Program Key

Conference Topics

AC Advanced Characterization Techniques
BG Bulk Growth
DI Dielectric Interfaces
EG Epitaxial Growth
EP Electronic and Photonic Devices, Circuits and Applications
ET Electronic Transport and Breakdown Phenomena
HM Heterogeneous Material Integration
KEY Keynote Address
MD Material and Device Processing and Fabrication Techniques
PS Plenary Session
TM Theory, Modeling and Simulation

Key to Session/Paper Numbers

Sessions sponsored by multiple topics are labeled with all acronyms (e.g. **AC+EM+SS**),
then a number to indicate simultaneous sessions sponsored by the same topic(s) (e.g. SS**1**, SS**2**),
then a dash followed by the first two characters of the day of the week:
Monday, **Tu**esday, **We**dnesday, **Th**ursday, **Fr**iday,
then a single letter for **M**orning, **A**fternoon, **E**vening, **P**oster,
and finally a number indicating the starting time slot for the paper.
Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

Program Overview

Room /Time	Jefferson 1 & Atrium	Jefferson 2-3
MoM		KEY1: Keynote Address AC-MoM: Characterization & Modeling I BG-MoM: Bulk & Epitaxy I
MoA		MD-MoA: Process & Devices I TM-MoA: Characterization & Modelling II
MoP	Poster Sessions	
TuM		PS1-TuM: Plenary Session I TM-TuM: Characterization & Modelling III AC-TuM: Advanced Characterization & Microscopy
TuA		EG-TuA: Bulk & Epitaxy II DI-TuA: Processes & Devices II
TuP	Poster Sessions	
WeM		PS2-WeM: Plenary Session II EP1-WeM: Process & Devices III EP2-WeM: Process and Devices IV

Monday Morning, August 8, 2022

	Room Jefferson 2-3	
8:30am		**Keynote Address** **Session KEY1** **Keynote Address** **Moderator: Dr. Kelson Chabak**, Air Force Research Laboratory
8:45am	**INVITED: KEY1-2** Keynote Lecture: Ga_2O_3 Device Technologies: Power Switching and High-Frequency Applications, and Beyond, ***Masataka Higashiwaki***, Department of Physics and Electronics, Osaka Metropolitan University, Japan; *T. Kamimura, S. Kumar, Z. Wang,* National Institute of Information and Communications Technology, Japan; *T. Kitada, J. Liang, N. Shigekawa,* Department of Physics and Electronics, Osaka Metropolitan University, Japan; *H. Murakami, Y. Kumagai,* Department of Applied Chemistry, Tokyo University of Agriculture and Technology, Japan	
9:00am		
9:15am		
9:30am	**INVITED: AC-MoM-5** Characterization of Deep Acceptors in β-Ga_2O_3 by Deep Level Optical Spectroscopy, *H. Ghadi, J. McGlone, E. Cornuelle,* The Ohio State University; *A. Senckowski,* University of Massachusetts Lowell; *S. Sharma, U. Singisetti,* University of Buffalo; *M. Wong,* University of Massachusetts Lowell; *A. Arehart,* ***Steven A Ringel***, The Ohio State University	**Advanced Characterization Techniques** **Session AC-MoM** **Characterization & Modeling I** **Moderator: Kornelius Tetzner**, Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH), Germany
9:45am		
10:00am	**AC-MoM-7** Determination of Cation Vacancy and Al Diffusion Constants in B-$(Al,Ga)_2O_3$ / Ga_2O_3 Superlattices, *H. Yang, A. Levin, B. Eisner, A. Bhattacharyya, P. Ranga, S. Krishnamoorthy,* ***Michael Scarpulla***, University of Utah	
10:15am	**AC-MoM-8** Defect Characterization in Gallium Oxide and Related Materials Using Terahertz Electron Paramagnetic Resonance Ellipsometry: Fe in Ga_2O_3, ***Mathias Schubert***, University of Nebraska, Lincoln; *S. Richter,* Lund University, Sweden; *S. Knight, P. Kuehne,* Linkoping University, Sweden; *M. Stokey, R. Korlacki,* University of Nebraska-Lincoln; *V. Stanishev,* Linkoping University, Sweden; *Z. Galazka, K. Irmscher,* Leibniz-Institut fuer Kristallzuechtung, Germany; *S. Mu, C. Van de Walle,* University of California at Santa Barbara; *V. Ivády,* MPI Physics of Complex Systems, Germany; *O. Bulancea-Lindvall, I. Abrikosov,* Linkoping University, Sweden; *V. Darakchieva,* Lund University, Sweden	
10:30am	BREAK	
10:45am	**INVITED: BG-MoM-10** b-Ga_2O_3 Growth and Wafer Fabrication, *A. Brady, G. Foundos,* ***Chase Scott***, Northrop Grumman SYNOPTICS; *V. Gambin,* Northrop Grumman Corporation; *K. Stevens,* Northrop Grumman SYNOPTICS; *J. Blevins,* Air Force Research Laboratory, Afghanistan	**Bulk Growth** **Session BG-MoM** **Bulk & Epitaxy I** **Moderator: John Blevins**, Air Force Research Laboratory
11:00am		
11:15am	**BG-MoM-12** Increasing the Bandgap of β-Ga_2O_3 via Alloying with Al_2O_3 or Sc_2O_3 in Czochralski-grown Crystals, ***Benjamin Dutton***, *J. Jesenovec, B. Downing, J. McCloy,* Washington State University	
11:30am	**BG-MoM-13** Chemi-Mechanical Polishing and Subsurface Damage Characterization of 2-inch (010) Semi-Insulating β-Ga_2O_3 Substrates, ***David Snyder***, Penn State Applied Research Laboratory	
11:45am	**BG-MoM-14** Ge-Delta Doped *β*-Ga_2O_3 Grown Via Plasma Assisted Molecular Beam Epitaxy, ***Thaddeus Asel***, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *E. Steinbrunner,* Wright State University, Department of Electrical Engineering; *J. Hendrick,* Air Force Institute of Technology, Department of Engineering Physics; *A. Neal, S. Mou,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA	
12:00pm	**BG-MoM-15** High Purity n-type β-Ga_2O_3 Films with 10^{13} cm^{-3} Residual Accepter Concentration by MOCVD, ***Andrei Osinsky***, *F. Alema,* Agnitron Technology	

Monday Afternoon, August 8, 2022

	Room Jefferson 2-3	
1:45pm	**INVITED: MD-MoA-1** High Aspect Ratio Ga_2O_3-based Homo and H0eterostructures by Plasma-free Metal-assisted Chemical Etching, ***Xiuling Li,*** University of Texas at Austin*; H. Huang, C. Chan, J. Michaels,* University of Illinois, Urbana-Champaign	**Material and Device Processing and Fabrication Techniques** **Session MD-MoA** **Process & Devices I** **Moderator: Man-Hoi Wong**, University of Massachusetts Lowell
2:00pm		
2:15pm	**MD-MoA-3** Blocking Behavior of N and Fe Ion Implanted β-Ga_2O_3, ***Bennett Cromer,*** Cornell University*; W. Li,* University of California at Berkeley*; K. Smith,* Cornell University*; K. Gann,* Cornell University, Iceland*; K. Nomoto,* Cornell University*; N. Hendriks,* University of California at Santa Barbara*; A. Green, K. Chabak,* Air Force Research Laboratory*; M. Thompson, D. Jena, G. Xing,* Cornell University	
2:30pm	**MD-MoA-4** Evolution and Recovery of Ion Implantation-Induced Damage Zone in β-Ga2O3, ***Elaf Anber****, D. Foley, J. Nathaniel,* Johns Hopkins University*; A. Lang ,* American Society for Engineering Education*; J. Hart ,* Johns Hopkins University*; M. Tadjer, K. Hobart,* US Naval Research Laboratory*; S. Pearton,* University of Florida, Gainesville*; M. Taheri,* Johns Hopkins University	
2:45pm	**MD-MoA-5** Heterogeneous Integration of Single-Crystal β-Ga_2O_3 and N-Polar GaN Substrates With ZnO Interlayer Deposited by Atomic Layer Deposition, ***Zhe (Ashley) Jian,*** University of Michigan, Ann Arbor*; C. Clymore,* University of California, Santa Barbara*; D. Agapiou,* University of Michigan, Ann Arbor*; U. Mishra,* University of California, Santa Barbara*; E. Ahmadi,* University of Michigan, Ann Arbor	
3:00pm	**MD-MoA-6** Structural Transformation of β-Ga_2O_3 through Si-implantation, ***Snorre Braathen Kjeldby****, A. Azarov, P. Nguyen,* Centre for Materials Science and Nanotechnology, University of Oslo, Norway*; V. Venkatachalapathy,* Centre for Materials Science and Nanotechnology, University of Oslo and Department of Materials Science, National Research Nuclear University, "MEPhI", Norway*; R. Mikšová,* Nuclear Physics Institute of the Czech Academy of Sciences, Czechia*; A. Macková,* Nuclear Physics Institute of the Czech Academy of Sciences and Department of Physics, Faculty of Science, J.E. Purkyně University, Czechia*; J. García-Fernández, A. Kuznetsov, Ø. Prytz, L. Vines,* Centre for Materials Science and Nanotechnology, University of Oslo, Norway	
3:15pm	**MD-MoA-7** Electrical Characteristics of *in Situ* Mg-Doped Ga_2O_3 Current-Blocking Layer for Vertical Devices, ***Sudipto Saha,*** University at Buffalo-SUNY*; L. Meng, A. Bhuiyan, Z. Feng, H. Zhao,* Ohio State University*; U. Singisetti,* University at Buffalo-SUNY	
3:30pm	BREAK	
3:45pm	**INVITED: TM-MoA-9** Transport, Doping, and Defects in β-Ga_2O_3, ***Adam Neal,*** Air Force Research Laboratory, Materials and Manufacturing Directorate, USA	**Theory, Modeling and Simulation** **Session TM-MoA** **Characterization & Modelling II** **Moderator: Mike Thompson**, Cornell University
4:00pm		
4:15pm	**TM-MoA-11** Structural Changes to Beta Gallium Oxide from Ion Irradiation Damage: Model and Relation to in-Situ Experiments, ***Alexander Petkov****, D. Cherns, D. Liu,* University of Bristol, UK*; W. Chen, M. Li,* Argonne National Laboratory, USA*; J. Blevins,* Air Force Research Laboratory, USA*; V. Gambin,* Northrop Grumman*; M. Kuball,* University of Bristol, UK	
4:30pm	**TM-MoA-12** Band Structure Across κ-$(In_xGa_{1-x})_2O_3$/κ-$(Al_yGa_{1-y})_2O_3$ Thin Film Interfaces, ***Ingvild Julie Thue Jensen****, A. Thøgersen, E. Fertitta, B. Belle,* SINTEF Materials Physics, Norway*; A. Langørgen, S. Cooil, Y. Hommedal, Ø. Prytz, J. Wells, L. Vines,* University of Oslo, Norway*; H. von Wenckstern,* University of Leipzig, Germany	
4:45pm	**TM-MoA-13** Aluminum Incorporation Striations in (-201) β-$(Al_xGa_{1-x})_2O_3$ Films Grown on C-Plane and Miscut Sapphire Substrates, ***Kenny Huynh****, Y. Wang, M. Liao,* University of California Los Angeles*; P. Ranga,* University of Utah*; S. Krishnamoorthy,* University of California at Santa Barbara*; M. Goorsky,* University of California, Los Angeles	
5:00pm	**TM-MoA-14** Plasmon-phonon Coupling in Electrostatically Gated *β*-Ga_2O_3 Films with Mobility Exceeding 200 $cm^2V^{-1}s^{-1}$*, A. Rajapitamahuni, A. Manjeshwar,* University of Minnesota, USA*; A. Kumar, A. Datta,* University at Buffalo*; P. Ranga,* University of California Santa Barbara*; L. Thoutam,* SR University, Warangal, India*; S. Krishnamoorthy,* University of California Santa Barbara*;* ***Uttam Singisetti,*** University at Buffalo*; B. Jalan,* University of Minnesota, USA	

Advanced Characterization Techniques
Room Jefferson 1 & Atrium - Session AC-MoP
Advanced Characterization Techniques Poster Session
5:15pm

AC-MoP-1 Advanced Defect Characterization in b-Ga_2O_3 Without the Arrhenius Plot, *J. Li,* NCKU, Taiwan; ***Adam Neal***, *S. Mou,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *M. Wong,* University of Massachusetts Lowell

AC-MoP-2 Infrared-Active Phonon Modes and Static Dielectric Constants of Orthorhombic $LiGaO_2$, ***Teresa Gramer***, *M. Stokey, R. Korlacki, M. Schubert,* University of Nebraska - Lincoln

AC-MoP-3 Spectroscopic Ellipsometry Optical Analysis of Zinc Gallate at Elevated Temperatures, ***Emma Williams***, University of Nebraska-Lincoln, USA; *M. Hilfiker, U. Kilic, Y. Traouli, N. Koeppe, J. Rivera, A. Abakar, M. Stokey, R. Korlacki,* University of Nebraska - Lincoln; *Z. Galazka,* Leibniz-Institut für Kristallzüchtung, Germany; *M. Schubert,* University of Nebraska - Lincoln

AC-MoP-4 The Electron Spin Hamiltonian for Fe^{3+} in Monoclinic β-Ga_2O_3, *S. Richter,* Lund University, Sweden; *S. Knight, P. Kühne,* Linköping University, Sweden; ***Mathias Schubert***, University of Nebraska - Lincoln; *V. Darakchieva,* Lund University, Sweden

AC-MoP-5 Characterization of (010) β-Ga_2O_3 to Support Fabrication, Wafer Size Scaleup, and Epi Development, ***David Snyder***, Penn State Applied Research Laboratory

AC-MoP-6 Photoluminescence Spectroscopy of Cr^{3+} in β-Ga_2O_3 and $(Al_{0.1}Ga_{0.9})_2O_3$, ***Cassandra Remple***, *J. Jesenovec, B. Dutton, J. McCloy, M. McCluskey,* Washington State University

AC-MoP-7 Surface Relaxation and Rumpling of Sn Doped B-ga2o3(010), ***Nick Barrett***, CEA Saclay, France; *A. Pancotti,* Universidade Federal de Jataí, Brazil; *T. Back,* AFRL; *W. Hamouda, M. Laccheb, C. Lubin, A. Boucly,* CEA Saclay, France; *P. Soukiassian,* Université Paris-Saclay, France; *J. Boeckl, D. Dorsey, S. Mou, T. Asel,* AFRL; *G. Geneste,* CEA, France

AC-MoP-8 Probing Vacancies and Hydrogen Related Defects in β-Ga_2O_3 with Positrons and FTIR, ***Corey Halverson***, *M. Weber, J. Jesenovec, B. Dutton, C. Remple, M. McCluskey, J. McCloy,* Washington State University

AC-MoP-9 Evolution of Anisotropy and Order of Band-to-Band Transitions, Excitons, Phonons, Static and High Frequency Dielectric Constants Including Strain Dependencies in Alpha and Beta Phase $(Al_XGa_{1-X})_2O_3$, ***Megan Stokey***, University of Nebraska-Lincoln; *R. Korlacki, M. Hilfiker, T. Gramer,* University of Nebraska - Lincoln; *J. Knudtson,* University of Nebraska-Lincoln; *S. Richter,* Lund University, Sweden; *S. Knight,* Linköping University, Sweden; *A. Mock,* Weber State University; *A. Mauze, Y. Zhang, J. Speck,* University of California Santa Barbara; *R. Jinno, Y. Cho, H. Xing, D. Jena,* Cornell University; *Y. Oshima,* National Institute for Materials Science, Japan; *E. Ahmadi,* University of Michigan; *V. Darakchieva,* Lund University, Sweden; *M. Schubert,* University of Nebraska - Lincoln

AC-MoP-10 Photoluminescence Mapping of Gallium Oxide and Aluminum Gallium Oxide Epitaxial Films, ***Jacqueline Cooke***, *P. Ranga,* University of Utah; *J. Jesenovec, J. McCloy,* Washington State University; *S. Krishnamoorthy,* University of California at Santa Barbara; *M. Scarpulla, B. Sensale-Rodriguez,* University of Utah

AC-MoP-12 Non-Destructive Characterization of Annealed Si-Implanted Thin Film β-Ga_2O_3, ***Aine Connolly***, *K. Gann,* Cornell University; *S. Tetlak,* Air Force Research Laboratory; *V. Protasenko,* Cornell University; *M. Slocum, S. Mou,* Air Force Research Laboratory; *M. Thompson,* Cornell University

Dielectric Interfaces
Room Jefferson 1 & Atrium - Session DI-MoP
Dielectric Interfaces Poster Session
5:15pm

DI-MoP-1 Band Offsets of MOCVD Grown β-(Al0.21Ga0.79)2O3/β-Ga2O3 (010) Heterojunctions, *T. Morgan, J. Rudie, M. Zamani-Alavijeh, A. Kuchuk,* University of Arkansas; *N. Orishchin, F. Alema,* Agnitron Technology Incorporated; *A. Osinsky,* Agnitron Technology Incorporated, United States Minor Outlying Islands (the); *R. Sleezer,* Minnesota State University at Mankato; *G. Salamo,* University of Arkansas, United States Minor Outlying Islands (the); ***Morgan Ware***, University of Arkansas

DI-MoP-2 Optimization of MOCVD Grown In-situ Dielectrics for β-Ga_2O_3, *G. Wang,* University of Wisconsin - Madison; *F. Alema,* Agnitron Technology Inc.; *J. Chen,* University of Wisconsin - Madison; *A. Osinsky,* Agnitron Technology Inc.; *C. Gupta,* University of Wisconsin-Madison; ***Shubhra Pasayat***, University of Wisconsin - Madison

Electronic and Photonic Devices, Circuits and Applications
Room Jefferson 1 & Atrium - Session EP-MoP
Electronic and Photonic Devices, Circuits and Applications Poster Session
5:15pm

EP-MoP-2 Gate Effects of Channel and Sheet Resistance in β-Ga_2O_3 Field-Effect Transistors using the TLM Method, ***Ory Maimon***, Department of Electrical Engineering, George Mason University; *N. Moser,* Air Force Research Laboratory, Sensors Directorate; *K. Liddy, A. Green, K. Chabak,* Air Force Research Laboratory, Sensors Directorate, USA; *C. Richter, K. Cheung, S. Pookpanratana,* Nanoscale Device and Characterization Division, National Institute of Standards and Technology; *Q. Li,* Department of Electrical Engineering, George Mason University

EP-MoP-3 Lateral β-Ga_2O_3 Schottky Barrier Diodes With Interdigitated Contacts, ***Jeremiah Williams***, Air Force Research Laboratory, Sensors Directorate; *A. Arias-Purdue,* Teledyne; *K. Liddy, A. Green,* Air Force Research Laboratory, Sensors Directorate; *D. Dryden, N. Sepelak,* KBR; *K. Singh,* Air Force Research Laboratory, Sensors Directorate; *F. Alema, A. Osinsky,* Agnitron Technology; *A. Islam, N. Moser, K. Chabak,* Air Force Research Laboratory, Sensors Directorate

EP-MoP-4 Optimized Annealing for Activation of Implanted Si in β-Ga2O3, ***Katie Gann***, *J. McCandless,* Cornell University; *T. Asel, S. Tetlak,* Air Force Research Laboratory; *D. Jena, M. Thompson,* Cornell University

Electronic Transport and Breakdown Phenomena
Room Jefferson 1 & Atrium - Session ET-MoP
Electronic Transport and Breakdown Phenomena Poster Session
5:15pm

ET-MoP-2 Electric Field Mapping in β-Ga_2O_3 by Photocurrent Spectroscopy, ***Darpan Verma***, *M. Adnan, S. Dhara,* Ohio State University; *C. Sturm,* Universitat Leipzig, Germany; *S. Rajan, R. Myers,* Ohio State University

ET-MoP-3 Activation of Si, Ge, and Sn Donors in High-Resistivity Halide Vapor Phase Epitaxial β-Ga_2O_3:N, ***Joseph Spencer***, Naval Research Laboratory/ Virginia Tech CPES; *M. Tadjer, A. Jacobs, M. Mastro, J. Gallagher, J. Freitas, Jr,* Naval Research Laboratory; *T. Tu, A. Kuramata, K. Sasaki,* Novel Crystal, Japan; *Y. Zhang,* Virginia Tech (CPES); *T. Anderson, K. Hobart,* Naval Research Laboratory

Heterogeneous Material Integration
Room Jefferson 1 & Atrium - Session HM-MoP
Heterogeneous Material Integration Poster Session
5:15pm

HM-MoP-1 Structural and Thermal Transport Analysis of Wafer Bonded β-Ga_2O_3 |4H-SiC, ***Michael Liao***, *K. Huynh, Y. Wang,* UCLA; *Z. Cheng,* UIUC; *J. Shi,* GaTech; *F. Mu,* IMECAS, China; *T. You, W. Xu, X. Ou,* ShanghaiTech, China; *T. Suga,* Meisei University, Japan; *S. Graham,* GaTech; *M. Goorsky,* UCLA

HM-MoP-2 Advances in Plasma-Enhanced Atomic Layer Deposited (PEALD) Ga_2O_3 Films, ***Virginia Wheeler***, *A. Lang, N. Nepal, E. Jin, D. Katzer, V. Gokhale, B. Downey, D. Meyer,* US Naval Research Laboratory

HM-MoP-3 Grafted Si/Ga2O3 pn Diodes, *H. Jang, D. Kim,* University of Wisconsin - Madison; *J. Gong,* University of Wisconsin at Madison; *F. Alema, A. Osinsky,* Agnitron Technology Inc.; *K. Chabak,* Air Force Research Laboratory; *G. Jessen,* BAE Systems; *G. Vincent,* Northrup Grumann; *S. Pasayat, C. Gupta,* University of Wisconsin - Madison; ***Zhenqiang Ma***, 1415 Engineering Drive

Tuesday Morning, August 9, 2022

	Room Jefferson 2-3	
8:30am		**Plenary Session** **Session PS1-TuM** **Plenary Session I** **Moderator: Dr. Kelson Chabak**, Air Force Research Laboratory
8:45am	**INVITED: PS1-TuM-2** Plenary Lecture: Gallium Oxide Electronics - Device Engineering Toward Ultimate Material Limits, ***Siddharth Rajan,*** The Ohio State University	
9:00am		
9:15am	**INVITED: TM-TuM-4** First-Principles Modeling of Ga_2O_3, ***Hartwin Peelaers,*** University of Kansas	**Theory, Modeling and Simulation** **Session TM-TuM** **Characterization & Modelling III** **Moderator: Michael Scarpulla**, University of Utah
9:30am		
9:45am	**TM-TuM-6** Theory of Acceptor-Donor Complexes in Ga_2O_3, *I. Chatratin, F. Sabino,* University of Delaware*; P. Reunchan,* Kasetsart University, Thailand*;* ***Anderson Janotti,*** University of Delaware	
10:00am	**TM-TuM-7** Donor Doping of Monoclinic and Corundum $(Al_xGa_{1-x})_2O_3$, ***Darshana Wickramaratne,*** US Naval Research Laboratory*; J. Varley,* Lawrence Livermore National Laboratory*; J. Lyons,* US Naval Research Laboratory	
10:15am	**TM-TuM-8** The Co-Design, Fabrication, and Characterization of a Ga2O3-on-SiC MOSFET*,* ***Yiwen Song,*** Pennsylvania State University*; A. Bhattacharyya,* University of Utah*; A. Karim, D. Shoemaker,* Pennsylvania State University*; H. Huang,* Ohio State University*; C. McGray,* Modern Microsystems, Inc.*; J. Leach,* Kyma Technologies, Inc.*; J. Hwang,* Ohio State University*; S. Krishnamoorthy,* University of California at Santa Barbara*; S. Choi,* Pennsylvania State University	
10:30am	BREAK	
10:45am	**INVITED: AC-TuM-10** Defects in Gallium Oxide – How We "See" and Understand Them, ***Jinwoo Hwang,*** The Ohio State University	**Advanced Characterization Techniques** **Session AC-TuM** **Advanced Characterization & Microscopy** **Moderator: Ginger Wheeler**, Naval Research Laboratory
11:00am		
11:15am	**AC-TuM-12** Atomic-Scale Investigation of Point and Extended Defects in Ion Implanted β-Ga_2O_3, ***Hsien-Lien Huang,*** *C. Chae,* The Ohio State University*; A. Senckowski, M. Wong,* Penn State University*; J. Hwang,* The Ohio State University	
11:30am	**AC-TuM-13** Microscopic and Spectroscopic Analysis of (100), (-201) and (010) $(Al_xGa_{1-x})_2O_3$ Films Using Atom Probe Tomography*, J. Sarker,* University at Buffalo-SUNY*; A. Bhuiyan, Z. Feng, L. Meng, H. Zhao,* The Ohio State University*;* ***Baishakhi Mazumder,*** University at Buffalo-SUNY	
11:45am	**AC-TuM-14** Phase and Microstructure Evolution of κ-Ga_2O_3 Thin Films Grown by MOCVD*,* ***Jingyu Tang,*** *K. Jiang,* Carnegie Mellon University, China*; M. Cabral, A. Park,* Carnegie Mellon University*; L. Gu,* Carnegie Mellon University, China*; R. Davis , L. Porter,* Carnegie Mellon University	
12:00pm	**AC-TuM-15** Investigation of Extended Defects in Ga2O3 Substrates and Epitaxial Layers using X-ray Topography*,* ***Nadeemullah A. Mahadik,*** *M. Tadjer, T. Anderson, K. Hobart,* Naval Research Laboratory, USA*; K. Sasaki, A. Kuramata,* Novel Crystal Technology, Japan	

Tuesday Afternoon, August 9, 2022

	Room Jefferson 2-3	
1:45pm	**INVITED: EG-TuA-1** Progress in Beta-Gallium Oxide Materials and Properties, ***James Speck,*** University of California Santa Barbara	**Epitaxial Growth** **Session EG-TuA** **Bulk & Epitaxy II** **Moderator: Xiuling Li**, University of Texas Austin
2:00pm		
2:15pm	**EG-TuA-3** (110) β-Ga_2O_3 Epitaxial Films Grown by Plasma-Assisted Molecular Beam Epitaxy, ***Takeki Itoh,*** *A. Mauze, Y. Zhang, J. Speck,* University of California at Santa Barbara	
2:30pm	**EG-TuA-4** Si-doped β-Ga2O3 Films Grown at 1 µm/hr by Suboxide MBE, ***Kathy Azizie,*** *P. Vogt, F. Hensling, D. Schlom, J. McCandless, H. Xing, D. Jena,* Cornell University*; D. Dryden, A. Neal, S. Mou, T. Asel, A. Islam, A. Green, K. Chabak,* Air Force Research Laboratory	
2:45pm	**INVITED: EG-TuA-5** MOCVD Growth of Ga_2O_3 and $(Al_xGa_{1-x})_2O_3$, ***Hongping Zhao,*** The Ohio State University	
3:00pm		
3:15pm		
3:30pm	BREAK	
3:45pm	**DI-TuA-9** Dielectric Integration on (010) β-Ga_2O_3: Al_2O_3, SiO_2 Interfaces and their Thermal Stability, ***Ahmad Islam,*** Air Force Research Laboratory*; A. Miesle,* University of Dayton*; M. Dietz,* Wright State University*; K. Leedy, S. Ganguli,* Air Force Research Laboratory*; G. Subramanyam,* University of Dayton*; W. Wang,* Wright State University*; N. Sepelak, D. Dryden,* KBR, Inc.*; T. Asel, A. Neal, S. Mou, S. Tetlak, K. Liddy, A. Green, K. Chabak,* Air Force Research Laboratory	**Dielectric Interfaces** **Session DI-TuA** **Processes & Devices II** **Moderator: Hongping Zhao**, Ohio State University
4:00pm	**DI-TuA-10** Deep Etch Field-Terminated β-Ga_2O_3 Schottky Barrier Diodes With 4.2 MV/cm Parallel Plate Field Strength, ***Sushovan Dhara,*** *N. Kalarickala, A. Dheenan, C. Joishi, S. Rajan,* The Ohio State University	
4:15pm	**DI-TuA-11** Demonstration of Low Thermal Resistance in Ga_2O_3 Schottky Diodes by Junction-Side-Cooled Packaging, ***Boyan Wang,*** *M. Xiao, J. Knoll, Y. Qin,* Virginia Polytechnic Institute and State University*; J. Spencer, M. Tadjer,* U.S. Naval Research Laboratory*; C. Buttay,* Univ Lyon, CNRS, INSA Lyon, Université Claude Bernard Lyon 1, Ecole Centrale de Lyon, Ampère, France*; K. Sasaki,* Novel Crystal Technology, Japan*; G. Lu, C. DiMarino, Y. Zhang,* Virginia Polytechnic Institute and State University	
4:30pm	**DI-TuA-12** High Temperature In-situ MOCVD-grown Al_2O_3 Dielectric on (010) β-Ga_2O_3 with 10 MV/cm Breakdown Field, ***Saurav Roy,*** University of California Santa Barbara*; A. Bhattacharyya,* University of Utah*; C. Peterson, S. Krishnamoorthy,* University of California Santa Barbara	
4:45pm	**DI-TuA-13** Metal Oxide (PtOX) Schottky Contact with High-k Dielectric Field Plate for Improved Field Management in Vertical β-Ga2O3 Devices, ***Esmat Farzana,*** University of California Santa Barbara*; A. Bhattacharyya,* The University of Utah*; T. Itoh, S. Krishnamoorthy, J. Speck,* University of California Santa Barbara	
5:00pm	**DI-TuA-14** Field Plated β-Ga_2O_3 Mis Diodes with High-κ Tio_2 Interlayer for Increased Breakdown and Reduced Leakage Current, ***Nolan Hendricks,*** Air Force Research Laboratory; UC Santa Barbara*; A. Green, A. Islam, K. Leedy, K. liddy, J. Williams,* Air Force Research Lab*; E. Farzana, J. Speck,* UC Santa Barbara*; K. Chabak,* Air Force Research Lab	

Epitaxial Growth
Room Jefferson 1 & Atrium - Session EG-TuP
Epitaxial Growth Poster Session
5:15pm

EG-TuP-1 α-phase Gallium Oxide Thin Films Stabilized on a-, r- and m-plane Sapphire Substrates via Reactive Magnetron Sputtering and Pulsed Laser Deposition, ***Edgars Butanovs***, Institute of Solid State Physics University of Latvia

EG-TuP-2 Epitaxial Growth of $(Al_xGa_{1-x})_2O_3$ by Suboxide MBE, ***Jacob Steele***, *K. Azizie, J. McCandless,* Cornell University; *T. Asel,* Air Force Research Lab; *H. Xing, D. Jena, D. Schlom,* Cornell University

EG-TuP-5 Free Carrier Control in Homoepitaxial β-Ga_2O_3 Thin Films by Tin Impurity Doping, ***Neeraj Nepal***, *B. Downey, V. Wheeler, D. Katzer, E. Jin, M. Hardy, V. Gokhale, T. Growden,* US Naval Research Laboratory; *K. Chabak,* Air Force Research Laboratory; *D. Meyer,* US Naval Research Laboratory

EG-TuP-6 MBE Growth of Doped and Insulating Homoepitaxial β-Ga_2O_3, ***Jon McCandless***, *V. Protasenko, B. Morell,* Cornell University; *E. Steinbrunner, A. Neal,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *Y. Cho, N. Tanen, H. Xing, D. Jena,* Cornell University

EG-TuP-7 High Conductivity Homoepitaxial β-Ga_2O_3 Regrowth Layers by Pulsed Laser Deposition, ***Hyung Min Jeon***, KBR; *K. Leedy,* Air Force Research Laboratory

EG-TuP-9 Highly conductive β-Ga_2O_3 and $(Al_xGa_{1-x})_2O_3$ epitaxial films by MOCVD, ***Fikadu Alema***, Agnitron Technology; *T. Itoh, J. Speck,* Materials Department, University of California, Santa Barbara; *A. Osinsky,* Agnitron Technology

Material and Device Processing and Fabrication Techniques
Room Jefferson 1 & Atrium - Session MD-TuP
Material and Device Processing and Fabrication Techniques Poster Session
5:15pm

MD-TuP-1 Record Low Specific Resistance Ohmic Contacts to Highly Doped MOVPE-Grown β-Ga_2O_3 and β-$(Al_xGa_{1-x})_2O_3$ Epitaxial Films, ***Carl Peterson***, University of California Santa Barbara; *F. Alema,* Agnitron Technology; *S. Roy,* University of California Santa Barbara; *A. Bhattacharyya,* University of Utah; *A. Osinsky,* Agnitron Technology; *S. Krishnamoorthy,* University of California Santa Barbara

MD-TuP-3 MOCVD β-Ga_2O_3 Gate-recessed MESFET, ***Hannah Masten***, *J. Lundh, J. Spencer,* US Naval Research Laboratory; *F. Alema, A. Osinsky,* Agnitron Technology; *A. Jacobs, K. Hobart, M. Tadjer,* US Naval Research Laboratory

MD-TuP-4 Subsurface Damage Analysis of Chemical Mechanical Polished (010) β-Ga_2O_3 Substrates, ***Michael Liao***, *K. Huynh, L. Matto, D. Luccioni, M. Goorsky,* UCLA

MD-TuP-5 Diffusion of Zn in β-Ga_2O_3, ***Ylva Knausgård Hommedal***, *Y. Frodason, L. Vines, K. Johansen,* Centre for Materials Science and Nanotechnology/Dep. of Physics, University of Oslo, Norway

MD-TuP-6 Initial Nucleation of Metastable γ-Ga_2O_3 During sub-Millisecond Thermal Anneals of Amorphous Ga_2O_3 , ***Katie Gann***, *C. Chang, M. Chang, D. Sutherland, A. Connolly, D. Muller, R. van Dover, M. Thompson,* Cornell University

MD-TuP-7 Heavily Doped β-Ga_2O_3 Deposited by Magnetron Sputtering, ***Adetayo Adedeji***, Elizabeth City State University; *J. Lawson, C. Ebbing,* University of Dayton Research Institute; *J. Merrett,* Air Force Research Laboratory

MD-TuP-8 Point Defect Distributions in Ultrafast Laser Induced Periodic Surface Structures on β-Ga_2O_3, *D. Ramdin, E. DeAngelis, M. Noor, M. Haseman, E. Chowdhury,* ***Leonard Brillson***, Ohio State University

Theory, Modeling and Simulation
Room Jefferson 1 & Atrium - Session TM-TuP
Theory, Modeling and Simulation Poster Session
5:15pm

TM-TuP-1 Simulation Study of Single Event Effects in Ga_2O_3 Schottky Diodes, ***Animesh Datta***, *U. Singisetti,* University at Buffalo

TM-TuP-2 Anisotropic Photoresponsivity and Deviation from Beer-Lambert Law in Beta Gallium Oxide, ***Md Mohsinur Rahman Adnan***, *D. Verma, S. Dhara,* The Ohio State University; *C. Sturm,* Universitat Leipzig, Germany; *S. Rajan, R. Myers,* The Ohio State University

TM-TuP-4 Self-Trapped Holes and Polaronic Acceptors in Ultrawide Bandgap Oxides, ***John Lyons***, US Naval Research Laboratory

TM-TuP-5 Modeling for a High-Temperature Ultra-Wide Bandgap Gallium Oxide Power Module, ***Benjamin Albano***, Virginia Tech Center for Power Electronics Systems; *B. Wang, C. DiMarino, Y. Zhang,* Virginia Tech Center for Power Electronics

TM-TuP-6 Atomic Surface Structure of Sn doped β-Ga_2O_3(010) Studied by Low-energy Electron Diffraction, ***Alexandre Pancotti***, Universidade Federal de Jataí, Brazil; *J. T. Sadowski,* Center for Functional Nanomaterials, Brookhaven National Laboratory; *A. Sandre Kilian,* Universidade Federal de Jataí, Brazil; *D. Duarte dos Reis,* Universidade Federal do Mato Grosso do Sul, Brazil; *C. Lubin,* SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay , France; *A. Boucly,* SPEC, CEA, CNRS, Université Paris-Saclay, France; *P. Soukiassian,* SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay, France; *J. Boeckl, D. Dorsey ,* Air Force Research Laboratory; *M. Shin, T. ASEL,* Air Force Research Lab; *J. Brown, N. Barrett ,* SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay , France; *T. Back,* SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay

Wednesday Morning, August 10, 2022

	Room Jefferson 2-3	
8:30am		**Plenary Session** **Session PS2-WeM** **Plenary Session II** **Moderator: Dr. Kelson Chabak**, Air Force Research Laboratory
8:45am	**INVITED: PS2-WeM-2** Plenary Lecture: Fundamental Limits of Ga_2O_3 Power Devices and How to Get There, ***Huili Grace Xing***, Cornell University	
9:00am		
9:15am	**EP1-WeM-4** Remarkable Improvement of Conductivity in B-Ga_2O_3 by High-Temperature Si Ion Implantation, ***Arka Sardar***, *T. Isaacs-Smith, S. Dhar,* Auburn University*; J. Lawson, N. Merrett,* Air Force Research Laboratory, USA	**Electronic and Photonic Devices, Circuits and Applications** **Session EP1-WeM** **Process & Devices III** **Moderator: Uttam Singisetti**, University of Buffalo, SUNY
9:30am	**INVITED: EP1-WeM-5** Towards Lateral and Vertical Ga_2O_3 Transistors for High Voltage Power Switching, ***Kornelius Tetzner***, *J. Würfl, E. Bahat-Treidel, O. Hilt,* Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH), Germany*; Z. Galazka, S. Bin Anooz, A. Popp,* Leibniz-Institut für Kristallzüchtung (IKZ), Germany	
9:45am		
10:00am	**EP1-WeM-7** Comparison of β-Ga_2O_3 Mosfets With TiW and NiAu Metal Gates for High-Temperature Operation, ***Nicholas Sepelak***, KBR, Wright State University*; D. Dryden,* KBR*; R. Kahler,* University of Texas at Dallas*; J. William,* Air Force Research Lab, Sensors Directorate*; T. Asel,* Air Force Research Laboratory, Materials and Manufacturing Directorate*; H. Lee,* University of Illinois at Urbana-Champaign*; K. Gann,* Cornell University*; A. Popp,* Leibniz-Institut für Kristallzüchtung, Germany*; K. Liddy,* Air Force Research Lab, Sensors Directorate*; K. Leedy,* Air Force Research Laboratory, Sensors Directorate*; W. Wang,* Wright State University*; W. Zhu,* University of Illinois at Urbana-Champaign*; M. Thompson,* Cornell University*; S. Mou,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA*; K. Chabak, A. Green,* Air Force Research Laboratory, Sensors Directorate*; A. Islam,* Air Force Research Laboratory, Sensors Directory	
10:15am	**EP1-WeM-8** High Electron Mobility Si-doped β-Ga_2O_3 MESFETs, ***Arkka Bhattacharyya***, University of Utah*; S. Roy,* University of California at Santa Barbara*; P. Ranga,* University of Utah*; S. Krishnamoorthy,* University of California at Santa Barbara	
10:30am	BREAK	
10:45am	**EP2-WeM-10** β-Ga_2O_3 Lateral FinFETs Formed by Atomic Ga Flux Etching, ***Ashok Dheenan***, *N. Kalarickal, Z. Feng, L. Meng,* The Ohio State University*; A. Fiedler,* IKZ Berlin, Germany*; C. Joishi, A. Price, J. McGlone, S. Dhara, S. Ringel, H. Zhao, S. Rajan,* The Ohio State University	**Electronic and Photonic Devices, Circuits and Applications** **Session EP2-WeM** **Process and Devices IV** **Moderator: Christina DiMarino**, Virginia Tech
11:00am	**EP2-WeM-11** Insights Into the Behaviour of Leakage Current in Lateral Ga_2O_3 Transistors on Semi-Insulating Substrates, *Z. Chen, A. Mishra, M. Smith, T. Moule,* University of Bristol, UK*; M. Uren,* University of Brsitol, UK*; S. Kumar,* ***Masataka Higashiwaki***, National Institute of Information and Communications Technology, Japan*; M. Kuball,* University of Bristol, UK	
11:15am	**EP2-WeM-12** Device Figure of Merit Performance of Scaled Gamma-Gate β-Ga_2O_3 MOSFETs, ***Kyle Liddy***, *A. Islam, J. Williams, D. Walker, N. Moser, D. Dryden, N. Sepelak, K. Chabak, A. Green,* AFRL	
11:30am	**EP2-WeM-13** Electromigration of Native Point Defects and Breakdown in Ga_2O_3 Vertical Devices, *M. Haseman, D. Ramdin,* Ohio State University*; W. Li, K. Nomoto, D. Jena, G. Xing,* Cornell University*;* ***Leonard Brillson***, Ohio State University	

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