

DRC 2022 | THE OHIO STATE UNIVERSITY

All session times are listed in Eastern Daylight Time (EDT)

SUNDAY - 6/26

All Coffee Breaks will take place in the Performance Hall

Poster Session will take place in the Performance Hall

U.S. BANK CONFERENCE THEATER

Short Course:
Cryogenic Computing Devices
1:00-5:00 pm

PERFORMANCE HALL

Welcome Reception
6:00-8:00 pm

MONDAY - 6/27

Intro and Awards
9:00-9:20 am

Plenary: Rediscovering Semiconductor Materials for Quantum Photonic Devices,
Hu (invited)
9:20-10:20 am, U.S. Bank Conference Theater

COFFEE BREAK 10:20-10:40 AM

Plenary: Unleashing the Potential of Integrated Ferroelectric Devices with Hafnium Oxide,
Mikolajick (invited)
10:40-11:40 am, U.S. Bank Conference Theater

LUNCH 11:40 am-12:40 pm (Not provided by Conference)

Session 1: Wide Bandgap I - Lateral Ga2O3 Devices
U.S. Bank Conference Theater

Session 2: Cryogenic Devices
Great Hall Meeting Room 1 & 2

High Performance Homoepitaxial Gallium Oxide Power Devices on Bulk and Composite Substrates,
Krishnamoorthy (invited)
1:00-1:40 pm

Design Space Analysis of Superconducting Nanowire-based Cryogenic Oscillators, Islam
1:00-1:20 pm

Scalable Cryogenic InGaAs Quantum Well Switches for Signal Routing, Ferraris
1:20-1:40 pm

Low dispersion MOCVD β -Ga2O3 δ -doped MESFET with a Mg-doped Buffer,
McGlone
1:40-2:00 pm

Enhanced Drain Current in Transient Mode due to Long Ionization Time of Shallow Impurities at 4 K in 65-nm bulk Cryo CMOS Transistors,
Miyao
1:40-2:00 pm

Thermal stability of ALD-grown SiO2 and Al2O3 on (010) β -Ga2O3 substrates, Islam
2:00-2:20 pm

Interface Engineering for Steep Slope Cryogenic MOSFETs, Richstein
2:00-2:20 pm

High-temperature operation of β -Ga2O3 MOSFET with TiW refractory metal gate,
Sepelak
2:20-2:40 pm

Cryogenic Device Requirements for Qubit Control and Readout,
Subramanian (invited)
2:20-3:00 pm

Comparison of lateral field-plated MOSFETs with and without Mg-doped buffer layer in MOCVD grown β -Ga2O3,
Sharma
2:40-3:00 pm

COFFEE BREAK 3:00-3:20 PM

Session 3: RF Devices
U.S. Bank Conference Theater

Session 4: Memory I
Great Hall Meeting Room 1 & 2

Polarization-Engineering of III-N mm-Wave Transistors for High Efficiency and Linearity,
Fay (invited)
3:20-4:00 pm

Sub-Nanosecond Switching of Si:HfO2 Ferroelectric Field-Effect Transistor, Dahan
3:20-3:40 pm

Buried-Channel Ferroelectric FET as Energy Efficient and Reliable 1T-1VM, Chakraborty
3:40-4:00 pm

D-band frequency memristor switch based on monolayer boron nitride, Yang
4:00-4:20 pm

Improved Endurance with Electron-Only Switching in Ferroelectric Devices, Wang
4:00-4:20 pm

Free-Standing High Power GaN Multi-Fin Camel Diode Varactors, Chen
4:20-4:40 pm

Interface-Controlled Ultralow Resistance Drift and Its Origin in Superlattice Phase Change Memory, Wu
4:20-4:40 pm

Record RF Performance of Ultra-thin Indium Oxide Transistors with Buried-gate Structure,
Charnas
4:40-5:00 pm

Statistical Analysis of 2T1R Gain-Cell RRAM Bitcell for Area Efficient, High-Performance, and Reliable Multi-level Cell Operation, Mehra
4:40-5:00 pm

BREAK 5:00-6:00 PM

POSTER SESSION
6:00-9:00 PM

TUESDAY - 6/28

Plenary: The Path Towards Realistic ASIC Electronics Deployment Into Previously Impractical Extreme Application Environments,
Neudeck (invited)
9:00-10:00 am, U.S. Bank Conference Theater

COFFEE BREAK 10:00-10:20 AM

Session 5: Wide Bandgap II - Vertical Devices
U.S. Bank Conference Theater

Session 6: Memory II
Great Hall Meeting Room 1 & 2

Ga2O3 Trench Schottky Diodes by Novel Low-Damage Ga-Flux Etching, Dhara
10:20-10:40 am
Movement of Current Filaments and its Impact on Avalanche Robustness in Vertical GaN P-N diode Under UIS stress,
Shankar
10:40-11:00 am

Nanoscale HfO2-based memristive devices for neuromorphic computing,
Hoffmann-Eifert (invited)
10:20-11:00 am

A Composite TE-TFE-FE Model for Schottky Barrier Reverse Current over the Entire Electric-Field Range, Li, Wenshen
11:00-11:20 am

Ambient Effects on Reprogrammable Read-only Selector-free Memory for the Embedded NVM Applications, Chen
11:00-11:20 am

β -Ga2O3 FinFETs by MacEtch: high aspect ratio and ultra-low hysteresis,
Li, Xiuling (invited)
11:20-12:00 pm

An Experimentally Validated, Universal Memristor Model Enabling Temporal Neuromorphic Computation, Zivasatienraj
11:20-11:40 am

Robust Reconfigurable Field Effect Transistors Process Route Enabling Multi-VT Devices Fabrication for Hardware Security Applications, Galderisi
11:40-12:00 pm

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

Session 7: Thin Film Transistors
U.S. Bank Conference Theater

Session 8: Quantum I - Spin
Great Hall Meeting Room 1 & 2

First Demonstration of Top-Gated ITO Transistors: Effect of Channel Passivation, Wahid
1:20-1:40 pm

Quantum-Ready Germanium and Silicon,
Scappucci (invited)
1:20-2:00 pm

Vertically Stacked Multilayer Atomic-Layer-Deposited Sub-1-Nanometer In2O3 Field-Effect Transistors with BEOL Compatibility, Zhang
1:40-2:00 pm

Controlling the Spin and Valley Hall Effect in Monolayer WSe2 at Elevated Temperatures, Li
2:00-2:20 pm

N:Cu2O S/D for low contact resistance p-type Cu2O thin film transistor, Jo
2:00-2:20 pm

Photonic Curing: Rapid Thermal Processing of Oxide Thin-film Transistors on Plastic, Chatterjee
2:20-2:40 pm

Electrically Triggered Spin-State Phase Transition in LaCoO3, Islam
2:20-2:40 pm

Atomically-thin atomic-layer-deposited InZnO transistors with BEOL compatibility, Zheng
2:40-3:00 pm

LATE NEWS
2:40-3:00 pm

COFFEE BREAK 3:00-3:20 PM

Session 9: 2-D Devices
U.S. Bank Conference Theater

Session 10: Quantum II - Photonics
Great Hall Meeting Room 1 & 2

Nanoscale Devices Based on Two-dimensional and Ferroelectric Materials, Zhu (invited)
3:20-4:00 pm

SiGeSn Technology for All-Group-IV Photonics,
Yu (invited)
3:20-4:00 pm

Mobility Enhancement of Monolayer MoS2 Transistors using Tensile-Stressed Silicon Nitride Capping Layers, Jaikissoon
4:00-4:20 pm

Ge-based Mid-infrared integrated photonics platform for Sensing,
Kim (invited)
4:00-4:40 pm

Gate-Tunable Resonant Tunneling in a Dual-Gated Twist-Controlled Double Monolayer Graphene-hBN Heterostructure, Lin
4:20-4:40 pm

Analysis of BTI in 300 mm integrated dual-gate WS2 FETs, Panarella
4:40-5:00 pm

LATE NEWS
4:40-5:00 pm

BREAK 5:00-6:00 PM

Conference Dinner Reception
6:00-8:00 pm, Faculty Club

Rump Session I
Great Hall Meeting Room 1 & 2

Rump Session II
Great Hall Meeting Room 3

What is the role of computational physics and modeling in emerging devices?
Panelists: Miller, Winslow, Low, Roy
8:30-10:30 pm

The Intersection of Industry and Academia: Training Future Researchers,
Panelists: Shahedipour-Sandvik, Younkin, Buck, Rajan
8:30-10:30 pm

WEDNESDAY - 6/29

EMC Plenary

8:20-9:20 am, Archie M. Griffin West Ballroom
**EMC Plenary is open to DRC attendees who agree on-site to the EMC COVID Duty of Care statement. Please see EMC website for details.*

COFFEE BREAK 9:20-10:00 AM

Session 11: Heterogeneous Integration
U.S. Bank Conference Theater

Hybrid 2D/CMOS Microchips,
Lanza (invited)
10:00-10:40 am

Large-Scale Heterogeneous Device Integration,
Radosavljevic (invited)
10:40-11:20 am

Monolithic and Heterogeneous Integration of Atomically Thin Semiconductors for non-von Neumann CMOS, Pendurthi
11:20-11:40 am

LATE NEWS
11:40-12:00 pm

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

Session 12: Wide Bandgap III - III-N HEMTs
U.S. Bank Conference Theater

Ultra-Wide Bandgap Semiconductor Transistors for mm-wave Applications,
Rajan (invited)
1:20-2:00 pm

Modeling of the Charge-Voltage Characteristics of AlScN/AlN/GaN Heterostructures, Wu
2:00-2:20 pm

Improved On/Off Current Ratio of TiO2/AlGaIn/GaN MIS-HEMTs with N2O Surface Treatment on TiO2 Layer, Zhama
2:20-2:40 pm

First demonstration of N-polar GaN/AlGaIn/AlN HEMT on Single Crystal AlN Substrates, Kim
2:40-3:00 pm