

2014 IEEE INTERNATIONAL ELECTRON DEVICES MEETING 60TH ANNIVERSARY

*The annual meeting of the Electron Devices Society
will be held at the Hilton San Francisco Union Square,
San Francisco, CA, December 15-17, 2014*

Increased participation in the following areas is sought:

- Circuit and process technology interaction
- Energy harvesting
- Bio-sensors and BioMEMS
- Power devices
- Sensors and Magnetics and Spintronics
- Two dimensional electronics
- Devices for non-Boolean computing
- Multiferroics

Information about IEDM can be found at:

<http://www.ieee-iedm.org>

Twitter: http://twitter.com/ieee_iedm

LinkedIn: <http://www.linkedin.com/groups/IEDM-7475096>

Abstract submission

- For full submission information, including guidelines, descriptions for submission categories (<http://www.ieee-iedm.org>)
- Deadline for submissions on June 23, 2014

Meeting Highlights

- Three plenary presentations by prominent experts.
- Invited papers on all aspects of advanced devices and technologies.
- Special focus sessions covering topics in
 - * Novel devices for specialty imaging applications
 - * Microsystems for personalized medicine
 - * Solid-state power devices
 - * Devices and Circuits for Analog Applications
- Two evening panel discussions.
- Presentation of IEEE/EDS awards.
- IEDM luncheon presentation will be held on Tuesday, December 16.
- Entrepreneur's lunch at IEDM on Wednesday, December 17.
- 90 minute tutorial sessions will be offered on emerging topics, on Saturday afternoon, December 13.
- Two short courses will be held on Sunday, December 14.

Papers in the following areas are requested

CIRCUIT and DEVICE INTERACTION (CDI): Papers are solicited in the areas of CMOS platform technology and circuit-device interactions. Topics include digital, analog and RF technology, device and circuit scaling issues, technology-circuit co-optimization, power-performance-area analysis, impact of future device structures on circuit design, circuit and architecture implication of interconnects, and manufacturability issues such as DFM and process control. Submission of papers covering device and design interactions in memory, logic, analog, and mixed-signal circuit issues such as technology 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, both front-end and back-end of the process. Topics include but are not limited to hot carriers, high-k and low-k dielectric wear-out and breakdown, process charging damage, latch-up, ESD, soft errors, noise and mismatch behavior, bias temperature instabilities, thermal modeling, at devices, circuits, and packaging level. Other topics include interconnect reliability, electromigration, the impact of back-end processing on devices, chip- package interaction, physics of failure analysis, as well as reliability issues for memory, logic, and 3D technologies and novel characterization techniques.

DISPLAY and IMAGING SYSTEMS (DIS): Papers are solicited on devices, structures, and integration for displays, imaging, and detectors. A subset of key topics in the displays and imaging area includes CMOS imagers, high-speed imagers, optoelectronic devices, CCD's, TFT's, organic, amorphous, and polycrystalline devices, optoelectronic devices, as well as emissive and reflective displays. Submission of papers addressing fundamental performance differences between CMOS and CCD imagers, organic and inorganic displays, and covering new technology trends in imagers and displays are encouraged. Other relevant subjects include DIS design, fabrication, reliability, theory, and modeling.

MEMORY TECHNOLOGY (MT): Papers are solicited covering all memory related technology topics, from novel memory cell concepts and integration schemes to fully integrated memories and manufacturing issues. Areas of interest include processes, reliability and modeling for volatile, nonvolatile memories, and novel memory cells including but not limited to ReRAM, STT-MRAM, PCRAM, Cross-point, Cross-point selectors, organic memory and NEMS-based devices. Other topics of interest are memory array optimization, 3D memory architectures, novel reading/program/erase schemes, solid state drive (SSD) applications and 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, their isolation and interconnection. Topics include physical and compact models for devices and interconnects, modeling of fabrication processes and equipment, material modeling, simulation algorithms, process characterization, parameter extraction, early compact models for advanced technologies, performance evaluation, design for manufacturing, reliability and technology benchmarking methodology. Other topics of interest include the modeling of interactions between process, device, and circuit 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, nanoelectronic devices. Examples of nanoelectronic devices include nanotubes, nanowires, and quantum dots; spintronic, photonic, plasmonic topological, phase transition and other non charge based devices; nanodevices for storage; molecular devices; tunnel FETs; and NEMS-based logic devices. Subsets of key topics include CMOS device physics, CMOS scaling issues, novel MOS structures, as well as devices for high performance, low power logic, analog and RF applications. Other topics of interest are non-planar devices, devices based on SOI, and devices with high-mobility channels such as strained silicon, germanium, SiGe, graphene and other 2D materials.

POWER and COMPOUND SEMICONDUCTOR DEVICES (PC): Papers are solicited in the areas of compound semiconductors (GaAs, InP, GaN, SiC, Antimonides and their related alloys, etc.) with electronic and optoelectronic device applications. Papers are also solicited on discrete and integrated power devices and modules using Si, diamond, and compound semiconductors. Topics include III-V FETs, tunnel FETs, HBTs, superjunction devices, IGBTs, vacuum devices, LEDs, lasers, external modulators, RF, microwave and millimeter-wave devices, and SAW/BAW devices. Also of special interest are ballistic and quantum effect devices, optoelectronic integrated circuits, optical interconnects, photovoltaics, photonic bandgap structures and crystals, and active and passive electron devices for analog applications.

PROCESS and MANUFACTURING TECHNOLOGY (PMT): Papers are requested on front-end, back-end, heterogeneous technology integration and packaging process modules for fabrication of logic, memory, and 3D integrated circuits on silicon and non-silicon technologies as well as advanced semiconductor manufacturing topics. Topics related to front-end processing include substrate technologies, new transistor materials and integration of alternative high mobility channel materials, lithography, etching, self-assembly techniques, isolation technologies, dielectric materials and metal electrodes for transistor gate stacks and MIM capacitors, shallow junctions, and silicides. Topics related to back-end processing include conductor systems, low dielectric constant materials, contact, via processes, barrier materials, planarization, integration considerations for multilevel interconnects, photonics-electronics integration on CMOS and advanced packaging. Advanced semiconductor manufacturing topics includes novel/emerging process technology, processes and tools designed to reduce variance, defect reduction in heterogeneous material systems, novel techniques around process understanding and stability as well as process control techniques for advanced CMOS, wide band-gap semiconductors and MEMS.

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

Preparation of Abstracts:

Abstracts must be submitted electronically. Deadline for submission of abstracts is June 23, 2014. PRIOR to preparing your abstract for electronic submission, please read the abstract preparation and submission guidelines below. A [sample abstract](#) is available on the website. **PLEASE AVOID THE USE OF SPECIAL INTERNATIONAL FONTS** in the main body text, figures, charts, and tables of the abstract submission.

Abstracts for review 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 ABSTRACT 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 3-page abstract submitted. Promises of upcoming results will be ignored.

Instructions for 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 abstract fits
- 50 word abstract

Abstracts for review 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
- Authors are asked to submit a one-page text abstract with up to two additional pages of figures and drawings (no text, captions only) on 8-1/2" x 11" format that define their planned 20-minute papers and emphasize their findings. The font size for the body of the text must be 10 point.
- Excessive photo reduction of figures and poor legibility will negatively impact acceptance. **ABSTRACTS WITH MORE THAN 1 PAGE OF TEXT SHALL BE GROUNDS FOR IMMEDIATE REJECTION.**

50 Word Abstract for the IEDM Web Page: 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: Phyllis Mahoney, IEDM, 19803 Laurel Valley Place, Montgomery Village, MD 20886 USA Tel: 301/527-0900 ext. 2 Email: iedm@his.com

Authors of accepted papers will be notified by **August 12, 2014**. They will receive an author's kit, which will include instructions on the preparation of an extended abstract of no more than 4 pages (including figures) for the Technical Digest of the 2013 IEDM. This abstract must be submitted to the printer by **September 17, 2014**. The title of the extended abstract must not be changed from original accepted abstract. 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 IF THE ABSTRACT IS IDENTIFIED AS A STUDENT PAPER AT THE TIME OF SUBMISSION. The best student paper award is decided based on the abstract, final paper and presentation by the student. The award will be announced and presented at the 2015 IEDM.

Award Consideration requirement: In order for a paper to be considered for the best student paper award, the student's professor and/or research supervisor will be asked to 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 can be mailed or faxed to the conference office by the final extended abstract deadline of September 17, 2014.

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 ABSTRACT 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 one-page abstracts and supporting information will be used by and for IEDM publicity purposes and portions of these abstracts 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 ABSTRACTS 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 or Present Abstracts: Submission of an abstract 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 abstracts is September 10, 2014.

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 abstracts announcing only very recent developments. PDF files should be in the same format as a regular abstract and should be emailed to Polly Mahoney at the Conference Office. ACCEPTED LATE NEWS PAPERS AND ACCOMPANYING FIGURES WILL BE PRINTED AS RECEIVED IN THE TECHNICAL DIGEST. SUBMISSION OF A LATE NEWS PAPER FOR REVIEW WILL BE CONSIDERED BY THE REVIEW COMMITTEE AS CONSENT FROM THE AUTHOR FOR ITS PUBLICATION IF ACCEPTED. Length of the late news presentation will be ten minutes, with an additional five minutes for questions.

FURTHER INFORMATION

All questions or inquiries for further information regarding this meeting should be directed to the Conference Office at: 19803 Laurel Valley Place, Montgomery Village, MD 20886 USA. Tel: 301-527-0900, ext. 103 FAX: 301-527-0994, Email: iedm@his.com

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