Aaron Arehart

List of Publications by Year
in descending order

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102 papers	4,020 citations	87888 38 h-index	118850 62 g-index
103 all docs	103 docs citations	103 times ranked	2880 citing authors

#	Article	IF	Citations
1	Modulation-doped Î²-(Al0.2Ga0.8)2O3/Ga2O3 field-effect transistor. Applied Physics Letters, 2017, 111, .	3.3	252
2	Deep level defects throughout the bandgap of (010) Î²-Ga2O3 detected by optically and thermally stimulated defect spectroscopy. Applied Physics Letters, 2016, 108, .	3.3	222
3	Î²-Gallium oxide power electronics. APL Materials, 2022, 10, .	5.1	184
4	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
5	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
6	Influence of metal choice on (010) Î²-Ga2O3 Schottky diode properties. Applied Physics Letters, 2017, 110, .	3.3	146
7	eta -Ga₂O₃ Delta-Doped Field-Effect Transistors With Current Gain Cutoff Frequency of 27 GHz. IEEE Electron Device Letters, 2019, 40, 1052-1055.	3.9	119
8	Effect of threading dislocation density on Niâ•n-GaN Schottky diode I-V characteristics. Journal of Applied Physics, 2006, 100, 023709.	2.5	108
9	Spatially-resolved spectroscopic measurements of Ecâ€‰â¯â€‰0.57â€‰eV traps in AlGaN/GaN high electron mobility transistors. Applied Physics Letters, 2013, 102, .	3.3	91
10	Deep level defects in Ge-doped (010) Î²-Ga2O3 layers grown by plasma-assisted molecular beam epitaxy. Journal of Applied Physics, 2018, 123, .	2.5	91
11	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
12	Effects of Applied Bias and High Field Stress on the Radiation Response of GaN/AlGaN HEMTs. IEEE Transactions on Nuclear Science, 2015, 62, 2423-2430.	2.0	84
13	Breakdown Characteristics of eta -(Al_{0.22}Ga_{0.78})₂O₃/Ga₂O₃ Field-Plated Modulation-Doped Field-Effect Transistors. IEEE Electron Device Letters, 2019, 40, 1241-1244.	3.9	82
14	Impact of deep level defects induced by high energy neutron radiation in Î²-Ga2O3. APL Materials, 2019, 7, .	5.1	80
15	Probing Charge Transport and Background Doping in Metalâ€Organic Chemical Vapor Depositionâ€Grown (010) Î²â€Ga₂O₃. Physica Status Solidi - Rapid Research Letters, 2020, 14, 2000145.	2.4	79
16	Trapping Effects in Si -Doped -Ga₂O₃ MESFETs on an Fe-Doped -Ga₂O₃ Substrate. IEEE Electron Device Letters, 2018, 39, 1042-1045.	3.9	78
17	Metal/BaTiO3/Î²-Ga2O3 dielectric heterojunction diode with 5.7 MV/cm breakdown field. Applied Physics Letters, 2019, 115, .	3.3	76
18	Layer-transferred MoS2/GaN PN diodes. Applied Physics Letters, 2015, 107, .	3.3	69

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19	Evaluation of Low-Temperature Saturation Velocity in <inline-formula> <tex-math notation="LaTeX">eta </tex-math> </inline-formula>-(Al_xGa_{1â€“x})₂O₃/Ga₂O₃ Modulation-Doped Field-Effect Transistors. IEEE Transactions on Electron Devices, 2019, 66, 1574-1578.	3.0	66
20	High electron density Î²-(Al0.17Ga0.83)2O3/Ga2O3 modulation doping using an ultra-thin (1â€‰nm) spacer layer. Journal of Applied Physics, 2020, 127, .	2.5	64
21	Unusual Formation of Point-Defect Complexes in the Ultrawide-Band-Gap Semiconductor <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mi>Î²</mml:mi><mml:mtext>â€’</mml:mtext><mml:msub><mml:mrow><mml:mi>Ga</mml:mi></mml:mrow><mml:mrow><mml:mi mathvariant="normal">O</mml:mi></mml:mrow><mml:mrow><mml:mn>3</mml:mn></mml:mrow></mml:msub></mml:mrow></mml:math>. Physical Review X, 2019, 9, .	3.9	62
22	Impact of proton irradiation on deep level states in n-GaN. Applied Physics Letters, 2013, 103, .	3.3	59
23	Analysis of Recombination Mechanisms in RbF-Treated CIGS Solar Cells. IEEE Journal of Photovoltaics, 2019, 9, 313-318.	2.5	58
24	Direct observation of 0.57eV trap-related RF output power reduction in AlGaN/GaN high electron mobility transistors. Solid-State Electronics, 2013, 80, 19-22.	1.4	57
25	Epitaxial growth of large area single-crystalline few-layer MoS2 with high space charge mobility of 192â€‰cm2 Vâ€’1 sâ€’1. Applied Physics Letters, 2014, 105, .	3.3	57
26	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
27	Electrical characterization of n-type Al0.30Ga0.70N Schottky diodes. Journal of Applied Physics, 2011, 109, .	2.5	55
28	Interface trap evaluation of Pd/Al₂O₃/GaN metal oxide semiconductor capacitors and the influence of near-interface hydrogen. Applied Physics Letters, 2013, 103, 201607.	3.3	54
29	Effect of buffer iron doping on delta-doped Î²-Ga2O3 metal semiconductor field effect transistors. Applied Physics Letters, 2018, 113, .	3.3	54
30	Comparison of deep level incorporation in ammonia and rfâ€plasma assisted molecular beam epitaxy nâ€GaN films. Physica Status Solidi C: Current Topics in Solid State Physics, 2008, 5, 1750-1752.	0.8	52
31	Full bandgap defect state characterization of Î²-Ga2O3 grown by metal organic chemical vapor deposition. APL Materials, 2020, 8, .	5.1	52
32	Direct comparison of traps in InAlN/GaN and AlGaN/GaN high electron mobility transistors using constant drain current deep level transient spectroscopy. Applied Physics Letters, 2013, 103, .	3.3	51
33	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
34	Interface trap characterization of atomic layer deposition Al2O3/GaN metal-insulator-semiconductor capacitors using optically and thermally based deep level spectroscopies. Journal of Applied Physics, 2013, 113, .	2.5	44
35	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
36	Growth and electrical characterization of two-dimensional layered MoS2/SiC heterojunctions. Applied Physics Letters, 2014, 105, .	3.3	42

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37	Mechanism of Si doping in plasma assisted MBE growth of Î²-Ga2O3. Applied Physics Letters, 2019, 115, .	3.3	41
38	Deep levels and their impact on generation current in Sn-doped InGaAsN. Journal of Applied Physics, 2001, 90, 3405-3408.	2.5	40
39	Identification of critical buffer traps in Si Î´-doped Î²-Ga2O3 MESFETs. Applied Physics Letters, 2019, 115, .	3.3	38
40	Deep traps in nonpolar m-plane GaN grown by ammonia-based molecular beam epitaxy. Applied Physics Letters, 2012, 100, .	3.3	36
41	Correlation of proton irradiation induced threshold voltage shifts to deep level traps in AlGaN/GaN heterostructures. Journal of Applied Physics, 2016, 119, .	2.5	35
42	A method to determine deep level profiles in highly compensated, wide band gap semiconductors. Journal of Applied Physics, 2005, 97, 083529.	2.5	34
43	Next generation defect characterization in nitride HEMTs. Physica Status Solidi C: Current Topics in Solid State Physics, 2011, 8, 2242-2244.	0.8	33
44	Proton irradiation effects on deep level states in Mg-doped p-type GaN grown by ammonia-based molecular beam epitaxy. Applied Physics Letters, 2015, 106, .	3.3	32
45	Direct nm-Scale Spatial Mapping of Traps in CIGS. IEEE Journal of Photovoltaics, 2015, 5, 1482-1486.	2.5	32
46	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
47	Nm-scale measurements of fast surface potential transients in an AlGaN/GaN high electron mobility transistor. Applied Physics Letters, 2012, 100, .	3.3	31
48	Influence of neutron irradiation on deep levels in Ge-doped (010) Î²-Ga2O3 layers grown by plasma-assisted molecular beam epitaxy. APL Materials, 2019, 7, .	5.1	31
49	Spatially-discriminating trap characterization methods for HEMTs and their application to RF-stressed AlGaN/GaN HEMTs. , 2010, , .		30
50	Electrostatic Engineering Using Extreme Permittivity Materials for Ultra-Wide Bandgap Semiconductor Transistors. IEEE Transactions on Electron Devices, 2021, 68, 29-35.	3.0	30
51	Probing unintentional Fe impurity incorporation in MOCVD homoepitaxy GaN: Toward GaN vertical power devices. Journal of Applied Physics, 2020, 127, 215707.	2.5	26
52	High-Field Stress, Low-Frequency Noise, and Long-Term Reliability of AlGaN/GaN HEMTs. IEEE Transactions on Device and Materials Reliability, 2016, 16, 282-289.	2.0	25
53	Thermal stability of deep level defects induced by high energy proton irradiation in n-type GaN. Journal of Applied Physics, 2015, 118, .	2.5	23
54	Influence of growth temperature on defect states throughout the bandgap of MOCVD-grown Î² -Ga2O3. Applied Physics Letters, 2020, 117, .	3.3	21

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55	Correlation of a generation-recombination center with a deep level trap in GaN. Applied Physics Letters, 2015, 106, .	3.3	20
56	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
57	Degradation Mechanism in Cu(In,Ga)Se₂ 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
58	Direct Determination of Energy Band Alignments of Ni/Al2O3/GaN MOS Structures Using Internal Photoemission Spectroscopy. Journal of Electronic Materials, 2014, 43, 828-832.	2.2	16
59	Direct Nanoscale Characterization of Deep Levels in AgCuInGaSe₂ Using Electron Energyâ€Loss Spectroscopy in the Scanning Transmission Electron Microscope. Advanced Energy Materials, 2019, 9, 1901612.	19.5	16
60	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
61	Investigation of Trap-Induced Threshold Voltage Instability in GaN-on-Si MISHEMTs. IEEE Transactions on Electron Devices, 2019, 66, 890-895.	3.0	15
62	Defect-mediated metastability and carrier lifetimes in polycrystalline (Ag,Cu)(In,Ga)Se2 absorber materials. Journal of Applied Physics, 2020, 127, .	2.5	14
63	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
64	Traps in AlGaInP materials and devices lattice matched to GaAs for multi-junction solar cells. , 2010, , .		12
65	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
66	Large-area SnSe2/GaN heterojunction diodes grown by molecular beam epitaxy. Applied Physics Letters, 2017, 111, .	3.3	11
67	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
68	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
69	Electrical and structural characterizations of crystallized Al2O3/GaN interfaces formed by in situ metalorganic chemical vapor deposition. Journal of Applied Physics, 2016, 119, .	2.5	10
70	Evidence for causality between GaN RF HEMT degradation and the EC-0.57 eV trap in GaN. Microelectronics Reliability, 2016, 56, 45-48.	1.7	10
71	Impact of Surface Treatment on Interface States of ALD Al₂O₃/GaN Interfaces. ECS Journal of Solid State Science and Technology, 2017, 6, P489-P494.	1.8	9
72	Velocity saturation in La-doped BaSnO3 thin films. Applied Physics Letters, 2019, 115, .	3.3	9

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73	Impact of the Ga/In ratio on defects in Cu(In, Ga)Se<inf>2</inf>. , 2016, , .		7
74	Additive phase noise measurements of AlGaN/GaN HEMTs using a large signal network analyzer and a tunable monochromatic light source. , 2009, , .		6
75	Role of Ev+0.98 Ev trap in light soaking-induced short circuit current instability in CIGS solar cells. , 2017, , .		6
76	Largeâ€Area (Ag,Cu)(In,Ga)Se‹sub›2‹/sub› Thinâ€Film Solar Cells with Increased Bandgap and Reduced Voltage Losses Realized with Bulk Defect Reduction and Frontâ€Grading of the Absorber Bandgap. Solar Rrl, 2022, 6, .	5.8	6
77	Defects in GaN based transistors. Proceedings of SPIE, 2014, , .	0.8	5
78	Proton irradiation-induced traps causing V‹inf›T‹/inf› instabilities and RF degradation in GaN HEMTs. , 2015, , .		5
79	Investigations of metamorphic (Al)GaInP for IIIâ€“V multijunction photovoltaics. , 2015, , .		5
80	Deep level traps in semiâ€polar nâ€GaN grown on patterned sapphire substrate by metalorganic vapor phase epitaxy. Physica Status Solidi (B): Basic Research, 2016, 253, 2225-2229.	1.5	5
81	Impact of Traps on the Adjacent Channel Power Ratios of GaN HEMTs. IEEE Electron Device Letters, 2020, 41, 816-819.	3.9	5
82	Toward a physical understanding of the reliability-limiting E<inf>C</inf>-0.57 eV trap in GaN HEMTs. , 2014, , .		4
83	Investigation of trapping effects on AlGaN/GaN HEMT under DC accelerated life testing. , 2016, , .		4
84	Characterization of traps in AlGaN/GaN HEMTs with a combined large signal network analyzer/deep level optical spectrometer system. , 2009, , .		3
85	Identifying the source of reduced performance in 1-stage-grown Cu(In, Ga)Se<inf>2</inf> solar cells. , 2016, , .		3
86	Characterization of traps in InAlN by optically and thermally stimulated deep level defect spectroscopies. Journal of Applied Physics, 2018, 124, .	2.5	3
87	Identification of Carbon-related Bandgap States in GaN Grown by MOCVD. Materials Research Society Symposia Proceedings, 2003, 798, 536.	0.1	2
88	High-mobility two-dimensional electron gas in InAlAsâˆ•InAs heterostructures grown on virtual InAs substrates by molecular-beam epitaxy. Applied Physics Letters, 2007, 90, 012115.	3.3	2
89	Local trap spectroscopy on cross-sectioned AlGaN/GaN devices with ‹i›in situ‹/i› biasing. Applied Physics Letters, 2019, 114, .	3.3	2
90	Characterization of Electronic Defects in RbF treated CIGS Solar cells. , 2018, , .		1

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91	Impact of moisture ingress on the degradation and trap spectrum in Cu(In,Ga)Se2 solar cells. , 2018, , .		1
92	Influence of metal choice on (010) Î²-Ga2O3 Schottky diode properties. , 0, .		1
93	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
94	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
95	Direct nm-scale spatial mapping of traps in CIGS. , 2015, , .		0
96	Detecting Sub Bandgap Energies in CIGS with Electron Energy-Loss Spectroscopy. Microscopy and Microanalysis, 2017, 23, 1546-1547.	0.4	0
97	Nanoscale Detection of Deep Levels in CIGS using Electron Energy Loss Spectroscopy. , 2017, , .		0
98	Investigation of traps density and position in alkali treated Cu(In,Ga)Se2 thin films and solar cells. , 2017, , .		0
99	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
100	Characterization of Sub-Bandgap Energy States in CuInxGa(i-x)Se2 and Transparent Conducting Oxides with Electron Energy-Loss Spectroscopy. Microscopy and Microanalysis, 2018, 24, 456-457.	0.4	0
101	Optical Characterization of Defects in High-efficiency (Ag, Cu)(In, Ga)Se2. , 2020, , .		0
102	Electrical Properties 3. Springer Series in Materials Science, 2020, , 421-441.	0.6	0