

2023 Nanoscale Vacuum Electronics Joint Program Review

Drs. Kenneth Goretta and John Luginsland | May 30-31, 2023 | Arlington, VA -hybrid

Basic Research Innovation Collaboration Center (BRICC)
4100 N Fairfax Drive, Suite 450 | Arlington, VA 22203

Agenda Day 1 | May 30, 2023

Time	Topic	Speaker
08:30-09:00	Registration	
09:00-09:15	Introductory remarks	John Luginsland and Ken Goretta, AFOSR
09:15-09:45	Overview of MIT Empty Space Electronics	Tayo Akinwande, MIT
09:45-10:15	Overview of FIU Field Emitter Robust Vacuum Integrated Nanoelectronics (FERVIN) by	Dimitris Pavlidis, FIU
10:15-10:30	BREAK	
10:30-11:00	Field Emitter Device Studies	Tyson Back and Harris Hall, AFRL
11:00-11:30	Thermal-Field effects in field emitter devices	Kevin Jensen, NRL
11:30-11:55	GaN Nanoscale Vacuum Channel Transistors	Tomás Palacios, MIT
11:55-12:20	AlGaIn and Ga ₂ O ₃ based Vacuum Emission Devices	Siddharth Rajan, OSU
12:20-1.30	LUNCH	
1:30-1:55	Planar Nanoscale Vacuum Channel Transistors	Phillip Keithley/ Karl Berggren, MIT
1:55-2:20	Si Field Emitter Devices and Arrays	Saeed Mohammad, Purdue
2:20-2:45	ESE Device Simulation	John Cary, U of Colorado
2:45-3:10	Numerical Modelling of Field Emitting Devices	Enrico Bellotti, BU
3:10-3:30	BREAK	
3:30-4:30	Breakout sessions (Review current state and recommend future needs and work) a. Device design and modeling b. Fabrication and characterization	
4:30-5.00	Reports by breakout session teams	
5:00	Adjourn Day 1	

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Agenda Day 2 | May 31, 2023

Time	Topic	Speaker
08:30-09:00	Registration	
09:00-09:15	Remarks	John Luginsland/Ken Goretta, AFOSR, Tayo Akinwande, MIT and Dimitris Pavlidis, FIU
09:15-09:40	Scaled Vertical Nano Vacuum Channel Transistors	Tayo Akinwande, MIT
09:40-10:05	MOCVD Growth of Group III-Nitride Field Emitter Structures	Joan Redwing, Penn State
10:05-10:30	In-situ Materials and Device Characterization	Bruce Gnade, Southern Methodist U
10:30-10:45	BREAK	
10:45-11:10	III-N Vertical Field Emitter Design, fabrication and Characterization	Georgios Doundoulakis. FIU
11:10-11:35	Device Characterization & Life Test	Jim Browning, Boise State U
11:35-12:00	Thermal Characterization and Phenomena in Vacuum Field Effect Transistors	Samuel Graham, U of Maryland
12:00-12:25	SE Device Optimization	Luca Daniel, MIT
12:25-1:30	LUNCH	
1:30-2:30	Poster Viewing and Networking	
2:30-3:15	Breakout sessions (Review current state and recommend future needs and work) a. Device design and modeling b. Fabrication and characterization	
3:15-4:15	Reports by breakout session teams and planning for the future. Concluding Remarks	
4:15	Adjourn Day 2	