

2018 International Flexible Electronics Technology Conference (IFETC 2018)

**Ottawa, Ontario, Canada
7 – 9 August 2018**



**IEEE Catalog Number: CFP18M87-POD
ISBN: 978-1-5386-3358-8**

**Copyright © 2018 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:	CFP18M87-POD
ISBN (Print-On-Demand):	978-1-5386-3358-8
ISBN (Online):	978-1-5386-3357-1

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

2018 International Flexible Electronics Technology Conference (IFETC)

Tutorial - Flexible Printed Organic TFT Devices and Integrated Circuit Applications

<i>Flexible Printed Organic Thin-Film Transistor Devices and Integrated Circuit Applications</i> Shizuo Tokito (Yamagata University, Japan)	1
--	---

Session A - Flexible RFID and Antennas

<i>Flexible Internet-of-Things Circuits Based on Thin-Film Transistors</i> Kris Myny (Imec, Belgium)	3
<i>Electromagnetic Engineered Surface Gratings at 5G Bands Using Printed Electronics</i> Jonathan Ethier (Government of Canada, Industry, Science and Innovation, Canada), Reza Chaharmir (Communications Research Centre Canada, Canada), Jafar Shaker (Communications Research Centre, Canada), Khelifa Hettak (Communications Research Centre (CRC), Canada)	4
<i>Fully Printed Flexible and Reconfigurable Antenna with Novel Phase Change VO₂ Ink Based Switch</i> Mohammad Vaseem (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Zhen Su (King Abdullah University of Science and Technology, Saudi Arabia), Shuai Yang (King Abdullah University of Science & Technology, Saudi Arabia), Atif Shamim (King Abdullah University of Science and Technology, Saudi Arabia)	6
<i>A Proposed Prototype for Cattle Monitoring System Using RFID</i> Chokri Jebali (École de Technologie Supérieure, Canada), Ammar Kouki (École de Technologie Supérieure, Canada)	8
<i>Fabrication and Performance Evaluation of Carbon-based Stretchable RFID Tags on Textile Substrates</i> Han He (Tampere University of Technology, Finland), Xiaochen Chen (Tampere University of Technology, Finland), Omid Mokhtari (Osaka University, Japan), Hiroshi Nishikawa (Osaka University, Japan), Leena Ukkonen (Tampere University of Technology, Finland), Johanna Virkki (Tampere University of Technology, Finland)	11

Poster Session

<i>Circularly Polarized Microstrip Antenna on Ultrathin PET Substrate for UHF RFID Applications</i> Chinmoy Saha (Indian Institute of Space Science and Technology, India & Royal Military College of Canada, Canada), Yahia Antar (Royal Military College of Canada, Canada), Gaozhi (George) Xiao (National Research Council Canada, Canada)	16
<i>A 3D Printed Flexible Passive RFID for Temperature Sensing</i> Woo Soo Kim (Simon Fraser University, Canada)	19
<i>Flexible Quasi-Isotropic Antenna for Marine Animals Tagging Application</i> Qingle Zhang (City University of Hong Kong, Hong Kong), YenHung Kuo (KAUST, Saudi Arabia), Nidhi Mishra (KAUST, Saudi Arabia), Atif Shamim (King Abdullah University of Science and Technology, Saudi Arabia)	22
<i>Bending Properties of Solid Thin Flexible Energy Storage Devices</i> Haoran Wu (University of Toronto, Canada), Julian Rosas (University of Toronto, Canada), Keryn Lian (University of Toronto, Canada)	24
<i>Thermal Transfer Printing with Donor Ribbon for Flexible Hybrid RFID Antenna Fabrication</i> Philippe Descent (Ecole de Technologie Supérieure, Canada), Ricardo Izquierdo (ETS, Canada)	26
<i>Triboelectric Flexible Sensors Employing Single-Walled Carbon Nanotube Field-Effect Transistors</i> Lingju Meng (University of Alberta, Canada), Qiwei Xu (University of Alberta, Canada), Li Dan (University of Alberta, Canada), Xihua Wang (University of Alberta, Canada)	28
<i>0-3 Polymer/Barium Titanate Nano Structures Based Flexible Piezoelectric Film</i> Kiran kumar Sappati (McGill University, Canada)	30
<i>Deformable User Interfaces: Using Flexible Electronics for Human Computer Interaction</i> Audrey Girouard (Carleton University, Canada), Alexander Eady (Carleton University, Canada)	32
<i>Energy Levels and Open-Circuit Voltages in Organic Solar Cells</i> Peicheng Li (University of Toronto, Canada), Weiji Hong (University of Toronto, Canada), Grayson Ingram (University of Toronto, Canada), Zheng-Hong Lu (University of Toronto, Canada)	35
<i>Mechanical Stress Simulation of Thin Film Transistor on Flexible Substrate</i> Sungwon Kong (Silvaco, USA), Heetaek Lim (Silvaco, USA), Andreas Hoessinger (Silvaco, Austria), Eric Guichard (Silvaco, USA)	37
<i>A High Speed Programmable Ring Oscillator Using InGaZnO Thin-Film Transistors</i> Bhawna Tiwari (IIIT Delhi, India), Jorge Martins (CENIMAT, Portugal), Shivam Kalla (IIIT Delhi, India), Shashwat Kaushik (IIIT Delhi, India), Ana Santa (FCT, UNL, Portugal), Pydi Bahubalindruni (IIIT, Delhi, India), Vitor Grade Tavares (INESC TEC/Faculty of Engineering, University of Porto, Portugal), Pedro Barquinha (CENIMAT, Portugal)	41
<i>Generic Parameter Extraction of Inkjet-Printed OTFTs via Optimisation Using LTspice and MATLAB</i> Denis Shleifman (National Research Council Canada, Canada, Canada), Ryan Griffin (National Research Council Canada, Canada), Afshin Dadvand (National Research Council Canada, Canada), Ta-Ya Chu (National Research Council Canada, Canada)	47
<i>Comparative Analysis of 1-Bit Memory Cell in CMOS and QCA Technology</i> Rupinder Kaur (Chitkara University, India), Nitin Saluja (Chitkara University, India)	50

<i>A Comparative Study of On-Chip Clock Generators Using a-IGZO TFTs for Flexible Electronic Systems</i> Nishtha Wadhwa (IIIT, Delhi, India), Jorge Martins (CENIMAT, Portugal), Pydi Bahubalindrani (IIIT, Delhi, India), Sujay Deb (IIIT Delhi, India), Pedro Barquinha (CENIMAT, Portugal)	53
<i>Carbon Based Electrode for Wearable Biosignal Monitoring Patch</i> Hachul Jung (K BIO Health, Korea)	59
<i>Highly Robust Oxide Thin Film Transistors for Stretchable Electronics</i> Md Hasan (Kyung Hee University, Seoul, South Korea, Korea)	61
<i>Inkjet Printed Hybrid Organic-Quantum Dots Solar Cells: Effects of Pre- And Post-Printing Activities</i> Ashkan Shafiee (Wake Forest School of Medicine, USA), Elham Ghadiri (Wake Forest University, USA), Muhamad Mat Salleh (Universiti Kebangsaan Malaysia, Malaysia), Muhammad Yahaya (Universiti Kebangsaan Malaysia, Malaysia)	64
<i>Characterization of the Repeatability and Sensitivity of the Quantum Tunneling Composites</i> Sharvari Dhote (5 King's College Circle & University of Toronto, Canada), Kamran Behdinan (University of Toronto, Canada), Jia Bian (University of Toronto, Canada)	70
<i>Improving the Adhesion Between Silver Nanowire Transparent Electrode and PET Film Using a Crosslinkable Polymer</i> Gaozhi (George) Xiao (National Research Council Canada, Canada)	72
<i>Fully Printed Organic Pseudo-CMOS Circuits for Sensing Applications</i> Leilai Shao (University of California, Santa Barbara, USA), Ta-Ya Chu (National Research Council Canada, Canada), Ye Tao (Advance Electronics and Photonics, Canada), Kwang-Ting Cheng (Hong Kong University of Science and Technology, P.R. China)	75
<i>Optimizing the Electrical Conductivity of Screen Printed Silver Conductive Tracks by Post Treatment</i> Haixiang Sun (National Research Council Canada, Canada), Gaozhi (George) Xiao (National Research Council Canada, Canada), Stephen Lang (National Research Council Canada, Canada), Zhiyi Zhang (National Research Council Canada, Canada), Ye Tao (Advance Electronics and Photonics, Canada)	79
<i>Flexible LED Displays for Electronic Textiles</i> Wilson Huang (Taiwan Textile Research Institute, Taiwan), Yu-Chi Wang (Taiwan Textile Research Institute, Taiwan), Po-Chun Hsu (Taiwan Textile Research Institute, Taiwan), Wei-Chung Wang (Taiwan Textile Research Institute, Taiwan), Alice Cavalier (National Graduate School of Chemistry of Montpellier, France), Tzu-Hao Huang (Taiwan Textile Research Institute, Taiwan), Chien-Lung Shen (Taiwan Textile Research Institute, Taiwan)	82
<i>A Printed Physiological Monitoring Module in E-Textile</i> Po-Chun Hsu (Taiwan Textile Research Institute, Taiwan), Chien-Lung Shen (Taiwan Textile Research Institute, Taiwan), Fen-Ling Chen (Taiwan Textile Research Institute, Taiwan), Wilson Huang (Taiwan Textile Research Institute, Taiwan), Wei-Chung Wang (Taiwan Textile Research Institute, Taiwan), Tzu-Hao Huang (Taiwan Textile Research Institute, Taiwan)	85
<i>A Self Sustained 6LoWPAN of a Sleepy Multi-Sensors with OND Support</i> Mohamed Seliem (University of Louisiana at Lafayette, USA), Khalid Elgazzar (University of Ontario Institute of Technology, Canada)	87
<i>Exploring Slot-Die Coating for Large Area Fullerene-Free Organic Photovoltaics</i> Audrey Laventure (University of Calgary, Canada), Cayley Harding (University of Calgary, Canada), Gregory Welch (University of Calgary, Canada)	89
<i>Printing Contractive Silver Conductive Inks Using Interface Interactions to Overcome Dewetting</i> Kevin Ton (University of Toronto, Canada), Ta-Ya Chu (National Research Council Canada, Canada), Zhiyi Zhang (National Research Council Canada, Canada), Ye Tao (Advance Electronics and Photonics, Canada)	90
<i>Fully Printed Parallel Plate Capacitance Humidity Sensors</i> Mickey Chen (National Research Council Canada, Canada), Heping Ding (National Research Council Canada, Canada), Zhiyi Zhang (National Research Council Canada, Canada), Stephen Lang (National Research Council Canada, Canada), Ye Tao (Advance Electronics and Photonics, Canada), Ta-Ya Chu (National Research Council Canada, Canada), Gaozhi (George) Xiao (National Research Council Canada, Canada), Neil Graddage (National Research Council Canada, Canada), Kevin Ton (University of Toronto, Canada)	92
<i>Separation of a Functional Film from a SiC Substrate by Ion Cut Without Bonding</i> Bing Hu (SaphiTech LLC, USA), Liang Ma (Beijing Zhongke Tianshun Information Technology Co. Ltd., P.R. China), Sujuan Liu (Beijing Zhongke Tianshun Information Technology Co. Ltd., P.R. China), Debo Guo (Beijing Zhongke Tianshun Information Technology Co. Ltd., P.R. China)	95
<i>Capacitance-Voltage Investigation of HfO₂/Al₂O₃ Bilayered High-k Dielectrics on Si Nanomembrane</i> Chen Liu (Xidian University, P.R. China), Zhuofan Wang (Xidian University, P.R. China), Yuming Zhang (Xidian University, P.R. China), Hongliang Lu (Xidian University, P.R. China), Jing Zhao (Xidian University, P.R. China), Zhang Yimen (Xidian University, P.R. China), Lixin Guo (Xidian University, P.R. China)	98

Session B - Flexible Energy Harvesters and Storages

<i>Sustainable Materials for Solid Flexible Supercapacitors</i> Keryn Lian (University of Toronto, Canada), Haoran Wu (University of Toronto, Canada), Matthew Genovese (University of Toronto, Canada), Alvin Virya (University of Toronto, Canada), Jak Li (University of Toronto, Canada), Kevin Ton (University of Toronto, Canada)	100
<i>R2R Gravure as an Additive Manufacturing Technology for the Fabrication of Large Area Flexible Displays and Inexpensive NFC Sensor Tags</i> Gyoujin Cho (Sunchon National University, Korea)	102

<i>Screen Printed Vias for a Flexible Energy Harvesting and Storage Module</i>	
Manu Kujala (Tampere University of Technology, Finland), Terho Kololuoma (VTT Technical Research Centre of Finland Ltd., Finland), Jari Keskinen (Tampere University of Technology, Finland), Donald Lupo (Tampere University of Technology, Finland), Matti Mäntysalo (Tampere University of Technology, Finland), Thomas M. Kraft (VTT Technical Research Centre of Finland, Finland)	103
<i>3D Printed Ion-Selective Field Effect Transistors</i>	
Chao Bao (Simon Fraser University, Canada)	109
<i>Electrostatically Driven Airborne Ultrasound Transmitter with Fine Mesh Electrode</i>	
Takaaki Kamigaki (The University of Tokyo, Japan), Yuki Ninomiya (The University of Tokyo, Japan), Hiroyuki Shinoda (University of Tokyo, Japan)	112
<i>Inkjet-Printing of Methylammonium Lead Trihalide Perovskite-Based Flexible Optoelectronic Devices</i>	
Charles Trudeau (Ecole de Technologie Supérieure & Institut National d'Optique (INO), Canada), Martin Bolduc (Institut National d'Optique, Canada), Patrick Beaupré (Institut National d'Optique, Canada), Ibrahim Ka (École de Technologie Supérieure, Canada), Ivy Asuo (École de Technologie Supérieure, Canada), Sylvain Cloutier (Ecole de Technologie Supérieure, Canada)	115

Session C - Novel Materials and Processes

<i>Progress in Materials and Processes for Printed Electronics</i>	
Beng Ong (Hong Kong Baptist University, Hong Kong)	121
<i>Stretchable Optical and Electronic Fibers via Thermal Drawing</i>	
Yunpeng Qu (EPFL, Switzerland), Tung Nguyen-Dang (EPFL, Switzerland), Alexis Page (EPFL, Switzerland), Wei Yan (EPFL, Switzerland), Tapajyoti Das Gupta (EPFL, P.R. China), Rene Rossi (EMPA, Switzerland), Valentine Favrod (EPFL, Switzerland), Nicola Bartolomei (EPFL, Switzerland), Fabien Sorin (EPFL, Switzerland)	122
<i>Low Temperature (80 °C) Sinterable Particle Free Silver Ink for Flexible Electronics</i>	
Mohammad Vaseem (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Atif Shamim (King Abdullah University of Science and Technology, Saudi Arabia)	123

Session D - Flexible sensors, actuators and transducers

<i>Flexible, Stretchable and Healable Electronics</i>	
Fabio Cicoira (Polytechnique Montreal & Chemical Engineering, Canada)	125
<i>A 2x2 Flexible Tactile Sensor Array Based on Mechanical-Field-Coupled TFTs</i>	
Kai Wang (School of Electronics and Information Technology, Sun Yet-sen University, P.R. China, P.R. China)	126
<i>A Piezo Transducer Based Flexible Hybrid Sensor for Health Monitoring</i>	
Amirhossein Shahshahani (University of McGill, Canada)	128
<i>Flexible Carbon-based Urea Sensor by Laser Induced Carbonisation of Polyimide</i>	
Emil R. Mamleyev (Karlsruhe Institute of Technology, Germany), Nurdiana Nordin (Karlsruhe Institute of Technology, Germany), Stefan Heissler (Karlsruhe Institute of Technology, Germany), Kerstin Länge (Institut für Mikrostrukturtechnik (IMT), Germany), Neil MacKinnon (Karlsruhe Institute of Technology, Germany), Swati Sharma (Karlsruhe Institute of Technology, Germany)	130
<i>Flexible Piezoresistive Sensors Fabricated by Spalling Technique</i>	
Katsuyuki Sakuma (IBM T. J. Watson Research Center, USA)	136

Session E - Other Applications

<i>Integration Strategy for Heterogeneously Integrated Wearable and Implantable Electronics</i>	
Muhammad Hussain (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)	138
<i>Printed Multifunctional Flexible Healthcare Patch</i>	
Kuniharu Takei (Osaka Prefecture University & JST PRESTO, Japan)	139
<i>Toward Growable Robot: Exploring and Integrating Flexible - Biological Matter with Electronics</i>	
Pat Pataranutaporn (MIT Media Lab, FREAK Lab, USA), Jaime De La Vega (Arizona State University, USA), Abhik Chowdhury (Arizona State University, USA), Audrey Ng (Nanyang Technological University, USA), Galina Mihaleva (NTU, Singapore)	140
<i>Inkjet Printing of A Reactive Oxygen Species Scavenger for Flexible Bioelectronics Applications in Neural Resilience</i>	
Ashkan Shafiee (Wake Forest School of Medicine, USA), Elham Ghadiri (Wake Forest University, USA), Muhamad Mat Salleh (Universiti Kebangsaan Malaysia, Malaysia), Muhammad Yahaya (Universiti Kebangsaan Malaysia, Malaysia), Anthony Atala (Wake Forest School of Medicine, USA)	144
<i>Metal-Elastomer Surface Deformation Control on Super-Compressible Strain Transducer Arrays</i>	
Cong Wang (Northumbria University, United Kingdom (Great Britain)), Ben Xu (Northumbria University, United Kingdom (Great Britain)), Jonathan Terry (University of Edinburgh, United Kingdom (Great Britain)), Stewart Smith (University of Edinburgh, United Kingdom (Great Britain)), Anthony Walton (University of Edinburgh, United Kingdom (Great Britain)), Yifan Li (Northumbria University, United Kingdom (Great Britain))	150

Session F - Organic Electronic Devices

<i>Soft Organic Electronics Based on Graphene Electrodes</i> Kilwon Cho (Pohang University of Science and Technology, Korea)	153
<i>Printable Solar Panels - Eni's R&D Activity on Organic Photovoltaics (OPV)</i> Andrea Bernardi (Eni, Italy)	154
<i>Printing of Flexible, Large-Area Organic Photovoltaic Cells</i> Yuliang Zhang (Université du Québec à Montréal, Canada), Ricardo Izquierdo (ETS, Canada), Shuyong Xiao (1 Material Inc., Canada)	155
<i>1Cm2 sub-1V Capacitive-Coupled Thin Film ID-Tag Using Metal-oxide TFTs on Flexible Substrate</i> Nikolaos Papadopoulos (Imec, Belgium), Steve Smout (Imec, Belgium), Myriam Willegems (Imec, Belgium), Marc Ameys (Imec, Belgium), Ganesh Rathinavel (Imec-nl, The Netherlands), Gerd Beeckman (Imec-nl, Belgium), Jan Stuijt (Imec-nl, The Netherlands), Kris Myny (Imec, Belgium)	158
<i>Flexible Green Perovskite Light Emitting Diodes</i> Giuseppe Cantarella (Wearable Computing Lab ETH Zürich, Switzerland), Sudhir Kumar (ETH Zurich, Switzerland), Jakub Jagielski (ETH Zurich, Switzerland), Chih-Jen Shih (ETH Zurich, Switzerland), Gerhard Tröster (Wearable Computing Lab ETH Zürich, Switzerland)	160

Session G - Wearable devices and smart textiles

<i>Functional Electronic Textiles: Circuit Integration and Energy Harvesting Power Supplies</i> Stephen Beeby (University of Southampton, United Kingdom (Great Britain)), Russel Torah (University of Southampton, United Kingdom (Great Britain)), John Tudor (University of Southampton, United Kingdom (Great Britain)), Menglong Li (University of Southampton, United Kingdom (Great Britain)), Abiodun Komolafe (University of Southampton, United Kingdom (Great Britain)), Kai Yang (University of Southampton, United Kingdom (Great Britain))	163
<i>Printed and Flexible Electronics for Wearables</i> Jie Zhang (Changzhou Institute of Printed Electronics Industry, P.R. China)	166
<i>Characterization of a Flexible Device Using a 3-Point Rolling Test</i> Mukunda Madhava Nath (Samsung R&D Institute Bangalore, India), Gaurav Gupta (Samsung R&D Institute, India)	167

Session H - Novel Materials and Processes

<i>Adopting Hybrid Integrated Flexible Electronics in Products: Case - Personal Activity Meter</i> Terho Kololuoma (VTT Technical Research Centre of Finland Ltd., Finland), Mikko Keränen (Ynvisible, Portugal), Timo Kurkela (VTT Technical Research Centre of Finland, Finland), Tuomas Happonen (VTT Technical Research Centre of Finland, Finland), Marko Korkalainen (VTT Technical research centr of Finland, Finland), Minna Kehusmaa (VTT Technical Research Centre of Finland, Finland), Sami Ihme (VTT Technical Research Centre of Finland, Finland), Ilkka Kaisto (VTT Technical Research Centre of Finland, Finland), Ashley Colley (University of Lapland, Finland), Kari Rönkä (VTT Technical Research Centre of Finland, Finland)	172
<i>Plasma Functionalised GNP for Volume Printed Flexible Electronics</i> Tim Claypole, MBE (Swansea University, United Kingdom (Great Britain)), Andrew Claypole (Swansea University, United Kingdom (Great Britain)), James Claypole (Swansea University, United Kingdom (Great Britain)), Sarah-Jane Potts (Swansea University, United Kingdom (Great Britain)), Tim Mortensen (Swansea University, United Kingdom (Great Britain))	178
<i>Smart Fibers Based on Low Dimensional Conductive Materials</i> Ranran Wang (Shanghai Institute of Ceramics, Chinese Academy of Sciences, P.R. China), Jing Sun (Shanghai Institute of Ceramics, Chinese Academy of Sciences, P.R. China)	179
<i>Process Integration for FlexTrate</i> Takafumi Fukushima (Tohoku University, Japan), Yuki Susumago (Tohoku University, Japan), Hisashi Kino (Tohoku University, Japan), Tetsu Tanaka (Tohoku University, Japan), Arsalan Alam (UCLA, USA), Amir Hanna (UCLA, USA), Subramanian Iyer (UCLA, USA)	181
<i>Novel Approach to Print Submicron Conductive Lines: From the Fundamental Process to the Laboratory Printer</i> Piotr Kowalczewski (XTPL SA, Poland), Aneta Wiatrowska (XTPL SA, Poland), Maciej Zięba (XTPL, Poland)	183

Technical Sponsor Session - IEEE EDS

<i>Transparent and Flexible Oxide Nano-Electronics</i> Arokia Nathan (University of Cambridge, United Kingdom (Great Britain)), Chen Jiang (University of Cambridge, United Kingdom (Great Britain)), Xiang Cheng (University of Cambridge, United Kingdom (Great Britain)), Xiaojun Guo (Shanghai Jiao Tong University, P.R. China), Hanbin Ma (University of Cambridge, United Kingdom (Great Britain)), Hyung Choi (University of Cambridge, United Kingdom (Great Britain))	185
<i>Surface Potential Based Compact Model for Thin Film Transistor</i> Ling Li (Unknown, P.R. China)	186
<i>Development of High Performance Infrared Printed Photodiodes for Biological Signal Detection</i> Yong-Young Noh (Dongguk University, Korea)	187

Session I - Circuits Design and Simulation for Flexible Electronics

Hybrid Systems-in-Foil - Combining Thin Chips with Large-Area Electronics

Joachim Burghartz (Institut für Mikroelektronik Stuttgart, Germany), Golzar Alavi (Institut für Mikroelektronik Stuttgart (IMS CHIPS), Germany), Björn Albrecht (Institut für Mikroelektronik Stuttgart (IMS CHIPS), Germany), Thomas Deuble (Institut für Mikroelektronik Stuttgart, Germany), Mourad Elsobky (Institut für Mikroelektronik Stuttgart (IMS CHIPS), Germany), Saleh Ferwana (Institut für Mikroelektronik Stuttgart (IMS CHIPS), Germany), Christine Harendt (Institut für Mikroelektronik Stuttgart (IMS CHIPS), Germany), Yigit Mahsereci (INES Institut für Nano- und Mikroelektronische Systeme, Universität Stuttgart, Germany), Harald Richter (IMS Chips, Germany), Zili Yu (IMS CHIPS, Germany)

189

3D Printed Flexible Coreless Transformers

Woo Soo Kim (Simon Fraser University, Canada)

195

Design of UWB Chipless RFID Tag Using Microstrip and Slot Cross-shaped Resonators

Cheng Teng (University of Macau, Macao & Jinan University, P.R. China), Li-Kang Wang (University of Macau, Macao), Pedro Cheong (University of Macau, Macao), Sut-Kam Ho (University of Macau, Macao), Wai Wa Choi (University of Macau, Macao), Guanghua Yang (Jinan University, P.R. China), Kam Weng Tam (University of Macau, P.R. China)

199

A Low-Power Rail-to-Rail Row/Column Selector Operating at 2V Using a-IGZO TFTs for Flexible Displays

Ângelo Santos (New University of Lisbon & CENIMAT, Portugal), Bhawna Tiwari (IIIT Delhi, India), Jorge Martins (CENIMAT, Portugal), Ana Santa (FCT, UNL, Portugal), Kamal Chapagai (IIIT-Delhi, India), Pydi Babubalindruni (IIIT, Delhi, India), Pedro Barquinha (CENIMAT, Portugal)

203

Operation and Control of Flexible Display Pixel Circuits Under Mechanical Bending

Qing Li (University of Waterloo, Canada), Czung-Ho Lee (University of Waterloo, Canada), Mohsen Asad (University of Waterloo, Canada), Manoj Sachdev (University of Waterloo, Canada), William Wong (University of Waterloo, Canada)

209

Technical Sponsor Session - NRC

A Versatile Low Temperature Curing Molecular Silver Ink Platform for Printed Electronics

Xiangyang Liu (NRC, Canada)

213

Printed Sensors for Building Management

Zhiyi Zhang (National Research Council Canada, Canada)

214

Special Session: CMOS Integrated Flexible and Stretchable Electronics for Healthcare and Human Machine Interface Applications

Additively Manufactured Flexible and Stretchable Antenna Systems for Wearable Applications

Atif Shamim (King Abdullah University of Science and Technology, Saudi Arabia), Mohammad Vaseem (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Sizhe An (King Abdullah University of Science and Technology, Saudi Arabia), Muhammad Farooqui (King Abdullah University of Science and Technology, Saudi Arabia)

217

Understanding the Stretching Mechanism of Spiral-Island Configurations for Highly Stretchable Electronics

Nadeem Qaiser (King Abdullah University of Science and Technology, Saudi Arabia), Sherjeel M Khan (King Abdullah University of Science and Technology, Saudi Arabia), Muhammad Hussain (KAUST, Saudi Arabia)

219

Do-It-Yourself (DIY) Based Flexible Paper Sensor Based Electronic System for Pill Health Monitoring

Sherjeel M Khan (King Abdullah University of Science and Technology, Saudi Arabia), Nadeem Qaiser (King Abdullah University of Science and Technology, Saudi Arabia), Muhammad Hussain (KAUST, Saudi Arabia)

221

Technical Sponsor Session - IEEE IMS

Nanogenerators on Flexible Substrates

Dayan Ban (, Canada)

223

Fluorescence pH Sensor Based on Polymer Film

Luigi Rovati (University of Modena and Reggio Emilia, Italy), Stefano Cattini (University of Modena and Reggio Emilia & Science & Technology Park for Medicine, Mirandola, Modena, Italy), Paola Fabbri (University of Bologna, Italy), Luca Ferrari (CNH Industrial, Italy)

225

Contacts with Nanocarbon Structures in Flexible Electronics

Jeongwon Park (University of Ottawa, Canada), Changjian Zhou (South China University of Technology, P.R. China), Cary Yang (Santa Clara University, USA)

230