

2017 IEEE International Electron Devices Meeting

December 2nd – 6th, 2017

Hilton San Francisco Union Square
San Francisco, California

Call for Papers

Submission deadline: August 2nd
Single submission of final, four-page paper

Topics

IEDM encourages submissions in all areas (details in next page) with special emphasis on:

- Sensors and MEMS devices for biological/medical applications
- Technologies for 5nm and beyond
- Neuromorphic computing / machine learning
- Advanced memory technologies
- Steep subthreshold devices
- Spin for memory and logic
- More than Moore device concepts
- Package-device level interactions
- Optoelectronics, photonics, displays and imaging systems

Meeting Highlights

- Four plenary presentations by prominent experts including a Nobel Prize winner
- Special focus sessions covering topics in:
 - Neuromorphics
 - 3D Integration
 - Silicon Photonics
 - Bio-Nanosensors
- Two evening panel discussions
- IEDM luncheon presentation on Tuesday, December 5th
- IEDM Entrepreneur's lunch on Wednesday, December 6th
- Tutorial sessions on Saturday afternoon, December 2nd
- Two short courses will be held on Sunday, December 3rd



For More Information

IEDM Online: ieee-iedm.org

Social Networks: ieee-iedm.org/social-media



Papers in the Following Areas Are Requested

CIRCUIT and DEVICE INTERACTION (CDI): Papers are solicited in the areas of CMOS platform technology, circuit design challenges in emerging technologies, and device technology interactions. Platform technologies include III-Vs, SiGe/Ge, and other underlying technologies for the “next node” (N+1). Topics also include digital and analog device and circuit performance and scaling issues, technology-design co-optimization, power-performance-area analysis, the impact of future device structures on circuit design, circuit and architectural implications of interconnect technology and performance, manufacturability issues such as design for manufacturability and process control, and emerging circuit design and technology concepts, including neuromorphic and non-von Neumann circuit approaches. Submission of papers discussing interactions between advanced device technology and design issues such as variability, power constraints, physical layout effects and design complexity in memory, logic, analog, and mixed-signal circuits is encouraged.

CHARACTERIZATION, RELIABILITY and YIELD (CRY): Papers are solicited in all areas of characterization, yield, and reliability, at both the front-end and back-end of the process. Topics include hot carriers, dielectric wear-out and breakdown, process charging damage, latch-up, ESD, soft errors, noise and mismatch behavior, variability/reliability interaction and time dependent variability, bias temperature instabilities, and thermal modeling at the device, circuit, and packaging level for memory, logic, analog, and novel device technologies. Other topics include interconnect reliability, electromigration, the impact of back-end processing on devices, chip-package interaction, physics of failure analysis, and novel characterization techniques.

COMPOUND SEMICONDUCTOR AND HIGH SPEED DEVICES (CHS): Papers are solicited in the areas of compound semiconductor electronic devices and high-speed device technologies based on GaAs, InGaAs, InP, GaN, SiGe, Antimonides and their related alloys. Devices of interest include III-V MOS devices, ballistic devices, HBTs (III-V and group IV) and HEMTs, RF/microwave/millimeter-wave devices, SAW/BAW devices, and active and passive electron devices for analog applications. Topics include device physics, design, modeling, reliability and manufacturing processes.

MEMORY TECHNOLOGY (MT): Papers are solicited covering all memory related technology topics, including devices for neuromorphic computing applications. Topics span the full range from novel cell concepts to fully integrated memories and manufacturing issues. Areas of interest include cell design and scaling, processing, reliability, and modeling for both volatile and nonvolatile memories, as well as conventional and novel memory cells including ReRAM, STT-MRAM, PCRAM, FeRAM, crosspoint and selectors, organic memory and NEMS-based devices. Devices and physics of memristors and other device concepts that support neural computing paradigms are also of interest. Higher level topics include array optimization, 3D architectures, novel read/program/erase schemes, solid state drive (SSD) applications, novel hierarchies and architectures for memory-centric systems, security, computing-in-memory and disruptive non-volatile memory-enabled emerging logic applications.

MODELING and SIMULATION (MS): Papers are solicited in the areas of analytical, numerical, and statistical approaches to modeling electronic, optical, and hybrid devices (including sensors), and their isolation and interconnection. Topics include physical and compact models for devices and interconnects, modeling of fabrication processes and equipment, material modeling, process characterization, parameter extraction, early compact models for advanced technologies and novel devices, performance evaluation, design for manufacturing, reliability, variability, and technology benchmarking methodologies. Other topics of interest include the modeling of interactions between process, device, circuit, and packaging technology. Submissions should advance the art of modeling and simulation or apply existing techniques to gain new insights into devices.

NANO DEVICE TECHNOLOGY (NDT): Papers are solicited on novel solid state and nanoelectronic devices and concepts. This includes devices based on novel transport mechanisms such as tunnel FETs and other steep-slope devices, molecular devices, and emerging concepts for devices based on topological insulators, phase transitions, quantum effects, and non-von Neumann devices. Non-charge based logic, magnetic logic, spintronics, plasmonics and quantum computing are also of interest. Furthermore, nanoelectronic devices based on low-dimensional systems are encouraged, including 2D materials, nanowires, nanotubes and quantum dots. Subsets of key topics include electron device physics, technology scaling issues, as well as novel transistor structures. Papers in NDT focus primarily on device physics and novel concepts; more mature “platform candidate” papers should be submitted to CDI.

OPTOELECTRONICS, DISPLAYS, and IMAGERS (ODI): Papers are solicited on devices, structures, and integration for optoelectronics, photonics, displays, and imaging systems. Optoelectronic devices include photovoltaics, photonic bandgap structures and crystals, LEDs and lasers, as well as optoelectronic and photonic integrated circuits and optical interconnects. Papers on quantum photonics and photonic qubits for quantum computation are also of interest. Displays and imaging area topics include CMOS imagers, high-speed imagers, CCDs, TFTs, organic, amorphous, and polycrystalline devices, as well as emissive and reflective displays. Submission of papers addressing flexible and/or stretchable electronics, printed electronics, stacked image sensors with Si or other photosensitive materials, organic and inorganic displays, and covering new technology trends in imagers and displays are encouraged. Other relevant subjects include device/circuit design, fabrication, reliability, theory, and modeling.

POWER DEVICES (PD): Papers are solicited on discrete and integrated power devices and modules using Si, diamond, and compound semiconductors. Papers exploring the system-level impact of power devices are also of interest. Topics of interest include power devices (FETs, superjunction devices, IGBTs, etc.), and materials (Si, SiC, GaN, Diamond, GaAs, AlN, Ga₂O₃, etc.), manufacturing processes, device design, modeling, physics, and reliability. Devices targeting the full range of power and power conversion applications, including hybrid vehicles, power supplies for computer and telecom, motor drives, utility and grid control, and wireless power transfer, are of interest.

PROCESS and MANUFACTURING TECHNOLOGY (PMT): Papers are requested on innovations in individual process modules, process integration schemes, and process control techniques that enable improved device or circuit performance or enable new functionality. Examples of front-end process topics include substrate and isolation technologies, new transistor materials, integration of heterogeneous channel materials, multi-patterning and EUV lithography, self-assembly techniques, deposition and etch techniques, novel dielectrics and metal electrodes for transistor gate stacks and MIM capacitors, shallow junctions, and silicides. Examples of back-end process topics include conductor systems, low dielectric constant materials, contact and via processes, barrier materials, planarization, integration considerations for multi-level interconnects, photonics-electronics integration on CMOS, and advanced packaging. Also of interest are topics like emerging process modules, 3D integration, additive manufacturing for microelectronics, processes and tools designed to reduce variance, defect reduction in heterogeneous material systems, novel techniques for enhancing process control and stability.

SENSORS, MEMS, and BioMEMS (SMB): Papers are solicited in the area of sensors, sensor networks, micro electromechanical systems (MEMS), BioMEMS, microfluidic as well as NEMS devices. The sensors area includes TFT-based sensors and sensors for chemical, molecular, and biological detection including electrochemical, mechanical and optical sensors. Topics of interest in the MEMS and BioMEMS area include resonators and resonant sensors, RF MEMS, integrated inertial measurement units, integrated biomedical sensing, integrated sensors and actuators, micro-optical devices, microfluidic and bio-electronic devices inspired or enabled by biomimetic structures, micro power generators, mechanical energy harvesting devices, opto-fluidic devices, and organic-inorganic hybrid-devices, with particular emphasis on new device concepts, integrated implementations, wearables, and complete sensor systems and networks.

Preparation of Full Papers

Papers must be submitted electronically. Deadline for submission of papers is August 2nd, 2017. Prior to preparing your paper for electronic submission, please read the paper preparation and submission guidelines below. A paper template and sample paper are available on the website at: iee-iedm.org/preparation-of-papers.

Papers Must Clearly State

- The purpose of the work
- The manner and degree to which it advances the art
- Specific new results that have been obtained and their significance

The degree to which the paper deals with these issues will strongly affect whether the paper is accepted. The most common cause of rejection of submitted papers is a lack of specific results. Only work that has not been previously published at the time of the conference will be considered. Paper acceptance will be based solely on the information provided on the four page paper submitted. Promises of upcoming results will be ignored.

Electronic Submission

Only electronic submissions will be accepted. Do not email files or mail hard copies to the conference office. In order for your paper to receive a full review, the following information **MUST** be entered on the website along with your submission:

- Title of paper
- Name, complete mailing address and phone, and email of first author
- Names, affiliations, city, state, country of additional authors
- Person to whom correspondence should be sent, if other than the first author
- Identification as invited or student paper and student travel request, if applicable
- Suggested area (as listed in this announcement) into which the paper fits
- 50 word abstract

Papers Must Include

- Title of paper
- Name, complete mailing address, phone, and email of first author and name, affiliation, city, state and country of additional authors
- Up to two pages of text and up to two additional pages of figures and drawings (no text, captions only) in 8-1/2" x 11" format describing the planned 20-minute paper and emphasizing the findings. The font size for the body of the text and in figures and captions must be at least 10 point.
- Excessive photo reduction of figures and poor legibility will negatively impact acceptance
- Papers with more than 2 pages of text or figures shall be grounds for immediate rejection
- Please avoid the use of special international fonts

50 Word Web Page Abstract

This abstract is a brief synopsis (50 words) of your paper. Accepted 50-word abstracts will be used in preparing the IEDM web pages. The abstract should be prepared and inserted into the appropriate text box marked Summary for the 50-word abstract on the submission web site. **DO NOT INCLUDE** the 50-word abstract as a separate page with your submission.

For questions contact the conference office:
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Notification of Acceptance

Authors of accepted papers will be notified by the end of September. The accepted paper will be published as-is in the Technical Digest of the 2017 IEDM. Publication in the digest in no way precludes later publication of a fuller account of the work in another journal, but **NO PUBLICATION** is acceptable before the conference. The paper must be presented at the conference by one of the listed authors.

Student Presentation of Papers Encouraged

Papers presented by students and based on their own work will be considered for the Best Student Paper Award. The paper must be identified as a student paper at the time of submission. The award is based on both the paper and the presentation which must be given by the student. The award will be announced and presented at the 2018 IEDM.

Award Consideration Requirement

To be considered for the best student paper award, the student's professor and/or research supervisor must complete the IEDM student paper recommendation form clearly outlining the student's individual contribution to the work. This form is to be filled out by those student papers that are accepted for the IEDM and must be mailed or faxed to the conference office by November 7th, 2017.

Student Speaker Financial and Travel Assistance

Financial assistance for travel and registration is available to students presenting papers. This applies also for overseas students. Assistance must be requested when the paper is submitted by choosing this option on the submission website (under "Type"). Further information on travel assistance will be included in the student's author kit. Late News Papers are not eligible for travel assistance or the student paper award.

Pre-Conference Publicity

The accepted 4-page papers and supporting information will be used by IEDM for publicity and portions of these papers may be quoted in pre-conference magazine articles and also via the Web. *If this is not acceptable, authors must indicate this on the web site when submitting the papers for review.* Questions regarding pre-conference publicity should be addressed to the conference public relations manager, Chris Burke at email: cburke@btbmarketing.com and tel. 1-919-872-8172.

Agreement Not to Pre-Publish

Submission of a paper for review and subsequent acceptance is considered by the committee as an agreement that the work will not be placed in the public domain by the author prior to the conference. Accepted papers or significant portions of the work may not be placed in the public domain (conference with or without proceedings) prior to the conference. Violation will be grounds for automatic withdrawal of the paper by the conference committee.

Late News Papers

**Deadline for receipt of papers is
September 11th, 2017.**

**A very limited number of Late News Papers
will be accepted. Late News Papers are not
eligible for travel assistance or the
student paper award.**

Authors are asked to submit late news papers announcing only very recent developments. Papers should be in the same format as a regular paper and should be submitted through the submission web site in the same way as for regular submissions. Authors of accepted papers will be notified by the end of September.

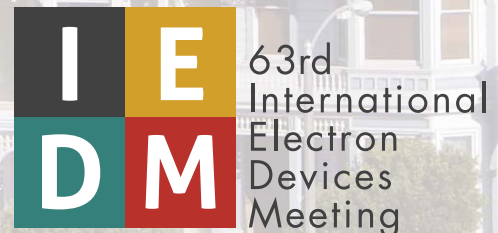


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For Further Information

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