

2023 37th Symposium on Microelectronics Technology and Devices (SBMicro 2023)

**Rio de Janeiro, Brazil
28 August – 1 September 2023**



**IEEE Catalog Number: CFP23SB0-POD
ISBN: 979-8-3503-1946-0**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23SB0-POD
ISBN (Print-On-Demand):	979-8-3503-1946-0
ISBN (Online):	979-8-3503-1945-3
ISSN:	2832-420X

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

The Five Priority Topics of Microelectronics Training to Meet Future Societal Challenges	1
<i>Olivier Bonnaud</i>	
Additive Processed ZnO Transparent Vertical Field Effect Transistor	5
<i>Sajid Hussain, Fawad Saeed, Lei Wei, Tayeb Mohammed Brahim</i>	
Compact Modeling of Transition Metal Dichalcogenide Ballistic Transistors	9
<i>Adelcio M. De Souza, Daniel R. Celino, Murilo A. Romero</i>	
Assembly of Piezoelectric MEMS Vibration Sensor for Cochlear Implant.....	13
<i>Ricardo Cotrin Teixeira, Alexander Flacker, Giuliano Maiolini, Rodrigo Reigota Cesar, Guilherme Cartagena Miron, Julio Apolinario Cordioli</i>	
Frugal Love Wave Acoustic Sensor Full Platform for <i>in Situ</i> Operation in Liquids.....	17
<i>Olivier Tamarin, Wejdene Gongi, Maxence Rube, Martine Sebeloue, Idris Sadli, Dominique Rebiere, Hatem Ben Ouada, Corinne Dejous</i>	
Fabrication and Characterization of Polymer CMUTs	21
<i>Gustavo Marcati A. Alves, Chi Nan Pai, Gustavo P. Rehder</i>	
Microwave-Based Complementary Split-Ring Resonator for the Detection of Variations in Aqueous Media.....	25
<i>Reinaldo Velásquez, Diego Tami, Gilberto Medeiros-Ribeiro, Cássio G. Rego, Jhonattan C. Ramirez</i>	
Reliability Aspects and Study of Copper Seed Deposition on Polyimide Via Sputtering	29
<i>Leonardo Shimizu Yojo, Fávero Guilherme Santos, Fagnaldo Braga Pontes, Carlos R. P. Dos Santos, Willyan Hasenkamp, Élvio C. Dutra E Silva</i>	
Influence of the Source/Drain Doping Region on the Reconfigurability of ^{BE} SOI MOSFET	33
<i>Daniel A. Ramos, Katia R. A. Sasaki, Ricardo C. Rangel, Pedro H. Duarte, Joao A. Martino</i>	
Unveiling the Potential Profile for Channel Access in Staggered Organic Thin-Film Transistors	37
<i>Stefan Blawid, Shabnam Donnhäuser</i>	
Monitoring the Temperature of a Nanowire SOI MOSFET Using a Neighbor PIN Diode	41
<i>Felipe Rodrigues Garé Carnielli, Marcelo Antonio Pavanello</i>	
Dark Current and Electron Activation Energy in Quantum Bragg Mirror Detectors (QBMDs)	45
<i>Luis Angel Chipana Monzon, Pedro Henrique Pereira, Patricia Lustosa De Souza, Germano Maioli Penello, Mauricio Pamplona Pires</i>	
Unlocking the Potential of Photonic Crystals: Exploring Designs for High-Performance Switches	49
<i>Gabriel Felipe Cândido Novy, Guilherme Caporali, Talles Emanuel Moreira Marques, Jhonattan Córdoba Ramirez, Omar Paranaíba Vilela Neto</i>	
Experimental Characterization of Switching Properties of ReRAM Devices by the Capacitance Measurements.....	53
<i>Fernando J. Costa, Aseel Zeinati, Renan Trevisoli, D. Misra, Rodrigo T. Doria</i>	
Study of a Graphene Optical Sensor Applied in Glottic Tumor	57
<i>Jacilene Martins Medeiros, Fernando César Rufino, Arlindo Neto Montagnoli, Giuseppe Antonio Cirino, José Alexandre Diniz</i>	

Development of a Robust Low-Cost System for Substrate Preparation and Growth of High Quality MoS ₂ Thin Films	61
<i>Flavio Assahi, João Ider, Adhimar Oliveira, Carla Rubinger, Rero Rubinger</i>	
Experimental Comparison of Threshold Voltage Extraction Methods in SOI Nanowire Transistors.....	65
<i>Vinicius Rodrigues Prates, Marcelo Antonio Pavanello, Michelly De Souza</i>	
Low-Field Mobility Degradation Factors Temperature Dependence in Two-Level Stacked Nanowire MOSFETs from 120K to 400K.....	69
<i>Jaime Calçade Rodrigues, Mikael Cassé, Sylvain Barraud, Maud Vinet, Olivier Faynot, Marcelo Antonio Pavanello</i>	
Ring Oscillator Aging Characterization in Conventional CMOS Technologies.....	73
<i>Andreas Kerber, Phil Kliza, Daniel Beckmeier, Abhimanyu Ravindranath, Luo Yuan, Yun Liu, Owen W. Jungroth</i>	
MOSFETs with Stacked 2D Nanosheet Channels – An Auspicious Option to Delay “Forever”	78
<i>Frank Schwierz, Martin Ziegler, Juin J. Liou</i>	
Development of Resistors with Ta _x N _y Deposited by RF Sputtering Using Lithography Technique	82
<i>R. R. César, M. Mederos, E. Joanni, V. M. Andrade, R. C. Teixeira, J. A. Diniz</i>	
Study of the Effect of Multiple Conductions on Threshold Voltage in a MIS-HEMT from 450 K Down to 200 K	86
<i>Welder F. Perina, Joao A. Martino, Eddy Simoen, Uthayasankaran Peralagu, Nadine Collaert, Paula G. D. Agopian</i>	
Analysis of the Trade-Off Between Voltage Gain and Frequency Response of OTA Designed Using Experimental Data of Omega-Gate Nanowire SOI MOSFETs	89
<i>Gustavo V. De Araujo, Joao A. Martino, Paula G. D. Agopian</i>	
Trade-Off Between Channel Length and Mechanical Stress in the Operational Transconductance Amplifier Designed with SOI FinFET	93
<i>Arllen D. R. Ribeiro, Gustavo V. Araujo, Joao A. Martino, Paula G. D. Agopian</i>	
Laser-Induced Graphene in Flexible PI/PDMS Polymer Aiming Application in Pressure Sensors	97
<i>D. J. Feria, A. T Lopes, D. D. Purificação, I. Pereyra, M. N. P Carreño</i>	
Interface Trap Density of Commercial 1.7 kV SiC Power MOSFETs	101
<i>Lucas B. Spejo, Samuel Lucidi, Marcos V. Puydinger Dos Santos, José A. Diniz, Renato A. Minamisawa</i>	
Low-Cost Ultraviolet Radiation Sensor Using Epoxy-Resin Optical Filters Over MOS Photodiodes	105
<i>Fernando L. Nogueira Santos, Sebastião G. Dos Santos Filho, João Antonio Martino</i>	
Mapping and Optimization of Oscillator Strength in Quantum Bragg Mirror Detectors as a Function of Their Dimensions	109
<i>Jose E. Ruiz, Pedro H. Pereira, Germano M. Penello, Guilherme M. Torelly, Patricia L. Souza, Mauricio P. Pires</i>	
Ultra-Compact Low-Loss Photonic Crystal Waveguide in Serpentine Form.....	113
<i>Renan Matheus Soares Da Silva, Gabriel Felipe Cândido Novy, Omar Paranaiba Vilela Neto, Jhonattan C. Ramirez</i>	
Electrical Characterization of Ω -Gate Nanowire MOSFETs Down to Cryogenic Temperatures	116
<i>Jefferson Almeida Matos, Michelly De Souza, Mikael Cassé, Sylvain Barraud, Olivier Faynot, Marcelo A. Pavanello</i>	

Junctionless Transistors Based Current Mirrors: Analog Figures of Merit Dependence on the Devices Width	120
<i>André B. Shibutani, Renan Trevisoli, Rodrigo T. Doria</i>	
Analysis of Low-Dropout Voltage Regulator Designed with Gate-All-Around Nanosheet Transistors	124
<i>Rayana Carvalho De Barros Souto, Joao Antonio Martino, Paula Ghedini Der Agopian</i>	
Anti-Reflection Coatings for Photodetectors to Reduce the Reflectance in the SWIR Range	128
<i>Marcelo G. Rua, Rudy M. S. Kawabata, Paulo V. N. Costa, Ana C. A. Monteiro, Leila R. O. Cruz, Carlos L. Ferreira, Patricia L. De Souza</i>	
Influence of Gate Insulator and AlGa _N Barrier Layer on MISHEMT Conduction Mechanisms	131
<i>Bruno G. Canales, Joao A. Martino, Paula G. D. Agopian</i>	
GaAs/AlGaAs Based Quantum Bragg Mirror Detector	135
<i>Germano Maioli Penello, Pedro Henrique Pereira, Guilherme Monteiro Torelly, Fernando Massa Fernandes, James Rushing, Jacob A. Tenorio, Paul Simmonds, Alain André Quivy</i>	
Multiband Rectenna for Radio Frequency Energy Harvesting Applied to Wireless Sensor Network	138
<i>Yago Souto, Brito Filho</i>	
Mobility Extraction Methods in AlGa _N /Ga _N HEMTs	142
<i>Eduardo Canga Panzo, Nilton Graciano Júnior, Eddy Simoen, Maria Glória Caño De Andrade</i>	
Preparation and Characterization of PVC-PMMA Polymer Blends as Flexible Bases for III–V Photovoltaics	147
<i>Graciana S. Sousa, Luciana D. Pinto, Fabiele C. Tavares, Guillermo J. N. Soares, Rogerio Valaski, Roberto Jakomin, Mauricio P. Pires, Patricia L. Souza</i>	

Author Index