

PROGRAMME

Sunday 17th October

- 18:00-20:00 Registration
19:00-20:00 Welcome Reception

Monday 18th October

- 8:00-8:45 Registration
8:45-9:00 Welcome and Conference Opening

09:00-10:45 *Session 1: InAlN/GaN HEMTs and Diamond*
Chair: M. Kuzuhara

- 09:00-09:30 **Progress in InAlN/GaN HEMTs**
Invited C. Gaquiere

- 9:30-9:45 **Process improvements toward high performances of InAlN/AlN/GaN based High Electron Mobility Transistors**
N. Sarazin, J. Dufraisse, G. Callet, E. Chartier, O. Jardel, M. Oualli, D. Lancereau, R. Aubry, M.A. Di Forte Poisson, S. Piotrowicz, E. Morvan and S.L. Delage

- 09:45-10:00 **Nanocrystalline Diamond overgrowth on GaN HEMTs**
S. Rossi, M. Alomari, M. Dipalo, E. Kohn, L. Tóth, Á. Barna, B. Pécz, M.-A. Diforte-Poisson, S. Delage, J-F. Carlin and N. Greandjean

- 10:00-10:15 **Structure of diamond film grown over InAlN/GaN HEMT**
L. Tóth, Á. Barna, B. Pécz, M. Alomari, M. Dipalo, S. Rossi, E. Kohn, M.-A. di Forte-Poisson, S. Delage, J-F. Carlin and N. Greandjean

- 10:15-10:30 **Multilayer antidiffusion barrier schemes for contact metallisations to InAlN/GaN power HEMTs**
E. Kamińska, I. Pasternak, M. A. Borysiewicz, M. Guziwicz, A. Piotrowska, E. Dynowska, R. Jakieła, V. Kolkovski and M.A. di Forte-Poisson

- 10:30-10:45 **Characterisation of electrical properties of InAlN/GaN Schottky diode dependent on ohmic contact pad electrode position**
A. Chvála, D. Donoval, R. Šramatý, J. Marek, J. Kováč and P. Kordoš

10:45-11:15 COFFEE BREAK

11:15-13:00 *Session 2: GaN Epitaxy and Characterization*
Chair: Th. Karakostas

- 11:15-11:45 **Heteroepitaxial nanostructures in nonpolar and semipolar III-Nitride semiconductors**
Invited G. Dimitrakopoulos

- 11:45-12:00 **Influence of substrate on crystal quality and electrical behavior of AlGaIn/GaN HEMTs grown by ammonia source molecular beam epitaxy**
Y. Cordier, N. Baron, F. Semond, M. Chmielowska, S. Chenot, H. Tang, C.Storey and J. A. Bardwell.
- 12:00-12:15 **Electrical properties of GaN based structures with carbon doped GaN buffer layers**
M.Ramdani, S. Chenot, F.Semond, M.Jouk, P. Renaud and Y. Cordier
- 12:15-12:30 **Microscopy of GaN grown on diamond**
B. Pécz, L. Tóth, Á. Barna, G. Tsiakatouras, A. O. Ajagunna and A. Georgakilas
- 12:30-12:45 **Mastering the properties of AlN epitaxial layers by implementing distinct hot-wall MOCVD system**
A. Kakanakova-Georgieva, D. Nilsson, U. Forsberg, and E. Janzén
- 12:45-13:00 **Characterization of semiconductors using Spreading Resistance Imaging and Kelvin Probe Force Microscopy**
D. Haško, J. Bruncko, A. Šatka, J. Kováč, and F. Uherek
- 13:00-15:30 LUNCH BREAK**
- 15:30-17:15 Session 3: III-V MIS-FETs & HEMTs**
Chair: C. Gaquiere
- 15:30-16:00 **Progress in III-V MOSFETs for high performance CMOS**
Invited S. Bentley
- 16:00-16:15 **Fabrication and characterisation of a 300nm In_{0.53}Ga_{0.47}As MOSFET**
J. Mo, A. Olivier, F. Martins, N. Wichmann, Y. Roelens, L. Desplanque, X. Wallart, S. Lepilliet, G. Dambrine and S. Bollaert
- 16:15-16:30 **Design and Fabrication of InGaAs-InAlAs Pseudo-MIS HEMTs**
D. Saguatti, K. W. Ian, M. Mohamad Isa and M. Missous
- 16:30-16:45 **Threshold Voltage of Al₂O₃/InAlAs/InGaAs Transistors: Effect of Metal Gate Schottky Barrier**
G. Krokidis, I. Tsopelas, J.P. Xanthakis and A. Dimoulas
- 16:45-17:00 **Study of the Impact of Interface Traps on the Electrical Characteristics of InGaAs-based MOSFETs and MOSHEMTs with high-k Gate Dielectrics**
L. Morassi, A. Padovani, G. Verzellesi, D. Veksler, I. Ok and G. Bersuker
- 17:00-17:15 **Strain additivity and its impact on the hole mobility of In_xGa_{1-x}As channels for III-V pMOSFETs**
U. Peralagu, M. C. Holland, G. W. Paterson and I. G. Thayne
- 17:15-17:45 COFFEE BREAK**

17:45-19:00 Session 4: InN and InGaN

Chair: Y. Cordier

17:45-18:15 **Proposal and fabrication of novel asymmetric structure GaN/IML-InN/InGaN/GaN QWs for high efficiency solar cells**

Invited A. Yoshikawa, Y. Ishitani, and K. Kusakabe

18:15-18:30 **InGaN Nanodiscs Embedded in GaN Nanorods Grown by MBE**

Th. Kehagias, T. Koukoula, G.P. Dimitrakopoulos, E. Kalesaki, H. Kirmse, W. Neumann, F. Furtmayr, M. Eickhoff, Th. Karakostas and Ph. Komninou

18:30-18:45 **InN-based material devices for infrared photodetection**

T. Brazzini, J. Grandal, A. de Prado and F. Calle

18:45-19:00 **Non-destructive determination of heteroepitaxial InN layer bulk conductivity using FTIR Spectroscopy**

C. C. Katsidis, A. O. Ajagunna and A. Georgakilas

Tuesday 19th October

08:45-10:15 Session 5: GaN power electronics

Chair: N. Sarazin

08:45-9:15 **Next challenges in GaN HEMT electronics**

Invited M. Kuzuhara

09:15-09:30 **Evaluation of thermal stability in D-mode and E-mode HEMTs based on AlGaIn/GaN**

S. Martín-Horcajo, M. J. Tadjer, R. Cuerdo, M. F. Romero and F. Calle

09:30-09:45 **Design of GaN HEMTs for Power Switching Operation**

M. Esposito, P. S. Park, D. N. Nath, S. Kryshnamoorthy, F. Akyol, V. Di Lecce, A. Chini and S. Rajan

09:45-10:00 **A study of trapping phenomena on Recessed-Gate AlGaIn/GaN-on-Silicon HEMT**

N. Ronchi, M. Meneghini, A. Stocco, G. Meneghesso, E. Zanoni, S. Tirelli and C. R. Bolognesi

10:00-10:15 **AlGaIn/GaN MIS-HFETs with Al-based dielectric layers prepared by sputtering technique**

R. Stoklas, D. Gregušová, Š. Gaži, J. Novák and P. Kordoš

10:15-10:45 COFFEE BREAK

10:45-12:00 Session 6: Nanomaterials and devices

Chair: E. Kohn

10:45-11:15 **Left-handed metamaterials**

Invited E.N. Economou

- 11:15-11:30 **GaN quantum dots as charge storage elements for memory devices**
P. Dimitrakis, P. Normand, K. Tsagaraki and E. Iliopoulos
- 11:30-12 :00 **Carbon nanotube electronics : focus on radio frequency applications**
Invited H. Happy, L. Nougaret, V. Derycke and G. Dambrine
- 12:00-13:15 POSTER SESSION**
Chair: G. Konstantinidis
- P.1 Development of AlGa_N/Ga_N based devices for TeraHertz generation by amplification of transverse electromagnetic waves**
M.Chmielowska, Y.Cordier, S.Chenot, T.Laurent, R.Sharma, P.Nouvel, J.Torres, S. Blin, L.Chusseau, C.Palermo, L.Varani, J.-P.Fauri and B.Beaumont
- P.2 Low-frequency noise in GaN HEMT transistors**
K. Rendek, A. Šatka, J. Kováč and D. Donoval
- P.3 Current instabilities in AlN/GaN HEMTs**
K.E. Aretouli, J. Kuzmik, D. Pogany, A. Adikimenakis, T. Kostopoulos, G.Konstantinidis and A. Georgakilas
- P.4 Study of GaN HEMTs degradation by numerical simulations of scattering parameters**
V. Di Lecce, M. Esposito, M. Bonaiuti, G. Meneghesso, E. Zanoni, F. Fantini and A. Chini
- P.5 Gate stack processing effects on III-V nMOSFET performance**
O. Ignatova, D.S. Macintyre, S. Thoms and I. Thayne
- P.6 Investigation of sub-micrometer ohmic contacts for III-V applications**
W. Jansen, X.Li and I. G Thayne
- P.7 Electrical Conduction of thin NiO films deposited by RF magnetron sputtering**
M. Guziewicz, J. Grochowski, M. Borysiewicz, I. Pasternak, E. Kamińska, A. Piotrowska, R. Kruszka, B. Witkowski and J. Domagała
- P.8 Shallow In_{0.53}Ga_{0.47}As/In_{0.52}Al_{0.48}As field effect transistors**
E. Skuras, Th. Makris, C.R. Stanley and A.R. Long
- P.9 AlGaAs/GaAs phototransistor with a single and double delta-doped base-simulation and performance characteristics**
B. Sciana, I. Zborowska-Lindert, M. Panek, D. Radziewicz, M. Tłaczala, J. Kováč, J. Škriniarová and M. Florovic
- P.10 High Sensitivity AlGa_N/Ga_N Hydrogen Sensor**
B. Paszkiewicz, R. Paszkiewicz, W. Macherzynski, A. Szyszka, J. Pramowska, M. Krasowska, J. Gryglewicz, A. Stafiniak, M. Wosko and M. Tłaczala

- P.11 Water Splitting with Transparent Diamond Electrodes Modified by Metallic Microdots**
C. Pietzka, Z. Gao, Y. Xu and E. Kohn
- P.12 Substrateless III-nitride based Lamb-type biosensor**
A.K. Pantazis, E. Gizeli and G. Konstantinidis
- P.13 Structural properties of Semipolar III-Nitride Quantum Dots**
G. P. Dimitrakopoulos, E. Kalesaki, A. Lotsari, Th. Kehagias, J. Kioseoglou, L. A. Das, Lahourcade, E. Monroy, I. Hausler, H. Kirmse, W. Neumann, Ph. Komninou and Th. Karakostas
- P.14 Nanoscale Structure of InGaN Quantum Dot Superlattices Grown by MBE**
T. Koukoula, Th. Kehagias, A. Lotsari, A. Das, Monroy, G.P. Dimitrakopoulos and Ph. Komninou
- P.15 Regulation Electrical and Optical Properties of Obtained p-type ZnO Films by the RBQE Method**
T. Butkhuzi, T. Khulordava, M. Sharvashidze, N. Bukhsianidze, N. Gapishvili, E. Kekelidze, L. Trapaidze, L. Aptsiauri, Sh. Mirianashvili and T. Qamushadze
- P.16 A novel study of image processing based on porous GaN structure measurements**
N. M. Ahmed, A. Ramizy, Z.Hassan, A. Amer, K. Omer and Y. Al-Douri
- P.17 Epitaxial growth of (0001) GaN films on polycrystalline diamond substrates, by plasma assisted MBE**
A.Adikimenakis, K. Tsagaraki, Th. Kostopoulos, G. Konstantinidis, K.E. Aretouli G. Tsiakatouras, E. Dynowska, E. Kaminska and A. Georgakilas
- P.18 Properties of InN films grown on r-plane Al₂O₃ by PAMBE**
A. O. Ajagunna, E. Iliopoulos, A. Lotsari, G. P. Dimitrakopoulos, G. Tsiakatouras, K. Tsagaraki, M. Androulidaki, Ph. Komninou and A. Georgakilas
- P.19 Application of Physical Characterization Methods during fabrication of 4H-SiC Static Induction Transistors**
K. Zekentes, M. Androulidaki, K. Tsagaraki, M. Kayambaki, A. Stavrinidis and G. Konstantinidis
- P.20 Excitation energy dependence of Raman spectra in monolayer and bilayer graphene**
D. Nakabayashi, M. Paillet, J.-R. Huntzinger, Th. Michel, A. Tiberj, N. Camara, A. Ayari, Ph. Poncharal, J.-L. Sauvajol, Ph. Godignon and J. Camassel
- P.21 GaN-on-Insulator Mesa Technology**
P. Herfurth, M. Dipalo, R. Rösch, J.-F. Carlin, N. Grandjean, and E. Kohn

Social Programme

14:30-20:00 Excursion to Rethymnon-Arkadi-Eleftherna

20:00 Banquet at the taverna PANORAMA

Wednesday 20th October

08:45-10:30 *Session 7: Optoelectronic and nanophotonic devices*

Chair: N. T. Pelekanos

08:45-09:15 **InGaAlN Laser Diodes**

Invited

U. Schwarz

09:15-09:30 **Degradation analysis of Violet high power LEDs**

N. Trivellin, M. Meneghini, C. de Santi, S. Vaccari, E. Zanoni and G. Meneghesso

09:30-09:45 **Periodically Arranged InGaN-Based Nanocolumns for Visible Light Emitters**

K. Kishino, K. Yamano, K. Nagashima, S. Ishizawa, A. Kikuchi, R. Araki, M. Goto and T. Kouno

09:45-10:00 **Strong coupling in a quantum dot micropillar system under electrical current injection**

C. Kistner, K. Morgener, S. Reitzenstein, C. Schneider, S. Höfling, L. Worschech, A. Forchel, P. Yao and S. Hughes

10:00-10:15 **Hybrid Semiconductor Structures Based on Combinations of Conjugated Polymers and III-Nitrides**

G. Itskos, C. R. Belton, G. Heliotis, I. M. Watson, M. D. Dawson, R. Murray and D. D. C. Bradley

10:15-10:30 **Ultrathin Laterally Etched GaN Membranes of High Optical Quality**

E. Trichas, N.T. Pelekanos, K. Tsagaraki, E. Iliopoulos, A. Kostopoulos and P.G. Savvidis

10:30-11 :00 COFFEE BREAK

11:00-13:00 *Session 8: Biosensors, MEMS and interfaces*

Chair: M. Eickhoff

11:00-11:30 **Membrane supported microwave and millimeter wave circuits based on III-V semiconductor micromachining**

Invited

A Muller, G Konstantinidis and D.Neculoiu

11:30-12:00 **Inorganic-organic semiconductor heterostructures in biosensing and bioelectronics**

Invited

N. Chaniotakis

- 12:00-12:15 **GaN quantum dots as optochemical transducers**
J. Teubert, S.Koslowski, A. Das, E. Monroy and M. Eickhoff
- 12:15-12:30 **AlGaN/GaN electrolyte gate field effect transistor based DNA sensors**
St. Linkohr, S. U. Schwarz, V. Polyakov, T. Nakamura, V. Cimalla, C. Nebel, and O. Ambacher
- 12:30-12:45 **Surface properties and electrical behavior of Cr contacts on MOCVD and MBE grown p-type GaN**
F. G. Kalitzakis, G. Konstantinidis, L. Sygellou, S. Kennou, S. Ladas and N. T. Pelekanos
- 12:45-13:00 **Density, lifetimes and capture cross-sections of interface states in Pd/n-SiGe from admittance measurements**
A. Sellai and M. Mamor
- 13:00-13:15 **Analysis of Static Surface States as Parasitic Elements in Nanoscale In_{0.52}Al_{0.48}As-In_{0.53}Ga_{0.47}As Symmetric Double-Gate HEMT**
Servin Rathi, Mridula Gupta and R S. Gupta
- 13:15-15:30 LUNCH BREAK**
- 15:30-17:00 Session 9: II-VI and III-V Heterostructures**
Chair: A. Yoshikawa
- 15:30-16:00 **Homoepitaxy of ZnMgO/ZnO heterostructures**
Invited J.M. Chauveau
- 16:00-16:15 **Growth and Characterization of ZnO/Zn_{1-x}Mg_xO Single Quantum Wells with high Mg-content**
B. Laumer, F. Schuster, T. Wassner, M. Stutzmann and M. Eickhoff
- 16:15-16:30 **Zinc Nitride based Heterostructure Devices (p/n diode & TFT)**
E. Aperathitis, V. Kambilafka, A. Kostopoulos, M. Androulidaki, K. Tsagaraki and M. Modreanu
- 16:30-16:45 **MBE growth of metamorphic InGaAs/GaAs/Ge and InAs/GaSb/GaAs heterostructures and devices**
Z. Niu, H. Ni, H. Wang, J. He, M. Li, Y. Zhu, X. Shang and R. Hao
- 16:45-17:00 **Quantum transport studies of Si δ - and slab-doping layers in InSb and InAs grown on GaAs by molecular beam epitaxy**
E. Skuras, R.L. Williams, S.D. Parker, R. Droopad, A. Norman, A.G. d'Oliveira, I.T. Ferguson, E.A. Johnson, A. MacKinnon and R.A. Stradling and J.C. Portal
- 17:00-17:30 COFFEE BREAK**

17:30-18:30 *Session 10: Graphene and SiC*

Chair: K. Zekentes

17:30-18:00 **Graphene on SiC: from epitaxial growth to advanced materials characterization**

Invited

J. Camassel, N. Camara, B. Jouault, A. Tiberj, J.R. Huntzinger, A. Caboni and P. Godignon

18:00-18:15 **Direct graphene epitaxy on 6H and 3C-SiC using propane chemical vapor deposition**

A. Michon, S.Vézian, A. Ouerghi, M. Zielinski, T. Chassagne and M. Portail

18:15-18:30 **2-D Simulation of a-SiC/c-Si(p) based , thyristor-like, high speed switches**

E.I.Dimitriadis , N.Archontas and N.Georgoulas

18:30-18:45 *Conference Closing*