E-MRS – IUMRS – ICEM 2000

SYMPOSIUM R

Materials Science with Ion Beams

May 30 – June 2, 2000

Symposium Organizers:

Harry Bernas, CSNSM, Orsay, France

Karl-Heinz Heinig, Forschungszentrum Rossendorf e.V, Germany

Jim Williams, Australian Nat. Univ., Canberra, Australia

Joerg K.N. Lindner, University of Augsburg, Germany

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E-MRS 2000 SPRING MEETING

Symposium R

Tuesday May 30, 2000 **Morning**
Mardi 30 mai 2000 Matin

Session I - Nanostructures I

Chairperson: A. Polman

R-I.1 9:00 **Invited** INTERFACE STABILITY AND SELF-ORGANIZATION OF PRECIPITATES UNDER IRRADIATION, **P. Bellon** and R. Enrique, Dept. of Materials Science and Engineering, University of Illinois, Urbana IL 61801, USA

R-I.2 9:40 SEPARATING NUCLEATION AND GROWTH OF METAL CLUSTERS IN GLASS, E. Valentin[(1,2)], H. Bernas[(1)], C. Ricolleau[(3)] and F. Creuzet[(4)], [(1)]Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse, CNRS-IN2P3, Bât 108, 91405-Orsay, France, [(2)]Laboratoire CNRS/Saint-Gobain, 39 quai Lucien Lefranc, 93303 Aubervilliers, France, [(3)]Laboratoire de Minéralogie et de Cristallographie de Paris, UMR CNRS- Universités Paris VI-VII, 4 pl. Jussieu, 75252-Paris, France, [(4)]Fontainebleau Research Center, Corning S.A., 77210 Avon, France

R-I.3 10:00 STRUCTURE AND MAGNETIC PROPERTIES OF COBALT IMPLANTED SILICA, O. Cintora-Gonzalez[(1)], D. Muller[(2)], C. Estournés[(1)], J.J. Grob[(2)], M. Richard-Plouet[(1)], R. Poinsot[(1)] and J. Guille[(1)], [(1)]I.P.C.M.S. GMI, UMR 7504 CNRS, ULP, ECPM, 23 rue du Loess, B.P. 20/CR, 67037 Strasbourg Cedex, France, [(2)]Laboratoire PHASE, UPR292 CNRS, BP20, 23 rue du Loess, 67037 Strasbourg Cedex, France

10:20 **BREAK**

Chairperson: H. Atwater

R-I.4 10:50 FORMATION OF TWO DIMENSIONAL ARRAYS OF SEMICONDUCTOR NANOCRYSTALS OR SEMICONDUCTOR-RICH NANOLAYERS BY VERY LOW ENERGY Si OR Ge ION IMPLANTATION IN SILICON OXIDE FILMS, P. Normand[(1)], K. Beltsios[(2)], E. Kapetanakis[(1)], D. Tsoukalas[(1)], T. Travlos[(3)], J. Van Den Berg[(4)], S. Zhang[(4)], J. Gautier[(5)] and L. Palun[(5)], IMEL[(1)], MESL[(2)], IMS[(3)], NCSR Demokritos, 15310 Aghia Paraskevi, Greece, [(4)]Department of Physics, U. of Salford, Salford M5 4WT, UK and [(5)]LETI/CEA, 17 rue des Martyrs, 38054 Grenoble Cedex 9, France

R-I.5 11:10 **Invited** ATOMISTIC MODELING OF ION BEAM SYNTHESIS OF NANOSTRUCTURES, **M. Strobel**, K.-H. Heinig and W. Möller, Forschungszentrum Rossendor, P.O.Box 510119, 01311 Dresden, Germany

R-I.6 11:50 INVERSE OSTWALD RIPENING UNDER ION IRRADIATION, K.-H. Heinig and M. Strobel, Forschungszentrum Rossendorf, PO Box 510119, 01314 Dresden, Germany

R-I.7 12:10 ION IRRADIATION-INDUCED FORMATION OF NANOCLUSTER SHELLS AROUND GOLD INCLUSIONS IN SiO_2: EXPERIMENTS AND SIMULATIONS, G.C. Rizza[(1)], M. Strobel[(2)], K.H. Heinig[(2)] and H. Bernas[(1)], [(1)]Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse, CNRS-IN2P3, 91405-Orsay, France, [(2)]Institute of Ion Beam Physics and Materials Research, Forschungzentrum Rossendorf, P.O. Box 510 119, 01314 Dresden, Germany

12:30 **LUNCH**

Tuesday May 30, 2000 — Afternoon

Mardi 30 mai 2000

Après-midi

Session II - Joint session with Symposium E: Nanotechnology

Chairpersons: H. Bernas and G. Marletta

R-II.1 14:00 **Invited** NANOFABRICATION FOR PHOTONIC APPLICATIONS COMBINING PULSED LASER DEPOSITION AND FOCUSSED ION BEAM TECHNOLOGIES, R. Lopez, R. Ruiz, L. Shen, **R.F. Haglund, Jr.**, R.A. Weller and L.C. Feldman, Vanderbilt University, NashvilleTenn., TN 37235, USA

R-II.2 14:40 OPTICAL AND STRUCTURAL PROPERTIES OF Si NANOCRYSTALS ARRAYS FORMED BY ULTRA LOW ENERGY Si IMPLANTS INTO THIN GATE OXIDES, S. Coffa, E. Castagna, C. Bongiorno, CNR-IMETEM, Stradale Primosole 50, 95121 Catania, Italy, D. Patti, STMicroelectronics, Stradale Primosole 50, 95121 Catania, Italy

R-II.3 15:00 **Invited** NANOCOMPOSITE MATERIALS FORMED BY ION IMPLANTATION: RECENT DEVELOPMENTS AND FUTURE OPPORTUNITIES, **A. Meldrum**[(1)], C.W. White[(2)], E. Sonder[(2)], R.A. Zuhr[(2)], S.P. Withrow[(2)], S.Honda[(2)], J.D. Budai[(2)] and L.A. Boatner[(2)], [(1)]Dept. of Physics, University of Alberta ,Edmonton, AB T6G 2J1, Canada, [(2)]Solid State Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, USA

R-II.4 **15:40** **NANOMETRIC MODIFICATIONS ALONG THE PATH OF ENERGETIC PROJECTILES, A. Dunlop and G. Jaskierowicz, Laboratoire des Solides Irradiés, Commissariat à l'Energie Atomique/ Ecole Polytechnique, 91128 Palaiseau, France and M. Kopcewicz, Institute of Electronic Materials Technology, Wolczynska 133, 01909 Warszawa, Poland**

16:00 **BREAK**

R-II.5 16:30 **Invited** FUNCTIONAL NANOCRYSTAL ARRAYS FOR FUTURE ELECTRONIC AND PHOTONIC APPLICATIONS, **H.A. Atwater**, Thomas J. Watson Laboratories of Applied Physics California Institute of Technology, Pasadena CA 91125, USA

R-II.6 17:10 INFLUENCE OF ANNEALING ATMOSPHERE ON THE EVOLUTION OF METAL AND METAL-ALLOY NANOCLUSTERS PRODUCED BY ION IMPLANTATION IN SILICA, G. Battaglin[(1)], E.Cattaruzza[(1)], G. De Marchi[(2)], F. Gonella[(1)], G. Mattei[(2)], P. Mazzoldi[(2)], A. Miotello[(3)], C. Sada[(2)], [(1)] INFM, Dipartimento di Chimica Fisica, Universita di Venezia, CalleLarga Santa Marta 2137, 30123 Venezia, Italy, [(2)] INFM, Dipartimento di Fisica, Universita di Padova, via Marzolo 8, 35131 Padova, Italy, [(3)] INFM, Dipartimento di Fisica, Universita di Trento, via Sommarive, 38050 Povo, Italy

R-II.7 17:30 **Invited** IRRADIATION-INDUCED MAGNETIC PATTERNING IN MAGNETIC MULTILAYERS, **D. Ravelosona**, T. Devolder, C. Chappert, Institut d'Electronique Fondamentale, Université Paris-Sud, 91405 Orsay Cedex, France, H. Bernas, Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse, Université Paris-Sud, 91405 Orsay Cedex, France, J. Ferré, J.P. Jamet, Laboratoire de Physique des Solides, Université Paris-Sud, 91405 Orsay Cedex, France, Y. Chen, Laboratoire de Micro-structures et Microélectronique, 196 rue H. Ravera, BP 107, 92225 Bagneux, France

R-II.8 18:10 NANOSTRUCTURE AND MAGNETIC PROPERTIES OF ALLOY-BASED NANOPARTICLES DISPERSED IN SILICA MATRIX PREPARED BY ION-IMPLANTATION AND SOL-GEL TECHNIQUES, C. de Julian Fernandez, G. Mattei, P. Mazzoldi, S. Lo Russo, INFM - Univ. di Padova, Dip. di Fisica, Marzolo 8, 35131 Padova, Italy; C. Battaglin, E. Cattaruzza, F. Gonella, INFM Dip. di Chimica-Fisica, Univ. di Venezia, Calle Larga Santa Marta 2137, 0123 Venezia, Italy; C. Sangregorio, Dip. di Chimica, Univ. di Firenze, via Maragliano 75, 50144 Firenze, Italy; F. D'Orazio, F. Lucari, INFM Dip. Fisica, Univ. L'Aquila, via Vetoio, 67100 L'Aquila, Italy and G. De, Central Glass & Ceramic Research Institute 196, Raja S. C. Mullick Road, Calcutta 700 0032, India

Wednesday May 31, 2000 — Afternoon
Mercredi 31 mai 2000 — Après-midi

14:00-18:30 **POSTER SESSION I**

Session III - Nanostructures II
Chairperson: S. Coffa

R-III.1 14:00 **Invited** KINETICS STUDY OF GROUP IV NANOPARTICLES ION BEAM SYNTHESIZED IN SiO_2, **C. Bonafos**, A. Claverie, CEMES, CNRS, BP 4347, 31055 Toulouse Cedex, France and B. Garrido, M. Lopez, A. Perez-Rodriguez, J.R. Morante, Electronics Department, Univesity of Barcelona, C. Marti i Franques 1, 08028 Barcelona, Spain

R-III.2 14:40 PHENOMENOLOGICAL MODEL OF EFFICIENT VISIBLE EMISSION FROM Si ION BEAM SYNTHESISED NC IN SiO_2, M. Lopez[(1)], B. Garrido[(1)], C. Bonafos[(2)], O. Gonzalez[(1)], A. Pérez[(1)], J. Montserrat[(3)], J.R. Morante[(1)], [(1)]EME, Departament d'Electronica, Universitat de Barcelona, Marti i Franqués, 1, 08028 Barcelona, Spain, [(2)]CEMES/CNRS, 29 rue J. Marvig, 31055 Toulouse, France, [(3)]Institut de Microelectronica de Barcelona (CNM-CSIC), Campus UAB, 08193 Bellaterra, Spain

R-III.3 15:00 Sn NANO-CLUSTERS FORMED IN THERMALLY GROWN SiO_2, STUDIED BY MOESSBAUER SPECTROSCOPY AND RUTHERFORD BACKSCATTERING SPECTROSCOPY, G. Koops, S. Nauwelaerts, R. Venegas, A. Vantomme, H. Pattyn Instituut voor Kern- en Stralingsfysica, Physics Department, KU-Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium

R-III.4 15:20 COHERENT PRECIPITATES AND DIFFUSION EFFECTS IN ION IMPLANTED TiO_2 SINGLE CRYSTALS, R. Fromknecht[(1)], G.Linker[(1)], I. Khubeis[(2)], T.Wiss[(3)] and O. Meyer[(2)], [(1)]Forschungszentrum Karlsruhe, INFP, P.O.B. 3640, 76021 Karlsruhe, Germany, [(2)]Faculty of Applied Science, Al-Balqa Applied University, Al-Salt, Jordan, [(3)]European Commision, JRC, Institute of Transuranium Elements, Postfach 2340, 76021 Karlsruhe, Germany

R-III.5 15:40 COHERENT AMORPHIZATION OF GeSi MULTILAYERS WITH ION BEAMS, E. Alves, M.F.da Silva, J.C. Soares, Instituto Tecnológico e Nuclear, EN10, 2686-953 Sacavém, Portugal, N. Sobolev, M.C. Carmo, Departamento de Física, Universidade de Aveiro, 3810 Aveiro, Portugal

16:00 **BREAK**

Session IV - Defects in Silicon
Chairperson: J.S Williams

R-IV.1 16:30 **Invited** POINT DEFECT DIFFUSION AND CLUSTERING IN ION IMPLANTED c-Si, **S. Libertino**, S. Coffa, A. La Magna, D. Arcifa and C. Spinella, CNR-IMETEM, Stradale Primosole 50, 95121 Catania, Italy

R-IV.2 17:10 VACANCY MIGRATION INTO CRYSTALLINE SILICON FROM AN ION-IMPLANTED SURFACE LAYER, A. Nylansted Larsen and J. Pilkington, Institute of Physics and Astronomy, University of Aarhus, 8000 Aarhus C, Denmark

R-IV.3 17:30 INFLUENCE OF ANNEALING AMBIENTS ON RELATIVE STABILITIES OF DISLOCATION LOOPS IN SILICON, F. Cristiano, B. Colombeau, B de Mauduit, M. Omri and A. Claverie, CEMES/CNRS, 29 rue J. Marvig, 31055 Toulouse Cedex, France and F. Giles, Max Plank Institute of Microstructure Physics, Weinberg 2, 06120 Halle/Saale, Germany and D. Skarlatos, D. Tsoukalas, Institute of Microelectronics, NCSR Demokritos, 15310 Aghia Paraskevi, Greece

R-IV.4 17:50 A MULTI-SCALE ATOMISTIC STUDY OF I AGGLOMERATION IN CRYSTALLINE Si, A. La Magna, S. Coffa, S. Libertino, CNR-IMETEM Stradale Primosole 50, 95121 CT, L. Brambilla, P. Alippi, INFM, Udr Milano-Bicocca, L. Colombo, INFM, UdR Cagliari, Italy

POSTER SESSION I

R-I/P1 He^{++} IRRADIATED BERYLLIUM DOPED $Al_{0.5}Ga_{0.5}As$ MBE LAYERS, J. Szatkowski[(1)], E. Placzek-Popko[(1)], K. Sieranski[(1)], O.P. Hansen[(2)], A. Johansen[(2)], J. Fialkowski[(1)], [(1)]Institute of Physics, Wroclaw University of Technology, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland, [(2)]Oersted Laboratory, University of Copenhagen, Universitetparken 5, 2100 Copenhagen, Denmark

R-I/P2 STUDIES OF THE VIOLET AND GREEN PHOTOLUMINESCENCE FROM Si_3N_4 AND SiO_xN_y FILMS IMPLANTED WITH Ar^+ AND Ge^+ IONS, I.E. Tyschenko, K.S. Zhuravlev, V.A. Volodin, Institute of Semiconductor Physics, Novosibirsk, 630090, Russia, L. Rebohle, M. Voelskow, W. Skorupa, Institute of Ion Beam Physics and Materials Research, Research Center Rossendorf, Inc. POB 510119, 01314 Dresden, Germany

R-I/P3 B-ION-IMPLANTATION-FORMED PRECIPITATION SITES FOR THE MOBILE IMPURITIES IN Si, G.A. Kachurin, S.G. Yanovskaya, V.I. Obodnikov, S.A. Arzhannikova, A.F. Buldygin. Institute of Semiconductor Physics SO RAN, 630090 Novosibirsk, Russia

R-I/P4 THE EVOLUTION OF POINT DEFECTS IN SEMICONDUCTORS USING THE DECAY OF IMPLANTED RADIOACTIVE ISOTOPES, S. Lindner, M.O. Henry, E. McGlynn, J. Fryar, School of Physical Sciences, Dublin City University, Dublin 9, Ireland, J. Bollmann, Max-Planck-Institute FKF, PF 800665, 70506 Stuttgart, Germany and The ISOLDE Collaboration, CERN, 1211 Geneva, Switzerland

R-I/P5 SELF-ORGANIZED $[Co(Co_xSi_y)/Si]_n$ NANOSTRUCTURES UNDER IMPLANTATION OF Co^+ IN Si, I. Belousov, Institute of Metal Physics UNAS, 36 Vernadskiiave, 252680 Kiev, Ukraine, V. Motsnyi, IMEC, MAP Division, Kapeldreef 75, 3001 Leuven, Belgium, S. Putselyk, S. Zankovych, Y. Nazarok, A. Gorchinsky, E. Buzaneva, National Kiev Taras Shevchenko University, 64 Vladimirskaya str., 01033 Kyiv, Ukraine

R-I/P6 FTIR SPECTROSCOPY STUDY OF HIGHLY IRRADIATED LAYERS FORMED BY HYDROGEN AND DEUTERIUM IMPLANTATION OF SILICON, L.N. Safronov, V.P. Popov, I.V. Antonova, V.I. Obodnikov, Institute of Semiconductor Physics, RAS, 630090 Lavrentieva 13, Novosibirsk, Russia, I.I. Morosov, Institute of Nuclear Physics, Novosibirsk 630090, Russia, A.P. Stepovik, V.T. Gromov, Federal Nuclear Center, Snezhinsk, Russia

R-I/P7 TEM AND XRD STUDY OF BLISTERING IN HYDROGEN IMPLATED SILICON LAYERS ANNEALED AT HIGH PRESSURE, V.P. Popov, A.K. Gutakovsky, A.I. Antonova, Institute of Semiconductor Physics, Novosibirsk 630090, Russia, A. Romano-Rodrigues, A. Bachrouri, University of Barcelona, Department of Electronics, Marti i Franques, 1, 08028 Barcelona, Spain, A. Misiuk, Institute of Electron Technology, al. Lotnikov 34/46, Warsaw, Poland, Ja. Back-Misiuk, J.Domagala, Institute of Physics, al. Lotnikov 34/46, Warsaw, Poland

R-I/P8 ACTIVATION ANALYSIS OF RAPID THERMALLY ANNEALED Si AND Mg CO-IMPLANTED SEMI-INSULATING GaAs, Chien-Chieh Lee, Liang-Wen Wu, Gou-Chung Chi, Department of Physics, National Central University, Chung-Li, Taiwan, R.O.C.

R-I/P9 THEORETICAL AND EXPERIMENTAL INVESTGATIONS OF DEFECT EVOLUTION IN SILICON CARBIDE DURING Al AND N ION IMPLANTATION TAKING INTO ACCOUNT INTERNAL STRESS FIELDS, P.V. Rybin, D.V. Kulikov, Yu.V. Trushin, A.F. Ioffe PTI of RAS, Polytechnicheskaya 26, St. Petersburg 194021, Russian Federation, R.A. Yankov, CCR Beschichtungstechnologie, TZO Rheinbreitbach, Maarweg 30, 53619 Rheinbreitbach, Germany, M. Voelskow, FZ Rossendorf, Institut fuer Ionenstrahlphysik und Materialforschung, 01314 dresden, Germany, J. Pezoldt, TU Ilmenau, Institut fuer Festkorperelektronik, Postfach 100565, 98684 Ilmenau, Germany

R-I/P10 HIGH Fe SOLUBILITY IN InP BY HIGH TEMPERATURE ION IMPLANTATION, B. Fraboni, INFM and Dipartimento di Fisica, Universita di Bologna, Italy, A.Gasparotto and F. Enrichi, INFM and Dipartimento di Fisica, Universita di Padova, Italy, F. Priolo, INFM and Dipartimento di Fisica, Universita di Catania, Italy, A. Mazzone, M. Troccoli and G. Scamarcio, INFM and Dipartimento di Fisica, Universita di Bari, Italy

R-I/P11 MODELING AND XPS STUDY OF PRECIPITATION AND OXIDATION OF GERMANIUM IN Ge^+ IMPLANTED SiO_2 LAYERS, V.A. Borodin*, K.-H. Heinig, B. Schmidt, Research Center Rossendorf, PO Box 510119, 01314 Dresden, Germany, S. Oswald, Institute for Solid State and Steel Research, PO Box 270016, 01171, Dresden, Germany, *Permanent address: RRC Kurchatov Institute, 123182 Moscow, Russia

R-I/P12 INFLUENCE OF BORON CONCENTRATION ON THE ENHANCED DIFFUSION OBSERVED AFTER IRRADIATION OF BORON DELTA-DOPED SILICON AT 700°C, P. Lévêque, J.S. Christensen, A.Yu. Kuznetsov and B.G. Svensson, Royal Institute of Technology, Solid State Electronics, Electrum 229, 16440 Kista-Stockholm, Sweden, A. Nylandsted Larsen, Institute of Physics and Astronomy, University of Aarhus, 800 Aarhus, Denmark

R-I/P13 INTERACTION BETWEEN SILICON INTERSTITIALS AND DISLOCATION LOOPS DURING OXIDATION USING THE WAFER BONDING TECHNIQUE, D. Tsoukalas, D. Skarlatos, Institute of Microelectronics, NCSR 'Demokritos', 15310 Aghia Paraskevi, Greece, J. Stoemenos, Department of Physics, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece

R-I/P14 LASER ANNEALING OF SAPPHIRE WITH IMPLANTED COPPER NANOPARTICLES, A.L. Stepanov[(1,2)], R.I. Khaibullin[(1)], D.E. Hole[(3)], V.N. Popok[(4)], I.B. Khaibullin[(1)], [(1)]Lab. of Radiation physics, Kazan Physical-Technical Institute, Sibirsky Trakt 10/7, 420029 Kazan, Russia, [(2)]I. Physikalisches Institut, Aachen Technical University RWTH, 52056 Aachen, Germany, [(3)]School of Engineering, University of Sussex, Brighton, BN1 9QH, UK, [(4)]Dept. of Physics and Engineering Physics, Gothenburg University and Chalmers University of Technology, 41296 Gothenburg, Sweden

R-I/P15 INVESTIGATION OF THE INTERACTION BETWEEN SILICON INTERSTITIALS AND DISLOCATION LOOPS DURING OXIDATION USING THE WAFER BONDING TECHNIQUE, D. Tsoukalas, D. Skarlatos, Institute of Microelectronics, NCSR 'Demokritos', 15310 Aghia Paraskevi, Greece, J. Stoemenos Department of Physics, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece

R-I/P16 ON THE RATE OF DIVACANCY FORMATION AT ELECTRON IRRADIATION, H.H. Abgarian, S.V. Harutyunyan, and V.V. Musakhanyan, Department of Medical, Biological Physics and Informatics, Yerevan State Medical University, 2 Koryun Str., Yerevan-25, 375025 Armenia

R-I/P17 THE INFLUENCE OF ION DOPING BY PHOSPHORUS ON THE LUMINESCENCE PROPERTIES OF SI NANOINCLUSIONS IN SIO2 PRODUCED BY ION IMPLANTATION, D.I.Tetelbaum, O.N. Gorshkov, S.A. Trushin, Physico-Technical Research Institute of Nizhnii Novgorod State University, Gagarin prospect 23/3, 603600 Nizhnii Novgorod, Russia, Z.F.Krasil'nik, D.M. Gaponova and D.G. Revin, Institute of Physics for Microstructures,GSP ñ 105, 603600 Nizhnii Novgorod, Russia

R-I/P18 STRUCTURAL DEFECTS INDUCED THROUGH SPE CRYSTALLIZATION OF Er-IMPLANTED Si LAYERS, V.I. Vdovin, M.G. Mil'vidskii, Institute for Chemical Problems of Microelectronics, B. Tolmachevsky per. 5, Moscow 109017, Russia, N.A. Sobolev, Yu.A. Nikolaev, Ioffe Physicotechnical Institute, Polytechnicheskaya 26, St. Petersburg 194021, Russia, A.K. Gutakovsky, Institute of Semiconductor Physics, ave. Lavrenteva 13, Novosibirsk 630090, Russia

R-I/P19 SIMULATION OF DEFECTS PROFILES INDUCED IN Si(100) BY As^+ IONS IMPLANTATION, R. Chemam, Département de Physique, Faculté des Sciences, Université d'Annaba, B.P.12, Annaba 23000, Algérie, A. Bouabellou, Département et Unité de Recherche de Physique, Université Mentouri, Route de Ain El Bey, Constantine 25000, Algérie, A. Boumali, Centre de Développement des Systèmes Energétiques, BP 180 Ain Ouassera 17200, Algérie and M. Zilabdi, Centre de Développement des Techniques Nucléaires, 2 Bd Frantz Fanon, B.P. 399 Alger-Gare, Algérie

R-I/P20 SYNTHESIS OF COBALT SILICIDE ON POROUS SILICON BY HIGH DOSE ION IMPLANTATION, A.R. Ramos[(1)] F. Pászti[(3)], G. Battistig[(4)], É. Vázsonyi[(4)], O. Conde[(2)], M.R. da Silva[(1)], M.F. da Silva[(1)], J.C. Soares[(1)], [(1)]ITN- Instituto Tecnológico e Nuclear, Estrada Nacional 10, 2686-953 Sacavém and Centro de Física Nuclear da Universidade de Lisboa, Av. Prof. Gama Pinto 2, 1649-003, Lisboa, Portugal, [(2)]FCUL-Faculdade de Ciências da Universidade de Lisboa, Dep. Física, Ed C4, 1749-016, Lisboa, Portugal, [(3)]KFKI-Res. Inst. for Particle and Nuclear Physics, PO BOX 49, 1525, Budapest, Hungary, [(4)]MTA-Res. Inst. for Technical Phys. and Materials Science, PO BOX 49, 1525, Budapest, Hungary

R-I/P21 HIGH CONDUCTIVITY n-TYPE LAYERS, FORMED IN B-DOPED P^+-SILICON BY H^+ ION IMPLANTATION, G.A. Kachurin, S.G. Yanovskaya, S.A. Arzhannikova, V.I. Obodnikov, Institute of Semiconductor Physics SO RAN, 630090 Novosibirsk, Russia

R-I/P22 BURIED ZnTe AND ZnSe NANOCRYSTALLITES IN THERMAL SiO_2 ON SILICON SYNTHESIZED BY HIGH DOSE ION IMPLANTATION, H. Karl, I. Grosshans, W. Reiber and B. Stritzker, Universität Augsburg, Institut für Physik, 86135 Augsburg, Germany

R-I/P23 RADIATION AND ANNEALING EFFECTS IN Si NANOSTRUCTURES, FORMED IN SiO_2 BY ION IMPLANTATION, G.A. Kachurin, S.G. Yanovskaya, A.K. Gutakovsky, K.S. Zhuravlev, Institute of Semiconductor Physics SO RAN, 630090 Novosibirsk, Russia

R-I/P24 FORMATION OF SUPPORTED NANOPARTICLES FROM ISLAND THIN FILMS DURING ION ETCHING, Z. Paszti, G. Peto, Z.E. Horvath, A. Karacs, MTA Research Institute for Technical Physics and Materials Science, 1525 Budapest, P.O.Box 49, Hungary and L. Guczi, MTA Research Centre for Chemistry, 1525 Budapest, P. O. Box 77, Hungary

R-I/P25 THE BEHAVIOUR OF DEUTERIUM INCORPORATED INTO THE BURIED OXIDE OF SIMOX, A. Rivera, A. van Veen, H. Schut, IRI, Delft University of Technology, 2629 JB Delft, The Netherlands, J.M.M. de Nijs, P. Balk, DIMES, Delft University of Technology, 2628 CT Delft, The Netherlands

R-I/P26 LATERAL GETTERING OF IRON AND PLATINUM BY HE IMPLANTATION IN SILICON, F. Roqueta, L. Ventura, LMP, Université de Tours, 16 rue Pierre et Marie Curie, BP 7155, 37071 Tours cedex 2, France, A. Grob and J-J. Grob, PHASE- CNRS, 23 rue du Loess, 67037 Strasbourg Cedex 2, France

R-I/P27 TRAPPING OF ALUMINIUM BY DISLOCATION LOOPS IN SI, Ch. Ortiz[(1,2)], D. Mathiot[(2)], D. Alquier[(1)], Ch. Dubois[(3)] and R. Jérisian[(1)], [(1)]L.M.P., Université de Tours, 16 rue Pierre et Marie Curie, BP 7155, 37071 Tours Cedex 2, France, [(2)]PHASE - CNRS, 23 rue du Loess, 67037 Strasbourg Cedex 2, France, [(3)]L.P.M. - INSA Lyon, 20 rue A. Einstein, 69621 Villeurbanne Cedex, France

R-I/P28 PHENOMENON OF HELIUM BUBBLES ORDERING IN SILICON DURING LOW-ENERGY He^+ IMPLANTATION, V.F. Reutov and A.S. Sokhatsky, Joint Institute for Nuclear Research, Flerov Laboratory of Nuclear Reactions, 141980, Dubna, Moscow reg., Russia

R-I/P29 FORMATION OF NANO-CRYSTALS IN _-Si With HELIUM BUBBLES, V.F. Reutov and A.S. Sokhatsky, Joint Institute for Nuclear Research, Flerov Laboratory of Nuclear Reactions, 141980 Dubna, Moscow reg., Russia

R-I/P30 Cancelled

R-I/P31 Cancelled

R-I/P32 OBSERVATION OF IRRADIATION-INDUCED RP/2 DEFECTS AND OPEN VOLUME DEFECTS IN SILICON BY GOLD DECORATION**,** J.S. Williams, M.J. Conway, B.C. Williams, M. Petravic and J. Wong-Leung, Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra ACT 0200, Australia

Thursday June 1, 2000 — Morning

Jeudi 1er juin 2000 — Matin

Session V - Cavities in Silicon

Chairperson: N. Cowern

R-V.1 9:00 **Invited** NON-EQUILIBRIUM PROPERTIES OF NANOCAVITIES IN SILICON AND THEIR EVOLUTION DURING ION IRRADIATION, **J.S. Williams**[(1)], X.F. Zhu[(1)], M.C. Ridgway[(1,2)], J. Wong-Leung[(1)], M. Conway[(1)], M. Petravic[(1)], F. Fortuna[(2)], M.-O. Ruault[(2)], H. Bernas[(2)] and A. Kinomura[(3)], [(1)]Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra ACT 0200, Australia, [(2)]Centre de Spectrometrie Nucleaire et Spectrometrie de Masse CNRS-IN2P3, Batiment 108, 91405 Orsay, France, [(3)]Department of Materials Physics, Osaka National Research Institute, 1-8-31 Midorigaoka, Ikeda, Osaka 563-8577, Japan

R-V.2 9:40 KINETICS ASPECTS OF THE GROWTH OF PLATELETS AND VOIDS IN H IMPLANTED Si, J. Grisolia, F. Cristiano, G. Ben Assayag and A. Claverie, CEMES/CNRS, BP 4347, 31055 Toulouse Cedex 4, France

R-V.3 10:00 NANOCAVITIES IN Si AT LESS-THAN-CRITICAL FLUENCE, C. Wintgens and S. Roorda, Départment de physique, Université de Montréal, Montréal, Canada, Peter Simpson, Physics Department, University of Western Ontario, London (ON), Canada

10:20 **BREAK**

Session VI - Implantation Effects in Silicon

Chairperson: A. Claverie

R-VI.1 10:50 **Invited** DEFECT ENERGETICS AND TRANSIENT ENHANCED DIFFUSION, **N.E.B. Cowern**[(1)], A. Claverie[(2)], F. Cristiano[(2)], B. Colombeau[(2)] and D. Stiebel[(3)], [(1)]Philips Research Laboratories, Prof. Holstlaan 4, 5656 AA Eindhoven, The Netherlands, [(2)]CEMES-CNRS, 29 rue J. Marvig, 31055 Toulouse, France, [(3)]Fraunhofer IIS-B, Schottkystrasse 10, 91058 Erlangen, Germany

R-VI.2 11:30 DECABORANE IONS FOR SHALLOW IMPLANTATION OF BORON IN SILICON, M. Sosnowski, M. Albano, V. Babaram and J.M. Poate, New Jersey Institute of Technology, Newark NJ, USA, D. Jacobson, Bell Laboratories, Lucent Technologies, Murray Hill NJ, USA

R-VI.3 11:50 DOSE RATE DEPENDENCE OF IRRADIATION DAMAGE IN SILICON, L. Bischoff, J. Teichert and S. Hausmann, Forschungszentrum Rossendorf e.V., Institut für Ionenstrahlphysik und Materialforschung, 01314 Dresden, Germany

R-VI.4 12:10 DOSE RATE AND TEMPERATURE DEPENDENCE OF Ge RANGE PROFILES IN Si OBTAINED BY CHANNELING IMPLANTATION, M. Posselt, J. Teichert, L. Bischoff and S. Hausmann, Forschungszentrum Rossendorf, Institute of Ion Beam Physics and Materials Research, P.O.Box 510119, 01314 Dresden, Germany

12:30 **LUNCH**

Thursday June 1, 2000 — Afternoon

Jeudi 1er juin 2000

Après-midi

14:00-18:30 **POSTER SESSION II**

Session VII - Implantation into GaN

Chairperson: A. Nylandsted-Larsen

R-VII.1 14:00 AMORPHIZATION OF GaN BY ION IMPLANTATION, C. Liu, X.J. Fan, Department of Physics, Wuhan University, Wuhan 430072, China, A. Wenzel, J.W. Gerlach, B. Rauschenbach, Institut für Physik, Universität Augsburg, 86135 Augsburg, Germany, E. Alves, M.F. DaSilva, J.C. Soares, ITN, 2685 Sacavém, Portugal

R-VII.2 14:20 TEMPERATURE DEPENDENCE OF ION-BEAM-INDUCED DISORDERING IN SILICON CARBIDE AND GALLIUM NITRIDE, W. Jiang, W.J. Weber and S. Thevuthasan, Pacific Northwest National Laboratory, Richland WA 99352, USA

R-VII.3 14:40 THE EFFECTS OF ION MASS, ENERGY, DOSE, FLUX, AND IRRADIATION TEMPERATURE ON IMPLANTATION DISORDER IN GaN, S.O. Kucheyev[(1)], J.S. Williams[(1)], J. Zou[(2)], C. Jagadish[(1)], G. Li[(3)], [(1)]Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra ACT 0200, Australia, [(2)]Electron Microscope Unit and Australian Key Center for Microscopy and Microanalysis, The University of Sydney, Sydney, NSW 2006, Australia, [(3)]Ledex Corporation, 23F, No 91 Chung-sun 2nd Rd, Kaohsiung, Taiwan

Session VIII - Ion Beam Synthesis and Mixing

Chairperson: K.-H. Heinig

R-VIII.1 15:00 **Invited** ION BEAM SYNTHESIS OF BURIED SiC LAYERS IN SILICON: BASIC PHYSICAL PROCESSES, **J.K.N. Lindner**, University of Augsburg, Institute of Physics, 86135 Augsburg, Germany

R-VIII.2 15:40 ION BEAM INDUCED SOLID STATE REACTION IN Si/C LAYER SYSTEMS, F. Harbsmeier, II. Physikalisches Institut and SFB345, Universität Göttingen, Bunsenstraße 7-9, 37073 Göttingen, Germany and W. Bolse, Institut für Strahlenphysik, Universität Stuttgart, Allmandring 3, 70569 Stuttgart, Germany

16:00 **BREAK**

R-VIII.3 16:30 SYNTHESIS OF BURIED METAL OXIDE FILMS BY HIGH FLUENCE OXYGEN ION IMPLANTATION INTO METALS, C. Hammerl and B. Rauschenbach, Institut für Physik, Universität Augsburg, Universtitätsstraße 1, 86159 Augsburg, Germany

R-VIII.4 16:50 IRRADIATION-INDUCED AMORPHIZATION, GROWTH OF DODECAHEDRAL PHASE AND SUPERLATTICE ASSEMBLED BY DODECAHEDRONS IN AN IMMISCIBLE Co-Cu SYSTEM, B.X. Liu, Z.C. Li and Q. Zhang, Department of Materials Science and Engineering, Tsinghua University, Beijing 100084, China, D.P. Yu, Department of Physics, Peking University, Beijing 100875, China

R-VIII.5 17:10 SYNTHESIZING SINGLE-PHASE ß-$FeSi_2$ VIA ION-BEAM IRRADIATIONS OF Fe/Si BILAYERS, M. Milosavljevic[(1,2)], S. Dhar[(1)], P. Schaaf[(1)], N. Bibic[(2)], M. Han[(1)] and K. P. Lieb[(1)], [(1)]II. Physikalisches Institut and SFB 345, Universität Göttingen, 37073 Göttingen, Germany, [(2)]VINCA Institute of Nuclear Sciences, 11001 Belgrade, Yugoslavia

R-VIII.6 17:30 ION IRRADIATION INDUCED SOLUTE CLUSTERING IN STEEL: A 3D NANOANALYSIS WITH THE TOMOGRAPHIC ATOM PROBE, P. Pareige and F. Perocheau, GPM, UMR CNRS, Rouen, France, S. Jumel, EDF, Les Renardiéres, France, H. Bernas, CSNSM, 91405 Orsay, France, A. Barbu, LSI Ecole Polytechnique, 91129 Palaiseau, France

R-VIII.7 17:50 ION BEAM SYNTHESIS OF BETA-$FeSi_2$/n-Si HETEROJUNCTIONS AND THEIR PHOTORESPONSIVITY, Yoshihito Maeda, Osaka Prefecture University, Sakai, Osaka 599-8531, Japan and University of Surrey, Guildford, Surrey GU2 5XH, UK, Kiyoshi Miyake, Saitama University, Urawa, Saitama 338-8570, Japan and Kenya Ohashi, Hitachi Research Laboratory, Hitachi, Ltd., Hitachi 319-1292 Ibaraki, Japan

R-VIII.8 18:10 ION BEAM SYNTHESIS OF IRON GRANULAR FILMS IN VISCOUS SILICONE POLYMERS, R.I. Khaibullin[(1)], V.A. Zhikharev[(1)], Yu.N. Osin[(1)], E.P. Zheglov[(1)], V.N. Popok[(2)], B.Z. Rameev[(3)], B. Aktas[(3)], [(1)]Kazan Physical-Technical Institute, Sibirskij Trakt 10/7, 420029 Kazan, Russia, [(2)] Belarusian State University, F. Skorina Avenue 4, 220050 Minsk, Belarus, [(3)]Gebze Institute of Technology, P.K.141 41400, Gebze/Kocaeli, Turkey

POSTER SESSION II

R-II/P1 OXYGEN BEHAVIOUR DURING PIII-NITRIDING OF ALUMINIUM, D. Manova, S. Mändl, B. Rauschenbach, Institut für Physik, Universität Augsburg, 86135 Augsburg, Germany

R-II/P2 HEAVY ION IRRADIATION INDUCED EFFECTS IN Ni_3N/Al BILAYERS, S. Dhar[(1)], L. Rissanen[(1)], K.-P. Lieb[(1)], K. Engel[(2)] and M. Wenderoth[(2)], [(1)]II. Physikalisches Institut and SFB 345 and [(2)]IV. Physikalisches Institut, Universität Göttingen, 37073 Göttingen, Germany

R-II/P3 SPONTANEOUS MULTILAYERED PHASE FORMATION IN HIGH FLUENCE NICKEL IMPLANTED ALUMINIUM, A. Cuenat, A. Hessler-Wyser, R. Gotthardt and M. Doebeli, Institut de Génie Atomique, Département de Physique, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland, 1 Ion Beam Physics, Paul Scherrer Institut, c/o IPP HPK H32, ETH Hönggerberg, 8093 Zurich, Switzerland

R-II/P4 SCANNING TUNNELING MICROSCOPE OBSERVATION OF EXTENDED PARTICLE TRACKS REVEALED BY OXIDATIVE ETCHING OF GRAPHITE IRRADIATED WITH 246 MeV Kr IONS, L.P. Biro, Z. Szabo, Research Institute for Technical Physics and Materials Science, 1525 Budapest, P.O.B. 49, Hungary, K. Havancsak, Institute for Solid State Physics, Eötvös University, 1117 Budapest, Pazmany P. setany 2, Hungary, J. Gyulai, Research Institute for Technical Physics and Materials Science, H-1525 Budapest, P.O.B. 49, Hungary

R-II/P5 LOW ENERGY ION IMPLANTATION AND HIGH ENERGY HEAVY ION IRRADIATION IN C60 THIN FILMS, K.L. Narayanan[(1)], M. Yamaguchi[(2)], N. Kojima[(2)], D.K. Avasthi[(1)] and D. Kanjilal[(1)], [(1)]Nuclear Science Centre, New Delhi 110 067, India, [(2)]Toyota Technological Insitute, 2-12-1 Hisakata, Tempaku, Nagoya 468 8511, Japan

R-II/P6 EFFECT OF SWIFT HEAVY ION IRRADIATION ON THE STRUCTURE AND MAGNETIC PROPERTIES OF Fe/Zr MULTILAYERS, A. Michel, C. Jaouen, J. Pacaud, Laboratoire de Métallurgie Physique, Université de Poitiers, SP2MI bd 2-Téléport 3, BP179, 86960 Futuroscope, France, C. Dufour, Laboratoire de Physique des Matériaux, Université de Nancy I, BP 239, 54506 Vandoeuvre Cedex, France, B. Gervais, CIRIL, BP 5133, 14070 Caen Cedex 05, France

R-II/P7 STRUCTURAL MODIFICATIONS IN AMORPHOUS Ge PRODUCED BY ION IMPLANTATION, I.D. Desnica-Frankovic[(1)], K. Furic[(1)], M.C. Ridgway[(2)] and C.J. Glover[(2)], [(1)]R. Boskovic Institute, Physics Department, Materials Physics Division, PO Box 1016, 10000 Zagreb, Croatia, [(2)]Department of Electronic Materials Engineering, Australian National University, Canberra, Australia

R-II/P8 HIGH FLUENCE ION BEAM MODIFICATION OF POLYMER SURFACE: EPR AND XPS STUDY, V. Popok, Department of Physics and Engineering Physics, Gothenburg University & Chalmers University of Technology, 41296 Gothenburg, Sweden, I. Azarko, V. Odzhaev, Physics Faculty, Belarusian State University, F. Skorina Av. 4, 220050 Minsk, Belarus, A. Toth, Chemical Research Centre of the Hungarian Academy of Science, Pusztaszeri ut 59-67, 1525 Budapest, Hungary, R. Khaibullin, Kazan Physical-Technical Institute, Sibirskij Trakt 10/7, 420029 Kazan, Russia

R-II/P9 LARGE AREA INDIUM-TIN-OXIDE (ITO) THIN FILM DEPOSITED BY A DUAL ION BEAM ASSISTED E-BEAM EVAPORATION SYSTEM, J.W. Bae, H.J. Kim, J.S. Kim, N.E. Lee and G.Y. Yeom. Dept. of Materials Engineering, Sungkyunkwan Univ., Suwon, Kyunggi-do 440-746, Korea

R-II/P10 STRESS-INDUCED PHASE TRANSITION IN THIN FILMS INFLUENCED BY ION IMPLANTATION, R.I. Grynszpan[(1,2)], J. Fradin[(1,3)], T. Thomé[(1,2)], W. Anwand[(4)], G. Brauer[(4)], J. Ligot [(5)], S. Benayoun [(5)] and J.J. Hantzpergue [(5)], [(1)]DGA-DCE-CTA, Dept. Lasers, Optics & Thermo-optics, Leptons Spectroscopy CNRS Cell, 16 bis, Ave. Prieur de la Côte d'Or, 94114 Arcueil, France, [(2)]LCMTR, UPR-CNRS 209, GLVT, 94230 Thiais, France, [(3)]SINUMEF, ENSAM, 151 Bd de l'Hôpital, 75013 Paris, France, [(4)]Forschungszentrum Rossendorf, Postfach 510119, 01314 Dresden, Germany, [(5)]LPMI, ENSAM, 2 Bd du Ronceray, 49035 Angers, France

R-II/P11 MODELING OF HYDROGEN PASSIVATION PROCESS OF SILICON FOR SOLAR CELLS APPLICATIONS, Z.T. Kuznicki, CNRS, Laboratoire PHASE (UPR 292), 67037 Strasbourg Cedex 2, France, R. Ciach, Institute of Metallurgy and Materials Science, Polish Academy of Science, Cracow, Poland, P. Gorley and M. Voznyy, Yu. Fedkovych Chernivtsi State University, Chernivtsi, Ukraine

R-II/P12 CEMS, AES AND XPS STUDY OF IRON FILMS AFTER SUCCESSIVE MULTI-ENERGY BORON AND NITROGEN IMPLANTATION, V.V. Uglov, Belarusian State University, F. Skorina av. 4, 220050 Minsk, Belarus, J.A. Fedotova, Belarusian State University, F. Skorina av. 4, 220050 Minsk, Belarus, J. Stanek, Jagiellonian University, Raymonta str. 4, 30-059 Cracow, Poland

R-II/P13 STUDY OF DLC FILMS BEFORE AND AFTER LOW ENERGY ELECTRON AND ION IRRADIATIONS, M. Silinskas, A. Grigonis, V. Kopustinskas, Physics Department, Kaunas University of Technology, Studentu str. 50, 3031 Kaunas, Lithuania, V. Sablinskas, Department of General Physics and Spectroscopy, VU, Sauletekio av. 9-3, 2040 Vilnius, Lithuania

R-II/P14 HEAVY ION INDUCED INTERMIXING OF METAL/SiC INTERFACES, R. Nagel[(1)], K. Weyrich[(2)], D.H.H. Hofmann[(2)], H. Hahn[(1)] and A.G. Balogh[(1)], [(1)]Materials Science Department, Thin Films Division, Darmstadt University of Technology, 64287 Darmstadt, Germany, [(2)]Institute for Nuclear Physics, Darmstadt University of Technology, 64289 Darmstadt, Germany

R-II/P15 ORIGIN AND GROWTH OF PHASES IN IMPLANTED TWO-LAYER FILMS, E.M. Shpilevsky, M.E. Shpilevsky and L.V. Baran, Belarusian State University, 4 Skorina av., 220050 Minsk, Belarus

R-II/P16 ELLIPSOMETRIC CHARACTERIZATION OF STAINLESS STEEL SURFACES TREATED BY DEUTERIUM PLASMA IONS, L.V. Poperenko[(1)], M.V. Vinnichenko[(1)], V.S. Voitsenya[(2)], A.F. Bardamid[(1)], [(1)]Physics Faculty, Kyiv Taras Shevchenko University, 64 Volodymyrska St., 01033 Kyiv, Ukraine, [(2)]Kharkov Institute of Physics & Technology, 310108 Kharkov, Ukraine

R-II/P17 CORRELATION BETWEEN DISTRIBUTION OF NITROGEN ATOMS IMPLANTED AT HIGH ENERGY AND HIGH DOSE AND NANOHARDNESS MEASUREMENTS INTO 316L STAINLESS STEEL, H. Pelletier, P. Mille, A. Cornet, Laboratoire d'Ingénierie des Surfaces de Strasbourg, 24, boulevard de la Victoire, 67000 Strasbourg, France, J.J. Grob, J.P. Stoquert, D. Muller, Laboratoire PHASE, CNRS UPR 232, 23, rue de Loess, BP 20CR, 67037 Strasbourg Cedex 2, France

R-II/P18 COMPUTER SIMULATION OF OSTWALD RIPENING FOR ION BEAM SYSNTHESIS OF BURIED LAYERS, T. Pohl, C. Hammerl, B. Rauschenbach, Institut für Physik, Universität Augsburg, Universtitätsstraße 1, 86159 Augsburg, Germany

R-II/P19 ION BEAM MODIFICATION OF THERMAL STRESS RESISTANCE OF MgO SINGLE CRYSTALS WITH DIFFERENT CRYSTALLOGRAPHIC FACES, V.N. Gurarie, P.H. Otsuka, D.N. Jamieson, School of Physics, MARC, University of Melbourne, Parkville VIC. 3052, J.S. Williams, M. Conway, Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, ANU, Canberra 0200, Australia

R-II/P20 ION BEAM INDUCED PREFERENTIAL REMOVAL OF OXYGEN FROM VANADIUM HYDRATES, V. Bondarenka, H. Tvardauskas, S. Grebinskij, S. Mickevicius, Z. Martunas, Semiconductor Physics Institute, A. Gostauto 11, 2600 Vilnius, Lithuania, V. Volkov, G. Zakharova, Institute of Solid State Chemistry, Pervomaiskaia 91, 620219 Yekateringburg, Russia

R-II/P21 SYNERGY OF THE NUCLEAR AND ELECTRONIC ENERGY DEPOSITON FOR THE DAMAGE KINETICS IN SiO_2 QUARTZ IRRADIATED BY MeV GOLD IONS, S.M.M. Ramos[(1)], H. Bernas[(2)], C. Clerc[(2)], B. Canut[(1)], J. Chaumont[(2)], C. Trautmann[(3)] and M. Toulemonde[(4)], [(1)]DPM Université Claude Bernard Lyon I, 69622 Villeurbanne Cedex, France, [(2)]CSNSM/IN2P3, 91405 Orsay Campus, France, [(3)]GSI/MF, 64291 Darmstadt, Germany, [(4)]CIRIL, BP 5133, 14070 Caen Cedex 2, France

R-II/P22 He^+ - IMPLANTATION AS EFFICIENT TECHNIQUE TO FABRICATE OPTICAL WAVEGUIDES IN BORATE MATERIALS (LTB, BBO, LBO) FOR FREQUENCY CONVERSION, C. Bakhouya[(1)], A. Boudrioua[(1)], P. Moretti[(2)], J.C. Loulergue[(1)] and K. Polgar[(3)], [(1)]Laboratoire Matériaux Optiques à Propriétés Spécifiques, (MOPS)/(CLOES), Université de Metz et Supélec, 2 rue E. Belin, Technopôle 2000, 57070 Metz Cedex 3, France, [(2)]Laboratoire de Physico-Chimie des Matériaux Luminescents, UMR CNRS N°5620, Université Claude Bernard, Lyon 1, France, [(3)]Research Institute for Solid State Physics and Optics of Hungrian Academy of Sciences, Hungary

R-II/P23 ION BEAM SYNTHESIS OF CARBIDES NITRIDES AND CARBONITRIDES IN TITANIUM ALLOYS : INVESTIGATIONS ON MICROSTRUCTUREAND MICROMECHANICAL PROPERTIES, M. Guemmaz[(1)], M. Maamache[(1)], A. Mosserand[(2)], J.J. Grob[(3)], [(1)]Dept de Physique, Université de Sétif, Algérie, [(2)]IPCMS-GSI, Strasbourg, France, [(3)]PHASE, Strasbourg, France

R-II/P24 INFLUENCE OF ION ENERGY ON TITANIUM OXIDE FORMATION BY VACUUM ARC DEPOSITION AND IMPLANTATION, S. Mändl, G. Thorwarth, D. Manova, B. Rauschenbach, Institut für Physik, Universität Augsburg, 86135 Augsburg, Germany

R-II/P25 AMORPHIZATION OF AlAs/GaAs SUPERLATTICES UPON ION IMPLANTATION, N.A. Sobolev, M.C. Carmo, Departament of Physics, University of Aveiro, 3810-193 Aveiro, Portugal, B. Breeger, E. Wendler, W. Wesch, Institute of Solid State Physics, Friedrich-Schiller-Universität, 07743 Jena, Germany, R. Hey, H.T. Grahn, Paul Drude Institute of Solid State Electronics, 10117 Berlin, Germany

R-II/P26 POSITRON IMPLANTATION PROFILES OF HE IMPLANTED 18 CARAT GOLD-SILVER ALLOY, T. Thomé[(1,2)], J. Fradin[(1,3)], R.I. Grynszpan[(1,2)], W. Anwand[(4)], G. Brauer[(4)], [(1)]DGA-DCE-CTA, Dept. Lasers, Optics & Thermo-optics, Leptons Spectroscopy CNRS Cell, 16 bis, Ave. Prieur de la Côte d'Or, 94114 Arcueil, France, [(2)]LCMTR, UPR-CNRS 209, GLVT, 94230 Thiais, France, [(3)]SINUMEF, ENSAM, 151 Bd de l'Hôpital, 75013 Paris, France, [(4)]Forschungszentrum Rossendorf, Postfach 510119, 01314 Dresden, Germany

R-II/P27 COMPUTER SIMULATION OF LOW-ENERGY ION IMPLANTATION WITH VISUAL OBSERVATION OF THE IMPLANTATION PROFILES, F.G. Djurabekova, F.F. Umarov, S.V. Yugay, Institute of Applied Physics of the National State University, Tashkent 700095, Uzbekistan

R-II/P28 THREE DIMENSIONAL KINETIC LATTICE MONTE-CARLO SIMULATIONS OF ION EROSION OF FCC(111) SURFACES, M. Strobel[(1,2)], K.-H. Heinig[(1)], T. Michely[(2)], [(1)]Forschungszentrum Rossendor, P.O. Box 510119, 01311 Dresden, Germany, [(2)]I. Physikalisches Institut, RWTH Aachen, 52056 Aachen, Germany

R-II/P29 STRUCTURAL AND MAGNETIC STUDIES OF CoCu GRANULAR ALLOY OBTAINED BY ION IMPLANTATION OF Co IN A Cu LAYER, H. Errahmani, A. Berrada, Faculté des Sciences de Rabat, B.P. 1014, Rabat, Maroc, S. Colis, G. Schmerber and A.Dinia, IPCMS-GEMME (UMR 7504 du CNRS), 23 rue du Loess, 67037 Strasbourg, France, D. Muller**,** Laboratoire PHASE (UPR292 du CNRS), BP 20, 67037 Strasbourg, France

R-II/P30 Cancelled

R-II/P31 KINETICS OF ION BEAM SYNTHESIS FOR $CoSi_2$ IN Si, M.-O. Ruault[(1)], A. Volkov[(2)], H. Bernas[(1)] and V. Borodin[(2)], [(1)]Centre de Spectromètrie Nucléaire et Spectrométrie de Masse, CNRS-IN2P3, Bât. 108, 91405 Orsay Campus, France, [(2)]RRC Kurtchatov Institute, 123182 Moscow, Russia

R-II/P32 THE DRESDEN EBIT: AN ION SOURCE FOR MATERIAL SCIENCES AND TECHNOLOGICAL APPLICATIONS OF LOW ENERGY HIGHLY CHARGED IONS, F. Groflmann1, S. Landgraf, V.P. Ovsyannikov1,2, F. Ullmann1, T. Werner, G. Zschornack, Technische Universit‰t Dresden, Institut f¸r Kern- und Teilchenphysik, Mommsenstr. 13, 01069 Dresden, Germany, 1 LEYBOLD Systems + Service GmbH, ZurWetterwarte 50, 01109 Dresden, Germany, 2 Joint Institute for Nuclear Research Dubna, Russia

Friday June 2, 2000 — Morning
Vendredi 2 juin 2000 — Matin

Session IX - Ion Beam Modification and Deposition
Chairperson: J.K.N. Lindner

R-IX.1 9:00 **Invited** PATTERN FORMATION ON SURFACES BY ION IRRADIATION, **E. Chason**, Brown University, Providence RI, USA, M.J. Aziz and J. Erlebacher, Harvard U., Cambridge MA, USA, J.A. Floro and M.B. Sinclair, Sandia National Laboratories, Albuquerque NM, USA

R-IX.2 9:40 SELF ORGANIZED QUANTUM DOT FORMATION ON SEMICONDUCTOR SURFACES BY ION SPUTTERING, T. Bobek, S. Facsko, T. Dekorsy, H. Kurz, Institut fuer Halbleitertechnik II, RWTH-Aachen, 52056 Aachen, Germany

10:00 **BREAK**

Chairperson: E. Chason

R-IX.3 10:30 **Invited** ION IRRADIATION-INDUCED PLASTIC DEFORMATION OF COLLOIDAL PARTICLES, T. van Dillen[(1)], E. Snoeks[(1)], W. Fukarek[(2)], M.L. Brongersma[(1)], A. van Blaaderen[(1,3)] and **A. Polman**[(1)], [(1)]FOM-Institute AMOLF, Amsterdam, The Netherlands, [(2)]Research Center Rossendorf, Germany, [(3)]Debye Institute, Utrecht University, The Netherlands

R-IX.4 11:10 SHAPE EVOLUTION OF OXIDIZED V-GROOVES ON (001) Si DURING HIGH-DOSE ION IMPLANTATION, T. Müller, K.-H. Heinig, B. Schmidt, A. Mücklich, W. Möller, Research Center Rossendorf, Institute of Ion Beam Physics and Materials Research, PO Box 510119, 01314 Dresden, Germany

R-IX.5 11:30 ION BEAM DOPING AND EPITAXIAL REGROWTH OF α-QUARTZ, F. Roccaforte*, F. Harbsmeier, S. Dhar, K.P. Lieb, II. Physikalisches Institut and SFB345, Universität Göttingen, Bunsenstraße 7-9, 37073 Göttingen, Germany, *Present address: Dipartimento di Fisica, Universita di Catania, corso Italia 57, 95129 Catania, Italy

R-IX.6 11:50 RECENT PROGRESS OF MASS-SEPARATED LOW-ENERGY ION BEAM DEPOSITION STUDIES AIMED AT ION-ASSITED FILM GROWTH MECHANISM, Kiyoshi Miyake, Saitama University, Urawa, Saitama 338-8570 Japan

R-IX.7 12:10 MONTE CARLO SIMULATION OF MASKED ION DAMAGE PROFILES IN $YBa_2Cu_3O_{1-\delta}$ THIN FILMS N. Peng[(1)], C. Jeynes[(1)], R. Webb[(1)], I. Chakarov[(2)], W. Booij[(3)], M. Blamire[(3)] and M. Kelly[(1)], [(1)]Surrey Centre for Research in Ion Beam Applications, School of Electronic Engineering, Information Technology and Mathematics, University of Surrey, Guildford GU2 5XH, UK, [(2)]SILVACO Internationla, Santa Clara CA 95054, USA, [(3)]IRC in Superconductivity, University of Cambridge, Cambridge CB3 0HE, UK

R-IX.8 12:30 CRYSTALLIZATION EFFECTS AND DIAMOND FORMATION IN AMORPHOUS CARBON FILMS AFTER LOW ENERGY ION BEAM IRRADIATION, P. Patsalas and S. Logothetidis, Department of Physics, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece

END OF SYMPOSIUM R.