

Matthew Charles

List of Publications by Year in descending order

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Version: 2024-02-01

60
papers

1,248
citations

840585

11
h-index

377752

34
g-index

60
all docs

60
docs citations

60
times ranked

1523
citing authors

#	ARTICLE	IF	CITATIONS
1	The 2018 GaN power electronics roadmap. Journal Physics D: Applied Physics, 2018, 51, 163001.	1.3	843
2	Power electronics with wide bandgap materials: Toward greener, more efficient technologies. MRS Bulletin, 2015, 40, 390-395.	1.7	71
3	Characterization and modeling of 2DEG mobility in AlGaIn/AlN/GaN MIS-HEMT. Microelectronic Engineering, 2019, 215, 110976.	1.1	24
4	The Characterization and Optimization of GaN Cap Layers and SiN Cap Layers on AlGaIn/GaN HEMT Structures Grown on 200µm GaN on Silicon. Physica Status Solidi (B): Basic Research, 2018, 255, 1700406.	0.7	21
5	The effect of AlN nucleation temperature on inverted pyramid defects in GaN layers grown on 200 mm silicon wafers. Journal of Crystal Growth, 2017, 464, 164-167.	0.7	20
6	Invited Paper: A Novel Process for Fabricating High-Resolution and Very Small Pixel-Pitch GaN LED Microdisplays. Digest of Technical Papers SID International Symposium, 2017, 48, 268-271.	0.1	16
7	Coherent tunneling in an AlGaIn/AlN/GaN heterojunction captured through an analogy with a MOS contact. Scientific Reports, 2017, 7, 8177.	1.6	14
8	H3PO4-based wet chemical etching for recovery of dry-etched GaN surfaces. Applied Surface Science, 2022, 582, 152309.	3.1	13
9	Characterization of 2DEG in AlGaIn/GaN heterostructure by Hall effect. Microelectronic Engineering, 2017, 178, 128-131.	1.1	12
10	Ion-assisted gate recess process induced damage in GaN channel of AlGaIn/GaN Schottky barrier diodes studied by deep level transient spectroscopy. Japanese Journal of Applied Physics, 2017, 56, 04CG01.	0.8	12
11	Effects of negative bias stress on trapping properties of AlGaIn/GaN Schottky barrier diodes. Microelectronic Engineering, 2017, 178, 158-163.	1.1	11
12	Multitechnique elemental depth profiling of InAlGaIn and InAlN films. Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics, 2018, 36, .	0.6	10
13	From epitaxy to converters topologies what issues for 200 mm GaN/Si?. , 2015, , .		9
14	High growth rate GaN on 200µm silicon by metal-organic vapor phase epitaxy for high electron mobility transistors. Journal of Crystal Growth, 2018, 483, 89-93.	0.7	9
15	Study of deep traps in AlGaIn/GaN high-electron mobility transistors by electrical characterization and simulation. Journal of Applied Physics, 2019, 125, .	1.1	9
16	Understanding and controlling Ga contamination in InAlN barrier layers. Journal of Crystal Growth, 2019, 507, 139-142.	0.7	9
17	XPS Analysis of AlGaIn/GaN Surface after Chemical and N-Containing Plasma Treatments. ECS Transactions, 2013, 50, 451-460.	0.3	8
18	On the Understanding of Cathode Related Trapping Effects in GaN-on-Si Schottky Diodes. IEEE Journal of the Electron Devices Society, 2018, 6, 956-964.	1.2	8

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19	X-ray Diffraction Microstrain Analysis for Extraction of Threading Dislocation Density of GaN Films Grown on Silicon, Sapphire, and SiC Substrates. <i>Physica Status Solidi (B): Basic Research</i> , 2020, 257, 1900579.	0.7	8
20	AlGaIn/GaN MIS-HEMT gate structure improvement using Al ₂ O ₃ deposited by plasma-enhanced ALD. <i>Microelectronic Engineering</i> , 2013, 109, 378-380.	1.1	7
21	Novel sheet resistance measurement on AlGaIn/GaN HEMT wafer adapted from four-point probe technique. , 2015, , .		7
22	Accurate statistical extraction of AlGaIn/GaN HEMT device parameters using the Y-function. <i>Solid-State Electronics</i> , 2021, 184, 108078.	0.8	7
23	Sheet resistance measurement on AlGaIn/GaN wafers and dispersion study. <i>Microelectronic Engineering</i> , 2013, 109, 334-337.	1.1	6
24	Leakage Current Paths in Isolated AlGaIn/GaN Heterostructures. <i>IEEE Transactions on Semiconductor Manufacturing</i> , 2016, 29, 363-369.	1.4	6
25	Thermal Evolution of Implantation Damages in Mg-Implanted GaN Layers Grown on Si. <i>ECS Transactions</i> , 2017, 80, 131-138.	0.3	6
26	SiGe nano-heteroepitaxy on Si and SiGe nano-pillars. <i>Nanotechnology</i> , 2018, 29, 275702.	1.3	6
27	Solving the problem of gallium contamination problem in InAlN layers in close coupled showerhead reactors. <i>Applied Physics Express</i> , 2019, 12, 045504.	1.1	6
28	Developments in understanding the nucleation of AlN on silicon by MOCVD and its effects on defects. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2017, 214, 1600431.	0.8	5
29	Capping stability of Mg-implanted GaN layers grown on silicon. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2017, 214, 1600487.	0.8	5
30	<i>(Invited)</i> Epitaxy of GaN on Si (111) for Power Electronics, RF and LEDs. <i>ECS Transactions</i> , 2018, 86, 233-247.	0.3	4
31	V-pit pinning at the interface of high and low-temperature gallium nitride growth. <i>Japanese Journal of Applied Physics</i> , 2019, 58, SC1035.	0.8	4
32	Extraction of stress and dislocation density using in-situ curvature measurements for AlGaIn and GaN on silicon growth. <i>Journal of Crystal Growth</i> , 2019, 517, 64-67.	0.7	4
33	Gate length effect on trapping properties in AlGaIn/GaN high-electron-mobility transistors. <i>Semiconductor Science and Technology</i> , 2019, 34, 045011.	1.0	4
34	Analysis of MIS-HEMT Device Edge Behavior for GaN Technology Using New Differential Method. <i>IEEE Transactions on Electron Devices</i> , 2020, 67, 4649-4653.	1.6	4
35	Y-Function Based Methodology for Accurate Statistical Extraction of HEMT Device Parameters for GaN Technology. , 2020, , .		4
36	Influence of epitaxy and gate deposition process on Ron resistance of AlGaIn/GaN-on-Si HEMT. , 2015, , .		3

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37	On the understanding of cathode related trapping effects in GaN-on-Si Schottky diodes. , 2017, , .		3
38	Unravelling the unwanted Ga incorporation effect on InGaN epilayers grown in CCS MOVPE reactors. Journal of Crystal Growth, 2020, 536, 125596.	0.7	3
39	Thermoelectric Properties of n-type GaN and 2D Electron Gas in AlGaN-GaN Heterostructure. Journal of Electronic Materials, 2021, 50, 1301-1306.	1.0	3
40	AlGaN/GaN MIS-HEMT Gate Structure Improvement Using Al ₂ O ₃ Deposited by PEALD and BCl ₃ Gate Recess Etching. ECS Transactions, 2013, 58, 269-277.	0.3	2
41	A microsecond time resolved current collapse test setup dedicated to GaN-based Schottky diode characterization. , 2017, , .		2
42	TCAD for gate stack optimization in pGaN Gate HEMT devices. , 2017, , .		2
43	Performance enhancement of CMOS compatible 600V rated AlGaN/GaN Schottky diodes on 200mm silicon wafers. , 2018, , .		2
44	Impact of growth conditions on AlN/GaN heterostructures with in-situ SiN capping layer. Journal of Crystal Growth, 2019, 515, 48-52.	0.7	2
45	Analysis of hole-like traps in deep level transient spectroscopy spectra of AlGaN/GaN heterojunctions. Journal Physics D: Applied Physics, 2020, 53, 185105.	1.3	2
46	Impact of Substrate Biasing During AlN Growth by PEALD on Al ₂ O ₃ /AlN/GaN MOS Capacitors. Advanced Materials Interfaces, 2022, 9, 2101731.	1.9	2
47	H ₂ based etching of GaN for re-grown gallium-free InAlN barriers giving very low 2DEG sheet resistance of 185Å ² /sq. Journal of Crystal Growth, 2022, 588, 126674.	0.7	2
48	GaN HEMTs on silicon for power devices. , 2012, , .		1
49	Modification of the surface morphology of silicon(111) with growth temperature. Surface Science, 2013, 608, 199-203.	0.8	1
50	Complete solid state lighting (SSL) line at CEA LETI. Proceedings of SPIE, 2014, , .	0.8	1
51	Novel C-V measurements based method for the extraction of GaN buffer layer residual doping level in HEMT. , 2017, , .		1
52	Nano-Heteroepitaxy: An Investigation of SiGe Nano-Pillars Coalescence. ECS Transactions, 2018, 86, 249-258.	0.3	1
53	III-N Epitaxy on Si for Power Electronics. , 2018, , 115-158.		1
54	Advanced Substrates for GaN-Based Power Devices. , 2019, , .		1

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55	SiGe nano-heteroepitaxy: An investigation of the nano-template. Journal of Crystal Growth, 2019, 527, 125232.	0.7	1
56	Doping of GaN grown on silicon via ion implantation. , 2019, , .		0
57	Nano-Heteroepitaxy: An Investigation of SiGe Pillars Coalescence. ECS Journal of Solid State Science and Technology, 2019, 8, P180-P185.	0.9	0
58	Simple and Accurate Prediction of AlGaIn Metal-Organic Vapor Phase Epitaxy Growth. Physica Status Solidi (B): Basic Research, 2020, 257, 1900576.	0.7	0
59	Parasitic Capacitance Analysis in Short Channel GaN MIS-HEMTs. , 2021, , .		0
60	Thorough Investigation of Low Frequency Noise Mechanisms in AlGaIn/GaN and Al ₂ O ₃ /GaN HEMTs. , 2021, , .		0