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TECHNICAL BRIEFS

DEVICE RESEARCH TRENDS—IEDM 2016 HIGHLIGHTS



The 2016 IEDM had several focus sessions including fascinating pieces on Wearable Electronics, the Internet of Things and Optogenetics. These Focus Sessions surveyed topics such as mechanical flexibility/stretchability, the ability to adhere to non-planar surfaces like the body, the heterogeneous integration of disparate technologies to create systems characterized by low-power operation, energy autonomy, wireless capability and ultra-low manufacturing costs. These topics were presented from researchers across the globe, and this issue of the EDS Newsletter captures glimpses into these latest technology developments. A short summary of a few key presentations at IEDM 2016 follows, with full text of the papers available in the IEDM Technical Digest in IEEE *Xplore* (ieeexplore.ieee.org).

A 7 nm FinFET technology disclosed illustrates the first integrated platform technology using an extreme ultraviolet (EUV) light to pattern transistors. The EUV lithography may become a requirement for ultra-small devices because the 13.5 nm wavelength of the EUV light is much shorter than that of the light currently used (193 nm) and it simplifies patterning. Here, EUV lithography and other advanced patterning approaches have led to the tightest contacted polysilicon pitch (44/48 nm), metallization pitch (36 nm), and contact opening (~10 nm) ever reported for FinFETs. The technology also features dual-strained channels on a thick strain-relaxed buffer (SRB) virtual substrate to combine tensile-strained NMOS and compressively strained SiGe PMOS for enhancement of drive current by 11% and 20%, respectively, versus a common planar HKMG process. It also features novel trench epitaxy to minimize the resistance of the highly scaled contact regions. (**Paper 2.6, A 7 nm FinFET Technology Featuring EUV Patterning and Dual-Strained High-Mobility Channels, R. Xie et al, IBM/Globafoundries/Samsung**)

Another 7 nm CMOS platform technology for mobile system-on-a-chip (SoC) applications featuring FinFETs, was presented by TSMC

(continued on page 3)

YOUR COMMENTS SOLICITED

Your comments are most welcome. Please write directly to the Editor-in-Chief of the Newsletter at radhakrishnan@ieee.org

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NEWSLETTER DEADLINES

ISSUE	DUE DATE
January	October 1st
April	January 1st
July	April 1st
October	July 1st

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FPO

SIBERIAN CONFERENCE ON CONTROL AND COMMUNICATIONS (SIBCON)

By OLEG STUKACH

The 12th Siberian Conference on Control and Communications (SIBCON), was held May 12–14, 2016, in Moscow at Higher School of Economics. The conference was organized by the ED Toms and Krasnoyarsk Chapters in order to promote interdisciplinary discussion and interaction among scientists and engineers with an emphasis on IEEE membership. About 180 participants from 23 countries presented 232 technical papers in 12 oral sessions. The papers were selected for presentation by the Scientific Program Committee, with an acceptance ratio of 32.5%. Only original, unpublished contributions were considered, and the authors of the best papers given awards. The conference proceedings are registered in *IEEE Xplore* and are indexed in Web of Science, Scopus, etc. The conference program is available at https://sibcon.hse.ru/en/progr_en.

National Instruments R&D organized an impressive exhibition of



Participants of SIBCON 2016

products developed in accordance with the company's platform-based approach.

SIBCON has a 20 year history as the flagship conference of the Russia Siberia Section. In 2017, SIBCON will be held in Astana, new capital of Kazakhstan. The conference will be held right after the main events of the world exhibition EXPO. Please visit

the conference website for more information: <http://ieee.tpu.ru/sibcon>.

Mark this event on your calendar! You won't want to miss the opportunity to enjoy the unique venue and luxury of human communication with the hospitable people of Kazakhstan.

~ Daniel Tomaszewski, Editor

SAVE THE DATE!

2017 IEEE International Conference on Electron Devices and Solid-State Circuits

One major event is the upcoming regional 2017 IEEE EDSSC (International Conference on Electron Devices and Solid-State Circuits). The Electron Devices Society is a technical co-sponsor and key members of the local Taiwan chapter are involved. The venue is planned for Tsing Hua University, Hsinchu, Taiwan. The conference is scheduled to begin October 18, 2017. For more information, visit the EDSSC website, <http://www2.ess.nthu.edu.tw/edssc2017/>.

Please make a note on your calendar for paper submissions in mid-2017.

~Ming Liu, Editor