

Aaron Arehart

List of Publications by Year in descending order

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102
papers

4,020
citations

87888

38
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118850

62
g-index

103
all docs

103
docs citations

103
times ranked

2880
citing authors

#	ARTICLE	IF	CITATIONS
1	\hat{I}^2 -Gallium oxide power electronics. APL Materials, 2022, 10, .	5.1	184
2	Large Area (Ag,Cu)(In,Ga)Se ₂ Thin-Film Solar Cells with Increased Bandgap and Reduced Voltage Losses Realized with Bulk Defect Reduction and Front Grading of the Absorber Bandgap. Solar Rrl, 2022, 6, .	5.8	6
3	Metalorganic Chemical Vapor Deposition Gallium Nitride with Fast Growth Rate for Vertical Power Device Applications. Physica Status Solidi (A) Applications and Materials Science, 2021, 218, 2000469.	1.8	11
4	Electrostatic Engineering Using Extreme Permittivity Materials for Ultra-Wide Bandgap Semiconductor Transistors. IEEE Transactions on Electron Devices, 2021, 68, 29-35.	3.0	30
5	Influence of growth temperature on defect states throughout the bandgap of MOCVD-grown \hat{I}^2 -Ga ₂ O ₃ . Applied Physics Letters, 2020, 117, .	3.3	21
6	Defect-mediated metastability and carrier lifetimes in polycrystalline (Ag,Cu)(In,Ga)Se ₂ absorber materials. Journal of Applied Physics, 2020, 127, .	2.5	14
7	High electron density \hat{I}^2 -(Al _{0.17} Ga _{0.83}) ₂ O ₃ /Ga ₂ O ₃ modulation doping using an ultra-thin (1%nm) spacer layer. Journal of Applied Physics, 2020, 127, .	2.5	64
8	Probing unintentional Fe impurity incorporation in MOCVD homoepitaxy GaN: Toward GaN vertical power devices. Journal of Applied Physics, 2020, 127, 215707.	2.5	26
9	Probing Charge Transport and Background Doping in Metal-Organic Chemical Vapor Deposition-Grown (010) \hat{I}^2 -Ga ₂ O ₃ . Physica Status Solidi - Rapid Research Letters, 2020, 14, 2000145.	2.4	79
10	Full bandgap defect state characterization of \hat{I}^2 -Ga ₂ O ₃ grown by metal organic chemical vapor deposition. APL Materials, 2020, 8, .	5.1	52
11	Impact of Traps on the Adjacent Channel Power Ratios of GaN HEMTs. IEEE Electron Device Letters, 2020, 41, 816-819.	3.9	5
12	Optical Characterization of Defects in High-efficiency (Ag, Cu)(In, Ga)Se ₂ . , 2020, , .		0
13	Electrical Properties 3. Springer Series in Materials Science, 2020, , 421-441.	0.6	0
14	Direct Nanoscale Characterization of Deep Levels in AgCuInGaSe ₂ Using Electron Energy-Loss Spectroscopy in the Scanning Transmission Electron Microscope. Advanced Energy Materials, 2019, 9, 1901612.	19.5	16
15	δ -Ga ₂ O ₃ Delta-Doped Field-Effect Transistors With Current Gain Cutoff Frequency of 27 GHz. IEEE Electron Device Letters, 2019, 40, 1052-1055.	3.9	119
16	Mechanism of Si doping in plasma assisted MBE growth of \hat{I}^2 -Ga ₂ O ₃ . Applied Physics Letters, 2019, 115, .	3.3	41
17	Identification of critical buffer traps in Si \hat{I} -doped \hat{I}^2 -Ga ₂ O ₃ MESFETs. Applied Physics Letters, 2019, 115, .	3.3	38
18	Unusual Formation of Point-Defect Complexes in the Ultrawide-Band-Gap Semiconductor \hat{I}^2 -Ga ₂ O ₃ . Physical Review X, 2019, 9, .		

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19	Velocity saturation in La-doped BaSnO ₃ thin films. Applied Physics Letters, 2019, 115, .	3.3	9
20	Impact of deep level defects induced by high energy neutron radiation in $\hat{\Gamma}^2$ -Ga ₂ O ₃ . APL Materials, 2019, 7, .	5.1	80
21	Breakdown Characteristics of β -(Al _{0.22} Ga _{0.78}) ₂ O ₃ /Ga ₂ O ₃ Field-Plated Modulation-Doped Field-Effect Transistors. IEEE Electron Device Letters, 2019, 40, 1241-1244.	3.9	82
22	Degradation Mechanism in Cu(In,Ga)Se ₂ Material and Solar Cells Due to Moisture and Heat Treatment of the Absorber Layer. IEEE Journal of Photovoltaics, 2019, 9, 1138-1143.	2.5	17
23	Local trap spectroscopy on cross-sectioned AlGaN/GaN devices with <i>in situ</i> biasing. Applied Physics Letters, 2019, 114, .	3.3	2
24	Influence of neutron irradiation on deep levels in Ge-doped (010) $\hat{\Gamma}^2$ -Ga ₂ O ₃ layers grown by plasma-assisted molecular beam epitaxy. APL Materials, 2019, 7, .	5.1	31
25	Metal/BaTiO ₃ / $\hat{\Gamma}^2$ -Ga ₂ O ₃ dielectric heterojunction diode with 5.7 MV/cm breakdown field. Applied Physics Letters, 2019, 115, .	3.3	76
26	Analysis of Recombination Mechanisms in RbF-Treated CIGS Solar Cells. IEEE Journal of Photovoltaics, 2019, 9, 313-318.	2.5	58
27	Evaluation of Low-Temperature Saturation Velocity in β -(Al _x Ga _{1-x}) ₂ O ₃ /Ga ₂ O ₃ Modulation-Doped Field-Effect Transistors. IEEE Transactions on Electron Devices, 2019, 66, 1574-1578.	3.0	66
28	Investigation of Trap-Induced Threshold Voltage Instability in GaN-on-Si MISHEMTs. IEEE Transactions on Electron Devices, 2019, 66, 890-895.	3.0	15
29	High-performance p-type multicrystalline silicon (mc-Si): Its characterization and projected performance in PERC solar cells. Solar Energy, 2018, 175, 68-74.	6.1	17
30	High Al-Content AlGaN Transistor With 0.5 A/mm Current Density and Lateral Breakdown Field Exceeding 3.6 MV/cm. IEEE Electron Device Letters, 2018, 39, 256-259.	3.9	46
31	Deep level defects in Ge-doped (010) $\hat{\Gamma}^2$ -Ga ₂ O ₃ layers grown by plasma-assisted molecular beam epitaxy. Journal of Applied Physics, 2018, 123, .	2.5	91
32	Correlative Defect Characterization in Semiconductors via Electron Channeling Contrast Imaging and Scanning Deep Level Transient Spectroscopy. Microscopy and Microanalysis, 2018, 24, 1056-1057.	0.4	0
33	Characterization of Electronic Defects in RbF treated CIGS Solar cells. , 2018, , .		1
34	Impact of moisture ingress on the degradation and trap spectrum in Cu(In,Ga)Se ₂ solar cells. , 2018, , .		1
35	Effect of buffer iron doping on delta-doped $\hat{\Gamma}^2$ -Ga ₂ O ₃ metal semiconductor field effect transistors. Applied Physics Letters, 2018, 113, .	3.3	54
36	Characterization of traps in InAlN by optically and thermally stimulated deep level defect spectroscopies. Journal of Applied Physics, 2018, 124, .	2.5	3

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37	Trapping Effects in Si-Doped Ga_2O_3 MESFETs on an Fe-Doped Ga_2O_3 Substrate. IEEE Electron Device Letters, 2018, 39, 1042-1045.	3.9	78
38	Characterization of Sub-Bandgap Energy States in $\text{CuIn}_x\text{Ga}_{(1-x)}\text{Se}_2$ and Transparent Conducting Oxides with Electron Energy-Loss Spectroscopy. Microscopy and Microanalysis, 2018, 24, 456-457.	0.4	0
39	Spatial correlation of the EC-0.57 eV trap state with edge dislocations in epitaxial n-type gallium nitride. Journal of Applied Physics, 2018, 123, .	2.5	11
40	Influence of metal choice on (010) $\hat{\Gamma}^2$ - Ga_2O_3 Schottky diode properties. Applied Physics Letters, 2017, 110, .	3.3	146
41	In Situ and Ex Situ Investigations of KF Postdeposition Treatment Effects on CIGS Solar Cells. IEEE Journal of Photovoltaics, 2017, 7, 665-669.	2.5	43
42	Modulation-doped $\hat{\Gamma}^2$ - $(\text{Al}_{0.2}\text{Ga}_{0.8})_2\text{O}_3/\text{Ga}_2\text{O}_3$ field-effect transistor. Applied Physics Letters, 2017, 111, .	3.3	252
43	Large-area SnSe_2/GaN heterojunction diodes grown by molecular beam epitaxy. Applied Physics Letters, 2017, 111, .	3.3	11
44	Impact of Surface Treatment on Interface States of ALD $\text{Al}_2\text{O}_3/\text{GaN}$ Interfaces. ECS Journal of Solid State Science and Technology, 2017, 6, P489-P494.	1.8	9
45	Detecting Sub Bandgap Energies in CIGS with Electron Energy-Loss Spectroscopy. Microscopy and Microanalysis, 2017, 23, 1546-1547.	0.4	0
46	Nanoscale Detection of Deep Levels in CIGS using Electron Energy Loss Spectroscopy. , 2017, , .		0
47	Role of $E_v+0.98$ eV trap in light soaking-induced short circuit current instability in CIGS solar cells. , 2017, , .		6
48	Investigation of traps density and position in alkali treated $\text{Cu}(\text{In,Ga})\text{Se}_2$ thin films and solar cells. , 2017, , .		0
49	High-Field Stress, Low-Frequency Noise, and Long-Term Reliability of AlGaIn/GaN HEMTs. IEEE Transactions on Device and Materials Reliability, 2016, 16, 282-289.	2.0	25
50	Identifying the source of reduced performance in 1-stage-grown $\text{Cu}(\text{In,Ga})\text{Se}_2$ solar cells. , 2016, , .		3
51	Electrical and structural characterizations of crystallized $\text{Al}_2\text{O}_3/\text{GaN}$ interfaces formed by <i>in situ</i> metalorganic chemical vapor deposition. Journal of Applied Physics, 2016, 119, .	2.5	10
52	Correlation of proton irradiation induced threshold voltage shifts to deep level traps in AlGaIn/GaN heterostructures. Journal of Applied Physics, 2016, 119, .	2.5	35
53	Deep level defects throughout the bandgap of (010) $\hat{\Gamma}^2$ - Ga_2O_3 detected by optically and thermally stimulated defect spectroscopy. Applied Physics Letters, 2016, 108, .	3.3	222
54	Impact of the Ga/In ratio on defects in $\text{Cu}(\text{In,Ga})\text{Se}_2$. , 2016, , .		7

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55	Deep level traps in semi-polar n-GaN grown on patterned sapphire substrate by metalorganic vapor phase epitaxy. <i>Physica Status Solidi (B): Basic Research</i> , 2016, 253, 2225-2229.	1.5	5
56	Investigation of trapping effects on AlGaIn/GaN HEMT under DC accelerated life testing. , 2016, , .		4
57	Evidence for causality between GaN RF HEMT degradation and the EC-0.57 eV trap in GaN. <i>Microelectronics Reliability</i> , 2016, 56, 45-48.	1.7	10
58	Direct nm-scale spatial mapping of traps in CIGS. , 2015, , .		0
59	Layer-transferred MoS ₂ /GaN PN diodes. <i>Applied Physics Letters</i> , 2015, 107, .	3.3	69
60	Thermal stability of deep level defects induced by high energy proton irradiation in n-type GaN. <i>Journal of Applied Physics</i> , 2015, 118, .	2.5	23
61	Proton irradiation-induced traps causing V_{T} instabilities and RF degradation in GaN HEMTs. , 2015, , .		5
62	Investigations of metamorphic (Al)GaInP for III-V multijunction photovoltaics. , 2015, , .		5
63	Effects of Applied Bias and High Field Stress on the Radiation Response of GaN/AlGaIn HEMTs. <i>IEEE Transactions on Nuclear Science</i> , 2015, 62, 2423-2430.	2.0	84
64	Proton irradiation effects on deep level states in Mg-doped p-type GaN grown by ammonia-based molecular beam epitaxy. <i>Applied Physics Letters</i> , 2015, 106, .	3.3	32
65	Correlation of a generation-recombination center with a deep level trap in GaN. <i>Applied Physics Letters</i> , 2015, 106, .	3.3	20
66	Direct nm-Scale Spatial Mapping of Traps in CIGS. <i>IEEE Journal of Photovoltaics</i> , 2015, 5, 1482-1486.	2.5	32
67	Growth and electrical characterization of two-dimensional layered MoS ₂ /SiC heterojunctions. <i>Applied Physics Letters</i> , 2014, 105, .	3.3	42
68	Epitaxial growth of large area single-crystalline few-layer MoS ₂ with high space charge mobility of $192 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$. <i>Applied Physics Letters</i> , 2014, 105, .	3.3	57
69	Defects in GaN based transistors. <i>Proceedings of SPIE</i> , 2014, , .	0.8	5
70	Direct Determination of Energy Band Alignments of Ni/Al ₂ O ₃ /GaN MOS Structures Using Internal Photoemission Spectroscopy. <i>Journal of Electronic Materials</i> , 2014, 43, 828-832.	2.2	16
71	Toward a physical understanding of the reliability-limiting $E_{\text{C}}-0.57 \text{ eV}$ trap in GaN HEMTs. , 2014, , .		4
72	Direct comparison of traps in InAlN/GaN and AlGaIn/GaN high electron mobility transistors using constant drain current deep level transient spectroscopy. <i>Applied Physics Letters</i> , 2013, 103, .	3.3	51

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73	Direct observation of 0.57eV trap-related RF output power reduction in AlGaIn/GaN high electron mobility transistors. Solid-State Electronics, 2013, 80, 19-22.	1.4	57
74	Spatially-resolved spectroscopic measurements of 0.57eV traps in AlGaIn/GaN high electron mobility transistors. Applied Physics Letters, 2013, 102, .	3.3	91
75	Interface trap characterization of atomic layer deposition Al ₂ O ₃ /GaN metal-insulator-semiconductor capacitors using optically and thermally based deep level spectroscopies. Journal of Applied Physics, 2013, 113, .	2.5	44
76	Impact of proton irradiation on deep level states in n-GaN. Applied Physics Letters, 2013, 103, .	3.3	59
77	Interface trap evaluation of Pd/Al ₂ O ₃ /GaN metal oxide semiconductor capacitors and the influence of near-interface hydrogen. Applied Physics Letters, 2013, 103, 201607.	3.3	54
78	Deep traps in nonpolar m-plane GaN grown by ammonia-based molecular beam epitaxy. Applied Physics Letters, 2012, 100, .	3.3	36
79	Nm-scale measurements of fast surface potential transients in an AlGaIn/GaN high electron mobility transistor. Applied Physics Letters, 2012, 100, .	3.3	31
80	Influence of V/III growth flux ratio on trap states in m-plane GaN grown by ammonia-based molecular beam epitaxy. Applied Physics Letters, 2012, 101, .	3.3	15
81	Next generation defect characterization in nitride HEMTs. Physica Status Solidi C: Current Topics in Solid State Physics, 2011, 8, 2242-2244.	0.8	33
82	Electrical characterization of n-type Al _{0.30} Ga _{0.70} N Schottky diodes. Journal of Applied Physics, 2011, 109, .	2.5	55
83	Impact of N- and Ga-face polarity on the incorporation of deep levels in n-type GaN grown by molecular beam epitaxy. Applied Physics Letters, 2010, 96, .	3.3	31
84	Effect of nitrogen plasma power on defect levels in Ni/n-GaN Schottky diodes grown by molecular beam epitaxy. Journal of Applied Physics, 2010, 107, .	2.5	11
85	Traps in AlGaInP materials and devices lattice matched to GaAs for multi-junction solar cells. , 2010, , .		12
86	Spatially-discriminating trap characterization methods for HEMTs and their application to RF-stressed AlGaIn/GaN HEMTs. , 2010, , .		30
87	Characterization of traps in AlGaIn/GaN HEMTs with a combined large signal network analyzer/deep level optical spectrometer system. , 2009, , .		3
88	Additive phase noise measurements of AlGaIn/GaN HEMTs using a large signal network analyzer and a tunable monochromatic light source. , 2009, , .		6
89	Comparison of deep level incorporation in ammonia and rf-plasma assisted molecular beam epitaxy n-GaN films. Physica Status Solidi C: Current Topics in Solid State Physics, 2008, 5, 1750-1752.	0.8	52
90	Separation of bulk and surface electron transport in metamorphic InAs layers using quantitative mobility spectrum analysis. Applied Physics Letters, 2008, 93, 062109.	3.3	13

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91	Deep level optical and thermal spectroscopy of traps in n-GaN grown by ammonia molecular beam epitaxy. Applied Physics Letters, 2008, 93, .	3.3	87
92	High-mobility two-dimensional electron gas in InAlAs/InAs heterostructures grown on virtual InAs substrates by molecular-beam epitaxy. Applied Physics Letters, 2007, 90, 012115.	3.3	2
93	Effect of threading dislocation density on Ni ²⁺ -n-GaN Schottky diode I-V characteristics. Journal of Applied Physics, 2006, 100, 023709.	2.5	108
94	A method to determine deep level profiles in highly compensated, wide band gap semiconductors. Journal of Applied Physics, 2005, 97, 083529.	2.5	34
95	Impact of deep levels on the electrical conductivity and luminescence of gallium nitride codoped with carbon and silicon. Journal of Applied Physics, 2005, 98, 053704.	2.5	150
96	Carbon-related Deep States in Compensated n-type and Semi-Insulating GaN:C and their Influence on Yellow Luminescence. Materials Research Society Symposia Proceedings, 2004, 831, 546.	0.1	0
97	Impact of carbon on trap states in n-type GaN grown by metalorganic chemical vapor deposition. Applied Physics Letters, 2004, 84, 374-376.	3.3	164
98	Influence of Growth Parameters on the Deep Level Spectrum in MBE-Grown n-GaN. Materials Research Society Symposia Proceedings, 2003, 798, 778.	0.1	0
99	Identification of Carbon-related Bandgap States in GaN Grown by MOCVD. Materials Research Society Symposia Proceedings, 2003, 798, 536.	0.1	2
100	Impact of Ga/N flux ratio on trap states in n-GaN grown by plasma-assisted molecular-beam epitaxy. Applied Physics Letters, 2002, 80, 805-807.	3.3	56
101	Deep levels and their impact on generation current in Sn-doped InGaAsN. Journal of Applied Physics, 2001, 90, 3405-3408.	2.5	40
102	Influence of metal choice on (010) In^{2+} -Ga ₂ O ₃ Schottky diode properties. , 0, .		1