



10th SiGe, Ge & Related Compounds: Materials, Processing, and Devices Symposium

Atlanta, GA

October 9 – 13, 2022



242nd ECS Meeting: G03 Symposium

Abstract Submission Deadline
April 8, 2022

The 10th International SiGe, Ge, & Related Compounds: Materials, Processing, and Devices Symposium is the G03 Symposium of the 242nd ECS Meeting. This meeting will provide a forum for reviewing and discussing materials and device related aspects of SiGe, Ge, and Related Compounds. There are 10 areas of interest:

1. Heterojunction Bipolar Transistors

Device physics, process technology, modeling, reliability, circuit applications (analog, digital, and RF to mm-wave).

2. FET Technology

Advanced CMOS, Compound Semiconductor Devices (III-V, Group IV), 2-D Materials FET, TFET, FDSOI, FinFETs, Nanowire FETs, Negative-Capacitance FET, Oxide TFTs, Ferroelectric FETs, and transistors with high bandgap materials (SiC, GaN, and Ga₂O₃).

3. Optoelectronics

Detectors, Waveguides, Quantum cascade structures, Photovoltaic cells, Photoluminescence, Electroluminescence, Integration with CMOS electronics, Ge buffers for III-V Optoelectronics on Si, monolithic optoelectronic integrated circuits (OEICs).

4. Epitaxy

Pre-epi surface preparation of Si, SiGe and Ge; Growth of Group IV epitaxial layers: graphene, Si, Ge, SiC, SiGe, SiGe:C, GeSn, SiGeSn. Epitaxial growth of other materials on Si or Ge such as III-V's; Novel growth techniques and precursors; Selective growth; Novel in-situ doping approaches; Quantum wire/dot growth.

5. Emerging Applications

Nano-structured devices, quantum computing, THz devices, electro-mechanical properties of SiGe layers, MEMs, TFTs, amorphous SiGe layer applications.

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6. Process and Integration

All aspects of integration like substrate engineering, monolithic and hetero-integration of SiGe/Ge devices and systems; yield, reliability and related processing including diffusion and suppression, Si/Ge intermixing, Oxidation and Nitridation, Cleaning & etching of SiGe, Ge, and SiGeC.

7. Strain Engineering

Stress engineering for GAA (Gate-All-Around) transistors. Performance and reliability of PMOS and NMOS transistors with SiGe and striped Si/SiGe channels. Stress engineering for 3D stacking technology. Efficiency of stress engineering for ultra-short channels approaching L = 10 nm. Ge quantum wells.

8. Surfaces and Interfaces

Surface Passivation, High K interface, Metal Contact, Interfacial electrical properties and its characterization. Electro-mechanical properties of SiGe layers, MEMs, TFTs.

9. Related Compounds

Material growth, processing, and characterization of related compounds (such as GaN, SiC, h-BN, etc.), devices with emerging applications (such as Micro LED/Mini LED, GaN on Si power electronics...) and device reliability.

10. Metrology & Characterization

Advancements in the nanoscale characterization of Group IV and III/V alloys in terms of their bulk (composition, strain, crystallinity, doping, dimensions, morphology, band structure, mobility) as well as surface/interface properties.

Evening Panel Session

A Panel of experts will discuss issues related to a topic in SiGe, Ge, or Related Compounds

Poster & Poster/Student Presentation Award Session

For the latest symposium details please see the symposium website at: www.sigesymposium.com.

Website maintained by Gianlorenzo Masini (masini@cisco.com)

Abstract Submission

All authors must submit an ECS abstract to the ECS PRIME2020 Website below, which is open for abstract submission till April 8, 2022. <https://ecs.confex.com/ecs/242/cfp.cgi>

Please select symposium **G03: SiGe, Ge, & Related Compounds: Materials, Processing, and Devices 10**.

Deadline Abstract Submission

April 8, 2022

ecs.confex.com/ecs/242/cfp.cgi

Proceedings Manuscript Submission

The Symposium Proceedings will be published in ECS Transactions (ECST), available at the time of the Symposia, serving as the digest of technical papers. All regular and invited paper authors are required to submit a full-length manuscript to the Electrochemical Society website to be included in the Proceedings. Please contact the Symposium Organizers for special cases. Detailed instructions and templates for the preparation of the Manuscript are found at the ECS Website, which will be open for manuscript submission on **June 17, 2022**. Please note that the Proceedings Manuscript must be submitted to the ECS website by **July 15, 2022**.

Deadline Proceedings Manuscript as ECST Enhanced Issue:

July 17, 2022

www.electrochem.org/242

HBT

V. Jain, Chair (Globalfoundries, USA)
G. Niu (Auburn University, USA)
C. Dahl (Infineon, Germany)
M. Dahlstrom (TI, USA)
T. Suligoj (University of Zagreb, Croatia)
A. Fox (IHP, Germany)

FET

X. Gong, Chair (National Univ. of Singapore)
Aaron Thean (National Univ. of Singapore)
Pouya Hashemi (IBM, USA)
WilmanTsai (TSMC, USA)
Suman Datta (University of Notre Dame, USA)
Ken Uchida (Keio University, Japan)
Thomas Skotnicki (STMicroelectronics, France)
Emmanuel Augendre (CEA-Leti, France)
Peide Ye (Purdue University, USA)

Optoelectronics

G. Masini, Chair (Cisco, USA)
G. Capellini (University of Rome, Italy)
F. Boeuf (ST Microelectronics, France)
Y. Ishikawa (University of Tokyo, Japan)
J. Liu (Dartmouth College, USA)
Chuanbo Li (Minzu University, China)
Donguk Nam (Nanyang Tech Univ., Singapore)

Epitaxy

J.M. Hartmann, Chair (LETI, France)
M. Bauer (AMAT, USA)
D. Buca (FZ Juelich, Germany)
Y. Yamamoto (IHP, Germany)
A. Hikavy (imec, Belgium)
M. Sakuraba (Tohoku University, Japan)
J. Holt (Globalfoundries, USA)

Emerging Applications

M. Ostling, Chair (KTH, Sweden)
A. Thean, (National Univ. of Singapore, Singapore)
S. Koester, (University of Minnesota, USA)
D. Paul (University of Glasgow, Scotland, UK)
M. Lemme (RWTH Aachen, Germany)
Subramanian S. Iyer, (UCLA, USA)

Process and Integration

A. Mai, Chair (IHP, Germany)
C.-W. Liu (National Taiwan University)
D. Dutartre (STMicroelectronics, France)
T. Sadoh (Kyushu University, Japan)
J. Donkers (NXP Semiconductor, Netherlands)

Strain Engineering

A. Ogura, Chair (Meiji University, Japan)
T. Irisawa (AIST, Japan)
S. Bedell, (IBM, USA)
S. Takagi (University of Tokyo, Japan)
V. Moroz (Synopsys, USA)
R. Loo (imec, Belgium)

Surfaces and Interfaces

S. Miyazaki, Chair (Nagoya University, Japan)
Osamu Nakatsuka (Nagoya University, Japan)
E. Garfunkel (Rutgers University, USA)
V. Le Thanh (CINaM/CNRS and Univ. Aix-Marseille)
A. Nishiyama (Kioxia, Japan)
O. Moutanabbir (Ecole Polytechnique de Montreal)

Related Compounds

W. Bi, Chair (Intel, USA)
Z. Mi (University of Michigan, USA)
B. Rahman (City University of London, UK)
N. Kobayashi (UC Santa Cruz, USA)
W. Li (UC Berkeley, USA)

Metrology and Characterization

A. Schulze, Chair (AMAT, USA)
M. Kuhn (Rigaku, USA)
J. Mody (Intel, USA)

Evening Panel Session

Poster & Student Presentation Award

J.M. Hartmann, Chair (LETI, France)

Symposium Organizers

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