

DRC 2023 | UNIVERSITY OF CALIFORNIA, SANTA BARBARA

SUNDAY - 6/25

All Coffee Breaks will take place in Lagoon Plaza

Poster Session will take place in Lagoon Plaza

UNIVERSITY CENTER, SANTA BARBARA HARBOR

Short Course: Two-Dimensional Materials for the Semiconductor Industry
1:00-5:00 pm

UNIVERSITY CENTER, LAGOON PLAZA

Welcome Reception
6:00-8:00 pm

MONDAY - 6/26

Intro and Awards
9:00-9:20 am, University Center, Corwin West

Plenary: EPI (Electronic Photonic Integration) by EPI (Epitaxy)
Kei May Lau, The Hong Kong University of Science and Technology (invited)
9:20-10:20 am, University Center, Corwin West

COFFEE BREAK 10:20-10:40 AM

25 Years of Development—From Esoteric Quantum Transport Theory to Wide Adoption in Atomistic Device Simulation
Gerhard Klimeck, Purdue University (invited)
10:40-11:40 am, University Center, Corwin West

LUNCH 11:40 am-1:00 pm (Not provided by Conference)

Session 1: 2D Electronics I
University Center, Corwin East

Crystal growth and applications of new 2D dielectric materials
Zdenek (invited),
1:00-1:40 pm

fMAX Exceeding 3 GHz in Self-Aligned Zinc-Oxide Thin-Film Transistors with Micron-Scale Gate Length, Ma
1:40-2:00 pm

Local Back-Gate Monolayer MoS2 Transistors with Channel Lengths Down to 50 nm and EOT ~ 1 nm Showing Improved Ion using Post-Metal Anneal, Jaikissoon, 2:00-2:20 pm

High-Performance WS₂ MOSFETs with Bi/Sb Composite Contacts, Wen
2:20-2:40 pm

High performance monolayer WSe2 devices through defect engineering and doping, Tan
2:40-3:00 pm

COFFEE BREAK 3:00-3:20 PM

Session 3: 2D Electronics II

A mobility study of monolayer MoS2 on low-κ/high-κ dielectrics, Sun
3:20-3:40 pm

Up to 100-fold Improvement of Threshold Voltage Stability in ITO Transistors, Wahid
3:40-4:00 pm

Hysteresis and thermal stability in FETs with exotic Bi2SeO5 and MnAl2S4 insulators, Illarionov
4:00-4:20 pm

Drift of Schottky Barrier Height in Phase Change Materials, Nir-Harwood
4:20-4:40 pm

Ultra Steep Slope Cryogenic MOSFETs Based on Bilayer Graphene, Icking
4:40-5:00 pm

Session 2: WBG I: Electronics
University Center, Corwin West

Multi-Channel β-Ga2O3/(Al0.2Ga0.8)2O3 MODFETs, Dheenan
1:00-1:20 pm

First GaN/AlN p-channel FinHFETs on Single-Crystal AlN Substrates, Zhang
1:20-1:40 pm

Large-scale vertically stacked ultrawide bandgap oxides for CMOS IC, Yuvaraja
1:40-2:00 pm

β-Ga2O3 FinFETs by MacEtch: temperature dependent I-V characteristics, Ren
2:00-2:20 pm

Complex oxide membranes as dielectrics for 2D electronics, Jalan (invited)
2:20-3:00 pm

Session 4: WBG II: Power

Gallium oxides devices for GW/MV transmission and high power switched mode RF amplifiers, Singsetti (invited)
3:20-4:00 pm

GaN-on-GaN PN Power Diode with a Breakdown Voltage of 7.86 kV, Xu
4:00-4:20 pm

GaN Super-Heterojunction Power Switches for Improved Voltage Handling and Radiation Hardness, Chu (invited)
4:20-5:00 pm

First Demonstration of 15A/1.4 kV Large Area Trench β-Ga2O3 Schottky Barrier Diode with High-κ RESURF, Roy
5:00-5:20 pm

POSTER SESSION
6:00-9:00 PM

TUESDAY - 6/27

Plenary: Integrated Printed and Flexible Electronic Systems, Ana Claudia Arias, University of California, Berkeley (invited)
9:00-10:00 am, University Center, Corwin West

COFFEE BREAK 10:00-10:20 AM

Session 5: Flexible Electronics
University Center, Corwin East

Carbon-based nanomaterial inks for print-in-place, recyclable, and water-based electronics, Franklin (invited)
10:20-11:00 am

Flexible CMOS electronics based on 2D p-type WSe2 and n-type MoS2, Piacentini
11:00-11:20 am

Quantum transport simulations for the next decade: Exploiting quantum topology in emerging 2D-devices, Muralidharan (invited)
11:20-12:00 pm

Fully Integrated Flexible RF Detectors in MoS2 and Graphene based MMIC, Palacios
12:00-12:20 pm

LUNCH 12:20-1:20 pm (Not provided by Conference)

Session 7: Emerging Devices I

Josephson parametric amplifiers for rapid, high-fidelity measurement of solid-state qubits, Shankar (invited)
1:20-2:00 pm

The D4-TFT: A Point-of-Care Carbon Nanotube BioFET for Ultrasensitive Detection of Biomarkers, Albarghouthi
2:00-2:20 pm

Ultra-compact ternary content-addressable memory cell based on single ambipolar two-dimensional floating-gate transistor, Cai
2:20-2:40 pm

Multifunctional Resistance Switching in Monolayer Hexagonal Boron Nitride Atomistor, Yang
2:40-3:00 pm

COFFEE BREAK 3:00-3:20 PM

Session 9: Emerging Devices II

Graded AlGaIn/GaN heterojunction bipolar transistors with 101 kA/cm2 collector current density using patterned area regrown base contacts, Joishi
3:20-3:40 pm

GaN/AlN Resonant Tunneling Field Effect Transistors, Encomendero
3:40-4:00 pm

Heterogenous integration of 3D vertically stacked metal-oxide transistors, Yuvaraja
4:00-4:20 pm

LATE NEWS
4:20-5:00 pm

Session 6: WBG III: RF Device
University Center, Corwin West

AlN/GaN HEMT with 14.1 W/mm Output Power Density at 10 GHz, Cheng
10:20-10:40 am

Temperature dependent properties of high-speed 15-GHz epitaxial AlN FBARs, Zhao
10:40-11:00 am

First Demonstration of GaN RF HEMTs on Engineered Substrate, Yadav
11:00-11:20 am

Fully Epitaxial, Reconfigurable Ferroelectric ScAlN/AlGaIn/GaN HEMTs, Wang
11:20-11:40 am

Late News
11:40-12:00 pm

Late News
12:00-12:20 pm

Session 8: WBG IV: HEMT

W-band fully passivated AlN/GaN HEMT device with 56% power-added efficiency and 780 mW/mm output power density at 94 GHz, Arkun
1:20-1:40 pm

AlN/Al0.25Ga0.75N/AlN Quantum Well HEMTs with ft/fmax of 67/166 GHz, Kim
1:40-2:00 pm

90 nm GaN Technology for Millimeter-Wave Power Applications to W-Band and Beyond, Srivastava
2:00-2:20 pm

Recent Advances in GaN HEMT Modeling using Fermi Kinetics Transport Miller (invited)
2:20-3:00 pm

Session 10: Optoelectronics

Size dependent characteristics of AlGaIn-based ultraviolet micro-LEDs, Yao
3:20-3:40 pm

Lattice-Matched InAsSbBi Photodetectors for Long-Wave Infrared Sensing, White
3:40-4:00 pm

Enhanced injection efficiency in double-color III-Nitride LEDs, Chlipala
4:00-4:20 pm

LATE NEWS
4:20-5:00 pm

Conference Dinner Reception
Goleta Beach (6:00 pm - 7:45 pm)

Rump Session - University Center, Corwin West

What makes a good device paper and how do you measure its impact?
Panelists: Aaron Franklin, Duke University; Azad Naeemi, Georgia Institute of Technology; Becky (R.L.) Peterson, University of Michigan; Curt Richter, National Institute of Standards and Technology; Mark Rodwell, University of California, Santa Barbara
8:30-10:30 pm

WEDNESDAY - 6/28

EMC Awards Ceremony & Plenary Session
Suboxide Molecular-Beam Epitaxy, Darrell Schlom, Cornell University (invited)
8:20-9:20 am, Music Building, Lotte Lehmann

COFFEE BREAK 9:20-10:00 AM

Session 11: Memory
University Center, Corwin West

FeFET-Based Synaptic Cross-Bar Arrays for Deep Neural Networks: Impact of Ferroelectric Thickness on Device-Circuit Non-Idealities and System Accuracy, Wang, 10:00-10:20 am

Origin of Polarization Charges Probed in Bulk Si:HfO2 FeFET, Dahan
10:20-10:40 am

Solving optimization tasks power-efficiently exploiting VO2's phase-change properties with Oscillating Neural Networks, Maher
10:40-11:00 am

Domain Wall Magnetic Tunnel Junction Artificial Neuron with Tunable Stochasticity for Computing on the Edge, Leonard
11:00-11:20 am

Computational Associative Memory Powered by Ferroelectric Memory, Ni (invited)
11:20-12:00 pm

LUNCH 12:00-1:00 pm (Not provided by Conference)

Session 12: Devices for Extreme Conditions

Radiation Effects in AlGaIn/GaN HEMTs and Gallium Oxide Diodes, Fleetwood (invited)
1:00-1:40 pm

Single-Event Burnout by Cf-252 Irradiation in Vertical β-Ga2O3 Diodes with Pt and PtOx Schottky Contacts and High Permittivity Dielectric Field Plate, Islam, 1:40-2:00 pm

Technology scaling effects on SRAM-PUF reliability under ionizing radiation, Surendranathan
2:00-2:20 pm

Fast switching (<10 ns) characteristics and long stress (190 h) operation of NO2-doped p-channel diamond MOSFETs, Saha
2:20-2:40 pm

DRC PARTICIPANTS CAN ATTEND BOTH DRC AND EMC SESSIONS ON WEDNESDAY