

CONFERENCE PROGRAM

Monday November 5th

Micro&Nano 2018: OPENING

- 9:00** **Welcome**
Conference Chairpersons: D. Tassis, N. Konofaos
- 9:15** **Welcome by the Micro&Nano Society - Greece**
President: E. Gogolides
- 9:30** **Plenary Talk**
3D-monolithic integration for CMOS and post-CMOS applications, Francois Andrieu

10:20-11:50

Micro & Nano-electronic devices

Chair: C.Tsamis

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|-----------|---|------------------------------------|
| M1 | 10:20 On the Physics of Dielectric Charging in Microelectromechanical System Electrostatic Devices | G.Papaioannou
(Invited) |
| | 10:50 Electrical characterization of alumina in MIM and MIS capacitor structures | E.Hourdakis |
| | 11:10 Enhancement of responsivity of a ZnO/Si heterojunction formed on laser-microstructured Si substrates | S.Gardelis |
| | 11:30 The reductive action of Al on Al ₂ O ₃ layers and its influence on the interface trap properties of Al/Al ₂ O ₃ /Ge MIS structures | V.Ioannou-Sougleridis |

11:50-12:00

Coffee break

- 12:00** **Announcements by the Micro&Nano Society - Greece**
E. Gogolides, G. Konstantinides, S. gardelis, M. Bucher, F. Farmakis, D. Tassis, N. Konofaos
- 12:15** **Announcements by the INNOVATION.EL: A National Infrastructure in Nanotechnology, Advanced Materials and Micro/Nanoelectronics**
C. Tsamis, Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"

12:30-13:30

Concepts, modeling and techniques

Chair: S. Stavrinides

M2

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|-------|---|---------------------|
| 12:30 | Advanced aerogel processing: A novel nanotechnology concept | K.Papachristopoulou |
| 12:50 | Deep learning nanometrology | V. Constantoudis |
| 13:10 | High optical quality cellulose films grown by deep ultraviolet laser ablation of natural raw cotton and processed alike | V. Karoutsos |

13:40-14:45

Lunch break

14:50-16:20

Nano-Bio-systems

Chair: A. Hatzopoulos

M3

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|-------|--|------------------------------------|
| 14:50 | Development of a portable diagnostic device for the detection of protein biomarkers | G. Litsardakis
<u>(Invited)</u> |
| 15:20 | Low-cost, PCB manufacturable microdevices for fast DNA amplification | G. Kaprou |
| 15:40 | Use of a novel graphite/SiO ₂ hybrid electrode modified with hybrid organic-inorganic perovskites for the determination of losartan | P. Nikolaou |
| 16:00 | Integrated, fast, cost effective, semi-automated Lab on a Chip for foodborne pathogen detection | E. Gogolides |

16:20-16:40

Coffee break

16:40-18:10

Critical nanoscale phenomena

Chair: P. Dimitrakis

M4

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|-------|--|-------------------------------|
| 16:40 | On the role of Fractional Calculus and Fractal Analysis in Modeling Material Problems at Micro/Nano Scales | K.Parisis
<u>(Invited)</u> |
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17:10	Intermittency-induced criticality in the random telegraph noise of nanoscale UTBB FD-SOI MOSFETs	S.G. Stavrinos
17:30	Hot Carrier Degradation of nanoscale Triple Gate Junctionless nanowires	T.A. Oproglidis
17:50	Charging properties of SiNx with embedded CNTs for MEMS capacitive switches application	G.Papaioannou

18:20-19:50

Poster Session I

Chair: D. Tassis, M. Bucher

P I.1	Atomistic approach of interfacial segregation in FCC metallic alloys	Balahouane Lezzar
P I.2	Detection of BRCA1 on partially reduced graphene oxide biosensors	S. Chatzandroulis
P I.3	On the Effects of Environmental Factors on the Functionality of Modern Dynamic Random Access Memory Modules	N. A. Anagnostopoulos
P I.4	"Quantum interference in pump-probe absorption of coupled quantum – plasmonic nanostructures: Comparison between metallic nanoparticles and carbon nanostructures"	S. Evangelou
P I.5	Energy band profile of Al/HfO ₂ /p-Ge MOS structures by XPS and electrical characterization	M. A. Botzakaki
P I.6	Electrical conductivity mechanisms and XPS analysis of Al/Ta ₂ O ₅ /p-Si MOS structures	M. A. Botzakaki
P I.7	Influence of high-temperature annealing on the hole transport and trapping properties of Al ₂ O ₃ /SiO ₂ dielectric stacks	V. Ioannou-Sougleridis
P I.8	The effect of thermal annealing on the structural and optical properties of CQD-based thin films	A. Segkos
P I.9	Growth of ZnO nanowires on seeding layers deposited by Atomic Layer Deposition: The influence of process parameters	A. P. Kerasidou
P I.10	"Applying power contributors method for leakage currents modeling of CMOS Cells"	S. Nikolaidis
P I.11	Electronic properties and magnetism of Si nanowires with non-magnetic doping and surface dangling bonds; a DFT approach	Francisco de Santiago
P I.12	Vacancies and boron doping in a zinc oxide monolayer: a DFT investigation	Francisco de Santiago
P I.13	Atomic Structure Investigation of Shockley Partial Dislocations in GaN Using Aberration-Corrected HRTEM	G. P. Dimitrakopoulos
P I.14	Understanding Small Fe–Mo Perovskite-like Clusters	Eliel Carvajal
P I.15	Quantum confinement effects on the low temperature specific heat of silicon nanowires: a first principles study	Alejandro Trejo Baños



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| P I.16 Modelling of the effect of boron-vacancy centers on the electronic properties of diamond nanowires | Alejandro Trejo Baños |
| P I.17 Electronic properties of hydrogen passivated [001]-Si nanowire with interstitial Na atoms | Fernando Salazar |
| P I.18 A computational analysis of rare cell capturing within a microfluidic device with patterned herringbone grooves | G.Kokkoris and A. Tserepi |
| P I.19 Design of a Lab on a chip microfluidic device for DNA amplification | G.Kokkoris and A. Tserepi |

Tuesday November 6th

9:00 Welcome, registration

9:30-10:40

Photonics, Lasers

Chair: N. Farmakis

T1

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|-------|---|---------------------------------------|
| 9:30 | Direct laser materials growth and processing for novel photonics | N.A.Vainos
<u>(Invited)</u> |
| 10:00 | A Ball Lens/LED micro-optical chip for imaging reflective surfaces | G.Korompili |
| 10:20 | On the negative photoconductivity in AlGa _N /Ga _N heterojunction under sub-bandgap illumination | S.Gardelis |

10:50-11:50

Magnetism and magnetic materials

Chair: E. Hatzikraniotis

T2

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|-------|--|-------------|
| 10:50 | Ultrathin antiferromagnetic films with tunable properties | A. Mandziak |
| 11:10 | Tuning of macroscopic magnetic features by magnetic field-induced nanoparticle self-assembly | E.Myrovali |
| 11:30 | Design of magnetic field configuration for spatially-focused heating of magnetic nanoparticles | N.Maniotis |

11:50-12:05

Coffee break

12:10-13:30

Technologies for Energy harvesting and storage

Chair: A. Hatzopoulos

T3

12:10	Triboelectric generators: Influence of surface modification on electrical performance	C.Tsamis
12:30	Silicon nanoparticles enwrapped with graphene as anode material for Lithium ion batteries	D. -P. Argyropoulos
12:50	Electrochemical study and modelling of activated carbon cloth with reduced graphene oxide coating as electrode for supercapacitors	I.Gkionis
13:10	Advances in micro & nano-structured thermoelectric materials for energy harvesting applications	E. Hatzikraniotis

13:40-14:50

Lunch break

15:00-16:50

Emerging Devices and Technologies

Chair: N. Konofaos

T4

15:00	Quantum computing with quantum walks	I.Karafylidis <u>(Invited)</u>
15:30	Simulation of a Vacuum Transistor	M. Tsagkarakis
15:50	JFETLAB – An Online Simulation Tool for Double Gate Junction FETs	M. Bucher
16:10	Undermask penetration for different crystal orientations in 4H-SiC TSIVJFETs	K. Zekentes
16:30	Graphene monolayer treated with UV irradiation for large area FETs by optimized electron beam lithography	P. Dimitrakis

16:50-17:10

Coffee break

17:20-19:00

Poster Session II

Chair: D. Tassis, G. Dimitrakopoulos

P II.1	Study of UTBB FD-SOI MOSFET transistors' degradation with TCAD simulation tools	D.Tassis
P II.2	Simple techniques for strain engineering of few layer MoS2 membranes	J. Parthenios

P II.3	Synthesis and spectroscopic study of two-dimensional WS ₂ crystals	J. Parthenios, K.Papagelis
P II.4	Weak Inversion Ring Oscillator Design Study in 65nm CMOS technology under Total Ionizing Dose Effects	A. Papadopoulou
P II.5	NiTi Memristive Behavior	S.G. Stavrinides
P II.6	Electrical characterization of Carbon Quantum Dots thin films	A. Segkos
P II.7	Comparison of impact ionization models for 4H-SiC, through breakdown voltage simulations in room temperature	D. Stefanakis
P II.8	Electrical characterization of metal/ a-SiC:H/Si MIS capacitors for DNA sensor application	F. Farmakis
P II.9	Subtractive Plasma Nanoassembly: A technology for the fabrication of hierarchical structures	A. Smyrnakis
P II.10	Electrical Behavior of Commercial Discrete Power VDMOS Transistors and their Compact Modelling	N. Makris
P II.11	Accurate and complete nanometrology of lithographic pattern roughness: Recent challenges and advances	V. Constantoudis
P II.12	Multifractal analysis of nanostructured polymer surfaces during plasma etching	V. Constantoudis
P II.13	Optimization of ZnO nanowires for piezoelectric harvesters on flexible substrates	C. Tsamis
P II.14	VO ₂ thin films prepared by reduction of PVD-deposited V ₂ O ₅ on transparent substrates: Electrical, optical properties around SMT and relevant applications	D. K. Manousou
P II.15	Humidity protected Platinum nanoparticles strain sensor using alumina coating	V. Aslanidis
P II.16	Synthesis of copper ferrite and β-cyclodextrin graphene-based nanohybrids via hydrothermal and solvothermal methods	A.Zourou
P II.17	Influence of embedded nanoparticles on switching properties of bilayer metal oxide structures	D. Tsoukalas
P II.18	TCAD simulation and AC-analysis of the UTBB FD-SOI transistor for the estimation of the trans-capacitances	S. Manousaridis

Wednesday November 7th

8:45 **Welcome, registration**

9:00-10:30

Memories, MEMS, Sensors

Chair: N. Farmakis

W1

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| 9:00 | Ultrafast Laser generated Rayleigh surface acoustic waves: physics and applications on material diagnosis | N.A.Papadogiannis
(Invited) |
| 9:30 | Stiffness correction method for improving vibrations immunity of a MEMS tuning fork gyroscope | A. Koumela |
| 9:50 | RRAM cells with Silicon Nitride as resistance switching layer | P. Karakolis |
| 10:10 | Acetone sas micro-sensors based on graphene nanoplatelets on flexible substrates | M.Georgas |

10:30-10:50

Coffee break

10:50-12:40

Novel materials and applications

Chair: M. Gioti

W2

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|--------------|---|--------------------------------|
| 10:50 | Nonlinear electromagnetic metamaterials: mathematical analysis, physical phenomena, and engineering explorations | N.Tsitsas
(Invited) |
| 11:20 | Nanoperforation of graphene with pore diameters smaller than the diffraction limit of light | J. Parthenios |
| 11:40 | Controlled, scalable synthesis and growth-induced strain effects in single-layer MoS2 and WS2 crystals | A. Michail |
| 12:00 | Computational Analysis of a-Type Edge Dislocations Along <10-10> in GaN | S. Giaremis |
| 12:20 | Quantitative Characterization of Ultrathin In _x Ga _{1-x} N/GaN Quantum Wells by HRSTEM | I.Vasileiadis |



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12:50-14:00

Closing Ceremony

12:50 **Plenary speaker**

Recent progress in nanoelectronics, C. Dimitriadis

13:30 **Closing remarks and award ceremony**

14:00-15:00

Lunch