EXMATEC 2018

EXPERT EVALUATION AND CONTROL OF COMPOUNDS OF SEMICONDUCTOR MATERIALS AND TECHNOLOGIES

BUCHAREST, ROMANIA, 16-18 MAY 2018

PROGRAM

Wednesday **16 May 2018**	**Thursday** **17 May 2018**	**Friday** **18 May 2018**
WOCSDICE + EXMATEC	**EXMATEC**	**EXMATEC**
08:30 – 09:00 EXMATEC Registration 09:00 – 09:15 Welcome to EXMATEC 2018 (Mircea Dragoman, Conference Chairman) 09:15 – 10:15 **WOCSDICE Invited papers** (Alexandru Muller, Romania; Ikuo Soga, Japan) 10:15 – 11:15 **THZ ELECTRONICS (WOCSDICE)** *Chair: Hans Hartnagel, Germany* 11:15 – 11:30 **Coffee break** 11:30 – 12:30 **ADVANCED MATERIALS AND APPLICATIONS III (WOCSDICE)** *Chair: Alexandru Muller, Romania* 12:30 – 14:00 **Lunch** 14:00 – 15:00 **EXMATEC Invited papers** (Robert Czernecki, Poland; Giuseppe Greco, Italy) 15:00 – 16:40 **GROWTH AND PROCESSING OF SEMICONDUCTORS AND OXIDES I (EXMATEC)** *Chair: Dimitris Pavlidis, USA* 19:00 – **EXMATEC Welcome Cocktail**, GRAND HOTEL CONTINENTAL, Concerto Restaurant	10:00 – 10:30 **Invited paper** (Jean-Michel Chauveau France) 10:30 – 11:30 **GROWTH AND PROCESSING OF SEMICONDUCTORS AND OXIDES II** *Chair: Magdalena Ciurea, Romania* 11:30 – 11:45 **Coffee break** 11:45 – 12:15 **Invited paper** (Bruno Daudin, France) 12:15 – 13:15 **CHARACTERISATION OF SEMICONDUCTORS AND OXIDES I** *Chair: Bruno Daudin, France* 13:15 – 14:00 **Lunch** 14:00 – 15:40 **CHARACTERISATION OF SEMICONDUCTORS AND OXIDES II** *Chair: Gheorghe Brezeanu, Romania* 16:00 – 19:00 **Bucharest City Guided Tour** 19:00 – **EXMATEC Gala Dinner**, "Casa Doina" Restaurant	09:00 – 09:30 **Invited paper** (Béla Pécz, Hungary) 09:30 – 10:30 **CHARACTERISATION OF SEMICONDUCTORS AND OXIDES III** *Chair: Raluca Müller, Romania* 10:30 – 10:45 **Coffee break** 10:45 – 12:15 **CHARACTERISATION OF SEMICONDUCTORS AND OXIDES IV** *Chair: Cornel Cobianu, Romania* 12:15 – 12:30 **Concluding remarks** 12:30 – 13:30 **Lunch**

	Wednesday, 16 May
	WOCSDICE + EXMATEC 2018
08:30 – 09:00	**EXMATEC Registration**
09:00 – 09:15	**Welcome to EXMATEC 2018** Mircea Dragoman, Conference Chairman
	WOCSDICE INVITED PAPERS
09:15 – 09:45	**GaN SAW based sensors manufactured by micromachining and nanoprocesing of of GaN/Si** Alexandru Muller, National Institute for R&D in Microtechnologies - IMT Bucharest, Romania
09:45 – 10:15	**MM-W and THz Circuitry Designs Based on InP and CMOS** Ikuo Soga[1]*, Yoichi Kawano[1] 1 Devices & Materials Laboratory, Fujitsu Laboratories Limited
	THZ ELECTRONICS I (WOCSDICE) *Chair: Hans Hartnagel, Germany*
10:15 – 10:35	**Resonant tunneling hard-type oscillators having a Schottky diode trigger circuit for stable and large voltage swing operation** Koichi Maezawa*, Motoyuki Yoshida, Masayuki Mori 1 Graduate School of Science and Engineering, University of Toyama
10:35 – 10:55	**Near-ultraviolet avalanche photodetectors based on bulk ZnSe** Hans L. Hartnagel[1]*, Vadim P. Sirkeli[1,2], Oktay Yilmazoglu[3], Ahid S. Hajo[1], Natalia D. Nedeoglo[4], Dmitrii D. Nedeoglo[4], Sascha Preu[1], and Franko Küppers[1] 1 Institut für Mikrowellentechnik und Photonik, Technische Universität Darmstadt, Darmstadt, Germany; 2 Comrat State University, Comrat, Moldova; 3 Department of High Frequency Electronics, Technische Universität Darmstadt, Darmstadt, Germany; 4 Moldova State University, Chisinau, Moldova
10:55 – 11:15	**A novel mechanical tuning element for SIW applications** Valentin Buiculescu, Ioana Zdru, *National Institute for R&D in Microtechnologies - IMT Bucharest, Romania*
11:15 – 11:30	**Coffee break**
	ADVANCED MATERIALS AND APPLICATIONS III (WOCSDICE) *Chair: Alexandru Muller, Romania*
11:30 – 11:50	**Effect of silicon surface cleaning on reliability of ALD HfO2 films deposited from Tetrakis(dimethylamino)hafnium (TDMAH)** Cornel Cobianu[1,2], Florin Nastase[1,2], Octavian Buiu[1,2], Bogdan Serban[1,2], Florin Comanescu[1], Raluca Gavrila[1], Cosmin Romanitan[1], Octavian Ionescu[1,2]; 1.National Institute for Research and Development in Microtechnologies - IMT Bucharest, ROMANIA, 2.Research Centre for Integrated Systems, Nanotechnologies and Carbon Based Nanomaterials (CENASIC) - IMT Bucharest, ROMANIA

	Wednesday, 16 May
	WOCSDICE + EXMATEC 2018
11:50 – 12:10	**Comparative study of structural and optical properties of Sm and La doped ZnO** P. Pascariu[1], I. V. Tudose[2], C. Pachiu[3], M. Danila[3], R. Gavrila[3], E. Koudoumas[2], Mirela Suchea [2,3]* 1 ”Petru Poni” Institute of Macromolecular Chemistry, Iaşi, Romania; 2 Technological Educational Institute of Crete, Heraklion, Greece 3 National Institute for Research and Development in Microtechnologies - IMT Bucharest, Bucharest, Romania
12:10 – 12:30	**Semiconducting metal oxides for ammonia and aliphatic amines gas sensing. A novel HSAB interaction paradigm** B. C. Serban[1]*, O. Buiu[1], O. Ionescu[1], C. Cobianu[1], M. Brezeanu[2] 1 National Institute for Research and Development in Microtechnologies - IMT Bucharest, Romania; 2 University Politehnica of Bucharest, Romania
12:30 – 14:00	**Lunch**
	EXMATEC INVITED PAPERS
14:00 – 14:30	**Influence of hydrogen on InGaN quantum well MOVPE growth** Robert Czernecki[1,2*], E. Grzanka[1,2], J. Smalc-Koziorowska[1,2], S. Grzanka[1,2], M. Leszczynski[1,2]; [1]Institute of High Pressure Physics of the Polish Academy of Sciences, Poland; [2]TopGaN Ltd., Poland
14:30 – 15:00	**Ohmic metallizations for GaN-based devices** Giuseppe Greco[1]*, F. Iucolano[2], F. Roccaforte[1]; [1]Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy; [2]STMicroelectronics, Italy
	GROWTH AND PROCESSING OF SEMICONDUCTORS AND OXIDES I (EXMATEC) *Chair: Dimitris Pavlidis, USA*
15:00 – 15:20	**Preparation of ZnO:Al thin films by helicon wave excited magnetron sputtering method** Shizutoshi Ando*, T. Namba, Tokyo University of Science, Japan
15:20 – 15:40	**Oxide-free, electrically-conductive semiconductor interfaces fabricated by room temperature covalent direct bonding** Viorel Dragoi*, C. Flötgen, N. Razek, EV Group E. Thallner GmbH, Austria
15:40 – 16:00	**Atomic layer etching of AlGaN** Sebastien Aroulanda[1,2]*, O. Patard[1], N. Defrance[2], P. Altuntas[1], N. Michel[1], J. Pereira[1], P. Gamarra[1], C. Lacam[1], S. L. Delage[1], J.-C. de Jaeger[2], C. Gaquiere[2], [1]III-V Lab, France ; [2]Institut d’Electronique, de Microélectronique et de Nanotechnologie, France
16:00 – 16:20	**MOCVD growth of thick InxAl1-xN (0.37 ≤ x ≤ 0.40) layer** Prerna Chauhan[1]*, S. Hasenöhrl[1], E. Dobročka[1], J. Kuzmík[1]; [1]Institute of Electrical Engineering, Slovak Academy of Sciences, Slovak Republic
16:20 – 16:40	**Nanoscale electrical characterization of graphene Schottky contacts onto AlGaN/GaN heterostructures** Giuseppe Greco[1*], E. Schilirò[1], S. Di Franco[1], R. Lo Nigro[1], F. Roccaforte[1], F. Giannazzo[1], F. Iucolano[2], S. Ravesi[2], P. Prystawko[3], P. Kruszewski[3], M. Leszczyński[3], R. Dagher[4], E. Frayssinet[4], A. Michon[4], Y. Cordier[4]; [1]Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy, [2]STMicroelectronics, Italy; [3]TopGaN, Poland; [4]Université Côte d’Azur, CNRS, CRHEA, France
19:00 – 21:00	**EXMATEC Welcome Cocktail**, GRAND HOTEL CONTINENTAL, Concerto Restaurant

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	EXMATEC 2018
10:00 – 10:30	**INVITED PAPER** **(Mg)ZnO heterostructures** Jean-Michel Chauveau, CNRS – CRHEA (Centre de Recherche sur l'Hétéro-Epitaxie et ses Applications), France
	GROWTH AND PROCESSING OF SEMICONDUCTORS AND OXIDES II *Chair: Magdalena Ciurea, Romania*
10:30 – 10:50	**Deposition and characterization of aluminum oxide, aluminum nitride and aluminum oxynitride thin films on silicon substrates** Piotr Firek*, A.Veklych, M.Sochacki, Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland
10:50 – 11:10	**Impact of Growth Temperature and Oxygen partial pressure variation on Gd_2O_3 growth over Si (001) substrate using Pulse Laser Deposition Technique** Sudipta Das[1*], K. R. Khiangte[2], Jaswant S. Rathore[2], S. Mahapatra[2], A. Laha[3]; [1]Centre for Research on Nano Technology and Science (CRNTS), [2]Department of Physics, [3]Department of Electrical Engineering
11:10 – 11:30	**Preparation of Iron-Oxide Thin Films by the Coating Thermal Decomposition Method Using Iron Naphthenate** Takashi Yamamoto[a], Felicia Iacomi[b], Shizutoshi Ando[a]; [a]Tokyo University of Science, Japan; [b]“Alexandru Ioan Cuza” University of Iasi, Romania
11:30 – 11:45	**Coffee break**
11:45 – 12:15	**INVITED PAPER** **III-N nanowires: from growth to a new generation of optoelectronical devices** Bruno Daudin, CEA-Grenoble, INAC PHELIQS/NPSC-Quantum Photonics, Electronics and Engineering, France
	CHARACTERISATION OF SEMICONDUCTORS AND OXIDES I *Chair: Bruno Daudin, France*
12:15 – 12:35	**Identification of DC stress sensitive locations in 100 nm T-gate AlGaN/GaN HEMTs via Electroluminescence Microscopy** Martina Baeumler[1*], M. Dammann[1], P. Brückner[1], T. Kemmer[1], H. Konstanzer[1], R. Quay[1], M. Simon-Najasek[2], A. Graff[2]; [1]Fraunhofer Institute for Applied Solid State Physics, Germany; [2]Fraunhofer Institute of Microstructure of Materials and Systems, Germany
12:35 – 12:55	**On the origin of buried defects in GaN on Silicon** Yvon Cordier*, R. Comyn, O. Tottereau, M. Portail, M. Nemoz; Université Côte d’Azur, CNRS, CRHEA, FRANCE
12:55 – 13:15	**Cross-section imaging of SiC layers and devices** M. Kayambaki[1], N. Makris[1], K. Tsagaraki[1], K. Zekentes[1*]; [1]MRG-IESL/ FORTH, Greece

	Thursday, 17 May
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13:15 – 14:00	**Lunch**
	CHARACTERISATION OF SEMICONDUCTORS AND OXIDES II *Chair: Gheorghe Brezeanu, Romania*
14:00 – 14:20	**Direct evidence of the impact of surface charges in InAlGaN/GaN epi-wafers with sub-10 nm barriers** Nadia EL BONDRY[1*], P. Gamarra[1], C. Lacam[1], Jean-Claude Jacquet[1], Y. Cordier[2]; [1]III-V Lab, Thales Research and Technology, France; [2]CRHEA, France
14:20 – 14:40	**InGaN decomposition studied using X-ray Diffraction and Photoluminescence** E. Grzanka[1,2], R. Czernecki[1,2], J. Smalc-Koziorowska[1,2], G. Staszczak[1], J. Domagala[3], S.Kret[3], V. Holy[4], Mike Leszczynski[1,2,*]; [1]Institute of High Pressure Physics PAS, Poland, [2]TopGaN Ltd., Poland, [3]Institute of Physics PAS, Poland, [4]CEITEC, Masaryk University, Czech Republic, [5]Charles University in Prague, Czech Republic
14:40 – 15:00	**Comparative study on non-recessed Au-free Ti- and Ta-based Ohmic contacts on AlGaN/GaN heterostructures** Monia Spera[1,2,3,*], G. Greco[1], R. Lo Nigro[1], C. Bongiorno[1], S. Di Franco[1], P. Badalà[4], F. Iucolano[4] , M. Krysko[5], M. Leszczynski[5], F. Giannazzo[1,] F. Roccaforte[1]; [1]Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy, [2]University of Catania, Italy, [3]University of Palermo, Italy, [4]STMicroelectronics, Italy, [5]Institute of High Pressure Physics - PAS, Poland
15:00 – 15:20	**Characterization of the recessed-gate channel in hybrid GaN MISHEMTs** Fabrizio Roccaforte[1*], G. Greco[1], F. Giannazzo[1], S. Reina[2], A. Parisi[2], F. Iucolano[2], P. Fiorenza[1]; [1]Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM), Italy, [2]STMicroelectronics, Italy
15:20 – 15:40	**A proved concept of independent control of interface state density and dielectric strength developed for SiC MOSFET technology** Mariusz Sochacki*, K. Krol, N. Kwietniewski, A.Taube, M. Waskiewicz, J. Szmidt, Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Poland
16:00 – 19:00	**Bucharest City Guided Tour**
19:00 – 22:00	**EXMATEC Gala Dinner**, “Casa Doina” Restaurant

	Friday, 18 May
	EXMATEC 2018
09:00 – 09:30	**INVITED PAPER** **Characterization of materials and interfaces in compound semiconductors by transmission electron microscopy** Béla Pécz, Institute of Technical Physics and Materials Science, Hungarian Academy of Sciences Centre for Energy Research, Hungary
	CHARACTERISATION OF SEMICONDUCTORS AND OXIDES III *Chair: Raluca Müller, Romania*
09:30 – 09:50	**TEM study of epitaxial W2C layer formation on the 4H-SiC surface** Valentin Teodorescu[1]*, C. Ghica[1], A. V. Maraloiu[1], A. Mihaila[2], L. Knoll[2], R. Minamisava[2,3], [1]National Institute of Materials Physics, Romania, [2]ABB
09:50 – 10:10	**Impurity complexes effects in tuning optical, transport and magnetic properties of N doped (Li/Cu/Mn/Ga):ZnO films** Rodica Plugaru[1]*, C. Romanitan[1], I. Mihalache[1], A. Istrate[1], N. Plugaru[2], L.C. Tanase[2], C.M. Teodorescu[2], [1]National Institute for R&D in Microtechnologies - IMT Bucharest, Romania, [2]National Institute of Materials Physics, Romania
10:10 – 10:30	**GeSn nanocrystals in GeSn-SiO_2 composite films obtained by magnetron sputtering deposition** A.Slav[1], M. Braic[2], V.S. Teodorescu[1], C. Palade[1], A. Lepadatu[1], I. Stavarache[1], M.P. Prepelita[3], C Logofatu[1], S. Lazanu[1], M.L. Ciurea[1], Toma Stoica[1]*; [1]National Institute of Materials Physics, Romania, [2]National Institute for Optoelectronics, Romania, [3]National Institute for Laser, Plasma and Radiation Physics, Romania
10:30 – 10:45	**Coffee break**
	CHARACTERISATION OF SEMICONDUCTORS AND OXIDES IV *Chair: Cornel Cobianu, Romania*
10:45 – 11:15	**Ge NCs in HfO_2 for floating gate dosimeter capacitor** Catalin Palade[1]*, A. Slav[1], I. Dascalescu, A.-M. Lepadatu[1], I. Stavarache[1], T. Stoica[1], M.L. Ciurea[1], S. Lazanu[1]; [1]National Institute of Materials Physics, Romania
11:15 – 11:35	**Photosensing of Ge-TiO_2 nanocrystalline films assisted by gating and surface photovoltage** C. Palade[1], A.-M. Lepadatu[1], A. Slav[1], I. Dascalescu[1], M. Enculescu[1], S. Iftimie[2], S. Lazanu[1], V. S. Teodorescu[1], T. Stoica[1], Magdalena L. Ciurea[1*]; [1]National Institute of Materials Physics, Romania, [2]University of Bucharest, Romania
11:35 – 11:55	**Electrospinning fabricated novel graphene and TiO2 - PVDF nanocomposites** P. Pascariu[1], I. V. Tudose[2], C. Pachiu[3], M. Danila[3], O. Ionescu[3], B. Bita[3], E. Koudoumas[2], Mirela Suchea[2,3*]; [1]"Petru Poni" Institute of Macromolecular Chemistry, Romania; [2]Technological Educational Institute of Crete, Heraklion, Greece; [3]National Institute for Research and Development in Microtechnologies - IMT-Bucharest, Romania
11:55 – 12:15	**Structural changes and defects investigation by Raman spectroscopy in CVD grown graphene and transferred on silicon substrate** Florin Comanescu*, A. Istrate, B. Tincu, M. Purica, National Institute for R&D in Microtechnologies - IMT Bucharest, Romania
12:15 – 12:30	**Concluding remarks**
12:30 – 13:30	**Lunch**