

May 19, 2010

Plenary I (Cheakamus)– Chairs: Andre Ivanov, UBC, ivanov@ece.ubc.ca and Dan Gale, CMC Microsystems, gale@cmc.ca

8:00-8:05 Dan Gale, gale@cmc.ca, CMC Microsystems, Welcome Address

8:05-8:35 Jan Rabaey, jan@eecs.berkeley.edu, Berkeley, Exploring the boundaries of ultra low power design

8:40-9:10 Takayasu Sakurai, tsakurai@iis.u-tokyo.ac.jp, U Tokyo, Emerging Circuits for Ambient Electronics

9:15-9:45 Omkaram (Om) Nalamasu, Om.Nalamasu@amat.com, Applied Materials, Enabling a path to 10nm: Innovations in Process Technology

Session 1A (Sutcliffe A) – BioElectronics, Karen Cheung, UBC, kcheung@ece.ubc.ca

10:00-10:20 Arjang Hassibi, arjang@mail.utexas.edu, UTexas at Austin, CMOS Biosensors: Fact or Fiction?

10:25-10:45 Anthony Guiseppi-Elie, AGUISEP@clemsun.edu, Clemson U, Engineering the Electrode-Tissues Interface of Implantable Biochips

10:50-11:10 Eberle Wolfgang, eberle@imec.be, IMEC, Single-Neuron in Vitro Interfacing Platform

11:15-11:35 Ryan Kelly, ryan.kelly@pnl.gov, PNNL, Microfluidics Coupled with Mass Spectrometry for Trace Biological Analysis

11:40-12:00 Vamsy Chodavarapu, vamsy.chodavarapu@mcgill.ca, McGill U, CMOS Detection and Processing Strategies for Biochemical Sensor Microarrays

12:05-12:25 Bhagwati Gupta, guptab@mcmaster.ca, McMaster U, Microfluidic systems for chemical screening and drug discovery

Session 2A – BioElectronics (Sutcliffe A), Bernard Courtois, CMP, bernard.courtois@imag.fr

1:30-1:50 Jose M. Carmena, carmena@eecs.berkeley.edu, Berkeley, Towards bidirectional brain-machine interfaces

1:55-2:15 Daniel Palanker, palanker@stanford.edu, Stanford, Restoration of Sight with Photovoltaic Retinal Prosthesis

2:20-2:40 Amin Arbabian, arbabian@eecs.berkeley.edu, Berkeley, Silicon-Based Portable Imaging Device for Medical Applications

2:45-3:05 Dave Hermann and Jonas Weiland, Dave.Hermann@onsemi.com, ON Semiconductor, Architecture and circuit level approaches for ultra low power medical applications

3:10-3:30 Shankar Sundaram, ssundaram@draper.com, Draper Laboratory, Smart Medical Devices

3:50-4:10 Naveen Verma, nverma@princeton.edu, Princeton U, Intelligent Patient Monitoring: The Sensing and Computation Challenges for Low-Power Electronics

4:15-4:35 Lian Yong, eleliany@nus.edu.sg, NUS, Ultra low power biomedical sensor interface design

4:40-5:00 Douglas Thomson, thomson@EE.UManitoba.CA, U Manitoba, Markerless electronic single cell diagnostics

5:05-5:25 Kyusun Choi, kyusun@cse.psu.edu, PSU, Sono-Pill Camera Chip

Session 1B – Emerging Technologies (Sutcliffe B), Alireza Nojeh, UBC, anojeh@ece.ubc.ca and Kazuya Masu, Tokyo Institute of Technology masu.k.aa@m.titech.ac.jp

10:00-10:20 Simon Deleonibus, simon.deleonibus@cea.fr, CEA-LETI, Devices architectures by the end and beyond the ITRS

10:25-10:45 Ada Poon, adapoon@stanford.edu, Stanford, Autonomous and Miniature Implantable Systems

10:50-11:10 Ehsan Afshari, ehsan@ece.cornell.edu, Cornell U, Signal Generation and Processing Beyond Transistor Limits

11:15-11:35 Robert Sobot, rsobot@uwo.ca, UWO, Memristors - the rise of intelligent machines?

11:40-12:00 Ken Mai, kenmai@andrew.cmu.edu, CMU, Securing Emerging Non-Volatile Storage-Class Memories

12:05-12:25 Alistair McEwan, alistair@ee.usyd.edu.au, Sydney U, Spread Spectrum Electrical Impedance Tomography by Code Division Multiplexing

Session 2B – Nanotechnology (Sutcliffe B), Alireza Nojeh, UBC, anojeh@ece.ubc.ca

1:30-1:50 Kang L Wang, wang@ee.ucla.edu, UCLA, Si based Nanoelectronics and Nano-Spintronics

1:55-2:15 Bozena Kaminska, kaminska@sfu.ca, SFU, Polymeric 3D Nano-Systems with Integrated Self-Powering

2:20-2:40 Paul R. Berger, berger@ece.osu.edu, OSU, Tunneling Based Electronics for Ultra-Low Voltage and Reduced Power Consumption

2:45-3:05 Shubhra Gangopadhyay, gangopadhyays@missouri.edu, U of Missouri, Sub-2 nm Size Tunable High Density Pt Nanoparticle Embedded Non-volatile Memory

3:10-3:30 Giuseppe C. Tettamanzi, g.c.tettamanzi@tudelft.nl, TU Delft, Thermionic Emission as a tool to study transport in ultra scaled Field Effect Transistors

3:50-4:10 Thomas Tiedje, tiedje@uvic.ca, UVIC, MBE-grown oxides for solid state waveguide lasers

4:15-4:35 Erol Girt, egirt@sfu.ca, SFU, Physics of magnetic recording

4:40-5:00 Raghu Murali, raghu@gatech.edu, Georgia Tech, Graphene Nanoelectronics

5:05-5:25 Andre Marziali, andre@physics.ubc.ca, UBC, Synthetic nanopore sensors for biomolecule analysis

Session 1C – Interconnects (Diamond Head), Malgorzata Chrzanowska-Jeske, PSU, jeske@ece.pdx.edu

10:00-10:20 Ron Ho, ron.ho@sun.com, Sun Microsystems, Interconnect for advanced high performance computing systems: a worldview

10:25-10:45 Davide Bertozzi, dbertozzi@ing.unife.it, U of Ferrara, Designing the System Interconnect for Nanoscale MPSoCs: the Latest from the Network-on-Chip Revolution

10:50-11:10 Marisa López-Vallejo, marisa@die.upm.es, ETSI, System-on-Chip monitoring networks targeting deep sub-micron technologies

11:15-11:35 Vasilis Pavlidis, vasileios.pavlidis@epfl.ch, EPFL, Interconnect Design Issues for 3-D ICs

11:40-12:00 Gul N. Khan, gnkhan@ee.ryerson.ca, Ryerson, Design and Simulation of Network on Chip Architectures and Systems

12:05-12:25 Federico Vecchi, federico.vecchi@unipv.it, U of Pavia, Design and optimization of integrated transmission lines on scaled CMOS technologies

Session 2C – Semiconductor Devices (Diamond Head), Bozena Kaminska, SFU, kaminska@sfu.ca

1:30-1:50 Michael Scholles, michael.scholles@ipms.fraunhofer.de, Fraunhofer IPMS, OLED-on-CMOS for sensors and microdisplays

1:55-2:15 Feng Zhao, zhaof2@cec.sc.edu, Tangali S. Sudarshan, U of South Carolina, Optically-controlled SiC Power Devices for Energy Conversion and Power Management

2:20-2:40 Ashok Kapoor, akapoor@suvolta.com, JFET technology for very low power

2:45-3:05 Bruce Rae, Bruce.Rae@ed.ac.uk, The University of Edinburgh, Integration of GaN Micro-LEDs with CMOS to Create a Miniaturised, Time-Resolved Fluorescence Analysis System

3:10-3:30 Pat Mooney, pmooney@sfu.ca, SFU, Silicon Carbide MOSFETs for High Power Applications

3:50-4:10 Mohammed Alomari, mohammed.alomari@uni-ulm.de, Ulm U, GaN and Diamond Hybrid Devices

4:15-4:35 Shyh-Chiang Shen, shyh.shen@ece.gatech.edu, Gatech U, GaN-based heterojunction bipolar transistor technology for next-generation microelectronics

4:40-5:00 Subramaniam Arulkumaran, SArulkumaran@pmail.ntu.edu.sg, Ng Geok Ing, NTU, GaN HEMTs for high frequency low-noise applications

5:05-5:25 James Li, jli@hrl.com, HRL Laboratories, Leveraging heterogeneous integration with deep sub-micron InP DHBTs

Session 1D– Test and Design (Black Tusk), Mani Soma, manisoma@u.washington.edu, U of Washington and Claudio Rey, claudio.gustavore@netscape.net, Fujitsu

10:00-10:20 Rob Aitken, Rob.Aitken@arm.com, ARM, Testing challenges in 32nm process node

10:25-10:45 Mohammed Ismail, ismail@ece.osu.edu, Ohio State U, BIST and Digital self calibration of RF and mm-wave ICs

10:50-11:10 Xiaoqing Wen, wen@cse.kyutech.ac.jp, Kyushu Institute of Technology, Power-Aware Testing for Low-Power Devices

11:15-11:35 Jihong Ren, Dan Oh and Sam Chang, jren@rambus.com, Rambus, High-speed I/O modeling challenges and solutions

11:40-12:00 Chris Winstead, chris.winstead@gmail.com, Abiezer Tejeda, Eduardo Monzon, and Yi Luo, An alternative TMR method for fault-tolerant logic

12:05-12:25 Suwen Yang, Mark Greenstreet, mrg@cs.ubc.ca, UBC, Surfing RC and LC Interconnect

Session 2D – Circuits (Black Tusk), Shahria Alam, shahria.alam@ubc.ca

1:30-1:50 Azita Emami, azita@caltech.edu, Caltech, Compressive sensing receiver design and analysis

1:55-2:15 Bob Kertis, Kertis.Robert@mayo.edu, Mayo, A 20 GS/s 5-Bit SiGe BiCMOS Dual-Nyquist Flash ADC With Sampling Capability up to 35 GS/s Featuring Offset Corrected Exclusive-Or Comparators

2:20-2:40 Luis Hernandez, luish@ing.uc3m.es, Carlos III University of Madrid, Data Converters inspired in time encoding for nanometer CMOS implementation

2:45-3:05 Dongsheng Brian Ma, dma@email.arizona.edu, U of Arizona, Power Management IC Design for Efficient DVFS On-Chip Operation

3:10-3:30 Shah M. Jahinuzzaman, shah@ece.concordia.ca, Concordia U, Managing SRAM Leakage Power and Soft Errors in Nanoscale CMOS

3:50-4:10 Glenn Cowan, gcowan@ece.concordia.ca, **Concordia U**, Variability mitigation strategies in CML Circuits

4:15-4:35 Sachin Junnarkar, sachin@bnl.gov, **BNL**, Time-to-digital converter circuits

4:40-5:00 Christian Fayomi, c_fayomi@yahoo.com, **UQAM**, Circuit Techniques for Low-Voltage Deep Submicron CMOS ADCs

Session 1E – Nano and Micro Technologies (Cheakamus), Thomas Johnson, thomas.johnson@ubc.ca, **UBC**

10:00-10:20 Themis Afentakis, tafentakis@sharp.com, **Sharp Japan**, Laser-induced controlled agglomeration for TFT fabrication

10:25-10:45 Karen Cheung, kcheung@ece.ubc.ca, Jonas Flueckiger, Frank Ko, **UBC**, Multifunctional Composite Nanofibers

10:50-11:10 Rajendra K. Bordia, bordia@u.washington.edu, **U of Washington**, Guenter Motz, U of Bayreuth, Polymer Derived Functional Ceramics

11:15-11:35 Joseph J. Talghader, joey@umn.edu, **U of Minnesota**, Luminescent microparticles as thermal history sensors

11:40-12:00 Jürgen Hildenbrand, juergen.hildenbrand@imtek.uni-freiburg.de, **Freiburg U**, Micromachined Mid-Infrared Emitter for Optical Gas Sensing Systems

12:05-12:25 Amporn Poyai, amporn.poyai@nectec.or.th, **Thai Microelectronics Center**, Magnetotransistor based on the carrier recombination-deflection effect

Session 2E – Wireless (Cheakamus), Thomas Johnson, thomas.johnson@ubc.ca, **UBC** and **Reza Mahmoudi**, **TU Eindhoven**, R.Mahmoudi@tue.nl

1:30-1:50 Paul A. Garris, pagarri@ilstu.edu, **Illinois State University**, Technological Evolution of Wireless Neurochemical Sensing with Fast-Scan Cyclic Voltammetry

1:55-2:15 Darrin Young, darrin.young@utah.edu, **U of Utah**, A Wireless and Batteryless Blood Pressure Sensor for Laboratory Mice In Vivo Real-Time Monitoring

2:20-2:40 Jan Beutel, beutel@tik.ee.ethz.ch, **ETHZ**, The PermaSense Project – Low-power Sensor Networks for Extreme Environments

2:45-3:05 Yao Li and Chen-Yi Lee, cylee@si2lab.org, **National Chiao Tung University**, Design of An Intelligent Video Decoder for Wireless TV Applications

3:10-3:30 Namsoo Kim, namssoo.kim@gmail.com, **Qualcomm**, A SAW-less receiver architecture and challenges

3:50-4:10 Hirotaka Sato, hirosato@berkeley.edu, Daniel Huang, Michel Maharbiz, **Berkeley**, Remote Radio Control of Insect Flight

4:15-4:35 Nicolas André, Nicolas.Andre@uclouvain.be, Laurent Francis, Sylvain Druart, Pascal Dupuis, Denis Flandre and Jean-Pierre Raskin, **Université catholique de Louvain**, Portable wireless microsensing system for human breath monitoring

4:40-5:00 Minjae Lee, minjae@ee.ucla.edu, **UCLA**, A Low Noise Wideband Digital Phase-Locked Loop based on a Coarse-Fine Time-to-Digital Converter with Sub-picosecond Resolution

5:05-5:25 Wu-Hsin Chen, roysusu@gmail.com, Byunghoo Jung, **Purdue U**, Wireless data link