Monitoring, SD RAS, Tomsk, RUSSIA; A.W. Vere, The Crystal Consortium Ltd, Glasgow, UNITED KINGDOM; C.J. Flynn, QinetiQ Ltd, Hampshire, UNITED KINGDOM.

M5.41
Abstract Withdrawn

M5.42
NEW RATE-LIMITING MECHANISM FOR INTERNAL GETTERING OF Fe IN Si. A.L. Smith, J. Michel, and L.C. Kimerling, MIT, Dept. of Materials Science and Engineering, Cambridge, MA.

M5.43
RAMAN AND MAGNETOTRANSPORT STUDIES OF MBE GROWN β-$FeSi_2$,β-$(Fe_{1-x}Cr_x)Si_2$,AND β-$(Fe_{1-x}Co_x)Si_2$. A. Srujana, A. Wadhawan, K. Srikala, R.J. Cottier, Dept. of Physics, University of North Texas, TX; W. Henrion, Hahn-Meitner-Institut Berlin GmbH, Berlin, GERMANY; A.G. Birdwell, University of Texas at Dallas, TX; V.N. Antonov, Institute of Metal Physics, National Academy of Sciences of Ukraine, UKRAINE; O. Jepsen, Max-Planck-Institut für Festkörperforschung, GERMANY; C.L. Littler, J.M. Perez, T.D. Golding, Dept. of Physics, University of North Texas, TX.

M5.44
DESIGN AND FABRICATION OF ONE VCSEL FOR OPERATION AT 850NM. Chichang Zhang, Aris Christou, Dept. Materials Science and Engineering, Univ. of Maryland at College Park, College Park, MD.

M5.45
HIGH GAIN, LOW THRESHOLD CURRENT GaInAsP BASED VCSELS FOR OPERATION AT 1.3UM. ZhuoPeng Tan, YiXin Li, Aris Christou, Univ of Maryland at College Park, Department of Materials and Nuclear Engineering, College Park, MD.

M5.46
MOCVD GROWTH OF GaAs/AlGaAs QW LASER DIODE STRUCTURES IN NITROGEN AMBIENT: Si- AND Zn-DOPING BEHAVIOR IN AlGaAs LAYERS. Baolin Zhang, Xiaohong Tang, Gensheng Huang, Nanyang Technological Univ, School of Electrical and Electronic Engineering, SINGAPORE.

M5.47
NOVEL RESISTANCE REDUCTION AND PHASE CHANGES OF CONTACTS TO n-TYPE InP BY RAPID THERMAL ANNEALING. J.S. Huang, T. Nguyen, N. Bar-Chaim, Agere Systems, Optical Access Division, Alhambra, CA; C.B. Vartuli, S. Anderson, Agere Systems, Orlando, FL; J. Shearer, C. Fisher, Agere Systems, Reading, PA.

M5.48
DESIGN OF A 364 NM ELECTRICALLY PUMPED MULTI-QUANTUM WELL CW NITRIDE VCSEL. Abhishek Motayed, Howard University, Electrical Engineering; Shelia C. Luke, Aris Christou, University of Maryland, Dept. of Materials Science and Engineering, College Park, MD.

M5.49
DLTS STUDIES OF DEFECTS PRODUCED IN N-TYPE SILICON BY HYDROGEN IMPLANTATION AT LOW TEMPERATURE. Takahide Sugiyama, Masayasu Ishiko, Toyota Central R&D Labs. Inc., Nagakute, Aichi, JAPAN; Shigeki Kanazawa and Yutaka Tokuda, Aichi Institute of Technology, Dept of Electronics, Toyota, Aichi, JAPAN.

M5.50
ELIMINATING UNSATURATED BONDS ON SILICON (100) SURFACE BY A MONOLAYER OF SELENIUM. Eduardo Maldonado, Meng Tao, and Wiley P. Kirk, Univ of Texas, NanoFAB Center and Dept of Electrical Engineering, Arlington, TX.

SESSION M6: NANOSTRUCTURES
Chairs: Daniel K. Johnstone and Todd Steiner
Wednesday Morning, December 4, 2002
Room 210 (Hynes)

8:30 AM *M6.1
PROGRESS IN SELF-ASSEMBLED QUANTUM DOT LATTICES. J.S. Speck, A.E. Romanov, J.S. Brown, A. Badolato, H. Lee, J. Johnson, and P.M. Petroff, Materials Dept., University of California, Santa Barbara, CA.

9:00 AM *M6.2
FORMATION OF SELF-ASSEMBLED QUANTUM DOTS OF QUASI-LATTICE- MATCHED GaN/AlGaN AND DEVELOPMENT OF DEEP UV LIGHT EMITTING DIODE USING THE DOTS. Yoshinobu Aoyagi[a,b], Satoru Tanaka[a,c], Hideki Hirayama[a] and Misaichi Takeuchi[a]; [a]RIKEN Institute, Saitama, JAPAN; [b]Tokyo Institute of Technology, Interdisciplinary Graduate School of Sci. and Technol., Dept. Information Processing, Yokohama, Kanagawa, JAPAN; [c]Hokkaido Univ, Research Inst. Electronic Science, Sapporo, JAPAN.

9:30 AM M6.3
CARRIER RECOMBINATION IN InAs/GaAs QUANTUM DOT AND GaInNAs/GaAs QUANTUM WELL LEDS EMITTING NEAR 1300 NM. Anthony Bennett, Linus Lofgren, Paul Stavrinou, Christine Roberts, Ray Murray, Gareth Parry, Center for Electronic Materials and Devices, Imperial College, London, UNITED KINGDOM; John Roberts, EPSRC III-V Semiconductor Central Facility, Sheffield, UNITED KINGDOM.

9:45 AM M6.4
FORMATION AND PROPERTIES OF DEFECTS IN MBE REGROWN HETEROJUNCTIONS ON GaAs AND GaAs/AlGaAs STRUCTURES. Matthew Lamberti, Vadim Tokranov, Michael Yakimov, Alex Katsnelson, Katherine Dovidenko, Richard Moore, and Serge Oktyabrsky, School of NanoSciences and NanoEngineering, University at Albany-SUNY, Albany, NY.

10:00 AM BREAK

10:30 AM *M6.5
INTERDIFFUSION IN SEMICONDUCTOR QUANTUM DOT STRUCTURES. P. Lever, L. Fu, C. Jagadish, H.H. Tan, Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra, ACT, AUSTRALIA; M. Gal, School of Physics, University of New South Wales, Sydney, NSW, AUSTRALIA.

11:00 AM M6.6
GaAs(711) TEMPLATES FOR MBE GROWTH: RECONSTRUCTION AND MORPHOLOGICAL STABILITY. V.R. Yazdanpanah, Z.M. Wang, and G.J. Salamo, MRSEC and Microelectronics-Photonics, University of Arkansas, Fayetteville, AR.

11:15 AM M6.7
1.5 μm RANGE SELF-ORGANIZED $In_{0.65}Ga_{0.35}As/In_{0.52}Al_{0.48}As$ QUANTUM WIRE STRUCTURES GROWN ON (775)B-ORIENTED InP SUBSTRATES BY MOLECULAR BEAM EPITAXY. K. Hyodo, Y. Ohno, H. Kanamori, T. Kitada, S. Shimomura, and S. Hiyamizu, Graduate School of Engineering Science, Osaka Univ, Toyonaka, Osaka, JAPAN.

11:30 AM M6.8
CHARACTERIZATION OF METALLIC AND METAL OXIDE NANOPARTICLES PRODUCED BY ELECTRO-THERMAL CHEMICAL SYNTHESIS. Kevin Jakubenas, Kyoungjin Kim, Kurt Schroder, Dennis Wilson, Nanotechnologies Inc., Austin, TX.

11:45 AM M6.9
EFFECT OF SELF ORGANIZED QUANTUM STRUCTURES ON SPINGLASS AND METAL-INSULATOR TRANSITION IN CdMnTe SINGLE CRYSTALS. K.P. Reddy, D. Raja Reddy and B. Krishnamma, Department of Physics, Sri Venkateswara University, Tirupati, INDIA.

SESSION M7: INNOVATIVE MATERIALS AND DEVICES
Chairs: H.S. Gingrich and Jerry M. Olson
Wednesday Afternoon, December 4, 2002
Room 210 (Hynes)

1:30 PM *M7.1
GROWTH OF GROUP III-AsSb ALLOYS ON GaSb BY MOCVD FOR OPTOELECTRONICS. J.G. Cederberg, M.J. Hafich, R.M. Biefeld, Sandia National Laboratories, Albuquerque, NM.

2:00 PM *M7.2
CHARACTERIZATION OF AlInAsSb AND AlGaInAsSb MBE-GROWN DIGITAL ALLOYS. Leslie G. Vaughn, L. Ralph Dawson, Center for High Technology Materials, The University of New Mexico, Albuquerque, NM; Huifang Xu, Department of Earth and Planetary Sciences, The University of New Mexico, Albuquerque, NM.

2:30 PM M7.3
PROGRESS IN DIAMOND ELECTRONICS: DEFECT PASSIVATION FOR THE REALIZATION OF DEEP UV PHOTODETECTORS. Haitao Ye, Stephane Curat, Olivier Gaudin, Oliver A. Williams and Richard B. Jackman, Electronic and Electrical Engineering, University College London, London, UNITED KINGDOM.

2:45 PM M7.4
PHASE TRANSFORMATION AND PHOTOLUMINESCENCE BEHAVIOR OF Er_2O_3 THIN FILMS. Xiaoman Duan, Sajan Saini, Keven Chen, Jurgen Michel and Lionel C. Kimerling, MIT, Department of Materials Science and Engineering, Cambridge, MA.

3:00 PM BREAK

3:30 PM *M7.5
YELLOW-GREEN EMISSION FOR EPITAXIAL-TRANSPARENT-SUBSTRATE LIGHT EMITTING DIODES AND LASERS BASED ON A STRAINED-InGaP QUANTUM-WELL HETEROSTRUCTURE GROWN ON A TRANSPARENT, COMPOSITIONALLY GRADED AlInGaP BUFFER. Lisa McGill, Juwell Wu, Eugene Fitzgerald, Massachusetts Institute of Technology, Department of Materials Science and Engineering, Cambridge, MA.

4:00 PM *M7.6
REFLECTANCE DIFFERENCE SPECTROSCOPY OF Sb-DOPED GaInP. J.M. Olson, W.E. McMahon, A.G. Norman, M.J. Romero and R. Reedy, National Renewable Energy Laboratory, Golden, CO.

4:30 PM M7.7
InP ON SILICON: QUASI-SUBSTRATES WITH COMPLIANT INTERFACE AND FURTHER DEVICE FABRICATION. Andrey Bakin, Dirk Piester, Ingo Behrens, Hergo-Heinrich Wehmann,

Erwin Peiner, Andreas Guttzeit, Andreas Schlachetzki, Institute of Semiconductor Technology, Technical University Braunschweig, Braunschweig, GERMANY; Stefan Neumann, Werner Prost, Franz-Josef Tegude, Solid-State Electronics Department, Gerhard Mercator University Duisburg, GERMANY; Peter Velling, IPAG-Innovative Processing AG, Duisburg, GERMANY.

4:45 PM M7.8
DETECTION OF TRACE WATER IN PHOSPHINE WITH CAVITY RING-DOWN SPECTROSCOPY. Susan Y. Lehman, Kris A. Bertness, National Institute of Standards and Technology, Optoelectronics Division, Boulder, CO; Joseph T. Hodges, National Institute of Standards and Technology, Process Measurements Division, Gaithersburg, MD.

SESSION M8: POSTER SESSION
Chairs: Brad D. Weaver, M. Omar Manasreh, and Chennupati Jagadish
Wednesday Evening, December 4, 2002
8:00 PM
Exhibition Hall D (Hynes)

M8.1
FAR INFRARED SPECTROSCOPY OF $In_{0.53}Ga_{0.47}As$ QUANTUM WELLS ON InP(100). N.L. Rowell, D.J. Lockwood, P.J. Poole, and G. Yu, National Research Council Ottawa, Ontario, CANADA.

M8.2
Abstract Withdrawn

M8.3
HIERARCHY OF NITROGEN CLUSTERS IN III-V SEMICONDUCTORS: A QUANTITATIVE APPROACH OF THE DOPING-TO-ALLOY BEHAVIOR TRANSITION. Patrick Leroux-Hugon, Univ Paris VI, Paris, FRANCE; Henri Mariette, CNRS, Grenoble, FRANCE.

M8.4
IMPROVED DEVICE PERFORMANCE OF $In_{0.5}Ga_{0.5}P/In_{0.22}Ga_{0.78}As/GaAs$ MOS p-HEMT USING A SELECTIVE LIQUID PHASE OXIDATION. I-H. Kang, J-W. Lee, S-J. Kang, S-J. Jo, S-K. In, H-J. Song, J-H. Kim, and J-I. Song, Dept of Information and Communication, Kwang-Ju Institute of Science and Technology (KJIST), Kwangju, KOREA.

M8.5
COMPARISON OF THE STRAIN AND STRESS IN BONDED AND EPITAXIAL GALLIUM ARSENIDE ON SILICON BY PHOTOREFLECTANCE SPECTROSCOPY MEASUREMENTS. Spyros Gallis, George Deligeorgis, and Alexandros Georgakilas, Microelectronics Research Group, FORTH, IESL and Physics Department, University of Crete, Heraklion, GREECE; Marin Alexe, Max Planck Institute of Microstructure Physics, Halle, GERMANY.

M8.6
$Si/Si_{1-y}C_y$ HETEROSTRUCTURES FOR nMOS DEVICES. J.M. Hartmann, T. Ernst, V. Loup, F. Ducroquet, G. Rolland, P. Holliger, F. Laugier, D. Lafond, M.N. Semeria and S. Deleonibus, CEA-DRT, LETI/DTS, CEA/GRE, Grenoble, FRANCE.

M8.7
SCANNING TUNNELING MICROSCOPY OF p-n JUNCTIONS: IMAGING MECHANISMS, SPECTROSCOPY, AND EXTRACTION OF MATERIALS PROPERTIES. N.D. Jäger, Forschungszentrum Jülich, Institut für Festkörperforschung, Jülich, GERMANY; M. Marso, Forschungszentrum Jülich, Institut für Schichten und Grenzflächen, Jülich, GERMANY; E.R. Weber, University of California and Lawrence Berkeley National Laboratory, Berkeley, CA; K. Urban, and Ph. Ebert, Forschungszentrum Jülich, Institut für Festkörperforschung, Jülich, GERMANY.

M8.8
Ti/Ni/Au/DIAMOND MIS FIELD EFFECT TRANSISTORS WITH TiO2 GATE DIELECTRIC. Yuhong Cai, Aris Christou, University of Maryland, Material Science and Engineering Department, College Park, MD.

M8.9
OXYGEN INCORPORATION INTO MBE-GROWN AlGaAs LAYERS. Shigeya Naritsuka, Osamu Kobayashi, Kazuhiro Mitsuda, Takahiro Maruyama and Tatau Nishinaga[a], Meijo Univ, Dept of Materials Science and Engineering, Nagoya, JAPAN; [a]Present adress: Toyohashi University of Technology, Toyohashi, JAPAN.

M8.10
ELECTRONIC PROPERTIES OF N-TYPE Al(x)Ga(1-x)AS ALLOYS. Antonio Ferreira da Silva, Instituto de Fisica, Universidade Federal da Bahia, Campus Universitario de Ondina, Salvador, BRAZIL; Clas Persson and R. Ahuja, Jailton Souza de Almeida, Condensed Matter Theory Group , Department of Physics, Uppsala University, Uppsala, SWEDEN; A.G. de Oliveira, Departamento de Fisica, Universidade Federal de Minas Gerais, Belo Horizonte, BRAZIL; Hamid Harati Zadeh and Per-Olof Holtz, Department of Physics, Linköping University, Linköping, SWEDEN.

M8.11
STABILITY OF NON-HYDROGENATED AND HYDROGENATED P-CHANNEL POLYCRYSTALLINE SILICON THIN-FILM TRANSISTOR. N.A. Hastas, C.A. Dimitriadis, Aristotle Univ of Thessaloniki, Dept of Physics, Thessaloniki, GREECE; J. Brini, G. Kamarinos, LPCS ENSERG, Grenoble, FRANCE.

M8.12
SCATTERING AND DEPHASING IN SEMICONDUCTOR HETEROSTRUCTURES. Ricardo Ascázubi, Osman C. Akin, Tauhid Zaman, Roland Kersting, Rensselaer Polytechnic Institute, Physics Department, Troy, NY; Gottfried Strasser, TU Wien, Institute for Solid State Electronics, Wien, AUSTRIA.

M8.13
GRADED-BAND-GAP SEMICONDUCTORS: THE POSSIBILITIES FOR IMPROVEMENT OF P-N JUNCTION PERFORMANCE. Roman Yasnytskyi, Bogdan Sokolovskii, Silvestr Ferents, Ivan Franko National Univ, Dept of Physics, Lviv, UKRAINE.

M8.14
Abstract Withdrawn

M8.15
Abstract Withdrawn

M8.16
MOCVD GROWTH AND CHARACTERIZATION OF GaInNAs/GaAs/InGaAs/GaAs QUANTUM WELL STRUCTURES. Abdel-Rahman A. El-Emawy, Hongjun Cao, Noppadon Nuntawong, Marek Osinski, Univ of New Mexico, Ctr for High Technology Materials, Albuquerque, NM.

M8.17
CMOS COMPATIBLE OPTICAL WAVEGUIDE MICRO-MIRRORS. Shom S. Ponoth[a], Navnit T. Agarwal[b], Peter D. Persans[c], Joel L. Plawsky[a]; [a]Dept. of Chemical Engineering, [b]Dept. of Electrical, Computer and Systems Engineering, [c]Dept. of Physics, Rensselaer Polytechnic Institute, Troy, NY.

M8.18
NOISE SOURCES IN POLYCRYATALLINE SILICON THIN-FILM TRANSISTORS. Il Ki Han, Young Ju Park, Woon Jo Cho, Won Jun Choi, Jungil Lee, KIST, Seoul, KOREA; Alain Chovet, Jean Brini, IMEP Grenoble, FRANCE.

M8.19
CHANGES IN STRUCTURAL AND OPTICAL PROPERTIES OF CdS THIN FILMS DURING THE PROCESS OF CHEMICAL BATH DEPOSITION. Wei Li, Liang-huan Feng, Ya-ping Cai, Jing-quan Zhang, Jia-gui Zheng, Wei Cai, Li-li Wu, Bing Li, Ye Shao, Dao-lin Cai and Wen-jian Len, Department of Materials Science, Sichuan University, Chengdu, P.R. CHINA.

M8.20
AN ON-CHIP SEMICONDUCTING DEVICE FOR READING SUBSURFACE OPTICAL DATA. William K. Loghry, Natale J. Ianno, and Rodney O. Dillon, Dept. of Electrical Engineering, Lincoln, NE.

M8.21
CORRELATION BETWEEN BANDGAP REDUCTION AND PHONON FREQUENCY SHIFT IN GaAsN. U. Tisch[a], S. Prawer[b], E. Finkman[a], and J. Salzman[a]; [a]Department of Electrical Engineering, Technion, Haifa, ISRAEL; [b]School of Physics, University of Melbourne, Victoria, AUSTRALIA.

M8.22
400°C FORMATION OF POLY-$Si_{1-x}Ge_x$ ($x \geq 0.5$) ON SiO_2 BY ION-BEAM STIMULATED SOLID-PHASE-CRYSTALLIZATION. I. Tsunoda, H. Kanno, A. Kenjo, T. Sadoh, M. Miyao, Depart. of Electronics, Kyushu University, Fukuoka, JAPAN.

M8.23
Abstract Withdrawn

M8.24
MICRO-RAMAN INVESTIGATION OF DAMAGE DISTRIBUTION INDUCED BY MeV Cu IONS IMPLANTED INTO SILICON. Bo-Rong Shi, Materials Characterisation & Preparation Facility, Hong Kong Univ. of Sci. & Tech., Kowloon, HONG KONG; Ke-Ming Wang, Dept of Physics, Shandong Univ., Jinan, Shandong, CHINA; N. Cue, Dept of Physics, Hong Kong Univ. of Sci. & Tech., Kowloon, HONG KONG.

M8.25
MOCVD GROWTH AND CHARACTERIZATION OF InNAs/GaAs QUANTUM WELLS. Abdel-Rahman A. El-Emawy, Noppadon Nuntawong, Hongjun Cao, Marek Osinski, Univ of New Mexico, Ctr for High Technology Materials, Albuquerque, NM.

M8.26
Abstract Withdrawn

M8.27
PHOTOLUMINESCENCE IN UHV-CVD TENSILE-STRAINED Si TYPE-II QUANTUM WELLS ON BULK CRYSTAL SiGe SUBSTRATES. Shuran Sheng, Sean P. McAlister, and Nelson L. Rowell, National Research Council of Canada, Ottawa, ON, CANADA; Michel Dion, SiGe Semiconductor Inc., Ottawa, ON, CANADA.

M8.28
PHOTOLUMINESCENCE OF Ge NANOCLUSTERS IN ION IMPLANTED SiO_2. J.M.J. Lopes, F.C. Zawislak, M. Behar, Instituto de Fisica UFRGS, Porto Alegre, RS, BRAZIL; P.F.P. Fichtner, Escola de Engenharia UFRGS, Porto Alegre, RS, BRAZIL; L. Rebohle, W. Skorupa, Forschungszentrum Rossendorf, Dresden, GERMANY.

M8.29
OPTICAL PROPERTIES OF $Al_{0.70}Ga_{0.30}As$:Er,Yb. Shin-ichiro Uekusa, Isao Tanaka, Tomoyuki Arai, Department of Electrical and Electronic Engineering, Meiji University, Kanagawa, JAPAN.

M8.30
A NEW LUMINESCENCE SPECTRUM OF $Z_nS:E_r^{3+}$ FILMS GROWN BY CVD WITH LASER ABLATION E_r DOPING. Takashi Hirate, Toshimitu Ono, Tomomasa Satoh, Kanagawa University, Dept. of Electrical, Electronics and Information Engineering, Yokohama, JAPAN.

M8.31
PHOTOREFLECTANCE STUDY OF HYDROGENATED (InGa)(AsN)/GaAs HETEROSTRUCTURES. M. Geddo, INFM-UdR Pavia, Pavia and Dipartimento di Fisica, Parma, ITALY; G. Guizzetti INFM-Dipartimento di Fisica, Pavia, ITALY; A. Polimeni, M. Bissiri, G. Baldassarri, Höger von Högersthal, and M. Capizzi, INFM-Dipartimento di Fisica, Roma, ITALY; M. Fischer and A. Forchel, Universität Würzburg, Technische Physik, GERMANY.

M8.32
OPTICAL AND EPR STUDY OF DEFECTS IN CADMIUM GERMANIUM ARSENIDE. Lihua Bai, Nanying Yang, N.Y. Garces, L.E. Halliburton, N.C. Giles, West Virginia Univ., Dept. of Physics, Morgantown, WV; P.G. Schunemann, S.D. Setzler, and T.M. Pollak, BAE Systems, Nashua, NH.

M8.33
Abstract Withdrawn

M8.34
Abstract Withdrawn

M8.35
EFFECT OF HIGH STRESS PLASTIC DEFORMATION ON THE SILICON PHOTOLUMINESCENCE. Sergio Pizzini, Simona Binetti, Alessia LeDonne, Milano-Bicocca University, Dept of Materials Science, Milano, ITALY; V.V Emtsev, Russian Academy of Sciences, Ioffe Physico-Technical Inst, St. Petersburg, RUSSIA.

M8.36
MESOSCOPIC STUDY OF THE ELECTRONIC PROPERTIES OF THIN POLYMER FILMS. Ricardo M. Ribeiro, Marta M.D. Ramos, Antonio M. Almeida, Helena M.G. Correia, Dept. de Fisica, Universidade do Minho, Braga, PORTUGAL; A.M. Stoneham, Department of Physics and Astronomy, University College London, London, UNITED KINGDOM.

M8.37
RED ORGANIC ELECTROLUMINECENCE DEVICES WITH BIS-CONDENSED DCM DERIVATIVES. B.J. Jung[a], L.-M. Do, H.Y. Chu, J.-I. Lee, T. Zyung, and H.-K. Shim[a], Basic Research Lab., ETRI, Taejon, KOREA; [a]Department of Chemistry, KAIST, Taejon, KOREA.

M8.38
INVESTIGATIONS OF LANTHANIDE DOPED NANO- POLY- AND SINGLE CRYSTALLINE CUBIC BORON NITRIDE. Ulrich Vetter, Horst Feldermann, Hans Hofsaess, Univ Goettigen, 2. Physikalisches Institut, Goettingen, GERMANY; Takashi Taniguchi, National Institute for Research in Inorganic Materials, Ibaraki, JAPAN.

M8.39
A NUMERICAL INVESTIGATION OF THE EFFECTS OF GAS-PHASE PARTICLE FORMATION ON SILICON FILM DEPOSITION FROM SILANE. Douglas M. Kremer, University of Maryland, Dept of Chemical Engineering, College Park, MD; Ronald W. Davis, Elizabeth F. Moore, National Institute of Standards and Technology, Chemical Science and Technology Laboratory, Gaithersburg, MD; Sheryl H. Ehrman, University of Maryland, Dept of Chemical Engineering, College Park, MD.

M8.40
THERMOELECTRIC PROPERTIES OF Au-ADDED $Bi_1Sb_3Te_6$ ALLOYS PREPARED BY MECHANICAL ALLOYING AND PULSE DISCHARGE SINTERING. Changho Lee, Yong-Ho Park, Hitoshi Hashimoto, National Institute of Advanced Industrial Science and Technology, Sendai, JAPAN.

M8.41
MICROSTRUCTURE AND THERMOELECTRIC PROPERTIES OF SINTERED $(Bi_{0.2}Sb_{0.8})_2Te_3$ ALLOYS WITH Ag ADDITION. Park Yong-Ho, Liu Xue-Dong, National Institute of Advanced Industrial Science and Technology, Sendai, JAPAN.

M8.42
ANALYSIS OF COMPOSITIONAL FLUCTUATIONS IN QUATERNARY InGaAsN/GaAs QUANTUM WELLS BY HRTEM. T. Remmele, M. Albrecht, V. Grillo, H.P. Strunk, Universität Erlangen-Nürnberg, Institut für Werkstoffwissenschaften, Mikrocharakterisierung, Erlangen, GERMANY; A. Yu Egorov, H. Riechert, Infineon Corporate Research, Munich, GERMANY; A. Kaschner, A. Hoffmann, Technische Universität Berlin, Institut für Festkörperphysik, Berlin, GERMANY.

M8.43
SYNTHESIS OF DIAMOND-LIKE CARBON (DLC) THIN FILMS ON SiC SUBSTRATE USING METAL GRIDS BY PLASMA IMPLANTATION AND DEPOSITION. P. Peng, X B. Tian, R.K.Y. Fu, Paul K. Chu, Dept of Physics and Materials Science, City University of Hong Kong, Kowloon, HONG KONG; B.Y. Tang, National Key Lab on Modern Welding Production Technology, Harbin Institute of Technology, Harbin, CHINA; S.P. Wong, Department of Electronic Engineering, Chinese University of Hong Kong, Shatin, HONG KONG.

M8.44
DIAMOND POWER TRANSISTORS. Hitoshi Umezawa, Hiroaki Ishizaka, Shingo Miyamoto, Hiroki Matsudaira, Masahiro Kohno, Minoru Tachiki, Kwang Soup Song, Hiroshi Kawarada, School of Science & Engineering, Waseda University, Tokyo, JAPAN; CREST, Japan Science and Technology Corporation (JST), JAPAN.

M8.45
IMPROVED CHARACTERIZATION OF DIFFUSION IN OHMIC CONTACTS USING BACKSIDE SIMS. Patrick Van Lierde, Chunsheng Tian, Charles Evans & Associates, Sunnyvale, CA.

M8.46
GROWTH AND CHARACTERIZATION OF EPITAXIAL FILMS OF $ZnGeP_2$. G.A. Verozubova, A.I. Gribenyukov, Institute for Optical Monitoring SB RAS, Tomsk, RUSSIA; M.C. Ohmer, N.C. Fernelius, J.T. Goldstein, Air Force Research Lab, Materials Directorate, AFRL/MLPSO, Wright-Patterson Air Force Base, Dayton, OH.

SESSION M9: DETECTORS
Chairs: M. Omar Manasreh and Hark Hoe Tan
Thursday Morning, December 5, 2002
Room 210 (Hynes)

8:30 AM *M9.1
QUANTUM DOT INFRARED PHOTODETECTORS. Joe C. Campbell and Zhengmao Ye, University of Texas, Austin, TX; Zhonghui Chen, Eui-Tae Kim, and Anupam Madhukar, University of Southern California, Los Angeles, CA.

9:00 AM *M9.2
OPTICAL TRANSITIONS IN InAs/AlSb QUANTUM WELLS. K. Kolokolov, J. Li, C.Z. Ning, NASA Ames Research Center, Moffett Field, CA; J. Tang, D.C. Larrabee, G.A. Khodaparast, J. Kono, Department of Electrical Engineering, Rice University, Houston, TX; X. Karasaki, O. Suekane, X. Ueda, S. Sasa, M. Inoue, Department of Electrical Engineering, Osaka Institute of Technology, JAPAN.

9:30 AM M9.3
HIGH Ge CONCENTRATION Si/SiGe SUPERLATTICES FOR 1.3 μM PHOTODETECTORS. L. Masarotto, J.M. Hartmann, G. Bremond[a], G. Rolland, A.M. Papon and M.N. Semeria, CEA-DRT, LETI/DTS, CEA/GRE-17, Grenoble, FRANCE. [a]LPM-INSA Lyon, FRANCE.

9:45 AM M9.4
GaSb-BASED MATERIALS FOR MID-INFRARED PHOTODIODES OPERATING IN THE 0.9-2.55 μM SPECTRAL RANGE. I.A. Andreev, E.V. Kunitsyna, M.P. Mikhailova, Yu.P. Yakovlev, Ioffe Physical-Technical Institute RAS, St-Petersburg, RUSSIA.

10:00 AM BREAK

10:30 AM *M9.5
IR-DETECTION DEVICES BASED ON InAs/(GaIn)Sb SHORT-PERIOD SUPERLATTICES. F. Fuchs, J. Schmitz, Ch. Pfahler, Q. Yang, and W. Pletschen, Fraunhofer-Institut für Angewandte Festkörperphysik (IAF), Freiburg, GERMANY.

11:00 AM *M9.6
ISSUES IN THERMAL STABILITY OF HgCdTe IR PHOTODIODES. J.M. Dell, T. Nguyen, C.A. Musca, J. Antoszewski, L. Faraone, Department of Electrical and Electronic Engineering, The University of Western Australia, Crawley, AUSTRALIA; R. Pal, Solid State Physics Laboratory, Timarpur, Delhi, INDIA.

11:30 AM M9.7
INTERSUBBAND TRANSITIONS IN $In_xGa_{1-x}As$/AlGaAs MULTIPLE QUANTUM WELLS FOR LONG WAVELENGTH INFRARED DETECTION. C.L. Workman, Z.M. Wang, W.Q. Ma, C. George, and G.J. Salamo, Dept of Physics, Univ of Arkansas, Fayetteville, AR; R.P. Selvam, Computational Mechanics Laboratory, Dept of Civil Engineering, Univ of Arkansas, Fayetteville, AR; R. Barbera Jr., Qiaoying Zhou, and M.O. Manasreh, Dept of Electrical and Computer Engineering, Univ of New Mexico, Albuquerque, NM.

11:45 AM M9.8
SPECTRAL RESPONSE MODIFICATION OF QUANTUM WELL INFRARED PHOTODETECTOR BY QUANTUM WELL INTERMIXING. J.C. Shin, W.J. Choi, I.K. Han, Y.J. Park, J.I. Lee, Nano Device Research Center, KIST, Seoul, KOREA; E.K. Kim, Dept. of Physics, Hanyang University, Seoul, KOREA; H.J. Kim, J.W. Choi, Dept. of Physics, Kyunghee University, Yongin, KOREA.

SESSION M10: III-NITRIDE MATERIALS AND DEVICES
Chairs: Daniel J. Friedman and John M. Zavada
Thursday Afternoon, December 5, 2002
Room 210 (Hynes)

1:30 PM *M10.1
GROWTH, CHARACTERIZATION, AND FABRICATION OF AlN-BASED SUPERLATTICES FOR UV OPTOELECTRONIC DEVICES. M. Holtz, K. Zhu, C. Ramkumar, Department of Physics, Texas Tech University, Lubbock, TX; G. Kipshidze, V. Kuryatkov, B. Borisov, A. Chandolu, S.A. Nikishin, H. Temkin, Department of Electrical Engineering, Texas Tech University, Lubbock, TX; S.N.G. Chu, Agere Systems, Murray Hill, NJ; G.A. Seryogin, Corning Lasertron, Bedford, MA.

2:00 PM *M10.2
GaInAsN QUANTUM WELLS ON InP-SUBSTRATE FOR APPLICATIONS IN 2.3 μm DIODE LASERS. D. Serries, T. Geppert, K. Köhler, P. Ganser, and J. Wagner Fraunhofer-Institut für Angewandte Festkörperphysik, Freiburg, GERMANY.

2:30 PM M10.3
LOW TEMPERATURE PHOTOLUMINESCENCE STUDIES OF GaAsSbN NARROW BANDGAP QUANTUM WELLS ON GaAs. K.E. Waldrip, E.D. Jones, F. Jalali, N.A. Modine, J.F. Klem, and G.M. Peake, Sandia National Laboratories, Albuquerque, NM.

2:45 PM M10.4
INTERBAND TRANSITION IN InGaAsN/GaAs SINGLE QUANTUM WELLS. M.O. Manasreh, Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM; D. Friedman, NREL, Golden CO; C.L. Workam and G.J. Salamo, Department of Physics, University of Arkansas, Fayetteville, AR.

3:00 PM BREAK

3:30 PM *M10.5
RARE-EARTH-DOPED GaN: GROWTH, PROPERTIES AND FABRICATION OF ELECTROLUMINESCENT DEVICES. A.J. Steckl, J. Heikenfeld, D.S. Lee, M. Garter, C. Baker, J. Wang, R. Jones and M. Pan, University of Cincinnati, Cincinnati, OH.

4:00 PM M10.6
GROWTH CONDITION DEPENDENCE OF THE EXCITON LOCALIZATION ENERGY IN MBE-GROWN GaInNAs. A.J. Ptak, W. Metzger and Sarah Kurtz, National Renewable Energy Laboratory, Golden, CO.

4:15 PM M10.7
INFLUENCE OF LOW ENERGY ELECTRON BEAM IRRADIATION ON DEFECTS IN ACTIVATED Mg-DOPED GaN STUDIED BY CATHODOLUMINESCENCE. O. Gelhausen, M.R. Phillips and H.N. Klein[†]; Microstructural Analysis Unit, University of Technology, Sydney, AUSTRALIA. [†]On leave from Institut für Festkörperphysik, Technische Universität, Berlin, GERMANY.

4:30 PM M10.8
ELECTRICAL ISOLATION OF P-TYPE GaAsN EPITAXIAL LAYERS BY ION IRRADIATION. Q. Gao[a], J. Muller[a,b], P.N.K. Deenapanray[a], H.H. Tan[a], C. Jagadish[a]; [a]Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra, AUSTRALIA; [b]FIUPSO, Université Paris Sud Orsay, Paris, FRANCE.

4:45 PM M10.9
COMPOSITIONAL AND OPTICAL CHARACTERIZATION OF InGaAsN ALLOY SEMICONDUCTOR GROWN BY MOVPE. Sakuntam Sanorpim, Fumihiro Nakajima, Ryuji Katayama, and Kentaro Onabe, Dept of Advanced Materials Science, The University of Tokyo, Bunkyo-ku, Tokyo, JAPAN.