

# 2020 IEEE INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

March 29<sup>th</sup> – April 2<sup>nd</sup> 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.

## **IRPS 2020 is Soliciting Increased Participation in Reliability for the Following Areas:**

*Wide bandgap semiconductors device reliability; 2.5/3D packaging; ESD in advanced nodes*

*Emerging memory reliability; Circuit and System reliability and aging;*

*Beyond CMOS – reliability issues in neuromorphic computing;*

*Reliability and testing challenges in automotive electronics;.*

### 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

**Product IC Reliability** – Includes burn-in; defect detection; on-chip sensors; modeling; stacked and HBM memory; DFT/DFR solutions for improved reliability

**Consumer and System Electronics Reliability** – Includes smart phones; wearable devices; tablets; healthcare devices, automotive, space, communications, energy and computing/networking; screening techniques; system monitoring; failure root cause determination; modeling methodologies; product qualification vs reliability; reliability of automotive electronics

**Soft Errors** – Includes neutron and alpha particle SER; multi-bit SER/SEU; mitigation techniques; simulation

**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

### Materials, Processing, and Devices

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

**Gate Dielectrics** – Includes TDDDB modeling; reliability of novel gate dielectrics; modeling of progressive breakdown; gate dielectric reliability for III-V FETs

**Beyond CMOS Devices** – Includes reliability of tunnel FETs, transistors with 2D semiconductors (graphene, MoS<sub>2</sub>); ferroelectric and negative capacitance FETs; spintronics; devices for neuromorphic computing

**Wide-Bandgap Semiconductors** – Includes reliability, threshold voltage instabilities and thermal issues in power devices (GaN, SiC, Ga<sub>2</sub>O<sub>3</sub>).

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

**Back-End 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](http://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

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