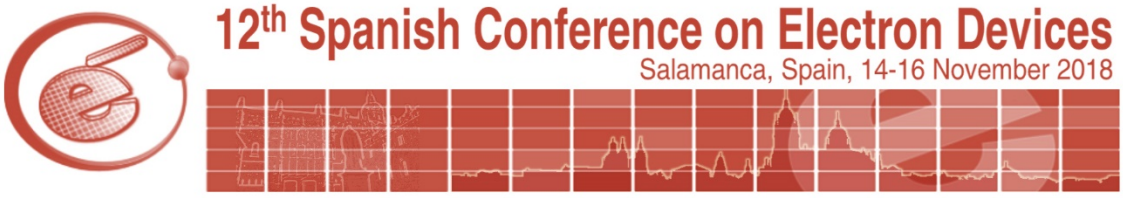


# Final Program

*Last updated: Monday, 29 October 2018*

## 13 November 2018, Tuesday

| | |
|---|---|
| *15:30-19:30* | *IEEE EDS Mini-Colloquium* |
| *19:00-20:30* | *REGISTRATION* |
| *20:00* | *WELCOME RECEPTION* |

## 14 November 2018, Wednesday

*8:00-8:45* *REGISTRATION*

### Session We I: OPENING / RESISTIVE SWITCHING

*Chairperson: R. Picos (Universitat de les Illes Balears)*

*8:45-9:00* *OPENING*

**We I-1** **9:00-10:00** **Opening plenary talk**

L. O. Chua

*University of California, Berkeley, U.S.A.*

Everything you wish to know about memristors but are afraid to ask

**We I-2** **10:00-10:15**

M. B. González[1], M. Maestro[1], A. Rodríguez-Fernández[2], S. Poblador[1], E. Miranda[2], J. Suñé[2], F. Jiménez-Molinos[3], J. B. Roldán[3], and F. Campabadal[1]

*[1]IMB-CNM, CSIC, Barcelona, Spain. [2]Universitat Autònoma de Barcelona, Spain. [3]Universidad de Granada, Spain.*

Advanced characterization of TiN/Ti/$HfO_2$/W memristor devices as electronic synapses

**We I-3** **10:15-10:30**

H. García, L. A. Domínguez, H. Castán, and S. Dueñas

*Universidad de Valladolid, Spain.*

Anti-series and anti-parallel resistive switching structures with selectable set and reset voltage polarities

**We I-4** **10:30-10:45**

S. Aldana[1], P. García-Fernández[1], R. Romero-Zaliz[3], M. B. González[2], F. Jiménez-Molinos[1], F. Campabadal[2], F. Gómez-Campos[1], and J. B. Roldán[1]

*[1]Dpto. Elec. y Tec. de Computadores, Universidad de Granada, Spain. [2]IMB-CNM, CSIC, Barcelona, Spain. [3]Dpto. Ciencias de la Comput. e Int. Artificial, Universidad de Granada, Spain.*

A kinetic Monte Carlo simulator to characterize resistive switching and charge conduction in Ni/$HfO_2$/Si RRAMs

**We I-5** **10:45-11:00**

A. Schulman[1,2], P. Stoliar[2,3], A. Kitoh[2], and I. H. Inoue[2]

*[1]University of Turku, Finland. [2]AIST, Tsukuba, Japan. [3]CIC nanoGUNE, Donostia-San Sebastian, Spain.*

Neuromorphic applications of $SrTiO_3$-based field effect transistors

*11:00-11:30* *Coffee Break*

## Session We II: PHOTOVOLTAIC DEVICES

*Chairperson: A. Braña (Universidad Autónoma de Madrid)*

**We II-1** **11:30-12:00** **Invited talk**

R. Alcubilla

*Universitat Politècnica de Catalunya, Barcelona, Spain.*

Dopant free selective contacts in silicon solar cells

**We II-2** **12:00-12:15**

D. Montero[1], R. Blasco[2], D. Caudevilla[1], S. Algaidy[1], R. García-Hernansanz[1], E. García-Hemme[1], S. Valdueza-Felip[2], and J. Olea[1]

*[1]Universidad Complutense de Madrid, Spain. [2]Universidad de Alcalá de Henares, Spain.*

Influence of Ti concentration on electro-optical properties of p-type silicon substrates

**We II-3** **12:15-12:30**

A. Jiménez[1], A. Datas[1,3], D. Canteli[2], D. Muñoz-Martín[2], M. Morales[2], C. Molpeceres[2], and C. del Cañizo[1]

*[1]IES, Universidad Politécnica de Madrid, Spain. [2]Centro Láser. Universidad Politécnica de Madrid, Spain. [3]Universitat Politècnica de Catalunya, Barcelona, Spain.*

Laser-diffused P emitters for Ge TPV cells

**We II-4** **12:30-12:45**

R. García-Hernansanz[1], D. Cordero[1], E. García-Hemme[1], D. Montero[1], J. Olea[1], A. del Prado[1], E. San Andrés[1], I. Mártil[1], C. Voz[2], L. G. Gerling[2], J. Puigdollers[2], and R. Alcubilla[2]

*[1]Universidad Complutense de Madrid, Spain. [2]Universitat Politècnica de Catalunya, Barcelona, Spain.*

Capacitance characterization of a heterojunction n-type silicon solar cell with $MoO_x$ hole-selective contact

**We II-5** **12:45-13:00**

J. G. Sánchez[1], V. S. Balderrama[2], M. Estrada[2], J. Ferré-Borrull[1], L. F. Marsal[1], and J. Pallarès[1]

*[1]Universitat Rovira i Virgili, Tarragona, Spain. [2]CINVESTAV-I.P.N, Ciudad de México, México.*

Recent advances on high efficiency inverted polymer solar cells

**We II-6** **13:00-13:15**

L. Barrutia, I. García, M. Ochoa, I. Lombardero, M. Hinojosa, P. Caño, J. Bautista, L. Cifuentes, I. Rey-Stolle, and C. Algora

*IES, Universidad Politécnica de Madrid, Spain.*

Development of lattice matched GaInP/Ga(In)As/Ge triple-junction solar cells with an efficiency over 40%

**We II-7** **13:15-13:30**

J. P. Ferrer-Rodríguez[1], E. F. Fernández[1], F. Almonacid[1], P. Pérez-Higueras[1], H. Baig[2], and T. Mallick[2]

*[1]Universidad de Jaén, Spain. [2]University of Exeter, U.K.*

Impact of the spectral response of III-V compound semiconductors on the optical performance of high-CPV systems

**We II-8** **13:30-13:45**

A. Navarro[1], M. Hinajosa[2], I. García[2], O. Martínez[3], J. Jiménez[3], C. Algora[2], C. Ballesteros[1], and B. Galiana[1]

*[1]Universidad Carlos III de Madrid, Spain. [2]IES, Universidad Politécnica de Madrid, Spain. [3]Universidad de Valladolid, Spain.*

Advanced characterization of inverted metamorphic solar cells

*13:45-15:30* *LUNCH*

### Session We III: CMOS SCALING AND BEYOND

*Chairperson: M. Nafría (Universitat Autònoma de Barcelona)*

**We III-1** **15:30-16:15** **Plenary talk**

S. Thiele[1], J. J. Liou[2], and F. Schwierz[1]

*[1]Technische Universität Ilmenau, Germany. [2]Zhengzhou University, China.*

CMOS Scaling - where we are and where we are heading

**We III-2** **16:15-16:30**

E. Colomés[1], J. Mateos[2], T. González[2], and X. Oriols[1]

*[1]Universitat Autònoma de Barcelona, Spain. [2]Universidad de Salamanca, Spain.*

Noise and charge discreteness as ultimate limit for the THz operation of ultra-small electronic devices

**We III-3** **16:30-16:45**

A. Toral-Lopez[1], J. M. González-Medina[1], E. G. Marin[2], A. Marín-Sánchez[1], A. Medina[1], F. G. Ruiz[1], and A. Godoy[1]

*[1]Universidad de Granada, Spain. [2]Università di Pisa, Italy.*

Simulation of 2D semiconductor based MOSFETs

**We III-4** **16:45-17:00**

L. López[1], D. Nagy[1], A. J. García-Loureiro[1], K. Kalna[2], G. Indalecio[1], G. Espiñeira[1], and N. Seoane[1]

*[1]Universidad de Santiago de Compostela, Spain. [2]Swansea University, Wales, U.K.*

Optimization of a tunnel field-effect transistor using 2D TCAD simulations

*17:00-17:30* *Coffee Break*

**17:00-18:30** **POSTER SESSION We P**

*18:45-20:15* *GUIDED NIGHT VISIT OF SALAMANCA*

*TAPAS TOUR*

## 15 November 2018, Thursday

*8:30-9:00* *REGISTRATION*

### Session Th I: CHARACTERIZATION AND RELIABILITY

*Chairperson: S. Dueñas (Universidad de Valladolid)*

**Th I-1** **9:00-9:45** **Plenary talk**

F. Guarín

*GlobalFoundries, NY, U.S.A.*

Reliability challenges for leading edge silicon RF/mmWave technologies

**Th I-2** **9:45-10:00**

J. Diaz-Fortuny[1], J. Martin-Martinez[1], R. Rodriguez[1], R. Castro-Lopez[2], E. Roca[2], F. F. Fernandez[2], and M. Nafria[1]

*[1]Universitat Autònoma de Barcelona, Spain. [2]IMSE-CNM, CSIC and Universidad de Sevilla, Spain.*

Smart extraction methodology of model parameters for the time-dependent variability in scaled MOSFETs

**Th I-3** **10:00-10:15**

Y. Lechaux[1], I. Íñiguez-de-la-Torre[1], J. A. Novoa[1], J. F. Millithaler[2], T. González[1], and J. Mateos[1]
*[1]Universidad de Salamanca, Spain. [2]University of Massachusetts Lowell, U.S.A*

Fabrication and characterization of $In_{0.53}Ga_{0.47}As$ planar Gunn diodes

**Th I-4** **10:15-10:30**

G. del Pozo[1], D. Martín-Martín[1], B. Arredondo[1], P. Apilo[2], and B. Romero[1]
*[1]Universidad Rey Juan Carlos, Madrid, Spain. [2]VTT Technical Research Centre of Finland Ltd., Oulu, Finland.*

Analyzing outdoor degradation of PEDOT-free P3HT:PCBM organic solar cells using impedance spectroscopy

**Th I-5** **10:30-10:45**

A. Cabrera, A. Ramos, I. Artacho, M. Gomez, K. Gavin, A. Martí, and A. Datas
*IES, Universidad Politécnica de Madrid, Spain.*

Thermophotovoltaic efficiency measurement: design and analysis of a novel experimental method

**Th I-6** **10:45-11:00**

A. Llorella[1], S. Conti[1], J. P. Esquivel[1], E. Ramon[1], and N. Sabaté[1,2]
*[1]IMB-CNM, CSIC, Barcelona, Spain. [2]ICREA, Barcelona, Spain.*

Ink-jet Printed Capacitors for flexible and wearable devices

*11:00-11:30* *Coffee Break*

## Session Th II: BIOMEDICAL DEVICES, SENSORS AND MICROSYSTEMS

*Chairperson: C. Horrillo (ITEFI-CSIC, Madrid)*

**Th II-1** **11:30-12:00** **Invited talk**

G. Gabriel[1,2], A. Moya[1,2], J. Yeste[1], X. Illa[1,2], M. Alvarez[1], and R. Villa[1,2]
*[1]IMB-CNM, CSIC, Barcelona, Spain. [2]CIBER-BBN, Spain.*

Technology and applications of organ-on-a-chip devices

**Th II-2** **12:00-12:15**

A. Streklas[1], A. Alcacer[1], A. Baraket[2], N. Zine[2], J. Gallardo-Gonzalez[2], A. Errachid[2], and J. Bausells[1]
*[1]IMB-CNM, CSIC, Barcelona, Spain. [2]Université Claude Bernand Lyon[1], Villeurbanne, France*

Pocket-sized potentiostat for non-invasive detection of heart failure related TNF-α biomarker

**Th II-3** **12:15-12:30**

M. Cabello, C. Aracil, F. Perdigones, and J. M. Quero
*Universidad de Sevilla, Spain*

Fabrication and characterization of a 3D MEA on PCB substrate. Comparison of the impedance of the 3D MEA with a wire bonding MEA culture device

**Th II-4** **12:30-12:45**

G. Domènech-Gil[1,2], L. Hrachowina[3], A. Pardo[1], M. S. Seifner[3], I. Gràcia[4], C. Cané[4], S. Barth[3], and A. Romano-Rodríguez[1,2]
*[1]Dept. Elec. and Biomed. Eng., Universitat de Barcelona, Spain. [2]I2UB, Universitat de Barcelona, Spain. [3]Vienna University of Technology, Austria. [4]IMB-CNM, CSIC, Barcelona, Spain*

Different nanowire materials localized growth and in-situ integration for electronic nose applications

**Th II-5** **12:45-13:00**

N. Gil-González[1,2], M. C. Morant-Miñana[3], F. Benito-Lopez[4], and E. Castaño[1,2]
*[1]Ceit, Donostia-San Sebastian, Spain. [2]Universidad de Navarra, Tecnun, Donostia-San Sebastián, Spain. [3]CIC energiGUNE, Miñano, Spain. [4]University of the Basque Country UPV/EHU, Vitoria-Gasteiz, Spain.*

Low power consumption gas sensors for indoor air quality control

**Th II-6** **13:00-13:15**

I. Donmez[1], M. Dolcet[1], A. Stranz[1], M. Salleras[1], L. Fonseca[1], G. Gadea[2], M. Pacios[2], A. Morata[2], and A. Tarancon[2]

*[1]IMB-CNM, CSIC, Barcelona, Spain. [2]IREC, Barcelona, Spain.*

Research on thermoelectric microgenerators based on Si and SiGe nanowires as thermoelectric material

**Th II-7** **13:15-13:30**

G. Domènech-Gil[1,2], E. López-Aymerich[1,2], I. Peiró[1], M. S. Seifner[3], I. Gràcia[4], C. Cané[4], S. Barth[3], and A. Romano-Rodríguez[1,2]

*[1]Dept. Elec. and Biomed. Eng., Universitat de Barcelona, Spain. [2]I2UB, Universitat de Barcelona, Spain. [3]Vienna University of Technology, Austria. [4]IMB-CNM, CSIC, Barcelona, Spain*

Fabrication, characterization and gas response of individual $(Ga_{1-x}In_x)_2O_3$ nanowire-based chemoresistors

**Th II-8** **13:30-13:45**

J. Fernández-Tejero, C. Fleta, and M. Ullán

*IMB-CNM, CSIC, Barcelona, Spain.*

A Python-based automatic layout generation tool for high energy physics silicon tracking detectors

*13:45-15:30* *LUNCH*

## Session Th III: THz AND IR DEVICES

*Chairperson: K. Kalna (Swansea University, U.K.)*

**Th III-1** **15:30-16:15** **Plenary talk**

T. Otsuji

*Tohoku University, Sendai, Japan*

Emission and detection of terahertz radiation in graphene-based 2D electron devices

**Th III-2** **16:15-16:30**

J. Delgado-Notario[1], J. E. Velázquez[1], J. Calvo-Gallego[1], M. Ferrando-Bataller[2], K. Fobelets[3], and Y. M. Meziani[1]

*[1]Universidad de Salamanca, Spain. [2]Universitat Politécnica de Valencia, Spain. [3]Imperial College London, U. K.*

Coupling of sub-terahertz radiation to strained-silicon field-effect transistors

**Th III-3** **16:30-16:45**

H. Sánchez-Martín[1], N. Defrance[2], C. Gaquière[2], J. Mateos[1], T. González[1], and I. Íñiguez-de-la-Torre[1]

*[1]Universidad de Salamanca, Spain. [2]IEMN, Lille, France.*

Gated GaN nanodiodes for enhanced THz detection

**Th III-4** **16:45-17:00**

E. García-Hemme[1], M. Wang[2], Y. Berencén[2], C. Xu[2], R. García-Hernansanz[1], D. Montero[1], S. Alga[1], R. Hübner[2], S. Prucnal[2], M. Helm[2], and S. Zhou[2]

*[1]Universidad Complutense de Madrid, Spain. [2]Helmholtz-Zentrum Dresden-Rossendorf, Germany.*

Tellurium-hyperdoped silicon for room-temperature short-wavelength infrared photodetection

*17:00-17:30* *Coffee Break*

**17:00-18:30** **POSTER SESSION Th P**

*20:30* *GALA DINNER (Palacio de Figueroa)*

## 16 November 2018, Friday

*8:30-9:00* *REGISTRATION*

### Session Fr I: NOVEL MEMORIES / NANOWIRES

*Chairperson: A. García-Loureiro (Universidade de Santiago de Compostela)*

**Fr I-1** **9:00-9:30** **Invited talk**

F. Gámiz, C. Navarro, C. Márquez, S. Navarro, C. Sampedro, L. Donetti, and J. L. Padilla

*Universidad de Granada, Spain.*

Embedded 1T-DRAM memory cells for Internet-of-Things devices

**Fr I-2** **9:30-9:45**

H. Castán, S. Dueñas, and O. G. Ossorio

*Universidad de Valladolid, Spain.*

A detailed description of memory maps of bipolar resistive RRAMs

**Fr I-3** **9:45-10:00**

M. Pedro[1], J. Martin-Martinez[1], R. Rodriguez[1], A. Crespo-Yepes[1], M. Nafria[1], M. B. Gonzalez[2], and F. Campabadal[2]

*[1]Universitat Autònoma de Barcelona, Spain. [2]IMB-CNM, CSIC, Barcelona, Spain.*

Characterization and modelling of G-V characteristics of RRAM devices for synaptic applications

**Fr I-4** **10:00-10:15**

A. del Moral, E. Amat, J. Bausells, and F. Perez-Murano

*IMB-CNM, CSIC, Barcelona, Spain.*

NW-FET modelling to be integrated in a SET-FET circuit

**Fr I-5** **10:15-10:30**

G. Martín[1], [2], L. López-Conesa[1,2,3], Q. Portillo[4], G. Doundoulakis[5,6], A. Georgakilas[5,6], S. Estradé[1,2], and F. Peiró[1,2]

*[1]Dept. Of Eng. Elec., Universitat de Barcelona, Spain. [2]I2UB, Universitat de Barcelona, Spain. [3]Unitat TEM-MAT, Universitat de Barcelona, Spain. [4]NanoMEGAS SPRL, Brussels, Belgium. [5]IESL, FORTH, Heraklion, Greece. [6]University of Crete, Heraklion, Greece*

TEM study of defects and strain in GaN nanowires fabricated by top-down etching

**Fr I-6** **10:30-10:45**

A. Abdelmoneam[1] and B. Iñiguez[2]

*[1]Arab Academy for Science and Technology, Egypt. [2]Universitat Rovira i Virgili, Tarragona, Spain.*

Compact modeling of quantum confinement in III-V gate all around nanowire MOSFET

**Fr I-7** **10:45-11:00**

M. Lozano

*IMB-CNM, CSIC, Barcelona, Spain.*

MICRONANOFABS - A Spanish Open Integrated Micro and Nano Fabrication Distributed Facility

*11:00-11:30* *Coffee Break*

### Session Fr II: GRAPHENE AND GaN DEVICES

*Chairperson: F. Gámiz (Universidad de Granada)*

**Fr II-1** **11:30-12:15** **Plenary talk**

T. Palacios

*Massachusetts Institute of Technolog, U.S.A.*

Gallium nitride, graphene and the new computing revolution

**Fr II-2** **12:15-12:30**

A. Boscá[1,2], A. Ladrón de Guevara[1,2], J. Pedrós[1,2], J. Martínez[1,3], and F. Calle[1,2]

*[1]ISOM, Universidad Politécnica de Madrid, Spain. [2]Dpto. Ingeniería Electrónica, Universidad Politécnica de Madrid, Spain. [3]Dpto. Ciencia de Materiales, Universidad Politécnica de Madrid, Spain.*

Parameter space of graphene growth in cold-wall CVD reactors

**Fr II-3** **12:30-12:45**

V. Clericò[1], J. A. Delgado-Notario[1,2], M. Saiz Bretín[3], A. V. Malyshev[3], Y. M. Meziani[2], F. Domínguez-Adame[3], and E. Diez[1]

*[1]Dpto. Física Fundamental, Universidad de Salamanca, Spain. [2]Dpto. Física Aplicada, Universidad de Salamanca, Spain. [3]Dpto. Física de Materiales, Unviersidad Complutense de Madrid, Spain.*

Conductance quantization in ballistic graphene nanoconstrictions

**Fr II-4** **12:45-13:00**

J. M. Iglesias, E. Pascual, E. M. Hamham, M. J. Martín, and R. Rengel

*Universidad de Salamanca, Spain.*

The role of interband processes on electronic transport in monolayer graphene

**Fr II-5** **13:00-13:15**

P. C. Feijoo[1], J. M. Iglesias[2], E. M. Hamham[2], R. Rengel[2], and D. Jiménez[1]

*[1]Universitat Autònoma de Barcelona, Spain. [2]Universidad de Salamanca, Spain.*

Impact of impurities, defects and residual carrier concentration on high frequency performance of hBN-encapsulated graphene field-effect transistors

**Fr II-6** **13:15-13:30**

M. Á. Pampillón[1], Z. Gao[1,2], M. F. Romero[1,3], A. Boscá[1], M. Meneghini[2], G. Meneghesso[2], and F. Calle[1]

*[1]ISOM, Universidad Politécnica de Madrid, Spain. [2]University of Padua, Italy. [3]Universidad Francisco de Vitoria, Pozuelo de Alarcón, Spain.*

Effects of h-BN on AlGaN/GaN HEMTs

*13:30-13:45* *CLOSING*

*13:45-15:30* *LUNCH*

## POSTER SESSION, We P

### H1. Materials and processing technology

**We P-1**

S. Dueñas[1], H. Castán[1], M. Benito[1], A. Muñoz[1], A. Tamm[2], A. Šutka[2], K. Kalam[2], K. Kukli[2,3], M. Ritala[3], and M. Leskelä[3]

*[1]Universidad de Valladolid, Spain. [2]University of Tartu, Estonia. [3]University of Helsinki, Finland.*

Ferroic materials fabricated by Atomic Layer Deposition

**We P-2**

L. Martín, I. Santos, H. Zaoui, P. López, L. A. Marqués, M. Aboy, and L. Pelaz

*Universidad de Valladolid, Spain.*

Modeling SiGe through classical molecular dynamics simulations: chasing an appropriate empirical potential

**We P-3**

A. L. Alvarez, S. J. Quesada, F. Borrás, and C. Coya

*Universidad Rey Juan Carlos, Madrid, Spain.*

Record and modelling of the current traces during local anodic oxidation of graphene

**We P-4**

J. A. Novoa-López[1], Y. Lechaux[1], J. A. Delgado-Notario[1], V. Clerico[2], E. Díez[2], H. Sánchez-Martín[1], B. G. Vasallo[1], I. Íniguez-de-la-Torre[1], J. Mateos[1], S. Pérez[1], and T. González[1]

*[1]Dpto. Física Aplicada, Universidad de Salamanca, Spain. [2]Dpto. Física Fundamental, Universidad de Salamanca, Spain.*

Fabrication process of non-linear planar diodes based on GaN

**We P-5** K. Ben Saddik, A. Diaz-Lobo, S. Fernández-Garrido, M. J. Hernández, A. F. Braña, N. López, and B. J. García

*Universidad Autónoma de Madrid, Spain.*

Chemical beam epitaxy growth of phosphide layers on silicon

**We P-6** M. P. Montero-Rama, A. Viterisi, C. Eckstein, J. Ferré-Borrull, and L. F. Marsal

*Universitat Rovira i Virgili, Tarragona, Spain.*

Development of nanostructured perovskite solar cells

**We P-7** C. D. Redondo-Obispo[1], T. S. Ripolles[1], E. Climent-Pascual[2], J. Bartolomé Vílchez[4], A. de Andrés[3], and C. Coya[1]

*[1]Universidad Rey Juan Carlos, Madrid, Spain. [2]Universidad Politécnica de Madrid, Spain. [3]ICMM-CSIC, Madrid, Spain. [4]Universidad Complutense de Madrid, Spain.*

Photo-stable bismuth doped $MAPbI_3$ thin films for optoelectronics devices

## H2. Device modelling and simulation

**We P-8** E. Miranda[1], H. Castán[2], S. Dueñas[2], H. García[2], A. Rodriguez-Fernandez[1], J. Muñoz-Gorriz[1], J. Suñé[1], M. B. González[3], and F. Campabadal[3]

*[1]Universitat Autònoma de Barcelona, Spain. [2]Universidad de Valladolid, Spain. [3]IMB-CNM, CSIC, Barcelona, Spain.*

Scaling properties of the ReRAM memory map

**We P-9** E. S. Skibinsky-Gitlin[1], F. M. Gómez-Campos[1,2] S. Rodríguez-Bolívar[1,2], J. E. Carceller[1,2], and M. Califano[3]

*[1]Dpto. Elec. y Tec. de los Computadores, Universidad de Granada, Spain. [2]CITIC, Universidad de Granada, Spain. [3]University of Leeds, U.K.*

Efficient mobility calculation for quantum dots superlattices

**We P-10** R. Picos[1], M. M. Al Chawa[1], F. Jiménez-Molinos[2], J. B. Roldán[2], and L. O. Chua[3]

*[1]Universitat de les Illes Balears, Spain. [2]CITIC, Universidad de Granada, Spain. [3]University of California, Berkeley, U.S.A.*

Experimental estimation of the dynamic road map in the reset transition of ReRAMs

**We P-11** M. D. Cubells-Beltrán[1], C. Reig[1], A. De Marcellis[2], S. Cardoso[3], and P .P. Freitas[3]

*[1]University of Valencia, Spain. [2]University of L'Aquila, Italy. [3]Universidade de Lisboa, Portugal.*

Electrical modeling of monolithically integrated GMR based current sensors

**We P-12** A. Romero[1,2], J. González[1], and J. A. Jiménez-Tejada[2]

*[1]Dpto. Arquitec. y Tec. de los Computadores, Universidad de Granada, Spain. [2]Dpto. Elec. y Tec. de los Computadores, Universidad de Granada, Spain.*

Constrained many-objective evolutionary extraction procedure for an OTFT compact model including contact effects

**We P-13** B. G. Vasallo[1], D. Moro-Melgar[2], T. González[1], and J. Mateos[1]

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Surface charge effects and edge fringing capacitance in GaAs and GaN Schottky barrier diodes

**We P-14** R. Rodríguez[1], B. González[1], J. García[1], G. Toulon[2], F. Morancho[3], and A. Núñez[1]

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Numerical simulation for DC Schottky gate leakage current in AlGaN/GaN HEMTs

**We P-15** N. Mavredakis[1], R. Garcia-Cortadella[2], A. Bonaccini-Calia[2], J. A. Garrido[2], and D. Jiménez[1]

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Modeling of 1/f noise in single layer graphene devices

**We P-16** E. Pascual, J. M. Iglesias, E. M. Hamham, M. J. Martín, and R. Rengel

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Diffusive electronic transport in $MoS^2$: a Monte Carlo study

**We P-17** D. Pandey[1], Z. Zhan[2], E. Colomés[1], M. Villani[1], S. Yuan[2], and X. Oriols[1]
*[1]Universitat Autònoma de Barcelona, Spain. [2]Wuhan University, China.*
Electron injection model for linear and parabolic 2D materials: Noise as a parabolic or linear band detector

**We P-18** M. Villani[1], D. Pandey[1], E. Colomés[1], Z. Zhan[2], and X. Oriols[1]
*[1]Universitat Autònoma de Barcelona, Spain. [2]Wuhan University, China.*
Tunneling times in graphene FET: from fundamental physics to practical engineering

**We P-19** P. López[1], M. Aboy[1], I. Santos[1], L. A. Marqués[1], C. Couso[2], M. Ullán[2], and L. Pelaz[1]
*[1]Universidad de Valladolid, Spain. [2]IMB-CNM, CSIC, Barcelona, Spain.*
ION degradation in Si devices in harsh radiation environments: modeling of damage-dopant interactions

**We P-20** J. R. Fragoso-Mora[1,2], O. V. Kolokoltsev[1], M. C. Horrillo[3], and D. Matatagui[1,3]
*[1]Inst. Ciencias Aplicadas y Tecnología, UNAM, México. [2]Fac. de Ingeniería, UNAM, México. [3]ITEFI-CSIC, Madrid, Spain.*
Theoretical analysis of elastic sensitivity for different Love wave propagation modes

**We P-21** F. Jiménez-Molinos[1], S. Dueñas[2], H. Castán[2], G. González-Cordero[1], and J. B. Roldán[1]
*[1]Universidad de Granada, Spain. [2]Universidad de Valladolid, Spain.*
AC small signal modeling of TiN/Ti/HfO2/W-based bipolar resistive RAMs

**We P-22** P. Andrés, N. Seoane, A. J. García-Loureiro, and G. Indalecio
*Universidad de Santiago de Compostela, Spain.*
Analysis of fluctuation sensitivity map algorithms applied to a 10nm GAA NW FET

**We P-23** A. Valera[1], E. F. Fernández[1], P. M. Rodrigo[2], and F. Almonacid[1]
*[1]Universidad de Jaén, Spain. [2]Universidad Panamericana, Aguascalientes, México.*
Feasibility of flat-plate heat-sinks for ultra-high concentrations (> 2000 suns) using microscale solar cells

**We P-24** H. Sánchez-Martín, I. Íñiguez-de-la-Torre, J. Mateos, and T. González
*Universidad de Salamanca, Spain.*
Electro-thermal modelling of AlGaN/GaN HEMTs: from DC to equivalent circuit parameters

## POSTER SESSION, Th P

### H3. Characterization and reliability

**Th P-1** J. Piñol, P. Ortega, I. Martín, A. Orpella, G. Masmitjà, E. Calle, G. López, M. García, E. Ros, C. Voz, J. Puigdollers, and R. Alcubilla
*Universitat Politècnica de Catalunya, Barcelona, Spain.*
Home-made and low-cost Suns-Voc measurement system to characterize c-Si solar cells

**Th P-2** V. Lähteenlahti, A. Schulman, H. Huhtinen, and P. Paturi
*University of Turku, Finland.*
Transport Properties of Resistive Switching in Ag/$Pr_{0.6}Ca_{0.4}MnO_3$/Al Thin Film Structures

**Th P-3** J. Muñoz-Gorriz[1], M. C. Acero[2], M. B. Gonzalez[2], E. Miranda[1], J. Suñe[1], and F. Campabadal[2]
*[1]Universitat Autònoma de Barcelona, Spain. [2]IMB-CNM, CSIC, Barcelona, Spain.*
Physical degradation of Ni/$HfO_2$/n+-Si resistive switching devices caused by unipolar cycling effects

**Th P-4** O. G. Ossorio[1], S. Dueñas[1], H. Castán[1], A. Tamm[2], K. Kalam[2], H. Seemen[2], and K. Kukli[2,3]
*[1]Universidad de Valladolid, Spain. [2]University of Tartu, Estonia. [3]University of Helsinki, Finland.*
Resistive switching properties of atomic layer deposited ZrO2-HfO2 thin films

**Th P-5** M. Maestro, S. Poblador, M. Zabala, M. C. Acero, M. B. Gonzalez, and F. Campabadal
*IMB-CNM, CSIC, Barcelona, Spain.*
Electrical characterization and resistive switching behavior of HfO2/Al2O3 multilayer stacks

**Th P-6** S. Claramunt, Q. Wu, A. Ruiz, M. Porti, M. Nafria, and X. Aymerich
*Universitat Autònoma de Barcelona, Spain.*
Role of graphene as interfacial layer in RRAM devices

## V1. Sensors, actuators and micro/nano systems

**Th P-7** M. Aleixandre[1], A. M. Benito[2], W. K. Maser[2], and M. C. Horrillo[1]
*[1]ITEFI-CSIC, Madrid, Spain. [2]Instituto de Carboquímica-CSIC, Zaragoza, Spain.*
Graphene sensors operating at room temperature for detection of low concentrations of NO2

**Th P-8** L. Parellada-Monreal, I. Castro-Hurtado, M. Martínez-Calderón, S. M. Olaizola, and G. G. Mandayo
*Ceit-I4 and Tecnun, University of Navarra, San Sebastián-Donostia, Spain*
ZnO thin film processed by direct laser interference patterning for formaldehyde detection

**Th P-9** J. P. Santos[1], T. Polichetti[2], E. Hontañón[1], I. Sayago[1], M. Aleixandre[1], B. Alfano[2], M. Miglietta[2], G. Di Francia[2], and J. Lozano[3]
*[1]ITEFI-CSIC, Madrid, Spain. [2]ENEA, Naples, Italy. [3]Universidad de Extremadura, Badajoz, Spain.*
Study of graphene based nanosensors for the detection of nitrogen dioxide

**Th P-10** M. Manna, G. Pellegrini, and D. Quirion
*IMB-CNM, CSIC, Barcelona, Spain.*
3D silicon sensors for the innermost layers of the ATLAS pixel upgrade

**Th P-11** I. Sayago[1], E. Hontañón[1], J. P. Santos[1], J. Lozano[2], and M. Aleixandre[1]
*[1]ITEFI-CSIC, Madrid, Spain. [2]Universidad de Extremadura, Badajoz, Spain.*
Nanostructured sensors of tin oxide (nanofibers and nanowires) for the detection of low concentration NO2

**Th P-12** S. Vallejos, I. Gràcia, M. Tomic, M. Salleras, E. Figueras, and C. Cané
*IMB-CNM, CSIC, Barcelona, Spain.*
Gas microsensors based on cerium dioxide modified tungsten oxide nanowires

**Th P-13** S. Poblador, M. Maestro, M. C. Acero, M. B. Gonzalez, and F. Campabadal
*IMB-CNM, CSIC, Barcelona, Spain.*
Physical characterization of filamentary structures in TiN/Ti/HfO2/W memristor devices

**Th P-14** C. Sánchez[1,3], J. Lozano[1], J. P. Santos[2], A. Azabal[3], and S. Ruiz-Valdepeñas[3]
*[1]Universidad de Extremadura, Badajoz, Spain. [2]ITEFI-CSIC, Madrid, Spain. [3]Up Devices and Technologies, Madrid, Spain*
Discrimination of aromas in alcoholic beer with electronic nose

## V2. Photovoltaic and optoelectronic/photonics devices and displays

**Th P-15** E. Navarrete-Astorga[1], D. Solís-Cortés[1], J. Rodríguez-Moreno[1], E. A. Dalchiele[2], F. Martín[1], D. Leinen[1], M-C. López[1], and J. R. Ramos-Barrado[1]
*[1]Universidad de Málaga, Spain. [2]Instituto de Física, Facultad de Ingeniería, Montevideo, Uruguay.*
Walking toward transparent devices to produce and/or storage energy

**Th P-16** S. Fernández[1], A. F. Braña[2], J. Grandal[3], J. P. González[1] F. García[1], and M. B. Gómez-Mancebo[1]
*[1]CIEMAT, Madrid, Spain. [2]Universidad Autónoma de Madrid, Spain. [3]Universidad Politécnica de Madrid, Spain.*
ITO-based selective contacts for silicon solar devices

**Th P-17** D. Segura García, D. Cardador, D. Vega, R. Alcubilla, and A. Rodriguez
*Universitat Politècnica de Catalunya, Barcelona, Spain.*
Widening macroporous silicon photonic crystal's bandgap

**Th P-18** E. Ros[1], T. Tom[2], J. Bertomeu[2], J. M. Asensi[2], J. Andreu[2], I. Martín[1], P. Ortega[1], J. Puigdollers[1], C. Voz[1], and R. Alcubilla[1]

*[1]Universitat Politècnica de Catalunya, Barcelona, Spain. [2]Universitat de Barcelona, Spain.*

Dielectric/metal/dielectric structures as a selective contact for dopant-free silicon solar cells

**Th P-19** E. F. Fernández[1,2], C. Outes[1], N. Seoane[1], F. Almonacid[2], and A. J. García-Loureiro[1]

*[1]Universidad de Santiago de Compostela, Spain. [2]Universidad de Jaén, Spain.*

Simulation of high-efficiency GaAs vertical solar cells up to 20,000 light concentration levels

**Th P-20** A. Rosell, I. Martín, M. Garín, G. López, and R. Alcubilla

*Universitat Politècnica de Catalunya, Barcelona, Spain.*

Improvement of optical properties of thin c-Si solar cells based on textured PDMS films

**Th P-21** T. Tom[1], E. Ros[2], C. Voz[2], P. Ortega[2], J. M. Asensi[1], J. Andreu[1], and J. Bertomeu[1]

*[1]Universitat de Barcelona, Spain. [2]Universitat Politècnica de Catalunya, Barcelona, Spain.*

Molybdenum oxide hole-selective contacts by reactive sputtering for n-type silicon heterojunction devices

**Th P-22** M. Ramírez-Como[1], V. S. Balderrama[2], J. G. Sánchez[3], A. Sacramento-Orduño[1], L. F. Marsal[3], and M. Estrada[1]

*[1]CINVESTAV-I.P.N, Ciudad de México, México. [2]CIDESI, Santiago de Querétaro, México. [3]Universitat Rovira i Virgili, Tarragona, Spain.*

Degradation analysis of polymer solar cells using HIZO as hole blocking layer

## V3. Biomedical devices and Lab-on-Chip

**Th P-23** B. Salvador[1], D. Escalante[2], L. Fernández[3], A. Corral[3], S. Camacho[2], J. M. Quero[1], and A. Luque[1]

*[1]Dept. Electronic Engineering, Universidad de Sevilla, Spain. [2]Technological Institute of Monterrey, México. [3]National Accelerators Centre, Universidad de Sevilla, Spain.*

Silicon photomultipliers for determining position of microfluidic radioactive samples

**Th P-24** N. Lete-Segura[1], L. Méndez-Mora[1], M. Funes-Luque[1,2], J. Gonzalez-Murillo[1], R. Rodriguez-Trujillo[1], A. Romano-Rodriguez[1], and M. Moreno-Sereno[1]

*[1]Universitat de Barcelona, Spain. [2]IBEC-BIST, Barcelona, Spain.*

Optical micro flow cytometer for C2C12 cell detection by fluorescence

**Th P-25** J. González-Murillo[1,2], M. Monge-Azemar[2,4], J. Bartoli[1], A. Florez[1], W. E. Svendsen[5], M. Moreno[1,2], M. García-Celma[2,4], A. Romano-Rodríguez[1,2], and R. Rodríguez-Trujillo[1,2,3]

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Electrical impedance spectroscopy microflow cytometer for cell viability tests

## V4. New device concepts: quantum devices, nano-devices, RF, microwave and power devices

**Th P-26** D. Maldonado[1], A. M. Roldán, M. B. González[2], F. Jiménez-Molinos[1], F. Campabadal[2], and J. B. Roldán[1]

*[1]Universidad de Granada, Spain. [2]IMB-CNM, CSIC, Barcelona, Spain.*

A study of magnetic field effects on TiN/Ti/$HfO_2$/W resistive memories

**Th P-27** C. Couso, D. Flores, S. Hidalgo, D. Quirion, and M. Ullán

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Novel radiation-hard JFET device based on 3D multi-ring cells

**Th P-28** F. A. Chaves and D. Jiménez

*Universitat Autònoma de Barcelona, Spain.*

Electrical properties of two-dimensional lateral junctions

**Th P-29** F. Pasadas[1], E. G. Marín[2], F. G. Ruiz[3], A. Godoy[3], and D. Jiménez[1]

*[1]Universitat Autònoma de Barcelona, Spain. [2]Università di Pisa, Italy. [3]Universidad de Granada, Spain.*

Charge model of four-terminal 2D semiconductor FETs