

[IEEE IFETC2019] August 11-14, 2019 Detailed Program

Sunday, August 11th 2019	
3:00 - 6:00 PM	Conference Registration (Harbour Centre Concourse)

Monday, August 12th 2019	
7:30	Conference Registration (Harbour Centre Concourse)
8:30	Opening Remarks (Fletcher Challenge Theatre)

8:45 - 9:45	Plenary Talk #1 (Fletcher Challenge Theatre) Prof. John A. Rogers: "Flexible Electronics in Digital Medicine"
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9:45 - 10:10	Coffee break (Harbour Centre Concourse)
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10:10 - 11:10	Plenary Talk #2 (Fletcher Challenge Theatre) Prof. Arokia Nathan: "Integration Strategies for Ultra Low Power Flexible Electronics"
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	<table border="1" style="width: 100%;"> <tr> <th style="width: 50%;">Room 1400 & 1410</th> <th style="width: 50%;">Room 1420 & 1430</th> </tr> <tr> <td>11:10-12:10 PM</td> <td>Tutorial #1: Prof. Peyman Servati, UBC Canada, "Stretchable electronic skin and smart textile for health and medical applications"</td> </tr> <tr> <td></td> <td>Tutorial #2: Dr. Guozhen Shen in Chinese Science Academy, China, "Tuning nanowire photodetectors for flexible image sensors"</td> </tr> </table>	Room 1400 & 1410	Room 1420 & 1430	11:10-12:10 PM	Tutorial #1: Prof. Peyman Servati, UBC Canada, "Stretchable electronic skin and smart textile for health and medical applications"		Tutorial #2: Dr. Guozhen Shen in Chinese Science Academy, China, "Tuning nanowire photodetectors for flexible image sensors"
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12:10 - 1:15 PM	Lunch (Harbour Centre Concourse)
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	Room 1400	Room 1410	Room 1420	Room 1430	
1:15 - 3:20 PM	Session 1.1 Flexible Sensors and Smart IoTs I, Chair: Prof. Byron Gates 1:15-1:40 [Invited] Printed Electronic Sensor Applications: From Simple to Extreme Environments, Prof. Harish Subbaraman 1:40-2:05 [Invited] Flexible Printed Acoustic Sensors, Prof. Sharmistha Bhadra 2:05-2:20 1570548371 Fall Detection with Neural Networks, Gaojing Wang 2:20-2:35 1570539537 A Fully Inkjet-Printed Flexible Microwave Multiresonator Circuit for Concentration Measurements of Liquid Solutions, Zonghao Li 2:35-2:50 1570548948 Development of Capacitive Wearable Patches and Bands for Data Fusion in Complex Physical Activities, Akanksha Rohit 2:50-3:05 1570539735 Smart Contact Lenses Integrated on Soft Contact Lenses for Wireless Ocular Diagnostics, Joohee Kim 3:05-3:20 1570546938 Characterization of Rigid and Flexible 3D Printed Planar Antennas, T. Searles	Session 1.2 Flexible Sensors and Smart IoTs II, Chair: Prof. Irene Goldthorpe 1:15-1:40 [Invited] Fully Printable and Autonomously Powered Electronic Nodes for the Internet of Everything, Prof. Paul R. Berger 1:40-2:05 [Invited] 3D-printed Flexible Chemical Sensing Solutions for Internet-of-Things, Prof. Woo Soo Kim 2:05-2:20 1570544114 New Ion-selective Sensing Platform: Additively Manufactured Flexible Digital Microfluidic System, Xin Min 2:20-2:35 1570547217 3D Printed Disposable Wireless Ion Selective Sensing Platform, Taeil Kim 2:35-2:50 1570539225 Peptide-functionalized Single-walled Carbon Nanotube Field-effect Transistors for Monitoring Volatile Organic Compounds in Breath, Daniel Sim 2:50-3:05 1570543765 Smart Thread Based pH Sensitive Antimicrobial Wound Dressing, Lucas R. Karperien 3:05-3:20 1570541307 Flexible BaTiO ₃ -PDMS Composite Thin Films for Sensing Applications, Kiran Kumar Sappati	Session 2.1 Flexible Thin Film Circuits I, Chair: Prof. Bonnie Gray 1:40-2:05 [Invited] Interface and sub-gap states density extraction model from the field effect Characteristics of amorphous thin film transistors, Prof. Ling Li 2:05-2:20 1570539636 A Study on Pentacene OTFTs by Using NdTiON as Gate Dielectric, Y. X. Ma 2:20-2:35 1570541656 Island Thickness Effects for Stretchable InGaZnO Thin Film Transistors on Wavy-Dimensional Elastomer Substrate, Hye-Won Jang 2:35-2:50 1570548946 2-Volt Solution-Processed, Indium Oxide (In ₂ O ₃) Thin Film Transistors on Flexible Kapton, Sagar R. Bhaleao 2:50-3:05 1570548947 Characteristics of Single Crystal MoS ₂ TFTs Using Inkjet-Printed Electrodes, M. Nouri 3:05-3:20 1570548322 Thin-film Transistor Electrical Performance of Hybrid MoS ₂ -P3HT Semiconductor Layers, Naeun Kim	Session 2.2 Flexible Thin Film Circuits II, Chair: Dr. Ta-Ya Chu 1:15-1:40 [Invited] Essential requirements for the commercialization of organic printed transistors and integrated circuits, Prof. Sungjune Jung 1:40-2:05 [Invited] Passive Sensing with Embroidered Electronics, Prof. Terry Ye 2:05-2:20 1570539640 Flexible Printed Top-Contact Organic Thin-Film Transistors, Yongwoo Lee 2:20-2:35 1570548956 Heterogeneous Integration of InGaN Micro-LEDs with a:Si TFT Arrays on Flexible Substrates, Mohsen Asad 2:35-2:50 1570549003 Sigma-Delta Modulation for SMES-Based DVR, Pooya Taheri	
	3:20 - 3:45 PM	Coffee break (Harbour Centre Concourse)			

	Room 1400	Room 1410	Room 1420	Room 1430	
3:45 - 5:45 PM	Session 3.1 Material Innovations in Flexible Electronics I, Chair: Prof. Sungjune Jung 3:45-4:10 [Invited] Printable Silicon for a novel RFID system approach on flexible substrates, Prof. Niels Benson 4:10-4:35 [Invited] Silver nanowires for printable, flexible electronics: transparent electrodes and e-textiles, Prof. Irene Goldthorpe 4:35-4:50 1570548376 Nanowoven Electrospun Nanofibers, Mikhail Kanygin 4:50-5:05 1570548390 Laser Scribed Carbon Layers: Process Optimization & Sensor Applications, Tianyi Cai 5:05-5:20 1570548417 Modeling the Mechanical Performance of Foldable Display Under Cyclic Loading, Mukunda Madhava Nath 5:20-5:35 1570547893 A Phase-Separated Polymer Blocking Layer for Enhancing Data Retention in Flexible Printed Nonvolatile Organic Memories, Woojo Kim	Session 3.2 Material Innovations in Flexible Electronics II, Chair: Prof. Paul R. Berger 3:45-4:10 [Invited] Siloxane Based Flexible Hard Coating on Cover Window Plastic Film for Implementation of Reliable Foldable Smartphone, Prof. Byeong-Soo Bae 4:10-4:35 [Invited] Tuning the Surface Chemistry of Materials through the Alcohol Condensation Reaction, Prof. Byron Gates 4:35-4:50 1570540637 Photodetector Based on All-inorganic Perovskite Quantum Dots with Ring Electrode, Qing Li 4:50-5:05 1570549075 Resistive Switching Behaviour of PVP/HfOx Hybrid RRAM on Flexible Substrate, Ishan Varun 5:05-5:20 1570541372 Effect of Mechanical Cycling on the Magnetic Properties of Permalloy Films Electroplated on Stretchable Substrates, Connor S. Smith 5:20-5:35 1570549180 Construction and Testing of a Functional Multilayer Demonstration Circuit Made with Gallium Indium Tin Metal Gel and Non-Silicone Stretchable Thermosetting Film, Mark Ronay	Session 1.3 Flexible Sensors and Smart IoTs III, Chair: Dr. George Xiao 3:45-4:10 [Invited] Biomarker Sensor Development for Human Performance and Protection, Dr. Steve S. Kim 4:10-4:35 [Invited] High-Resolution Printing Methods for Flexible Sensor Platforms, Prof. Jang-Ung Park 4:35-4:50 1570549315 A Low-Cost Chalcogenide Ion Sensitive Electrode for Copper Sensing with an LoD < 20 ppb, Priya Vinayak 4:50-5:05 1570549182 Synthesis of Monodisperse Ag ₂ Se Quantum Dots with Elevated Precursor Reactivity for the Application in near Infrared Photodetectors, Jianying Ouyang 5:05-5:20 1570549274 Thin Film GaAs Devices on Epi-Ready Metal Substrates for Flexible Photovoltaics and Flexible Electronics, V. Selvamanickam 5:20-5:35 1570544558 Artificial Neural Network Modelling and Simulation of Organic Field Effect Transistors and Circuits, Ryan H. Griffin	Session 1.4 Flexible Sensors and Smart IoTs IV, Chair: Dr. Patrick Malenfant 3:45-4:10 [Invited] Transforming Soft Bioelectronics with Nanomeshed Material Components, Prof. Hui Fang 4:10-4:35 [Invited] Integrated microfluidic and electronic platforms for flexible and wearable devices and systems, Prof. Bonnie Gray 4:35-4:50 1570547467 Bending and Frequency Response of Piezo-sensor, C. Rokaya 4:50-5:05 1570548161 All-solid dual-pH Electrolyte Electrochemical Capacitor, Haoran Wu 5:05-5:20 1570549816 Signal Quality Analysis of Electro-cardiogram Textile Electrodes for Smart Apparel Applications, Katherine Le 5:20-5:35 1570548412 Ion Penetration Model of SiO ₂ /SiN _x /SiO ₂ Barrier Trilayer for Implantable Electronics, Chen Liu	
	5:45 - 7:00 PM	Poster Session & Welcome Reception (Harbour Centre Concourse)			

Tuesday, August 13th 2019	
8:00 - 8:30	Coffee break (Harbour Centre Concourse)
8:30 - 9:30	Plenary Talk #3 (Fletcher Challenge Theatre) Dr. Jupiter Hu, Deputy General Director at ITRI, "Roll-to-roll processes for flexible electronics"

	<table border="1" style="width: 100%;"> <tr> <th style="width: 33%;">Room 1400</th> <th style="width: 33%;">Room 1410</th> <th style="width: 33%;">Room 1420 & 1430</th> </tr> </table>	Room 1400	Room 1410	Room 1420 & 1430
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9:30 - 12:00 PM	Session 3.3 Material Innovations in Flexible Electronics III, Chair: Prof. Keryn Lian	Session 3.4 Material Innovations in Flexible Electronics IV, Chair: Prof. Taek-Soo Kim	Special Invited Sesssion #1: Emerging Materials and Devices for Advanced Soft Implantable Systems Chair: Prof. Hui Fang, Northeastern University, USA
	9:30-9:55 [Invited] A Study on the Dynamic Bending Reliability of Chip-in-Flex and -Fabrics (CIFs) Packages using Anisotropic Conductive Films (ACFs) Materials for Flexible Electronic Applications, Prof. Kyung-Wook Paik	9:30-9:55 [Invited] Responsive Liquid Metals for Reconfigurable, Ultra-Stretchable, and Self-Healing Electronics, Dr. Christopher Tabor	9:30-9:55 Microelectrode Arrays for Large Scale Clinical Mapping: Electrochemical and Density Considerations, Prof. Shadi A. Dayeh
	9:55-10:20 [Invited] Light Management in Core-Shell Silicon Nanowire Solar Cells, Prof. Michael M. Adachi	9:55-10:20 [Invited] Strategies for Mechanically Reliable Thin-Film Flexible Electronics, Prof. Taek-Soo Kim	9:55-10:20 Flexible injectable probe for chronic and acute stress monitoring, Prof. Tae-il Kim
	10:20-10:35 1570539633 Technology Development for Direct-Printed Dual-Gate Organic TFT Circuit Fabrication with 3-D Integration, Jimin Kwon	10:20-10:35 1570547844 Collaborative Conception of a R2R Printed Testing Platform for Printed Electronics Standardization, Chloé Bois	10:20-10:45 Flexible, Hybrid Optoelectronic Implants for Neural Interfaces, Prof. Wen Li
	10:35-10:50 1570544514 TFT Adder Design on Flexible Substrate, Qing Li	10:35-10:50 1570548375 Transfer Characteristic of AlGaIn/GaN Ridge HEMTs Used for Power Supply Circuits of Flexible Devices, Hitoshi Aoki	10:45-11:10 Flexible Microsystems for On-Body Sensing and Measuring Tissue Integrated Sensors, Prof. Michael A. Daniele
	10:50-11:05 1570549508 A Flexible Non-Enzymatic Electrochemical Glucose Sensor Using Cu Nanoparticle/Laser-Induced Graphene Fiber/Porous Laser-Induced Graphene Network Electrode, Taeheon Kim	10:50-11:05 1570548389 Minimizing Stiction of Microelectromechanical Systems (MEMS) Through Solution-Phase Surface Modification with Alcohols, Austin W.H. Lee	11:10-11:35 Sticker-like electronics (Sticktronics) for wearable biomedical devices, Prof. Chi Hwan Lee
	11:05-11:20 1570548972 Enhanced Hybrid Copper Conductive Ink for Low Power Direct Laser Sintering, Chaneel I. Park	11:05-11:20 1570549968 Analysis and Design of high-K Material Nanowire Transistor for Improved Performance, Mohinder Bassi	11:35-12:00 Multimaterial multifunctional fiber-based neural interfaces, Prof. Xiaoting Jia
11:20-11:35 1570549875 Single-pass Spray-coated Flexible Organic Solar Cells Using Graphene Transparent Electrodes, Zenan Jiang	11:20-11:35 1570549650 Pinhole-free MAPb ₃ Perovskite Synthesis on PbCl ₂ Interphase Under Excess Iodide Ions by Vapor-Assisted Solution Process, H. Harun Arkaz		

12:00 - 1:15 PM Lunch (Harbour Centre Concourse)

1:15 - 2:15 PM **Plenary Talk #4 (Fletcher Challenge Theatre) Dr. Meyya Meyyappan, "Printed Electronics: Equipment, Processing and Applications"**

Room 1400 & 1410 **Room 1420 & 1430**

2:15 - 3:15 PM **Tutorial #3: Dr. Ta-ya Chu, National Research Council Canada, "From Vacuum Deposition to Solution Process in Organic Electronics"** **Tutorial #4: Prof. Mark D. Poliks, Binghamton University, USA, "Materials, Printing and Processing of Flexible Hybrid Electronics"**

3:15 - 3:30 PM Coffee break (Harbour Centre Concourse)

Room 1400 & 1410 **Room 1420 & 1430**

3:30 - 6:00 PM	Special Invited Sesssion #2: E-Textiles: Energy devices, sensors, and their integration towards wearable healthcare and soft robotics, Chair: Prof. Hyun-Joong Chung, University of Alberta, Canada	Special Invited Sesssion #3: Flexible Bio-medial Sensors/Electronics Chair: Prof. Tae-il Kim, Sungkyunkwan University, South Korea
	3:30-3:55 System Design Considerations for Textile-Based Electronics, Prof. Jess Jur	3:30-3:55 Unconventional Bio-integrated Electronics towards Human-Machine Interface, Prof. Ki Jun Yu
	3:55-4:20 Super-elastic multi-material fibers for healthcare, advanced textiles and soft robotics, Prof. Fabien Sorin	3:55-4:20 Imperceptible sensor foils for soft electronics and machines, Prof. Martin Kaltenbrunner
	4:20-4:45 A Solution for Wearable Electronics: Electroless Nickel-Immersion Gold Coatings for Stretchable Conductors and e-Textiles, Prof. Tricia Breen Carmichael	4:20-4:45 Soft Sensing Devices and Technologies for Wearables, Robotics and Prosthetics Systems, Prof. Benjamin C. K. Tee
	4:45-5:10 Electronic textile for skin-mountable biomedical device, Prof. Kyung-In Jang	5:10-5:35 Point-of-use flexible sensors for health and environmental applications: assessment of motor skills and chemical exposure, Prof. Tse Nga (Tina) Ng
5:10-5:35 Force myography: a step forward, Prof. Carlo Menon	5:35-6:00 Self-assembled flexible neural probes for stable neural activity recordings, Prof. Ying Fang	
5:35-6:00 Elastomer/Textile Composites in Wearable Electronics and in Normothermic Ex-Vivo Organ Perfusion Devices, Prof. Hyun-Joong Chung		

6:00 - 8:30 PM Banquet (Segal Building 500 Granville Street)

Wednesday, August 14th 2019

8:00 - 8:30 Coffee break (Harbour Centre Concourse)

8:30 - 9:30 **Plenary Talk #5 (Fletcher Challenge Theatre) Dr. Ye Tao, "Printable Electronics and Its Role in the Development Power Autonomous Sensors"**

Room 1400 & 1410 **Room 1420 & 1430**

9:30 - 12:00 PM	Special Invited Session #4: Stretchable electronics and Energy devices Chair: Prof. Pooi See Lee, Nanyang Technical University, Singapore	Special Invited Sesssion #5: Flexible and Stretchable Electronics Technologies and Sensors Chair: Prof. Matti Mäntysalo, Tampere University, Finland
	9:30-9:55 Adding a new sensing dimension to soft sensors: from the skin to below the skin, Prof. Sheng Xu	9:30-9:55 Facile Fabrication of Highly Soft Tactile Sensor based on Porous Sponge with Geometry Effect on Sensing Characteristics, Prof. Geng Yang
	9:55-10:20 Recent Progress on Highly Compliant Polymer Electronic and Electromechanically Responsive Materials and Device Explorations, Prof. Qibing Pei	9:55-10:20 Flexible Printed Organic Electronics and their IoT Sensor Applications, Prof. Shizuo Tokito
	10:20-10:45 Powered Platform for All-stretchable Electronics, Prof. Unyong Jeong	10:20-10:45 Stretchable free-form circuits based on conventional electronic assembly and polymer processing technologies, Prof. Jan Vanfleteren
	10:45-11:10 Flexible, stretchable and healable electronics, Dr. Xinda Li	10:45-11:10 Printed and Flexible NTC Thermistors Suitable for On-Skin Temperature Monitoring, Dr. Terho Kololuoma
	11:10-11:35 Fully Rubbery Stretchable Electronics and Integrated Devices, Prof. Cunjiang Yu	11:10-11:35 Performance of fully printed ultra-thin inverter for on-skin biosignal measurements, Mr. Mika-Matti Laurila
11:35-12:00 Stretchable and deformable materials and devices for wearable technology, Prof. Pooi See Lee	11:35-12:00 Printed Elastronics for Wearable Biomedical Applications. Prof. Matti Mäntysalo	

12:00 - 1:00 PM Lunch (Harbour Centre Concourse)

1:00 - 2:00 PM	Plenary Talk #6 (Fletcher Challenge Theatre) Prof. Leena Ukkonen, "Reliability of wireless communication and power transfer to small biomedical implants"	
2:00 - 2:30 PM	Coffee break (Harbour Centre Concourse)	
	Room 1400 & 1410	Room 1420 & 1430
2:30 - 5:00 PM	Special Invited Sesssion #6: From the Laboratory to the Manufacturing Floor: Scalable Processes for Flexible Electronics Chairs: Dr. Benjamin Leever, AFRL, and Dr. Scott Miller, NextFlex, USA	Special Invited Sesssion #7: Material & Process Innovations in Flexible Printed Electronics Chairs: Prof. Jie Zhang, Jiangnan University, China and Prof. Gyoujin Cho, Sunchon National University, South Korea
	2:30-2:55 Next Generation Process for Electronics, Dr. Jaons Veres	2:30-2:55 Development of flexible tactile sensor using hybrid manufacturing technologies, Prof. Dr. Toshihide Kamata
	2:55-3:20 Materials & Multi-Scale Patterning Approaches to Inspire Printed Electronics Solutions, Dr. Adam Cook	2:55-3:20 The Impact of polymer electrolytes on the performance and longevity of solid flexible supercapacitors, Prof. Keryn Lian
	3:20-3:45 Printed Hybrid Electronics: From Printed Interconnects to Multi-Layer Printed Circuitization and 3D Hybrid Electronics, Dr. Daniel Hines	3:20-3:45 Nanomaterials for printed electronics, Dr. Patrick Malenfant
	3:45-4:10 Material Challenges for Printed Electronics in the Microwave Domain, Prof. Craig Armiento	3:45-4:10 Fabricating high performance FACsPb(I/Br) ₃ perovskite films through printing technologies, Prof. Frank Peng
	4:10-4:35 Essential Technologies for the Future of Scalable FHE and Energy Device Additive Manufacturing, Prof. Devin MacKenzie	4:10-4:35 R2R gravure printed IGZO based rectenna for NFC sensor tags, Dr. Younsu Jung
	4:35-5:00 A Manufacturing Case Study: Design & Fabrication of an FHE Programmable Microcontroller, Mr. Wilfried Bair	4:35-5:00 Fabrication of High-Performance Soft Composites 3D Electronics by Hybrid Modes with Direct Ink Writing, Prof. Yu Liu
6:00 - 8:30 PM	Invitee Dinner	

List of Poster papers
1570538580 Flexible Printed Capacitive Force Sensors Based Beehive Weight Monitoring System
1570539633 Technology Development for Direct-Printed Dual-Gate Organic TFT Circuit Fabrication
1570539640 Flexible Printed Top-Contact Organic Thin-Film Transistors
1570540637 Photodetector Based on All-inorganic Perovskite Quantum Dots with Ring Electrode
1570548375 Transfer Characteristic of AlGaIn/GaN Ridge HEMTs Used for Power Supply Circuits of
1570548417 Modeling the Mechanical Performance of Foldable Display Under Cyclic Loading
1570548946 2-Volt Solution-Processed, Indium Oxide (In ₂ O ₃) Thin Film Transistors on Flexible
1570549003 Sigma-Delta Modulation for SMES-Based DVR
1570550277 Keyboard Mouse Glove with Bluetooth Capabilities for the Physically Impaired