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[1]Microelectronics Research Center, Department of Electrical & Computer Engineering, UT Austin, Austin, TX 78758, USA; [2]Center for Quantum Nanoscience, Institute for Basic Science (IBS), Seoul 03760, Republic of Korea; [3]Department of Physics, Ewha Womans University, Seoul 03760, Republic of Korea; [4]Materials Science & Engineering Program, University of California, San Diego, La Jolla, CA, 92093, USA; [5]Department of Materials Science & Engineering, The University of Texas at Dallas, Dallas, TX 75080, USA; [6]School of Electrical & Computer Engineering, Cornell University, Ithaca, NY, 14850, USA; [7]Physics Department, University of Notre Dame, Notre Dame, IN, 46556, USA; [8]Departments of Chemistry & Biochemistry, University of California, San Diego. La Jolla, CA, 92093, USA

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[1]University of Lille, IEMN, CNRS UMR8520, Avenue Poincaré – CS 60069, 59652 Villeneuve d'Ascq, France; [2]Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden University of Bordeaux, IMS, CNRS UMR 5218, Bât. A31, 351 Cours de la Libération,33400 Talence, France

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[1]CEA, LETI, Minatec Campus, F-38054 Grenoble, France; [2]CEA, INAC, F-38054 Grenoble, France
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[1]King Abdullah University of Science and Technology, mmh Labs, Thuwal 23955-6900, Saudi Arabia; [2]Swiss Federal Laboratories for Materials Science and Technology, Überland Str. 129, 8600 Dübendorf, Switzerland; [3]Department of Medical Engineering, California Institute of Technology, Pasadena, CA 91125, USA; [4]International Institute of Information Technology, Hyderabad, Gachibowli, Hyderabad, Telangana 500032, India; [5]King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia; [6]King Abdulaziz University, Jeddah 21589, Saudi Arabia; [7]MIT Media Lab, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307 USA

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A. Razavieh[1], Y. Deng[1], P. Zeitzoff[1], M.H. Na[2], J. Frougier[1], G. Karve[2], D.E. Brown[1], T. Yamashita[2] and E.J. Nowak[1]
[1]GLOBALFOUNDRIES, 257 Fuller Rd., Albany, NY 12203, USA; [2]IBM, 257 Fuller Rd., Albany, NY 12203, USA

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Novel 2-D Materials for Tunneling FETs: an Ab-initio Study 275
C. Klinkert[1], A. Szabo[1], D. Campi[2], C. Stieger[1], N. Marzari[2], and M. Luisier[1]
[1]Integrated Systems Laboratory, ETH Zurich, CH-8092 Zurich, Switzerland; [2]Theory and Simulation of Materials, EPF Lausanne, CH-1015 Lausanne, Switzerland

IX-A.-4
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Alleviation of Short Channel Effects in Ge Negative Capacitance pFinFETs 277
Wonil Chung, Mengwei Si and Peide D. Ye
School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN 47907

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Bias Stress Stability of Carbon Nanotube Transistors with Implications for Sensors 279
Steven G. Noyce[1], James L. Doherty[1], Aaron D. Franklin[1,2]
[1]Duke University, Department of Electrical & Computer Engineering, Durham, North Carolina 27708, USA; [2]Duke University, Department of Chemistry, Durham, North Carolina 27708, USA

Session X. THIN-FILM ELECTRONICS 297-306

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Paper-electronics: a sustainable multifunctional platform 299
Elvira Fortunato, Diana Gaspar, Inês Cunha, Manuel Mendes, António Vicente, Hugo Águas, Ana Carolina Marques, Ana Pimentel, Daniela Nunes, Luís Pereira and Rodrigo Martins
i3N/CENIMAT, Department of Materials Science, Faculty of Science and Technology, Universidade NOVA de Lisboa and CEMOP/UNINOVA, Campus de Caparica 2829-516 Caparica, Portugal

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Exploring Silver Contact Morphologies in Printed Carbon Nanotube Thin-Film Transistors 301
Jorge A. Cardenas[1], Sophia Upshaw[1], Matthew J. Catenacci[2], Benjamin J. Wiley[2], Aaron D. Franklin[1,2]
Department of Electrical and Computer Engineering, Duke University, Durham NC 27708, USA

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11:30 AM
CMOS 3D-Extended Metal Gate ISFETs with Near Nernstian Ion Sensitivity 303
Jun-Rui Zhang[1], F. Bellando[1], M. Rupakula[1], E. Garcia Cordero[1], N. Ebejer[2], J. Longo[2], F. Wildhaber[2], H. Guérin[2], A.M. Ionescu[1]
[1]Nanolab, Ecole Polytechnique Fédérale de Lausanne, Switzerland; [2]Xsensio S.A., EPFL Innovation Park, 1024 Ecublens, Switzerland

X.-5
(Late News) Supercapacity (>1000 μF/cm^2) charge release in a CVD-grown WSe$_2$ FET incorporating a PEO:CSClO$_4$ side gate 305
M. Asghari Heidarlou[1], B. Jariwala[2], P. Paletti[1], S. Rouvimov[1], J. A. Robinson[2], S. K. Fullerton-Shirey[3], and A. Seabaugh[1]
[1]University of Notre Dame, Notre Dame, IN, 46556, USA; [2]The Pennsylvania State University, University Park, Pennsylvania 16802, USA: [3]University of Pittsubrgh, Pittsburgh, Pennsylvania, 15213, USA

60th ELECTRONIC MATERIALS CONFERENCE
WEDNESDAY PM SESSIONS
N/A

Session G: GALLIUM OXIDE DEVICES
N/A

G01 1:30 PM
(Student) High Electron Mobility in Modulation-Doped β-(Al$_x$Ga$_{1-x}$)$_2$O$_3$/Ga$_2$O$_3$ Heterostructures N/A
Yuewei Zhang[1], Adam T. Neal[2], Zhanbo Xia[1], Chandan Joishi[1], Yuanhua Zheng[3], Sanyam Bajaj[1], Mark Brenner[1], Shin Mou[2], Donald Dorsey[2], Kelson Chabak[4], Gregg Jessen[4], Jinwoo Hwang[5], Joseph Heremans[3] and Siddharth Rajan[1, 5]
[1]The Ohio State University, United States; [2]Air Force Research Laboratory, Materials and Manufacturing Directorate, United States; [3]The Ohio State University, United States; [4]Air Force Research Laboratory, Sensors Directorate, United States; [5]The Ohio State University, United States.

1:50 PM G02
(Student) MBE Growth and Doping of Ga2O3 Heterostructures N/A
Nicholas Tanen[1], Vladimir Protasenko[2], Celesta Chang[3], Hanjong Paik[1], Vasanth Balakrishnan[1], Jonathan P. McCandless[2], David Muller[3], Darrell Schlom[1], Huili Xing[2, 1] and Debdeep Jena[2, 1]
[1]Cornell University, United States; [2]Cornell University, United States; [3]Cornell University, United States.

2:10 PM G03
Strain Engineering and Two-Dimensional Electron Gas in Polar ε-Ga$_2$O$_3$ N/A
Sung Beom Cho[1] and Rohan Mishra[1, 2]
[1]Washington University in St. Louis, United States; [2]Washington University in St. Louis, United States.

2:30 PM G04 **(Student) DC and RF Characteristics of Submicron Delta-Doped β-Ga_2O_3 Field Effect Transistors** N/A
Zhanbo Xia[1], Chandan Joishi[1, 4], Sriram Krishnamoorthy[2], Sanyam Bajaj[1], Yuewei Zhang[1], Mark Brenner[1], Saurabh Lodha[4] and Siddharth Rajan[1, 3]
[1]The Ohio State University, United States; [2]The University of Utah, United States; [3]The Ohio State University, United States; [4]Indian Institute of Technology Bombay, India.

2:50 PM G05 **(Student) Pulse and Large Signal RF Performance of *β*-Ga_2O_3 MOSFETs** N/A
Manikant Singh[1], Michael A. Casbon[2], Michael J. Uren[1], James W. Pomeroy[1], Paul Tasker[2], Man Hoi Wong[3], Kohei Sasaki[4], Akito Kuramata[4], Shigenobu Yamakoshi[4], Masataka Higashiwaki[3] and Martin Kuball[1]
[1]University of Bristol, United Kingdom; [2]University of Cardiff, United Kingdom; [3]National Institute of Information and Communications Technology, Japan; [4]Tamura Corporation, Japan.

3:10 PM BREAK

3:30 PM G06 **(Student) Analytical Electron Microscopy of Annealed Ga_2O_3/SiO_2 and Ga_2O_3/Al_2O_3 Interface Structures in MOS Devices** N/A
Christopher J. Klingshirn[1], Joshua A. Taillon[1], Asanka Jayawardena[2], Sarit Dhar[2], Tsvetanka Zheleva[3], Aivars Lelis[3] and Lourdes G. Salamanca-Riba[1]
[1]University of Maryland, United States; [2]Auburn University, United States; [3]U.S. Army Research Laboratory, United States.

3:50 PM G07 **(Student) Ternary Alloy Rare Earth Scandate as Dielectric for β-Ga_2O_3 MOS Structures** N/A
Hannah N. Masten, Jamie Phillips and Rebecca L. Peterson
University of Michigan, United States.

4:10 PM G08 **Evaluation of Constant Voltage Stress on Al_2O_3/β-Ga_2O_3 MOSCAPs** N/A
Chadwin D. Young[1], M.S. Lakshmi Narayanan[1], Xioye Qin[1], Andrea Padovani[2], Peng Zhao[1], Pavel Bolshakov[1], Akito Kuramata[3], Luca Larcher[4] and Robert Wallace[1]
[1]University of Texas at Dallas, United States; [2]MDLsoft, Inc., United States; [3]Novel Crystal Technology, Inc., Japan; [4]Universita di Modena e Reggio Emilia, Italy.

4:30 PM G09 **Combined XPS-UPS Study of Conduction Band Offsets for High-*k* Dielectric Nanolaminates Grown on Single-Crystal GaN and Ga_2O_3(010) by Atomic Layer Deposition** N/A
David J. Mandia[1], Angel Yanguas-Gil[1], Jian Liu[3], Jacob H. Leach[2], Keith R. Evans[2] and Jeffrey W. Elam[1]
[1]Argonne National Laboratory, United States; [2]Kyma Technologies, Inc., United States; [3]Northwestern University, United States.

4:50 PM G10 **(Student) MBE-Grown Self-Powered β-Ga_2O_3 MSM Deep-UV Photodetector** N/A
Anamika S. Pratiyush[1], Sriram Krishnamoorthy[3, 2], Sandeep Kumar[1], Zhanbo Xia[2], Rangarajan Muralidharan[1], Siddharth Rajan[2] and Digbijoy N. Nath[1]
[1]Indian Institute of Science, Bangalore, India; [2]The Ohio State University, United States; [3]The University of Utah, United States.

Session H: NITRIDES–LEDs AND LASERS N/A

1:30 PM H01 **Stimulated Emission at 375nm from Optically Pumped Vertical-Cavity Surface- Emitting Lasers with Air-Gap/$Al_{0.05}Ga_{0.95}N$ Distributed Bragg Reflectors** N/A
Youngjae Park[1], Theeradetch Detchprohm[1], Karan Mehta[1], Oliver Moreno[1], Yuh-Shiuan Liu[1], Shuo Wang[2], Shyh-Chiang Shen[1], P. Douglas Yoder[1], Fernando Ponce[2]and Russell Dupuis[1]
[1]Georgia Institute of Technology, United States; [2]Arizona State University, United States.

1:50 PM H02 **(Student) Waveguide Design for AlGaN-Based Deep-Ultraviolet (DUV) Laser** N/A
Qiang Guo[1], Ronny Kirste[2], Shun Washiyama[1], Seiji Mita[2], Will Mecouch[2], Pramod Reddy[2], Ramón Collazo[1] and Zlatko Sitar[1, 2]
[1]North Caroline State University, United States; [2]Adroit Materials, United States.

2:10 PM H03 **Material Growth and Device Fabrication of GaN-Based Laser Diodes in Ultraviolet Region from 390 nm Towards 370 nm** N/A

Ping Chen[1, 2], Yuh-Shiuan Liu[2], Youngjae Park[2], Detchprohm Theeradetch[2], Shyh-Chiang Shen[2] and Russell Dupuis[2]
[1]Institute of Semiconductors, Chinese Academy of Sciences, China; [2]Georgia Institute of Technology, United States.

2:30 PM H04 **(Student) Reducing Forward Voltage Through AlGaN Layer Optimization in *c*-Plane InGaN-Based Green Light-Emitting Diodes** N/A
Cheyenne Lynsky, Abdullah I. Alhassan, James S. Speck, Steven P. DenBaars and Shuji Nakamura
University of California, Santa Barbara, United States.

2:50 PM H05 **(Student) Carrier Dynamics in High-Speed III-Nitride Light-Emitting Diodes for Visible-Light Communication** N/A
Arman Rashidi, Morteza Monavarian, Andrew Aragon, Ashwin Rishinaramangalam and Daniel Feezell
University of New Mexico, United States.

3:10 PM BREAK

Session I: III-NITRIDES–PHOTODETECTORS N/A

3:30 PM I01 **(Student) Demonstration of GaN *p-i-p-i-n* Separate-Absorption and Multiplication Ultraviolet Avalanche Photodiodes Arrays with Large Detection Area** N/A
Mi-Hee Ji[1], Jeomoh Kim[2], Hoon Jeong[1], Marzieh Bakhtiary Noodeh[1], Theeradetch Detchprohm[1] and Russell Dupuis[1]
[1]Georgia Institute of Technology, United States; [2]LG Electronics, Korea (the Republic of).

3:50 PM I02 **(Student) Billion-Fold Reduction in Screw Dislocation Related Dark Current in Al0.50Ga0.50N Solar-Blind Metal-Semiconductor-Metal Photodetectors** N/A
Shashwat Rathkanthiwar, Anisha Kalra, Rangarajan Muralidharan, Digbijoy N. Nath and Srinivasan Raghavan
Indian Institute of Science, Bangalore, India, India.

4:10 PM I03 **(Student) Impact of Interface Properties in N-Polar Heterostructure GaN Photocathodes** N/A
Emma Rocco[1], Isra Mahaboob[1], Kasey Hogan[1], Vincent Meyers[1], Sean A. Tozier[1], L. Doug Bell[2] and Fatemeh (Shadi) Shahedipour-Sandvik[1]
[1]SUNY Polytechnic Institute, Colleges of Nanoscale Science and Engineering, United States; [2]California Institute of Technology, United States.

4:30 PM I04 **(Student) High Efficiency, Monolithically Integrated (In)GaN/Si Photocathode for Stable Generation of Solar Fuels** N/A
Srinivas Vanka[1, 2], Sheng Chu[2], Yichen Wang[2], Ishiang Shih[2] and Zetian Mi[1, 2]
[1]University of Michigan, United States; [2]McGill University, Canada.

4:50 PM I05 **(Student) Back-Illuminated $Al_{0.4}Ga_{0.6}N$ p-i-n UV Detector with 67% Zero-Bias External Quantum Efficiency** N/A Anisha Kalra, Shashwat Rathkanthiwar, Rangarajan Muralidharan, Srinivasan Raghavan and Digbijoy N. Nath
Indian Institute of Science, India.

Session J: PROCESSING AND CHARACTERIZATION OF ORGANIC MATERIALS AND DEVICES N/A

1:30 PM J01 **Operation of High-Frequency Vertical Organic Transistors** N/A
Hans Kleemann[1], Markus P. Klinger[1], Axel Fischer[1], Bahman Kheradmand-Boroujeni[2, 3], Frank Ellinger[2, 3] and Karl Leo[1, 3]
[1]Technische Universität Dresden, Germany; [2]Technische Universität Dresden, Germany; [3]Center for Advancing Electronics Dresden (cfaed), Germany.

1:50 PM J02 **(Student) Enhancing Crystalline Conformation in Polyfluorene Films Deposited by Resonant Infrared Matrix Assisted Pulsed Laser Evaporation** N/A
Spencer Ferguson and Adrienne Stiff-Roberts
Duke University, United States.

2:10 PM J03 **Thermoelectric Response of Conducting Polymers Doped by Solid-State Diffusion and Their Electronic Applications** N/A
Keehoon Kang[1], Deepak Venkateshvaran[2], Katharina Broch[3], Guillaume Schweicher[2], Youngrok Kim[1], Cameron Jellett[4], Christian B. Nielsen[5], Iain McCulloch[4, 6], Takhee Lee[1] and Henning Sirringhaus[2]
[1]Seoul National University, Korea (the Republic of); [2]Cavendish Laboratory, University of Cambridge, United Kingdom; [3]University of Tuebingen, Germany; [4]Imperial College, London, United Kingdom; [5]Queen Mary University, United Kingdom; [6]King Abdullah University of Science and Technology, Saudi Arabia.

2:30 PM J04 **(Student) A Programmable Molecular-Scale Rectifier Driven by the Interface-Engineered Molecular Junction Consisting of the 2D Semiconducting Layer and the Self-Assembled Monolayers** N/A
Jaeho Shin, Seunghoon Yang, Chul-Ho Lee and Gunuk Wang
Korea University, Korea (the Republic of).

2:50 PM J05 **High Piezoelectric Coefficient PVDF-TrFE Films for Flexible Electronics** N/A
Deepak[1, 2], Karishma Jain[1, 2] and Anshu Gaur[1, 2]
[1]Indian Institute of Technology Kanpur, India; [2]Indian Institute of Technology Kanpur, India.

3:10 PM BREAK

Session K: MATERIALS INTEGRATION N/A

3:30 PM K01 **(Student) Characterization of Wafer-Bonded Silicon with Surfaces Treated with an Ion-Bombardment Procedure to Form Oxide-Free Interfaces** N/A
Michael E. Liao[1], Chao Li[1], Christoph Floetgen[2] and Mark Goorsky[1]
[1]University of California, Los Angeles, United States; [2]EV Group, Austria.

3:50 PM K02 **The Effect of In-Plane Rotational Misalignment on Electrical Conductivity of Wafer-Bonded n-InP/n-InP Structures** N/A
Michael E. Liao, Victor Tran, Matthew Yee and Mark Goorsky
University of California, Los Angeles, United States.

4:10 PM K03 **(Student) Wafer-Scale Lift-Off of Epitaxial GaN Transistors from Silicon to Glass Substrate and Their JDEC Reliability Tests** N/A
Pavani Vamsi Krishna Nittala, Nayana Remesh, Nagaboopathy K. Mohan, Rangarajan Muralidharan, Srinivasan Raghavan, Digbijoy N. Nath and Prosenjit Sen
Indian Institute of Science, India.

4:30 PM K04 **A New Relaxation Mechanism Enabling High-Quality, Laterally Grown Ge Films on Si** N/A
Nate Quitoriano
McGill University, Canada.

4:50 PM K05 **(Student) Formation of Si/SiGe Nanowires and Quantum Dots via Ge Diffusion During Oxidation of Si/SiGe Heterostructures** N/A
Emily Turner[1], William Brewer[1], Yan Xin[3], Christopher Hatem[4], Van Truong[1], Kevin Jones[1], Keshab R. Sapkota[2] and George T. Wang[2]
[1]University of Florida, United States; [2]Sandia National Laboratories, United States; [3]National High Magnetic Field Laboratory, United States; [4]Applied Materials, United States.

Session L: 2-D MATERIALS SYNTHESIS N/A

1:30 PM L01 **(Student) Diffusion-Controlled Epitaxy of Large Area Coalesced WSe_2 Monolayers on Sapphire** N/A
Xiaotian Zhang[1], Tanushree H. Choudhury[2], Mikhail Chubarov[2], Yu Xiang[3, 4], Bhakti Jariwala[1], Fu Zhang[1], Nasim Alem[1, 2], Gwo-Ching Wang[3, 4], Joshua A. Robinson[1, 2] and Joan M. Redwing[1, 2]
[1]The Pennsylvania State University, United States; [2]The Pennsylvania State University, United States; [3]Rensselaer Polytechnic Institute, United States; [4]Rensselaer Polytechnic Institute, United States.

1:50 PM L02 **(Student) Wafer-Scale Synthesis of Monolayer WSe_2—A Multi-Functional Photocatalyst for Efficient Overall Pure Water Splitting** N/A
Yongjie Wang, Yuanpeng Wu and Zetian Mi
University of Michigan, United States.

2:10 PM L03 **(Student) Tailoring Material Properties of Nanostructured WS_2 During Plasma-Enhanced Atomic Layer Deposition for Enhanced Electrochemical Performance** N/A
Shashank Balasubramanyam[1], Longfei Wu[2], Vincent Vandalon[1], Marcel Verheijen[1, 3], W.M.M (Erwin) Kessels[1], Jan Philipp Hofmann[2] and Ageeth Bol[1]
[1]Eindhoven University of Technology, Netherlands; [2]Eindhoven University of Technology, Netherlands; [3]Phillips Innovation Laboratories, Netherlands.

2:30 PM L04 **Wafer Scale Epitaxial Growth of Monolayer and Few-Layer WS_2 by Gas Source Chemical Vapor Deposition** N/A
Mikhail Chubarov[1], Tanushree H. Choudhury[1] and Joan M. Redwing[1, 2]
[1]The Pennsylvania State University, United States; [2]The Pennsylvania State University, United States.

2:50 PM L05 **(Student) Two-Dimensional Tantalum Disulfide—Controlling Structure and Properties via Synthesis** N/A
Rui Zhao[1], Benjamin Grisafe[2], Ram Krishna Ghosh[2], Suman Datta[2] and Joshua A. Robinson[1]
[1]Pennsylvania State University, United States; [2]University of Notre Dame, United States.

3:10 PM BREAK

3:30 PM L06 **(Student) Two-Dimensional Elemental Materials via Intercalation Through Epitaxial Graphene** N/A
Natalie C. Briggs[1, 2, 3], Brian M. Bersch[1, 2], Ana De La Fuente Duran[1], Yuanxi Wang[3], Shruti Subramanian[1, 2], Chengye Dong[1, 2], Ke Wang[4], Vincent Crespi[5, 2, 3] and Joshua A. Robinson[1, 2, 3]
[1]Pennsylvania State University, United States; [2]The Pennsylvania State University, United States; [3]Pennsylvania State University, United States; [4]Pennsylvania State University, United States; [5]Pennsylvania State University , United States.

3:50 PM L07 **(Student) Epitaxial Growth and Characterization of 2-D Bi1-xSbx Alloys on Si(111)** N/A
Sarah E. Muschinske[1], Emily S. Walker[1], Christopher J. Brennan[1], Yukun Sun[2], Alice Yau[1], Tanuj Trivedi[1], Anupam Roy[1], Stephen D. March[1], Andrew F. Briggs[1], Erica M. Krivoy[1], Deji Akinwande[1], Minjoo L. Lee[2], Edward T. Yu[1] and Seth Bank[1]
[1]The University of Texas at Austin, United States; [2]The University of Illinois at Urbana-Champaign, United States.

4:10 PM L08 **Chemical Vapor Deposition of Black Phosphorus** N/A
Michael Snure, Gene Siegel, Shivashankar Vangala, Timothy A. Prusnick and Stefan C. Badescu
Air Force Research Lab, United States.

4:30 PM L09 **(Student) Properties of MBE-Grown GaN on MoS_2 Heterojunctions** N/A
Choong Hee Lee[1], Yuewei Zhang[1], Jared Johnson[1], Rachel Koltun[2], Vincent Gambin[2], Jinwoo Hwang[1] and Siddharth Rajan[1]
[1]Ohio State University, United States; [2]Northrop Grumman Aerospace Systems, United States.

4:50 PM LATE NEWS

Session M: COMPUTATIONAL ELECTRONIC MATERIALS N/A

1:30 PM M01 **(Student) Refractive Indices of BAlN and BGaN Alloys from First-Principle Calculations** N/A
Feras S. Alqatari[1], Kuang-Hui Li[1], Kaikai Liu[2, 1] and Xiaohang Li[1]
[1]King Abdullah University of Science and Technology, Saudi Arabia; [2]Huazhong University of Science and Technology, China.

1:50 PM M02 **Band Structures and Direct-to-Indirect Bandgap Transition in BGaN Alloys** N/A
Che-Hao Liao
King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

2:10 PM M03 **Wurtzite $B_xAl_{1-x}N$ and $B_xGa_{1-x}N$ Heterointerface for Optical and Power Electronics** N/A
Haiding Sun, Kaikai Liu, Muwei Zhang, Feras S. Alqatari and Xiaohang Li
King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

2:30 PM M04 **(Student) Towards Automating High-Throughput Calculations of Intrinsic Point Defect Properties with Semi-Local DFT** N/A
Daniel Broberg and Mark Asta
University of California, Berkeley, United States.

2:50 PM M05 ***Ab Initio* Design of Two-Dimensional Electron Gas at Perovskite Oxide Interface** N/A
Kesong Yang
University of California San Diego, United States.

3:10 PM BREAK

3:30 PM M06 **Stability, Novel Materials and Physics of Perovskite Semiconductors for Solar Cells** N/A
Chao Zheng and Oleg Rubel
McMaster University, Canada.

3:50 PM M07 **Identification of Intrinsic Defects in BiI_3 for Photovoltaic Applications** N/A
Sung Beom Cho[1], Jaume Gazquez[3], Yoon Myung[2], Parag Banerjee[1] and Rohan Mishra[1]
[1]Washington University in St. Louis, United States; [2]Sejong University, Korea (the Republic of); [3]Institut de Ciència de Materials de Barcelona, Spain.

4:10 PM M08 **Phase Transitions and Self-Assembled Nanostructure in Chalcopyrite Semiconductors and Similar Compounds** N/A
Paul Quayle
Kyma Technologies, Inc., United States.

4:30 PM M09 **First-Principal Predictions of Integer Anomalous Quantum Hall Effect in 2D Chern Insulator and Transition to Weyl Semimetal in Bulk—Bi_2MnX_4 (X= Se, Te)** N/A
Sugata Chowdhury[1], Kevin Garrity[2], Joseph A. Hagmann[1], Curt Richter[1], Carelyn Campbell[2] and Francesca Tavazza[2]
[1]National Institute of Standards and Technology, United States; [2]National Institute of Standards and Technology, United States.

4:50 PM M10 **(Student) Design of a Simulation Framework for ZnO QD-Graphene Channel UV Photodetector** N/A
Amelia Peterson and Shayla Sawyer
Rensselaer Polytechnic Institute, United States.

Session N: NANOSCALE CHARACTERIZATION N/A

1:30 PM N01 **(Student) Electron Microscopy Characterization of 2D Indium/Indium Nitride Layer Synthesized by Confinement Heteroepitaxy (CHet) Technique** N/A
Hesham M. ElSherif[1], Brian M. Bersch[2], Natalie C. Briggs[2], Nabil D. Bassim[1] and Joshua A. Robinson[2]
[1]McMaster University, Canada; [2]The Pennsylvania State University, United States.

1:50 PM N02 **(Student) Optical Bandgaps Measured by STEM-EELS—A ZnO Study** N/A
Cecilie Granerød, Wei Zhan, Lasse Vines, Klaus Magnus Johansen and Øystein Prytz
University of Oslo, Norway.

2:10 PM N03 **Structural-Chemical Characterization and Bandgap Measurements at the Nanoscale of $(ZnO)_{1-X}(GaN)_X$ Thin Films Using (S)TEM Methods** N/A
Calliope Bazioti, Cecilie Granerød, Vegard S. Olsen, Lasse Vines, Bengt G. Svensson and Øystein Prytz
University of Oslo, Norway.

2:30 PM N04 **(Student) Direct Observation of Recombination Enhanced Dislocation Glide in GaAs/Si Thin Films Using Electron Channeling Contrast Imaging** N/A
Brian B. Haidet[1], Patrick Callahan[1], Gareth Seward[2], Daehwan Jung[3], John Bowers[1, 3, 4] and Kunal Mukherjee[1]
[1]University of California Santa Barbara, United States; [2]University of California Santa Barbara, United States; [3]Institute for Energy Efficiency, University of California Santa Barbara, United States; [4]University of California, Santa Barbara, United States.

2:50 PM N05 **TiN/HZO/Si Examined by Atom Probe Tomography and STEM/EDX** N/A
Norman Sanford[1], Paul Blanchard[1], Alexana Roshko[1], Andrew Kummel[2], Michael Katz[1] and Albert Davydov[1]
[1]National Institute of Standards and Technology, United States; [2]University of California, San Diego, United States.

3:10 PM BREAK

3:30 PM N06 **Laser-Assisted Atom Probe Studies of AlOx Tunnel Junctions on Silicon** N/A
Norman Sanford, Paul Blanchard, Russell Lake, Xian Wu and David Pappas
National Institute of Standards and Technology, United States.

3:50 PM N07 **Non-Destructive Piezoresponse Force Microscopy (PFM) for Nanoscale Materials Characterization** N/A
Yonatan Calahorra
University of Cambridge, United Kingdom.

4:10 PM N08 **Optimization and Limitations of Scanning Spreading Resistance Microscopy** N/A
Jay Mody and Jochonia Nxumalo
GLOBALFOUNDRIES, United States.

4:30 PM N09 **Nanoscale Surface Characterization by Correlated Multimodal Scanning Probe Microscopy** N/A
Nathan D. Kirchhofer, Marta Kocun, Jason Li and Roger Proksch
Asylum Research, an Oxford Instruments Company, United States.

4:50 PM N10 **Simultaneous Topographical and Electrochemical Mapping Using Scanning Ion Conductance Microscopy—Scanning Electrochemical Microscopy (SICM-SECM)** N/A
Wenqing Shi, Gerald Pascual, Byong Kim and Keibock Lee
Park Systems, United States.

Session O: MATERIAL FOR ENERGY STORAGE AND CATALYSIS N/A

1:30 PM LATE NEWS

1:50 PM O02 **$Li_4Ti_5O_{12}$/Li Hybrid Solid-State/Ionic Liquid Electrolyte Batteries** N/A
Isaiah O. Oladeji[2] and Robert E. Peale[1]
[1]University of Central Florida, United States; [2]Sisom Thin Films LLC, United States.

2:10 PM O03 **Large-Scale First-Principles Molecular Dynamics Simulation of Organic Molecules@SWCNT for Novel Cathode Material of Li-Ion Battery** N/A
Shuji Ogata, Takahiro Tsuzuki and Masahiro Uranagase
Nagoya Institute of Technology, Japan.

2:30 PM O04 **Investigating the Electrochemical Performance of One Pot Synthesized MnO_2 Nanorods** N/A
Neha Kanaujiya[1], Nagesh Kumar[2], Yogesh Sharma[1, 2] and Ghanshyam D. Varma[1, 2]
[1]I.I.T. Roorkee, India; [2]I.I.T. Roorkee, India.

2:50 PM LATE NEWS

3:10 PM BREAK

3:30 PM O06 **Engineering Monolayer MoS_2 Films to be Better Hydrogen Evolution Catalyst than Pt** N/A
Guoqing Li and Linyou Cao
North Carolina State University, United States.

3:50 PM O07 **(Student) Optimization and Tunability of 3D Graphene Structures for Catalytic Applications** N/A
Chen Wang, Adrian E. Garcia, Robert Sanderson, Regina Ragan, Kyle Mcdevitt and Ali Mohraz;
University of California, Irvine, United States.

4:10 PM O08 **Graphene and Carbon Nanotube Based Electrocatalysts for PEM Fuel Cell Application** N/A
Marie Heitzmann[1, 3], Seydou Hebie[1, 4], Stephane Louisa[1, 3, 2], Emeline Remy[1, 3], Pierre-André Jacques[1, 3], Lionel Dubois[1, 4] and Philippe Serp[2]
[1]CEA, France; [2]LCC ENSIACET, France; [3]LITEN, France; [4]INAC, France.

4:30 PM O09 **On-Chip Signaling Approaches for Chemical Sensing and Fundamental Investigation of Electrochemical Processes** N/A
Mengning Ding
Nanjing University, China.

4:50 PM LATE NEWS