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1. REPORT DATE (DD-MM-YYYY) 07-03-2018	2. REPORT TYPE Final Report	3. DATES COVERED (From - To) 1-Jun-2017 - 30-Sep-2017
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4. TITLE AND SUBTITLE Final Report: 75th Device Research Conference (DRC 2017)	5a. CONTRACT NUMBER W911NF-17-1-0295
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER 611102

6. AUTHORS	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES AND ADDRESSES Materials Research Society 506 Keystone Dr. Warrendale, PA 15086 -7573	8. PERFORMING ORGANIZATION REPORT NUMBER
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211	10. SPONSOR/MONITOR'S ACRONYM(S) ARO
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) 71244-EL-CF.2

12. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.
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13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Aaron Franklin
a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 919-681-9471

RPPR Final Report
as of 25-May-2018

Agency Code:

Proposal Number: 71244ELCF

Agreement Number: W911NF-17-1-0295

INVESTIGATOR(S):

Name: Ph.D Aaron D Franklin
Email: aaron.franklin@duke.edu
Phone Number: 9196819471
Principal: Y

Name: J. Ardie Dillen
Email: dillen@mrs.org
Phone Number: 7247792711
Principal: N

Organization: **Materials Research Society**

Address: 506 Keystone Dr., Warrendale, PA 150867573

Country: USA

DUNS Number: 107328510

EIN: 311037979

Report Date: 31-Dec-2017

Date Received: 07-Mar-2018

Final Report for Period Beginning 01-Jun-2017 and Ending 30-Sep-2017

Title: 75th Device Research Conference (DRC 2017)

Begin Performance Period: 01-Jun-2017

End Performance Period: 30-Sep-2017

Report Term: 0-Other

Submitted By: Donna Gillespie

Email: gillespie@mrs.org

Phone: (724) 779-2732

Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees: 0

STEM Participants: 0

Major Goals: The Device Research Conference (DRC) brings together leading scientists and engineers in the broad field of device research to share and discuss new discoveries and directions related to electronic and photonic devices. While student attendance and participation has always been a hallmark of DRC, we have seen a decline in student involvement in recent years. We have found that student participation is strictly tied to the ability of offering a discounted student registration rate. This is a major anniversary edition of the conference that will include a multitude of educational opportunities for students; hence, the objective to increase and enhance student participation. Our approach for accomplishing this increased student involvement is to use the requested \$10,000 ARO grant to offer a 50% discount for student registration to the general conference and its short course. It is anticipated that this level of discount will yield a 30 % increase in student registrants over the past few years.

Accomplishments: Our goal was to achieve a 30% increase in student registrants over the previous year, and we realized a 32% increase (25 more registered students than the 2016 DRC).

Training Opportunities: Nothing to Report

RPPR Final Report as of 25-May-2018

Results Dissemination: A brief history of the DRC can be found in the 75th edition article:
<http://ieeexplore.ieee.org/Xplore/home.jsp>

Abstract:

At a time when the scientific community is overrun with conferences, workshops, and congresses to discuss all facets of innovation, much can be learned from considering a meeting that has withstood the test of time: the Device Research Conference (DRC). The DRC has been the launching pad for many game-changing innovations, from early transistors to new electronic materials. While the conference has undergone transformations to adapt to changing times, it remains true to its roots in a way that has enabled 75 years' worth of successful technical gatherings. Remembering DRC's past provides inspiration for preserving and, we would argue, repeating the pattern laid by this historic meeting.

Published in: IEEE Journal of the Electron Devices Society (Volume: 6, Issue: 1, Dec. 2018)

Page(s): 116 - 120

Date of Publication: 06 December 2017

Electronic ISSN: 2168-6734

INSPEC Accession Number: 17502569

DOI: 10.1109/JEDS.2017.2780778

Publisher: IEEE

Sponsored by: IEEE Electron Devices Society

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

PARTICIPANTS:

Participant Type: PD/PI

Participant: Aaron Franklin PhD

Person Months Worked: 1.00

Project Contribution:

International Collaboration:

International Travel:

National Academy Member: N

Other Collaborators:

Funding Support:

Participant Type: Co-Investigator

Participant: J. Ardie Dillen

Person Months Worked: 1.00

Project Contribution:

International Collaboration:

International Travel:

National Academy Member: N

Other Collaborators:

Funding Support:

RPPR Final Report
as of 25-May-2018

FINAL REPORT

Title: 75th Device Research Conference (DRC)

Objectives

The primary objective for this ARO support was to encourage student attendance at the 75th Device Research Conference (DRC) and short course held during the conference. The DRC brings together leading scientists and engineers in the broad field of device research to share and discuss new discoveries and directions related to electronic and photonic devices. While student attendance and participation has always been a hallmark of DRC, we have seen a decline in student involvement in recent years. We have found that student participation is strictly tied to the ability of offering a discounted student registration rate. This was a major anniversary edition of the conference that included a multitude of educational opportunities for students; hence, the objective was to increase and enhance student participation. *Our approach for accomplishing the increased student involvement was to use the \$10,000 ARO grant to aid in offering a 50% discount for student registration to the general conference.* Our goal was to achieve a 30% increase in student registrants over the previous year, and we realized a 32% increase (25 more registered students than the 2016 DRC).

Presentations, highlights

Overall, the 2017 meeting was a great success, with 228 attendees, nearly half of which were students. The conference was held at the University of Notre Dame campus from June 25 – 28, 2017. The technical program of the conference was composed of 3 plenary papers, 3 historical plenary talks, 12 invited talks, 37 contributed oral papers, and 49 contributed posters. 80% of contributed papers were student papers. To capture late-breaking device developments, the program also included 4 late news oral papers and 3 late news posters. A copy of the technical program follows in **Appendix I**.

Both plenary sessions were a great success at the 2017 DRC, with strong attendance and talks that covered the development of the device field in terms of scaled silicon, FinFETs, and metal-oxide TFTs. The significant role that nanoscale devices and materials have played in transforming the field of device research was described, and participants were provided with a clear picture for the next important steps in each of these areas. For the special plenary session on the history of the DRC, participants were instructed by longtime participants in the field, including Tom Jackson (Penn St), Mark Rodwell (UCSB), and Jerry Woodall (UC-Riverside).

Another highlight was the poster session of the 2017 DRC. The venue provided for easy perusing of the contributed posters, most of which were from students. Active discussions were had at nearly every poster over the entire 2-hour session. Without question, this provided the student presenters with an excellent forum for sharing their research results and receiving feedback from international experts in the relevant field.

Finally, the rump sessions for the 2017 DRC were a highlight. One of the sessions in particular, on whether or not devices were important for neuromorphic computing, was heavily attended and

brought together world-leading experts on the topic, from theory to experimental work. There was a healthy debate from several perspectives that provided for a very honest evaluation of the role that device research plays (or should play) in this new area of computation.

Through the 2017 DRC, contributions were made to several core disciplines. The foremost discipline is electrical engineering as much of the presentations related to the operation of electron devices. Additionally, the discipline of physics was contributed to through substantial discussions regarding electron transport and mesoscopic physics. Materials science engineering was also contributed to through work on the synthesis of materials for devices and control of interfaces in the devices. In addition to these more coarsely defined disciplines, the following more specific disciplinary areas were contributed to through the 75th DRC: nanoelectronics, nanomaterials, nanotechnology, photonics, optoelectronics, detectors, spintronics, power devices, thin-film electronics, memory devices, device modeling, terahertz devices, and so forth.

Future Direction for this Conference

The topic of electronic and optical device research continues to be of paramount importance. From the future of Moore’s law-driven computing to the next technological revolution, devices will play a key role in what our future will look like. Therefore, the DRC will continue to provide a world-class, international platform for bringing together top researchers in these fields to present and discuss the latest results. Next year, the 2018 DRC will be held at one of the meeting’s most popular locations: The University of California at Santa Barbara (UCSB). Holding the meeting at UCSB has historically drawn an increase in attendance and we will be looking to take advantage of the attractive geographic location in order to spur even stronger attendance, and participation from students. DRC has a history marked by several incredible ‘firsts,’ including the first public discussion of the transistor by Shockley, the first demonstration of epitaxial growth on III-Vs, and the first report of a charge-coupled device (CCD). This trend will continue as the DRC provides the right setting for students, academics, industry researchers, and others to collaborate on device research topics that have the potential to transform our coming decades.

List of those supported with ARO funds

The full registration price for the DRC was \$600, yet it was decided to offer the student registration at ½ price: \$300. Therefore, for the 99 students that registered for the conference, these ARO funds helped with reducing the registration rate by approximately \$101 each. Here is a list of all student registrants that benefited from this support:

	Last Name	First Name	University
1	Alessandri	Cristobal	University of Notre Dame
2	Alharbi	Abdullah	New York University
3	Allemang	Christopher	The University of Michigan
4	Arezoomandan	Sara	Univ of Utah
5	Arnold	Andrew	The Pennsylvania State University
6	Atalla	Mahmoud	University of Minnesota

7	Aygun	Levent	Princeton University
8	Aziz	Ahmedullah	The Pennsylvania State University
9	Babb	Michael	Texas A&M University
10	Bader	Samuel	
11	Bahamonde	Jose	Columbia University
12	Bailey	Tony	University of Cincinnati
13	Bajaj	Sanyam	The Ohio State University
14	Banerji	Sourangsu	University of Utah
15	Belete	Melkamu	University of Siegen
16	Berg	Alexander	Princeton University
17	Bharadwaj	Shyam	Cornell Univ
18	Bhattacharjee	Shubhadeep	Indian Institute of Science, Bangalore
19	Burg	Gregory	The University of Texas at Austin
20	Camsari	Kerem	Purdue Univ
21	Catenacci	Matthew	Duke University
22	Chakraborty	Indranil	Purdue University
23	Chaudhuri	Reet	Cornell University
24	Cheng	Zhihui	Duke University
25	Chouhan	Shikhar	Indian Institute of Technology Bombay
26	Colon-Berrios	Aida	Columbia University
27	Condori Quispe	Hugo	Univ of Utah
28	Datye	Isha	
29	Demir	Baran	University of Michigan
30	Fathipour	Sara	Univ of Notre Dame
31	Gandharava	Sumedha	Boise State University
32	Gao	Jianyi	University of California, Davis
33	Gonzalez	Karla	University of Notre Dame
34	Goyal	Natasha	IIT Bombay
35	Grisafe	Ben	University of Notre Dame
36	Gupta	Chirag	Univ of California-S Barbara
37	Han	Sangmoon	Chonbuk National University
38	Hickman	Austin	Cornell University
39	Hou	Shuoben	KTH Royal Institute of Technology
40	Islam	Arnob	
41	Jerry	Matthew	
42	Ji	Dong	Univ of California-Davis
43	Kabilova	Zumrad	University of Michigan--Ann Arbor
44	Kawata	Takuya	Osaka University
45	khan	digangana	
46	Kudoh	Sohya	Tokyo Institute of Technology

47	Latorre Rey	Alvaro	Arizona State University
48	le Goff	Florian	Thales 3-5 Lab
49	Lee	Kwanjae	Chonbuk National Univ
50	Lee	Kevin	
51	Lee	Jaesung	Case Western Reserve University
52	Li	Hongmei	
53	Liu	Tianning	The Pennsylvania State University
54	Lo	Chun-Li	Purdue University
55	Long	Pengyu	Purdue University
56	Ma	Rui	University of Minnesota
57	Masten	Hannah	University of Michigan--Ann Arbor
58	McClellan	Connor	Stanford University
59	McGinn	Christine	Columbia University
60	McGuire	Felicia	
61	McLemore	Charles	The Pennsylvania State University
62	Mehlman	Yoni	Princeton University
63	Mohammed	Amr	Purdue University
64	Mondal	Sandip	Indian Institute of Science
65	Mousavi Iraei	Rouhollah	Georgia Institute of Technology
66	Muhtadi	Sakib	University of South Carolina
67	Pandey	Pratyush	University of Notre Dame
68	Pang	Chin-Sheng	Purdue University Birck Center
69	Philip	Timothy	University of Illinois at Urbana-Champaign
70	Pramanik	Tanmoy	The University of Texas at Austin
71	Price	Katherine	Duke University
72	Rajpoot	Anuj	IIT Madras
73	Rastegar	Sepideh	Boise State University
74	Rockwell	Ann Kathryn	Univ of Texas-Austin
75	Rush	Andrew	
76	Sanne	Atresh	The University of Texas at Austin
77	Sasidharan Rajalekshmi	Nandakumar	New Jersey Institute of Technology
78	Schulman	Daniel	Pennsylvania State Univ
79	Shoute	Gem	Univ of Alberta
80	Shukla	Nikhil	University of Notre Dame
81	Si	Mengwei	Purdue Univ
82	Smith	Jeffrey	University of Notre Dame
83	Son	Youngbae	University of Michigan
84	Stieger	Christian	ETH Zurich
85	Thakar	Kartikey	Indian Institute of Technology, Bombay
86	Tsai	Yi-Chia	National Chiao Tung University

87	Venuthurumilli	Prabhu Kumar	Purdue University
88	Waskiewicz	Ryan	Pennsylvania State Univ
89	Wu	Ting	New York University
90	Wu	Peng	Purdue University
91	Yadav	Deepika	Tohoku Univ
92	Ye	Fan	Case Western Reserve University
93	Zeng	Ke	University at Buffalo
94	Zhang	Suki	Purdue University
95	Zhang	Feng	Purdue University
96	Zheng	Xun	University of California, Santa Barbara
97	Zhou	Hong	
98	Zhou	Ruiping	
99	Zhu	Yuqi	



Device Research Conference

June 25–28, 2017 // University of Notre Dame // South Bend, IN

PROGRAM OVERVIEW

SUNDAY

12:00 pm–5:00 pm Registration **McKenna Hall**
1:00 pm–6:00 pm Short Course, "Memory Devices for the Next 10 Years" **McKenna Hall Auditorium**
 2:50 pm–3:10 pm Coffee Break **McKenna Hall**
6:00 pm–8:00 pm Welcome Reception **McKenna Hall**

MONDAY

8:00 am–5:00 pm Registration **McKenna Hall**
8:30 am–12:10 pm Plenary Session **McKenna Hall Auditorium**
 8:30 am Intro and Awards
 8:50 am There's Still Plenty of Room at the Bottom—and at the Top (King Liu)
 9:50 am Coffee Break
 10:10 am Transparent Amorphous Oxide Semiconductors: Materials Design, Electronic Structure, and Device Applications (Hosono)
 11:10 am Evolution of Photonic Integrated Circuits (Bowers)
 12:10 pm Lunch (Not provided by Conference)

Session II-A. 2D Devices I **McKenna Hall Auditorium**
Invited Dimensionality Matters: Electronic Transport in 2D Layered Materials (Appenzeller)
 2:10 pm Effective n-type Doping of Monolayer MoS₂ by AlOx (McClellan)
 2:30 pm Double Bilayer Graphene-WSe₂ Resonant Tunneling Heterostructures with High Interlayer Current Densities and Peak-to-Valley Ratios (Burg)
 2:50 pm First Demonstration of Band-to-Band Tunneling in Black Phosphorus (Wu)
 3:10 pm Black Phosphorus Field-effect Transistor with Record Drain Current Exceeding 1 A/mm (Si)

Session II-B. Ga₂O₃ Electronics **McKenna Hall 210-214**
Invited Toward Realization of Ga₂O₃ for Power Electronics Applications (Jessen)
 2:10 pm Gate-Recessed, Laterally-Scaled β-Ga₂O₃ MOSFETs with High-Voltage Enhancement-Mode Operation (Chabák)
 2:30 pm Demonstration of Ga₂O₃ Trench MOS-Type Schottky Barrier Diodes (Sasaki)
 2:50 pm Radiation Hardness of Ga₂O₃ MOSFETs Against Gamma-Ray Irradiation (Wong)
 3:10 pm Temperature Dependent Characterization of Ga₂O₃ MOSFETs with Spin-on-Glass Source/Drain Doping (Zeng)
 3:30 pm Coffee Break

Session III-A. 2D Devices II **McKenna Hall Auditorium**
 3:50 pm E-Mode RF Transistors and Circuit Model using CVD MoS₂ (Sanne)
 4:10 pm Contact Engineering of Monolayer CVD MoS₂ Transistors (Alharbi)
 4:30 pm Integration of 3.4 nm HfO₂ into the gate stack of MoS₂ and WSe₂ top-gate field-effect transistors (Price)
 4:50 pm First synthesized WS₂ nanotube and nanoribbon field effect transistors grown by chemical vapor transport (Fathipour)
 5:10 pm Late News
 5:30 pm Late News
 5:50 pm Late News

Session III-B. Nitride Electronics **McKenna Hall 210-214**
 3:50 pm N-Polar GaN MIS-HEMTs on Sapphire with a Proposed Figure of Merit f_{max}-VDS,Q of 9.5 THz-V (Zheng)
 4:10 pm Small-Signal Characteristics of Graded AlGaN Channel PoIFETs (Bajaj)
 4:30 pm 1 kV Field Plated *In-Situ* Oxide, GaN interlayer based vertical trench MOSFET (OG-FET) (Gupta)
 4:50 pm Quantifying Substrate Removal Induced Electrothermal Degradation in AlGaN/GaN HEMTs (Tadjer)
 5:10 pm Plasmonic Enhancement of Photoacoustic Signal for Sensing Applications (Khan)
 5:30 pm Late News
 5:50 pm Late News

POSTER SESSION

Monday, 6:30 pm – 9:30 pm | McKenna Hall

Paper	Title (Presenter)
P 1	Work Function Modulation of Monolayer MoS ₂ Doped with 3D Transition Metals (Tsai)
P 2	Band-to-band Tunneling Limited Ambipolar Current in Black Phosphorus MOSFETs (Robbins)
P 3	Realizing P-FETs and Photodiodes on MoS ₂ through area-selective p-Doping via Vacancy Engineering (Bhattacharjee)
P 4	Gallium Selenide (GaSe)-Molybdenum Disulfide (MoS ₂) van der Waals Heterojunction Diodes (Islam)
P 5	Graphene Field Effect Transistors with optimized Contact Resistance for Current Gain (Wei)
P 6	Glucose Sensing using Dual-Gated BioFETs with 5nm-Thick Silicon Body (Wu)
P 7	Graphene-based ion-sensitive field effect transistor (Li)
P 8	A Random Number Generator based on Insulator-to-Metal Electronic Phase Transitions (Jerry)
P 9	High-performance Nanoscale Topological Inductor (Philip)
P 10	Low Power Current Sense Amplifier based on Phase Transition Material (Aziz)
P 11	Reconfigurable Germanium Transistors with Low Source-Drain Leakage for Secure and Energy-Efficient Doping-free Complementary Circuits (Trommer)
P 12	Partial Switching of Ferroelectrics for Synaptic Weight Storage (Kinder)
P 13	Effect of Thermal Resistance and scaling on dc-IV Characteristics of PCMO based RRAM Devices (Chouhan)
P 14	Novel Two-Terminal Vertical Transition Metal Dichalcogenide Based Memory Selectors (Zhang)
P 15	NbOx Synaptic Devices for Spike Frequency Dependent Plasticity Learning (Rush)
P 16	Characterization of Transient Redox Dynamics in SrTiO ₃ Synaptic Devices (Bailey)
P 17	Influence of Si(100) surface flattening process on nonvolatile memory characteristics of Hf-based MONOS structures (Kudoh)
P 18	A simple PECVD SiO ₂ OTP Memory based PUF for 180nm Node for IoT (Lele)
P 19	A Non-volatile Cascadable Magneto-electric Material Implication Logic (Jaiswal)
P 20	Machine learning for variability aware statistical device design: The case of perpendicular spin-transfer-torque random access memory (Roy)
P 21	Generation of Hot Electrons in GaN HEMTs under RF Class A and AB Pas (Latorre Rey)
P 22	A high-current InP-channel triple heterojunction tunnel transistor design (Long)
P 23	Soft Error Evaluation for InGaAs and Ge Complementary FinFETs (Ni)

Paper	Title (Presenter)
P 24	Suspended ReS ₂ FET for Improved Photocurrent-time Response (Mukherjee)
P 25	Plasmonic Enhanced Polarization Sensitive Black Phosphorus Photodetection Device (Deng)
P 26	Novel Fabrication Method and Structure of Single Crystal Thin Film In _{0.53} Ga _{0.47} As Schottky Diodes for Potential IR Applications (Hussin)
P 27	First report of scaling a normally-off <i>In-Situ</i> Oxide, GaN interlayer based vertical trench MOSFET (OG-FET) (Ji)
P 28	Depletion/Enhancement-mode β-Ga ₂ O ₃ on Insulator Field-effect Transistors with Drain Currents Exceeding 1.5/1.0 A/mm (Zhou)
P 29	Al _{0.65} Ga _{0.35} N Channel High Electron Mobility Transistors on AlN/ Sapphire Templates (Muhtadi)
P 30	Scaling of 4H-SiC p-i-n Photodiodes for High Temperature Applications (Hou)
P 31	Gate Structure Engineering for Enhancement-mode AlGaN/GaN MOSHEMT (Liu)
P 32	Characterization of β-Ga ₂ O ₃ Interface and Conduction Band Offset with GaN using a Sol-gel Process of Deposition (Gao)
P 33	Al _{0.45} Ga _{0.55} N/Al _{0.30} Ga _{0.70} N High Electron Mobility Transistors with Schottky Gates and Small Subthreshold Slope Factor (Baca)
P 34	Self-Aligned Contact Metallization to AlGaN/GaN Heterostructures (Johnson)
P 35	Gate Tunable 2D WSe ₂ Esaki Diode by SiNx Doping (Pang)
P 36	First InGaAs Lateral Nanowire MOSFET RF Noise Measurements and Model (Ohlsson)
P 37	Ultra Thin Body InAs MOSFET with raised InAs n+ S/D by selective MBE (Pastorek)
P 38	Nano-indented Ge surfaces by metal-assisted chemical etching (MacEtch) and its application for optoelectronic devices (Kim)
P 39	Edge contacts to multilayer MoS ₂ using <i>In-Situ</i> Ar ion beam (Cheng)
P 40	Molecular Doping of Transition Metal Dichalcogenides using Metal Phthalocyanines (Zhang)
P 41	Acoustoelastic Amplification of Surface Acoustic Waves on ZnO deposited on AlGaN/GaN Epi (Bahamonde)
P 42	Flower-Like Light Distribution inside InGaN-Based Light-Emitting Diodes Operated in Spectral Range from Violet to Red (Lee)
P 43	Integration of InGaAs/InP structure above ROIC-CMOS for SWIR imaging (Le Goff)
P 44	Piezoelectric Thin Films on Polyimide Substrates for Flexible Piezoelectric Devices (Liu)
P 45	Enhancing breakdown voltage in amorphous zinc tin oxide Schottky diode (Son)
P 46	High temporal and spatial resolution imaging of catastrophic and soft breakdown in self-assembled nanodielectrics (SANDs) films (Mohammed)
P 47	High-Frequency ZnO Schottky Diodes for Non-contact Inductive Power Transfer in Large-Area Electronics (Ayygun)
P 48	CMOS Integrated ZnO Thin Film Bulk Acoustic Resonator with Si ₃ N ₄ Susceptor Layer for Improved IR Sensitivity (Colon Berrios)
P 49	Narrow Line Crystallization of Rubrene Thin Film Enhanced by Yb Interfacial Layer for Single Crystal Channel OFET Application (Ohmi)



DRC Device Research Conference

June 25–28, 2017 // University of Notre Dame // South Bend, IN

PROGRAM OVERVIEW (Continued)

TUESDAY

8:00 am–5:00 pm Registration **McKenna Hall**

Session IV. Special Plenary: History of the DRC **McKenna Hall Auditorium**

- 8:00 am Intro and DRC Timeline (Franklin)
- 8:10 am 1965–1975: A Miracle Decade for DRC (Woodall)
- 8:30 am Your Golden Age of Device Research (Jackson)
- 8:50 am The Device Research Conference: 1992–2017 and 2017–2042 (Rodwell)
- 9:10 am Coffee Break

Session V-A. Steep Slope Transduction Devices **McKenna Hall Auditorium**

- 9:20 am **Invited** 2D-EFET—A Novel beyond Boltzmann Transistor (Das)
- 10:00 am Negative Capacitance Transients in Metal-Ferroelectric $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ -Insulator-Semiconductor (MFIS) Capacitors (Sharma)
- 10:20 am MoS_2 Negative Capacitance FETs with CMOS-Compatible Hafnium Zirconium Oxide (McGuire)

Session V-B. **McKenna Hall 210-214**

Emerging Memory Devices & Applications

- 9:20 am **Invited** Scaling is over—what now? (Haensch)
- 10:00 am Supervised Learning in Spiking Neural Networks with MLC PCM Synapses (Nandakumar)
- 10:20 am Fully printed memristors from Cu-SiO₂ core-shell nanowire composites (Catenacci)
- 10:40 am Coffee Break

Session VI-A. 2D Materials & Properties **McKenna Hall Auditorium**

- 10:50 am **Invited** Water-based 2D-crystal Inks: from Formulation Engineering to Printed Devices (Casiraghi)
- 11:30 am BEOL Compatible 2D Layered Materials as Ultra-Thin Diffusion Barriers for Cu Interconnect Technology (Lo)
- 11:50 am Defects in Layered Vapor-Phase Grown MoS_2 (Belete)
- 12:10 pm Effect of Electron Beam Irradiation on Black Phosphorous Field Effect Transistor Performance (Goyal)
- 12:30 pm Lunch* (Not provided by Conference)

Session VI-B. Spin Devices **McKenna Hall 210-214**

- 10:50 am **Invited** p-transistors, p-bits and p-circuits for an Invertible Logic (Camsari)
- 11:30 am **Invited** Three-terminal Spintronics Devices for CMOS Integration (Ohno)
- 12:10 pm A Proposal for a Magnetostriiction-Assisted All-Spin Logic Device (Mousavi Iraei)
- 12:30 pm Lunch* (Not provided by Conference)

Session VII-A. Advanced Logic Devices **McKenna Hall Auditorium**

- 1:50 pm **Invited** Carbon Nanotube Transistor Technology for Extending Logic Roadmap (Han)
- 2:30 pm Scaling Challenges of FinFET Architecture below 40nm Contacted Gate Pitch (Razavieh)
- 2:50 pm Corrugated Channel $\text{In}_{0.8}\text{Ga}_{0.2}\text{As}$ Quantum Well Transistors for Low Power Logic Applications (Smith)
- 3:10 pm Late News
- 3:30 pm Late News

Session VII-B. Photonic Devices **McKenna Hall 210-214**

- 1:50 pm **Invited** Low-Noise Staircase, Tunneling, and Conventional Avalanche Photodetectors (Bank)
- 2:30 pm Black Phosphorus Avalanche Photodetector (Atalla)
- 2:50 pm S-shaped Negative Differential Resistance in III-Nitride Blue Quantum-Well Laser Diodes Grown by Plasma-Assisted MBE (Turksi)
- 3:10 pm **Invited** Multilayer Silicon Nitride-on-Silicon Photonic Platforms for Three-Dimensional Integrated Photonic Devices and Circuits (Poon)
- 3:50 pm Coffee Break

Session VIII-A. Device Physics & Modeling **McKenna Hall Auditorium**

- 4:10 pm **Invited** Graphene and Black Phosphorous for Infrared Optoelectronics (Low)
- 4:50 pm *Ab-initio* modeling of self-heating in single-layer MoS_2 transistors (Stieger)
- 5:10 pm Extracting Interface Recombination Velocities from Double-Heterojunction Solar Cell Reverse-Recovery Characteristics (Berg)
- 5:30 pm Late News

Session VIII-B. Thin Film Devices **McKenna Hall 210-214**

- 4:10 pm Flash Memory TFT Based on Fully Solution Processed Oxide (Mondal)
- 4:30 pm Increased Blocking Voltage in Solution Processed ZTO HVTFTs through Drain Offset (Allemand)
- 4:50 pm Self-Aligned ZnO Thin-Film Transistors with 860 MHz fT and 2 GHz fmax for Large-Area Applications (Mehlman)
- 5:10 pm Late News
- 5:30 pm Late News

6:00 pm Conference Dinner Reception* **Bond Hall Lawn**

(Northeast Quad on Campus)
Jordan Hall of Science

*Reception Inlement Weather Location

8:15 pm Rump Session 1: **McKenna Hall Auditorium**

Next 10 years for device research

8:15 pm Rump Session 2: **McKenna Hall 210-214**

Neuromorphic computing—Do devices matter?

WEDNESDAY

8:00 am–12:00 pm Registration **McKenna Hall**

8:20 am–9:20 am Joint EMC/DRC Plenary **Mendoza College of Business
Jordan Auditorium**

9:20 am Coffee Break

Session IX. Optoelectronics **McKenna Hall Auditorium**

- 9:50 am **Invited** Three-Dimensional Plasmonic Light Concentrators for Efficient Terahertz Generation (Jarrahi)
- 10:30 am High-Temperature p-Type Polarization Doped AlGaN Cladding for sub-250 nm deep-UV Quantum Well LEDs by MBE (Bharadwaj)
- 10:50 am Towards electro-optical integration of hybrid III-V on Si lasers into the BEOL of a CMOS technology (Hahn)
- 11:10 am Terahertz LED based on Current Injection Dual-Gate Graphene-Channel Field Effect Transistors (Yadav)

SPECIAL THANKS

DRC has been funded, in part, by the generous contributions of these organizations.

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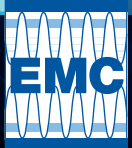


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All DRC attendees may attend Wednesday EMC technical sessions.