

2015 30th Symposium on Microelectronics Technology and Devices (SBMicro 2015)

**Salvador, Brazil
31 August – 4 September 2015**



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Keynotes**Lessons from Brain Connectivity for Future Interconnect in ICs****Jan Rabaey**

University of California at Berkeley - UCB, USA

Majority-based synthesis for digital nano-technologies**Giovanni De Micheli**

EPFL, Switzerland

A Path towards Average-Case Silicon via Asynchronous Resilient Bundled-Data Design**Peter Beerel**

University of Southern California (USC) in Los Angeles

Invited Papers**CMOS-Compatible Spintronic Devices**

Viktor Sverdlov, Joydeep Ghosh, Alexander Makarov, Thomas Windbacher, and Siegfried Selberherr

The smaller the noisier? Low Frequency Noise Diagnostic of Advanced Semiconductor Devices

C. Claeys, E. Simoen, P.G.D. Agopian, J.A. Martino, M. Aoulaiche, B. Cretu, W. Fang, R. Rooyackers, A. Vandooren, A. Veloso, M. Jurczak, N. Collaert and A. Thean

More Moore and More Than Moore meeting for 3D

Simon Deleonibus

CEA-Leti, France

Session 1 - Semiconductor Devices**Dynamic threshold voltage influence on Ge pMOSFET hysteresis**

Alberto Oliveira, Paula Agopian, João Martino, Eddy Simoen, Cor Claeys, Hans Mertens, Nadine Collaert and Aaron Thean

Apparent Schottky Barrier Height of MIS Ni/SiC diodes

Ivan Kaufmann, Marcelo Pereira and Henri Boudinov

Asymmetric Self-Cascode versus Graded-Channel SOI nMOSFETs for Analog Applications

Rafael Assalti, Marcelo Antonio Pavanello, Denis Flandre and Michelly de Souza

Back Enhanced (BE) SOI pMOSFET

Ricardo Rangel and Joao Martino

Heightening the Electrical Performance of MOSFET Switches by Applying Ellipsoidal Layout Style

Marcello Marcelino Correia and Salvador P. Gimenez

Reliability of film thickness extraction through CV curves of SOI p-i-n gated diodes

Katia Sasaki, Carlos Navarro, Maryline Bawedin, François Andrieu, Joao Martino and Sorin Cristoloveanu

Session 2 - Device Physics and Modeling**Modelling of dark current in AlGaAs/GaAs QWIPs**

Diogo de Moura Pedroso and Angelo Passaro

Impact of Temperature on Electromigration Lifetime Extrapolation

Roberto Lacerda de Orio

Limitations of Coupled Mode Theory to Model Coupled Microresonators "Dark States"

Guilherme de Rezende, Mario Souza and Newton Frateschi

Numerical Evaluation of Warpage in PoP Encapsulated Semiconductors

Fabiano Alex Colling, Celso Renato Peter, Carlos Alberto Mendez Moraes, Eduardo Luiz Rhod, Willyan Hasenkamp Carreira, Dong-Hyun Park and Tae Sung Oh

Session 3 - Fabrication Technology**Spacer lithography for 3D MOS devices using amorphous silicon deposited by ECR- CVD**

Andressa Rosa, José Diniz, Ioshiaki Doi, Mara Canesqui, Alfredo Vaz and Marcos dos Santos

Development of MCM-D Technology With Photosensitive Benzocyclobutene

Cristina Adamo, Alexander Flacker, Hercílio Cavalcanti, Ricardo Teixeira, Antônio Rotondaro and Leandro Manera

Characterization of HfO₂ on Hafnium-Indium-Zinc Oxide HIZO layer Metal-Insulator- Semiconductor Structures deposited by RF sputtering

Isai Hernandez, Magali Estrada, Ivan Garduño, Julio Tinoco and Antonio Cerdeira

Investigations of Capacitively-Coupled Plasmas by Electrostatic Probe Technique

Giuseppe Cirino, Raul Castro, Marcelo Pisani, Patrick Verdonck, Ronaldo Mansano, Marcos Massi, Rodrigo Pessoa, Luis Alberto Barea, Tayeb Brahim and Homero Maciel

Reactive Sputtering of SixNy for MONOS Memory Fabrication

Matheus Adam, Artur Coelho, Marcelo Pereira and Henri Boudinov

From InAs extended monolayer flat 2D terraces to 3D islands grown on GaAs substrates

Guilherme Torelly, Roberto Jakomin, Mauricio P. Pires, Luciana P. Dornelas, Rodrigo Prioli, Paula G. Caldas, Hongen Xie, Fernando A. Ponce and Patricia L. Souza

Session 4 - Devices and Circuits**Use of Back Gate Bias to Enhance the Analog Performance of Planar FD and UTBB****SOI Transistors-Based Self-Cascode Structures**

Rodrigo Doria, Denis Flandre, Renan Trevisoli, Michelly de Souza and Marcelo Pavanello

Effect of Channel Doping Concentration on the Harmonic Distortion of Asymmetric**n- and p-type Self-Cascode MOSFETs**

Lígia d'Oliveira, Rodrigo Doria, Marcelo Pavanello, Denis Flandre and Michelly de Souza

Performance Comparison Between TFET and FinFET Differential Pair

Marcio Martino, João Martino and Paula Agopian

Design and comparative performance simulation of RHBD inverter cells in 180nm CMOS

Pablo Vaz and Gilson Wirth

Comparative Analysis of 350nm CMOS Active Pixel Sensor Electronics

Lidiane Costa, Artur Mello, Luciana Salles and Davies William Monteiro

Wireless transducer based on split-ring resonator

Roddy Alexander Romero, Renato Feitoza, Carlos Renato Rambo and Fernando Rangel De Sousa

Session 5 - Sensors**Novel SAW Gas sensor based on Graphene**

Ioannis NIKOLAOU, Hamida Hallil, George Deligeorgis, Veronique Conedera, Hermenegildo Garcia, Corinne Dejous and Dominique Rebière

Porous silicon photonic crystal applied as chemosensor for organic solvents

Danilo Huanca and Walter Salcedo

Design of an interdigitated microelectrode biosensor using a-SiC:H surface to capture E. coli

José Herrera-Celis, Claudia Reyes-Betanzo and Abdu Orduña-Díaz

Adaptation of the Pedagogical Approaches for master students in Microelectronics in the Frame of a French-Chinese Joint Program

Olivier Bonnaud and Xuefei Zhong

Session 6 - Nanowires and TFETs

Effective Channel Length in Junctionless Nanowire Transistors Renan Trevisoli, Rodrigo Doria, Michelly de Souza and Marcelo Pavanello
Detailed Analysis of Transport Properties of FinFETs Through Y-Function Method: Effects of Substrate Orientation and Strain Thales Augusto Ribeiro, Eddy Simoen, Cor Claeys, João Antonio Martino and Marcelo Antonio Pavanello
Impact of Diameter on TFET Conduction Mechanisms Victor B. Sivieri, Paula G. D. Agopian and João A. Martino
Analytical Compact Model for Triple Gate Junctionless MOSFETs Fernando Ávila-Herrera, Antonio Cerdeira, Bruna Cardoso Paz, Magali Estrada and Marcelo Antonio Pavanello
Analysis of analog parameters in NW-TFETs with Si and SiGe source composition at high temperatures Caio Bordallo, João Martino, Paula Agopian, Rita Rooyackers, Anne Vandooren, Aaron Thean, Eddy Simoen and Cor Claeys
Electrical characterization of electrodeposited Ni nanowires for MagFET application Marcos Vinicius Puydinger dos Santos, Lucas Petersen Barbosa Lima, Rafael Alves Mayer, Jefferson Bettini, Fanny Béron, Kleber Roberto Pirota and José Alexandre Diniz

Session 7 - Photonics**All-Optical Majority and Feynman Gates in Photonic Crystals**

Luis Eduardo Pedraza Caballero, Juan Pablo Vasco Cano, Paulo Sérgio Soares Guimarães and Omar Paranaíba Vilela Neto

Engineering of the photoluminescence of ZnO nanowires by different growth and annealing environments

A. L. F. Cauduro, C. I. L. Sombrio, P. L. Franzen, H. I. Boudinov and D. L. Baptista

Photo and Electroluminescence from SiNx Layers Deposited by Reactive Sputtering

Guilherme Sombrio, Frâncio Rodrigues, Paulo Franzen, Paulo Soave and Henri Boudinov

InAs quantum dots on GaAs for intermediate band solar cells

Daniel Micha, Eleonora Weiner, Roberto Jakomin, Rudy Kawabata, Renato Mourão, Mauricio Pires and Patricia Souza

New hybrid structures based on CdSe/ZnS quantum dots and multilayer graphene for photonics applications

Andrei Alaferdov, Raluca Savu, Simas Rackauskas, Tatiana Rackauskas, Mara Canesqui, Yulia Gromova, Anna Orlova, Alexander Baranov, Anatoly Fedorov and Stanislav Moshkalev

Fresnel Zone Plate Array Fabricated by Maskless Lithography

Luís Alberto Barêa, Antonio A. von Zuben, Tayeb Mohammed-Brahim, Arlindo Neto Montagnoli, Michel Hospital, Newton Cesário Frateschi and Giuseppe Antonio Cirino

Flash Presentation and Poster Session**Electrical and Optical Behavior of ZnO Nanowires Irradiated by High-energy Ions**

C. I. L. Sombrio, A. L. F. Cauduro, P. L. Franzen, H. I. Boudinov and D. L. Baptista

Fabrication of 60 Channel Microelectrode Arrays for Future Use With Cultured Neuronal Networks

Vanessa Gomes, Angelica Barros, João Filho, Sergio Martinoia, Alberto Pasquarelli and Jacobus Swart

Role of the extensions in Double-Gate Junctionless MOSFETs in the drain current at high gate voltage

Antonio Cerdeira, Fernando Ávila, Bruna Cardoso, Magali Estrada and Marcelo Pavanello

Photoactive Thin Films Based on Benzoxazole Derivatives

Louise Etcheverry, Fabiano Rodembusch, Henri Boudinov, André Gündel and Eduardo Moreira

Fatigue Analysis of IC Packaging

Vanessa Davanço Pereira de Lima and Antônio Luis Pacheco Rotondaro

Effect of Metal Target Power on the Properties of Co-Sputtered Sn-DLC and W-DLC Thin Films

Gabriela Leal, Mariana A. Fraga, Guilherme W. A. Cardoso, Argemiro S. da Silva Sobrinho and Marcos Massi

Production of Yb³⁺/Er³⁺ codoped PbO-GeO₂ pedestal type waveguides for photonic applications

Francisco Bomfim, Davinson da Silva, Vanessa Del Cacho, Luciana Kassab and Marco Alayo

On the Origin of Low-Frequency Noise of Submicron Graded-Channel Fully Depleted SOI nMOSFETs

Allan Molto, Rodrigo Doria, Michelly Souza and Marcelo Pavanello

Ground Plane Influence on UTBB SOI nMOSFET Analog Parameters

Vitor Itocazu, Victor Sonnenberg, Eddy Simoen, Cor Claeys and Joao Antonio Martino

Array of Miniaturized Structures Applied to Small-Labs Development

Alisson R. Leite, Roberto R. Lima, Eliphas W. Simões and Maria Lúcia P. da Silva

Carbon dioxide sensing at near infrared using zeolitic imidazolate framework-8 (ZIF-8) absorbers

Ademauro Volponi and Sebastião Gomes dos Santos Filho

Imaging amplification for minimally invasive medical devices

Jose Correia, Jose Gomes, Catarina Costa, Reinoud Wolffenbuttel, Joao Carmo

Tutorials**Field Effect Transistor: From MOSFET to Tunnel FET****João Antonio Martino**

Universidade de São Paulo - USP, Brazil

Revisiting Diode and Solar Cell extraction methods**Adelmo Ortiz-Conde**

Universidad Simon Bolivar, Venezuela

More , Beyond and More than Moore meeting for 3D**Simon Deleonibus**

CEA-Leti, France

Trends and challenges in Nano-electronic technologies for new device concepts**Rita Rooyackers**

IMEC, Belgium

Panel**Challenges for Semiconductor in Brazil and 10 years of the program IC Brazil****Moderator:** Jacobus W. Swart