2020 IEEE INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

March 29th – April 2nd 2020, Hilton DFW Lakes Executive Conference Center, Dallas, TX

IRPS is the preeminent conference for timely research on Reliability Physics of devices, materials, circuits, and products used in the electronics industry, where important reliability challenges and solutions are first discussed.

SPECIAL FOCUS TOPICS for 2020

Circuit Reliability and Aging – EDA tools, sensor, aging aware designs
Wide Bandgap - Reliability of SiC Devices
Neuromorphic Computing – Reliability issues
Reliability of RF/mmW/5G Devices – CMOS, SiGe BiCMOS, SOI, GaAs

Circuits, Products, and Systems

Circuit Reliability and Aging – Includes digital, mixed-signal, power and RF applications; design for reliability; variability-aware design, EDA tools and compact modeling

***IC Product Reliability** – Includes burn-in; Early Failure Rate; defect detection; on-chip sensors; failure analysis; modeling; product reliability estimation; multichip product; stacked and HBM memory; DFT/DFR solutions for improved reliability.

***System Electronics Reliability** – Includes reliability of electronic systems including personal computing, data center, storage, networking, communication, healthcare, automotive, portable devices, space, display and energy; architecture and design methods to manage system reliability; system monitoring, modeling and health prognostics; system qualification for reliability including screening techniques and failure root cause determination.

***Soft Errors** – Includes impact of neutrons, alpha particles, protons and heavy ions on electronics, photonic devices and systems; Device, circuit, system and application level simulation and mitigation techniques for single-bit/multi-bit single event effects in memories and logic.

ESD and Latchup – Includes component and system-level ESD design; modeling and simulation

Packaging and 2.5D/3D Assembly – Includes chip-package interaction; fatigue; power dissipation issues; reliability of 2.5D and 3D IC packaging and TSV integration, interconnects, multichip modules

Reliability Testing – Includes reliability equipment, tools, and test methods

Silicon Photonics – Including reliability of integrated silicon photonics systems

RF/mmW/5G – Reliability of CMOS, BiCMOS, SiGe, SOI, III-V and other devices in high frequency applications

Materials, Processing, and Devices

Transistors – Includes hot carrier phenomena; BTI; RTN; advance node scaling; variability; Ge and III-V channels

Gate/MOL Dielectrics – Includes reliability of novel gate dielectrics and ferroelectrics; dielectrics for 2D materials based devices; modeling of dielectric breakdown; gate dielectric reliability for III-V, Ge, and advanced FETs.

Beyond CMOS Devices – Includes reliability of tunnel FETs, transistors with 2D semiconductors (graphene, MoS_2); ferroelectric and negative capacitance FETs; spintronics

Neuromorphic Computing Reliability – Reliability of devices logic and memory (MRAM, RRAM, etc) and design architectures used in neuromorphic computing

***Wide-Bandgap Semiconductors** – threshold voltage instabilities, charge trapping, switching stress, breakdown and other reliability topics including thermal issues within power devices (GaN, SiC, Ga_2O_3).

Compound and Optoelectronic Devices – Includes reliability of III-V-based devices; optoelectronic devices; silicon photonics; far infrared detectors

Metallization/BEOL Reliability – Includes electromigration; Joule heating; stress migration; low-k dielectric breakdown; middle-of-the-line reliability; MIM/MOM capacitors

Process Integration – Includes new process-related reliability issues; foundry reliability challenges

Failure Analysis – Includes evidence of new failure mechanisms; advances in failure analysis techniques

Memory Reliability – Includes DRAM and NVM; novel memory devices such as 3D Flash, STT MRAM and ReRAM

Photovoltaics – Includes reliability of solar cells in silicon, CdTe, CIGS, organics, multi-junctions, etc.

MEMS – Includes reliability of sensors and actuators; reliability testing; analysis & modeling; BioMEMS

Abstract (Paper/Poster) Submission due October 25, 2019: Your two-page original abstract submission should clearly and concisely present specific results, and explain the importance of your work in the context of prior work. Use the IRPS document template available at www.irps.org. Full manuscripts of accepted papers will be due before the conference. Registration for the conference is required for the author presenting the paper.

Late Paper Submission: Camera-ready, full-length manuscripts with late breaking news may be considered for inclusion in the conference/proceedings. **Due January 24, 2020.**

Technical Program
Chair: **Charlie Slayman** (Cisco Systems, 1-408-525-0930, cslayman@cisco.com)
Vice-Chair: **Vincent Huard** (Dolphin Integration, +33 755591841 vincent.huard@dolphin.fr)

General Chair
Gaudenzio Meneghesso (Univ. of Padova, +39 0498277653 gaudenzio.meneghesso@unipd.it)

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