



# 11th SiGe, Ge, & Related Compounds: Materials, Processing and Devices Symposium

Honolulu (HI), USA

October 6 – 11, 2024



246th ECS Meeting  
(PRiME 2024)

Abstract Submission Deadline  
April 12, 2024

The 11th International SiGe, Ge, & Related Compounds: Materials, Processing and Devices Symposium will be one Symposium of the 246th 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  $\text{Ga}_2\text{O}_3$ ).

### 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 & Quantum Computing

Nano-structured devices, quantum devices based on group-IV semiconductors, THz devices, electro-mechanical properties of SiGe layers, MEMs, TFTs, amorphous SiGe layer applications, heterogeneous 3D integration.

The SiGe, Ge, & Related Compounds Symposium will be a Symposium of the PRiME 2024 Meeting. Registration and Hotel arrangements must be booked through the ECS at <https://www.electrochem.org/prime2024>

### 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

### Student Award Session

For the latest symposium details please see the symposium website at: [www.sigesymposium.org](http://www.sigesymposium.org).

Website maintained by Gianlorenzo Masini ([masini@cisco.com](mailto:masini@cisco.com))

## Abstract Submission

All authors must submit an ECS abstract to the ECS PRIME2024 Website below, which will open soon for abstract submission till **April 12, 2024**.  
<https://www.electrochem.org/prime2024>

## Deadline Abstract Submission April 12, 2024

## 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 21, 2024**. Please note that the Proceedings Manuscript must be submitted to the ECS website by **July 19, 2024**.

## Deadline Proceedings Manuscript at ECST : July 19, 2024

<https://www.electrochem.org/prime2024>

Symposium dedicated to the memory of Qizhi Liu, the former chairman of that symposia series, who passed away in February 2023. In his honor, the student award will be named the "Qizhi Liu student award".



## HBT

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

## FET

**X. Gong, Chair** (National Univ. of Singapore)  
Pouya Hashemi (IBM, USA)  
Wilman Tsai (Stanford, USA)  
Suman Datta (Georgia Institute of Technology, USA)  
Thomas Skotnicki (STMicroelectronics, France)  
Kai Ni (University of Notre Dame)  
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. Holt, Co-Chair** (Globalfoundries, USA)  
**J.M. Hartmann, Co-Chair** (CEA-LETI, France)  
D. Buca (FZJ, Germany).  
R. Khazaka (ASM, Belgium)  
Y. Yamamoto (IHP, Germany)  
M. Sakuraba (RIEC, Tohoku Univ., Japan)  
J. Tolle (AMAT, USA)  
S. Mochizuki (IBM, USA)

## Emerging Applications & Quantum Computing

**M. Ostling, Chair** (KTH, Sweden)  
Max Lemme, (AMO and RWTH)  
Steve Koester (UMN)  
Aaron Thean Voon Yew (NUS)

## Process and Integration

**A. Mai, Chair** (IHP, Germany)  
J. Donkers (NXP Semiconductor, Netherlands)  
M. Oehme (University of Stuttgart, Germany)  
K. Makihara (Nagoya University, Japan)  
T. Sadoh (Kyushu University, Japan)  
M. Bauer (Mattson, USA)

## 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/Ghent Univ., Belgium)

## Surfaces and Interfaces

**O. Nakatsuka, Chair** (Nagoya University, Japan)  
Other members to be confirmed.

## Related Compounds

**W. Bi, Chair** (Chinese University of Hong Kong, China)  
Z. Mi (University of Michigan, USA)  
B. Rahman (City University of London, UK)  
N. Kobayashi (UC Santa Cruz, USA)  
B. Liu (Nanjing University, China)  
W. Li (Intel Components Research, USA)

## Metrology and Characterization

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

## Symposium Organizers

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