

WOCSDICE - EXMATEC 2023

TIME	21 st May	22 nd May	23 rd May	24 th May	25 th May					
08:30		Registration	4H-SiC device technology <i>Session Chairs: F. Giannazzo, F. La Via</i>		GaN devices & technology <i>Session Chairs: G. Greco, Y. Cordier</i>					
08:40			Conference Opening	Marilena Vivona (Invited)		Recent trends in Schottky barriers for energy efficient silicon carbide power devices	Joana Catarina Mendes (Invited)	Improving the performance of GaN HEMTs with diamond		
08:50		Marco Mauceri		200 mm Silicon Carbide Epitaxy		HEMTs Technology II <i>Session Chairs: E. Zanoni, E. Piner</i>	Youssef Hamdaoui	High quality drift layer thickness scaling in vertical GaN-on-Silicon PIN diodes		
09:00			HEMTs Technology I <i>Session Chairs: F. Medjdoub, P. Fiorenza</i>				Yvon Cordier (Invited)	Past and new trends in the hetero-epitaxy of III-Nitrides for power devices	Sung-Hoon Lee	Design Methodology of Trench MIS Field Plate for GaN Vertical PN Diode
09:10		Srabanti Chowdhury (invited)	Making GaN more efficient with avalanche and thermal management			Alfio Samuele Mancuso			Hydrogen etching process of 4H-SiC (0001) in limited regions	Mahmoud Abou Daher
09:20			Aleš Chvála	Characterization of Electrical Properties of Power SiC Schottky Diodes		Reda Elwaradi	Epitaxial growth of AlGaIn/GaN HEMTs on patterned Si substrate for high voltage power switching application	Seiya Kawasaki	Fabrication of GaN Hi-Lo IMPATT diode	
09:30			Kei Sakota	Design of high-Al-content AlGaIn/GaN HEMTs for improved DC and RF operation		Patrick Fiorenza	Time Dependent Dielectric Breakdown in 4H-SiC power MOSFETs under positive and negative gate-bias and gate-current stresses at 200°C	Vanya Darakchieva	Tuning composition in graded channel and high-Al content AlGaIn barrier HEMTs	Pawel Prystawko
09:40		Elodie Carneiro	Comparison of Sub-Micron thick AlGaIn/GaN and AlIn/GaN HEMTs on Silicon for RF applications	Bruno Galizia		Al ₂ O ₃ /AlN dielectric stacks for silicon carbide (4H-SiC) by Thermal and Plasma-Enhanced ALD growth	Etienne Nowak	Recent Achievements in Recessed Gate MOS-channel HEMT Technology	Zihao Lyu	Exploring the Effectiveness of Ni/ITO Ohmic Contact on p-Type GaN
09:50		Hossein Yazdani	Towards More Efficient Ka-band Power Cells: Low-Resistive Gate Module for RF GaN- HFETs by Electroplating	Carmen Altana		Heavy ions radiation damage on silicon and silicon carbide detectors	Joel T. Asubar	Threshold voltage control in GaN-based MIS-HEMTs with recessed structure and regrown AlGaIn barrier layers	Camille Sonneville	Micro-Raman characterization of vertical GaN Schottky and PN diodes
10:00		Kathia Harrouche	Pushing Q-band power performances by means of buffer engineering in AlN-GaN HEMTs	Francesca Migliore		Response of epitaxial layer of 4H-SiC to β-rays and X-rays irradiation	Jun-Hyeok Yim	Normally-off AlGaIn/GaN MIS-HFET with AlN Passivation	Héctor Sánchez-Martín	Trap-related slow transient effects in AlGaIn/GaN nanochannels at low temperature
10:10		Ryota Ochi	Influence of the parallel conduction on the current non-linearity of GaN based MIS-HEMTs in the forward bias region	Scott Greenhorn		4H-SiC N-P-N Epitaxial and Implanted Junctions for isolation in Neural Interfaces			Dimitris Pavlidis	Vertical top-down GaN Nanowire Field Emitters with an Integrated Air-Bridge Anode Approach
10:20										
10:30 - 11:00			Coffee Break	Coffee Break		Coffee Break	Coffee Break			

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11:00		Nitrides materials & defects <i>Session Chairs: M. Leszczynski, E. Iliopoulos</i>		UWBG: Ga2O3 & ZnO <i>Session Chairs: S. Besendoerfer, F. Lloret</i>		UWBG: AlN & Diamond <i>Session Chairs: S. Rajan, B. Pecz</i>		Packaging and Applications of SiC & GaN devices <i>Session Chairs: C. Giacomia, A. Chvala</i>		
11:10		Stefano Leone (Invited)	Status and Perspectives of AlScN Materials Grown by MOCVD	Siddharth Rajan (invited)	Device Engineering for Ultra-Wide Bandgap Semiconductors	Oliver Williams (invited)	Diamond Integration with non-diamond materials	Nadia Lecci	How to exploit the intrinsic GaN technology features: application hints and integrated solutions performance evaluation	
11:20								Gregorio Iuzzolino	GaN based devices integration in the electric vehicle world	
11:30		Yvon Cordier	Evaluation of the electrical properties of ScAlN/GaN HEMTs grown by ammonia source molecular beam epitaxy	Georges Brémont	Demonstration of a p/n junction behaviour using space charge spectroscopy in Zn:β-Ga2O3 grown by MOCVD	Beatriz Soto Portillo	ZrO2/diamond-based deep depletion MOSFET: electro-optical control of the threshold voltage	Daniele Scirè	Comparison between SiC and GaN switching devices in fast-recharging systems for electric vehicles	
11:40		Alice Hospodková	Improvement of Electron Transport Properties in 2DEG below AlGaN/GaN interface by V-pit formation	Filip Tuomisto	Electrical compensation and vacancy defects in Si doped β-(Al,Ga)2O3	Fernando Lloret	Effect of methane on phosphorus and nitrogen co-doped CVD diamond growth	Giacomo Scelba	Performance Evaluation of GaN Technology on MultiLevel Inverters for Electric Traction Systems	
11:50		Matej Matus	Electrically Active Defects in InAlGaN/GaN HEMT structures	Marcell Gajdics	Study of the annealing-induced crystallization of Ga2O3 prepared by radio frequency sputtering	Joana C. Mendes	CVD diamond electrodes for in vitro electrophysiological sensing devices	Giuseppe Galieto	GaN and SiC devices' input capacitance experimental characterization	
12:00		Piotr Kruszewski	The Effect of Electric-Field Enhancement of Electron Emission Rates for Deep-Level Traps in n-type GaN	Carlos García Nuñez	Optimizing the Piezoelectric Response of Zinc Oxide Thin Films through Plasma Coating Deposition	Sven Besendörfer (invited)	AlN for next generation power devices: from crystal growth to epitaxy	Vincenzo Vinciguerra	Using ANSYS Finite Elements Analysis to Calculate the Equivalent Thickness of a Taiko Wafer	
12:10		Roger A. Peña	Temperature analysis of reverse leakage current hysteresis in GaN Schottky Barrier Diodes	Manuel Pelayo Garcia	On the quasi-static measurements of piezoelectric coefficient in semiconductor thin films for ultrasonic sensors			Giuseppe Bellomonte	Corrosion study for RF power GaN HEMT in FO-WLP packaging	
12:20		Lucía Nieto Sierra	Study of AlN piezoelectric thin films deposited by reactive DC magnetron sputtering							
12:30-14:00			Light Lunch	Light Lunch	Light Lunch	Light Lunch	Light Lunch	Light Lunch	Light Lunch	
14:00			Other III-V compounds <i>Session Chairs: D. Pavlidis, K. Zekentes</i>		HEMTs Reliability <i>Session Chairs: G. Meneghesso, H.J Würfl</i>		Nitrides Quantum Wells <i>Session Chairs: S. Leone, P. Prysawko</i>		Industrial Session <i>Session Chairs: F. Roccaforte</i>	
14:10		Lorenzo Faraone	Dislocation filtering technology for defect reduction in heteroepitaxially-grown semiconductors	Enrico Zanoni (invited)	Microwave and millimeter-wave GaN HEMTs: impact of epitaxial structure on short-channel effects, electron trapping and reliability	David Cooper (invited)	Field mapping of IIIV semiconductor devices by off-axis electron holography	Ferdinando Iucolano (Keynote)	STMicroelectronics, Italy	GaN on Si Power and RF Technology: Devices and Application
14:20		Jonathan Hall	Logic Without CMOS: A III-V Semiconductor, Single Charge Carrier Approach to Digital Logic							
14:30		Vladimir Drakinsky	Integrated Schottky Diode Mixer Technology up to 5 THz							
14:30	Pablo Caño	Room temperature photoluminescence of dilute (GaAs)1-x(Ge2)x ternary alloys	Giuseppe Greco	Correlation between gate current transport and degradation mechanisms in p-GaN-gate HEMTs	Eleftherios Iliopoulos	Surface kinetics mechanisms in RF-MBE epitaxy of InGaN alloys: The relative role of adsorption and decomposition concerning the entire ternary range	Sébastien Sicre (Keynote)	Infineon Technologies, Austria	Characterization and model of dynamic R _{DS(on)} drift of normally-off power GaN HEMTs	
14:40	Gilberto A. Umama Membreno	High-Resolution Mobility Spectrum Analysis of Electronic Transport in InAs/GaSb type-II Superlattices for Infrared Sensing Applications	Myeongsu Chae	Temperature dependence of the threshold voltage instability in normally-off AlGaN/GaN HEMTs with p-GaN gate	Mike Leszczynski	Diffusion of magnesium and silicon in AlGaN layers				
14:50	Gizem Acar	Enhancing the efficiency of type-II GaSb quantum ring devices at telecommunication wavelengths using cavity effects	Giuseppe Luongo	Gate Leakage Transport Mechanism Analysis for p-GaN Power HEMTs	Ewa Grzanka	Temperature induced structural and optical changes in InGaN/GaN Quantum Wells				
15:00	Samuel Jones	Distributed Bragg Reflectors for GaSb/GaAs Quantum-Ring Vertical-Cavity Surface-Emitting Lasers Targeting Telecommunications and Sensing	Maurizio Moschetti	Temperature Effect on RON-degradation induced by Off-state Drain Voltage Stress	Marco Nicoletto	InGaN/GaN Multiple Quantum Wells solar cells: a trade-off in p-GaN thickness, to optimize reliability and quantum efficiency	Student Awards Cerimony & Closing Remarks			
15:10	Nima Dehdashtikhavan	High performance HgCdTe short-wave infrared detectors for emerging sensing and imaging applications	Giovanni Giorgino	Improved High Temperature Behaviour of On-Resistance in 100V p-GaN HEMTs	Mikolaj Grabowski	The influence of point defects present in the substrates with different TDD after ion implantation on InGaN/GaN QWs properties and stability at high temperatures				
15:20	Xiuxin Xia	An Optimised Fabrication Flow for Scaling of ULTRARAM™ Devices	Nicolò Zagni	Modelling and Simulation of ON-Resistance Instability due to Gate Bias in p-GaN Power HEMTs	Hoi Wai Choi	Integration of GaN-based optoelectronic devices with Si-based integrated circuits				

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15:30 - 16:00		Coffee Break		Cristina Miccoli Dynamic RDS-on degradation analysis on power GaN HEMT by means of TCAD simulations and experimental measurement.	Coffee Break		
16:00		2D Materials <i>Session Chairs: J.C. Mendes, J. Sun</i>		Coffee Break		Cubic Silicon Carbide (3C-SiC) <i>Session Chairs: D. Alquier, M. Vivona</i>	
16:10		Sebastian Pazos (Invited)	Hexagonal boron nitride as two-dimensional functional layered insulator: from fundamentals to true random number generation	Excursion and Social dinner		Jean-François Michaud (Invited)	3C-SiC MEMS for gas detection
16:20		Béla Pécz	Highly uniform MoS2 heterojunctions with bulk GaN by sulfurization of ultrathin MoOx film			Francesco La Via	Measurement of residual stress, Young's modulus and beam resonator Q factor on micromachined monocrystalline 3C-SiC layers grown on <111> silicon
16:30		Filippo Giannazzo	Towards large area MoS2 heterostructures with epitaxial graphene on SiC			Viviana Scuderi	Effect of stress on 3C-SiC resonator by Raman spectroscopy.
16:40		Salvatore Ethan Panasci	Highly crystalline monolayer MoS2 on sapphire by sulfurization of Molybdenum oxide ultrathin films			Emanuela Schilirò	Al2O3 layers grown by Atomic Layer Deposition as gate insulator in 3C-SiC MOS devices
16:50		Simonpietro Agnello	Aging effects and thermally induced modification of monolayer MoS2 obtained by gold assisted exfoliation			Jianwu Sun	Growth of High-Quality Cubic Silicon Carbide and Graphene for Conversion of Solar Energy into Renewable Fuels
17:00		Jozef Novák	Bipolar heterojunction phototransistor based on thin PtSe2 layer				
17:10		Emma Keel	Three-dimensional graphene foam for energy harvesting devices				
17:20		Zsafia Baji	VO2 layers prepared with different approaches: relationship between resistive switching and structural properties				
17:30		Marco Cannas	Graphitization effects induced by thermal treatments of 4H-SiC				
17:40		Zsafia Baji	Nucleation of atomic layer deposited metal sulphide layers				
17:50							
18:00 - 19:00		Registration					
19:00 - 21:00	Welcome reception						
21:00 - 23:00							