

Tetsu Kachi

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

114
papers

1,945
citations

22
h-index

38
g-index

124
ext. papers

2,318
ext. citations

2.3
avg, IF

5.38
L-index

#	Paper	IF	Citations
114	Encapsulant-Dependent Effects of Long-Term Low-Temperature Annealing on Interstitial Defects in Mg-Ion-Implanted GaN. <i>Journal of Electronic Materials</i> , 2022 , 51, 1731	1.9	
113	Insight into interface electrical properties of metal oxide semiconductor structures fabricated on Mg-implanted GaN activated by ultra-high-pressure annealing. <i>Applied Physics Letters</i> , 2022 , 120, 082103 ³⁻⁴	3.4	1
112	Atomic-scale investigation of implanted Mg in GaN through ultra-high-pressure annealing. <i>Journal of Applied Physics</i> , 2022 , 131, 185701	2.5	0
111	Effect of annealing time and pressure on electrical activation and surface morphology of Mg-implanted GaN annealed at 1300 °C in ultra-high-pressure nitrogen ambient. <i>Applied Physics Express</i> , 2021 , 14, 121004	2.4	6
110	Enhanced activation of Mg ion-implanted GaN at decreasing annealing temperature by prolonging duration. <i>Applied Physics Express</i> , 2021 , 14, 011005	2.4	8
109	Low-temperature annealing behavior of defects in Mg-ion-implanted GaN studied using MOS diodes and monoenergetic positron beam. <i>Japanese Journal of Applied Physics</i> , 2021 , 60, 016502	1.4	5
108	Breakdown Electric Field of GaN p+-n and p-n+ Junction Diodes with Various Doping Concentrations. <i>IEEE Electron Device Letters</i> , 2021 , 1-1	4.4	1
107	Contribution of the carbon-originated hole trap to slow decays of photoluminescence and photoconductivity in homoepitaxial n-type GaN layers. <i>Journal of Applied Physics</i> , 2021 , 129, 115701	2.5	6
106	Mg-implanted bevel edge termination structure for GaN power device applications. <i>Applied Physics Letters</i> , 2021 , 118, 093502	3.4	11
105	X-ray photoelectron spectroscopy study on effects of ultra-high-pressure annealing on surface of Mg-ion-implanted GaN. <i>Japanese Journal of Applied Physics</i> , 2021 , 60, 036503	1.4	2
104	Isochronal annealing study of Mg-implanted p-type GaN activated by ultra-high-pressure annealing. <i>Applied Physics Express</i> , 2021 , 14, 056501	2.4	7
103	Impact ionization coefficients and critical electric field in GaN. <i>Journal of Applied Physics</i> , 2021 , 129, 185703	2.5	23
102	Channeled implantation of magnesium ions in gallium nitride for deep and low-damage doping. <i>Applied Physics Express</i> , 2021 , 14, 066503	2.4	3
101	Inhibition of Mg activation in p-type GaN caused by thin AlGaIn capping layer and impact of designing hydrogen desorption pathway. <i>Applied Physics Express</i> , 2021 , 14, 071001	2.4	1
100	Design and demonstration of nearly-ideal edge termination for GaN p-n junction using Mg-implanted field limiting rings. <i>Applied Physics Express</i> , 2021 , 14, 074002	2.4	8
99	Formation of highly vertical trenches with rounded corners via inductively coupled plasma reactive ion etching for vertical GaN power devices. <i>Applied Physics Letters</i> , 2021 , 118, 102101	3.4	6
98	Impact of channel mobility on design optimization of 600V-class high-speed GaN vertical-trench MOSFETs based on TCAD simulation. <i>Applied Physics Express</i> , 2021 , 14, 094002	2.4	0

97	Nitrogen-displacement-related electron traps in n-type GaN grown on a GaN freestanding substrate. <i>Applied Physics Letters</i> , 2021 , 118, 012106	3.4	8
96	Identification of origin of E C 0.6 eV electron trap level by correlation with iron concentration in n-type GaN grown on GaN freestanding substrate by metalorganic vapor phase epitaxy. <i>Applied Physics Express</i> , 2020 , 13, 071007	2.4	14
95	Defect evolution in Mg ions implanted GaN upon high temperature and ultrahigh N2 partial pressure annealing: Transmission electron microscopy analysis. <i>Journal of Applied Physics</i> , 2020 , 127, 105106	2.5	20
94	Dual-color-sub-bandgap-light-excited isothermal capacitance transient spectroscopy for quick measurement of carbon-related hole trap density in n-type GaN. <i>Japanese Journal of Applied Physics</i> , 2020 , 59, SGGD05	1.4	1
93	Why do electron traps at E C 0.6 eV have inverse correlation with carbon concentrations in n-type GaN layers?. <i>Japanese Journal of Applied Physics</i> , 2020 , 59, 105505	1.4	10
92	Depth profiling of surface damage in n-type GaN induced by inductively coupled plasma reactive ion etching using photo-electrochemical techniques. <i>Applied Physics Express</i> , 2020 , 13, 106505	2.4	3
91	Improvement of channel property of GaN vertical trench MOSFET by compensating nitrogen vacancies with nitrogen plasma treatment. <i>Applied Physics Express</i> , 2020 , 13, 124003	2.4	7
90	Effects of Dosage Increase on Electrical Properties of Metal-Oxide-Semiconductor Diodes with Mg-Ion-Implanted GaN Before Activation Annealing. <i>Physica Status Solidi (B): Basic Research</i> , 2020 , 257, 1900367	1.3	5
89	Overview of carrier compensation in GaN layers grown by MOVPE: toward the application of vertical power devices. <i>Japanese Journal of Applied Physics</i> , 2020 , 59, SA0804	1.4	19
88	Reduction of plasma-induced damage in n-type GaN by multistep-bias etching in inductively coupled plasma reactive ion etching. <i>Applied Physics Express</i> , 2020 , 13, 016505	2.4	15
87	Highly reliable AlSiO gate oxides formed through post-deposition annealing for GaN-based MOS devices. <i>Applied Physics Express</i> , 2020 , 13, 026504	2.4	10
86	Redistribution of Mg and H atoms in Mg-implanted GaN through ultra-high-pressure annealing. <i>Applied Physics Express</i> , 2020 , 13, 086501	2.4	18
85	Effects of ultra-high-pressure annealing on characteristics of vacancies in Mg-implanted GaN studied using a monoenergetic positron beam. <i>Scientific Reports</i> , 2020 , 10, 17349	4.9	9
84	High Pressure Processing of Ion Implanted GaN. <i>Electronics (Switzerland)</i> , 2020 , 9, 1380	2.6	15
83	Progress on and challenges of p-type formation for GaN power devices. <i>Journal of Applied Physics</i> , 2020 , 128, 090901	2.5	30
82	Impacts of high temperature annealing above 1400°C under N2 overpressure to activate acceptors in Mg-implanted GaN 2020 ,		4
81	Electric-field-induced simultaneous diffusion of Mg and H in Mg-doped GaN prepared using ultra-high-pressure annealing. <i>Applied Physics Express</i> , 2019 , 12, 111005	2.4	19
80	Acceptors activation of Mg-ion implanted GaN by ultra-high-pressure annealing 2019 ,		2

79	Highly effective activation of Mg-implanted p-type GaN by ultra-high-pressure annealing. <i>Applied Physics Letters</i> , 2019 , 115, 142104	3.4	58
78	Measurement of avalanche multiplication utilizing Franz-Keldysh effect in GaN p-n junction diodes with double-side-depleted shallow bevel termination. <i>Applied Physics Letters</i> , 2019 , 115, 142101	3.4	14
77	Atomic resolution structural analysis of magnesium segregation at a pyramidal inversion domain in a GaN epitaxial layer. <i>Applied Physics Express</i> , 2019 , 12, 031004	2.4	12
76	Design and Fabrication of GaN p-n Junction Diodes With Negative Beveled-Mesa Termination. <i>IEEE Electron Device Letters</i> , 2019 , 40, 941-944	4.4	45
75	Fully Ion Implanted Normally-Off GaN DMOSFETs with ALD-ALD Gate Dielectrics. <i>Materials</i> , 2019 , 12,	3.5	16
74	Estimation of Impact Ionization Coefficient in GaN by Photomultiplication Measurement Utilizing Franz-Keldysh Effect 2019 ,		2
73	Characterization of hole traps in MOVPE-grown p-type GaN layers using low-frequency capacitance deep-level transient spectroscopy. <i>Japanese Journal of Applied Physics</i> , 2019 , 58, SCCB36	1.4	12
72	Shockley-Read-Hall lifetime in homoepitaxial p-GaN extracted from recombination current in GaN p-n junction diodes. <i>Japanese Journal of Applied Physics</i> , 2019 , 58, SCCB14	1.4	12
71	Impact Ionization Coefficients in GaN Measured by Above- and Sub-Eg Illuminations for p-n Junction 2019 ,		15
70	Quantitative investigation of the lateral diffusion of hydrogen in p-type GaN layers having NPN structures. <i>Applied Physics Express</i> , 2019 , 12, 011006	2.4	11
69	Theoretical prediction of a self-forming gallium oxide layer at an n-type GaN/SiO ₂ interface. <i>Applied Physics Express</i> , 2018 , 11, 031002	2.4	3
68	Sources of carrier compensation in metalorganic vapor phase epitaxy-grown homoepitaxial n-type GaN layers with various doping concentrations. <i>Applied Physics Express</i> , 2018 , 11, 041001	2.4	41
67	The trap states in lightly Mg-doped GaN grown by MOVPE on a freestanding GaN substrate. <i>Journal of Applied Physics</i> , 2018 , 123, 161405	2.5	28
66	Cathodoluminescence Study on Thermal Recovery Process of Mg-Ion Implanted N-Polar GaN. <i>Physica Status Solidi (B): Basic Research</i> , 2018 , 255, 1700379	1.3	14
65	GaN devices for automotive application and their challenges in adoption 2018 ,		2
64	Effects of a photo-assisted electrochemical etching process removing dry-etching damage in GaN. <i>Japanese Journal of Applied Physics</i> , 2018 , 57, 121001	1.4	16
63	The origin of carbon-related carrier compensation in p-type GaN layers grown by MOVPE. <i>Journal of Applied Physics</i> , 2018 , 124, 215701	2.5	46
62	Franz-Keldysh effect in GaN p-n junction diode under high reverse bias voltage. <i>Applied Physics Letters</i> , 2018 , 112, 252104	3.4	13

61	P-type doping of GaN by magnesium ion implantation. <i>Applied Physics Express</i> , 2017 , 10, 016501	2.4	65
60	Formation of helical dislocations in ammonothermal GaN substrate by heat treatment. <i>Semiconductor Science and Technology</i> , 2016 , 31, 034002	1.8	22
59	Experimental Validation of Normally-On GaN HEMT and Its Gate Drive Circuit. <i>IEEE Transactions on Industry Applications</i> , 2015 , 51, 2415-2422	4.3	27
58	State-of-the-art GaN vertical power devices 2015 ,		8
57	Recent progress of GaN power devices for automotive applications. <i>Japanese Journal of Applied Physics</i> , 2014 , 53, 100210	1.4	220
56	Resonant gate driver for normally-on GaN high-electron-mobility transistor 2013 ,		4
55	Experimental validation of newly fabricated normally-on GaN high-electron-mobility transistor 2013 ,		2
54	Reliability Evaluation of Al ₂ O ₃ Deposited by Ozone-Based Atomic Layer Deposition on Dry-Etched n-Type GaN. <i>Japanese Journal of Applied Physics</i> , 2013 , 52, 08JN19	1.4	22
53	Improvement of Current Collapse by Surface Treatment and Passivation Layer in p-GaN Gate GaN High-Electron-Mobility Transistors. <i>Japanese Journal of Applied Physics</i> , 2013 , 52, 04CF08	1.4	14
52	Current status of GaN power devices. <i>IEICE Electronics Express</i> , 2013 , 10, 20132005-20132005	0.5	25
51	As-grown deep-level defects in n-GaN grown by metal-organic chemical vapor deposition on freestanding GaN. <i>Journal of Applied Physics</i> , 2012 , 112, 053513	2.5	31
50	GaN power device and reliability for automotive applications 2012 ,		20
49	Reduction of peak electric field strength in GaN-HEMT with carbon doping layer. <i>Physica Status Solidi C: Current Topics in Solid State Physics</i> , 2012 , 9, 915-918		3
48	Study on post-etching processes for p-type GaN using HAX-PES. <i>Physica Status Solidi C: Current Topics in Solid State Physics</i> , 2012 , 9, 927-930		4
47	Interface Properties of Al ₂ O ₃ /n-GaN Structures with Inductively Coupled Plasma Etching of GaN Surfaces. <i>Japanese Journal of Applied Physics</i> , 2012 , 51, 060201	1.4	9
46	Interface Properties of Al ₂ O ₃ /n-GaN Structures with Inductively Coupled Plasma Etching of GaN Surfaces. <i>Japanese Journal of Applied Physics</i> , 2012 , 51, 060201	1.4	2
45	Study of etching-induced damage in GaN by hard X-ray photoelectron spectroscopy. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2011 , 208, 1541-1544	1.6	30
44	Study on leakage current of pn diode on GaN substrate at reverse bias. <i>Physica Status Solidi C: Current Topics in Solid State Physics</i> , 2011 , 8, 2512-2514		14

43	Automotive Applications of GaN Power Devices 2011 ,		13
42	Loss evaluation of an AC-AC direct converter with a new GaN HEMT SPICE model 2011 ,		11
41	Electrical Characterization of GaN p-n Junctions Grown on Freestanding GaN Substrates by Metal-Organic Chemical Vapor Deposition. <i>Japanese Journal of Applied Physics</i> , 2011 , 50, 031005	1.4	
40	Electrical Characterization of GaN p-n Junctions Grown on Freestanding GaN Substrates by Metal-Organic Chemical Vapor Deposition. <i>Japanese Journal of Applied Physics</i> , 2011 , 50, 031005	1.4	
39	Performance verification of a novel soft switching three-phase utility frequency AC to high frequency AC direct power converter with PFC function for industrial IH applications 2010 ,		5
38	Electrical Properties of Metal-Insulator-Semiconductor Capacitors on Freestanding GaN Substrate. <i>Japanese Journal of Applied Physics</i> , 2010 , 49, 04DF08	1.4	11
37	Advanced SiC and GaN power electronics for automotive systems 2010 ,		22
36	Mg segregation in a (1 1̄0 1) GaN grown on a 7̄-off-axis (0 0 1) Si substrate by MOVPE. <i>Journal of Crystal Growth</i> , 2009 , 311, 2883-2886	1.6	9
35	GaN-Based Trench Gate Metal Oxide Semiconductor Field-Effect Transistor Fabricated with Novel Wet Etching. <i>Applied Physics Express</i> , 2008 , 1, 021104	2.4	184
34	Characterization of Traps in GaN pn Junctions Grown by MOCVD on GaN Substrate Using Deep-Level Transient Spectroscopy. <i>Materials Science Forum</i> , 2008 , 600-603, 1297-1300	0.4	1
33	Reduction of Mg segregation in a metalorganic vapor phase epitaxial grown GaN layer by a low-temperature AlN interlayer. <i>Journal of Applied Physics</i> , 2008 , 104, 014906	2.5	20
32	GaN Power Devices for Automotive Applications 2007 ,		10
31	Vertical device operation of AlGaIn/GaN HEMTs on free-standing n-GaN substrates 2007 ,		6
30	Evaluation of dislocation-related defects in GaN using deep-level transient spectroscopy. <i>Physica Status Solidi C: Current Topics in Solid State Physics</i> , 2007 , 4, 2568-2571		19
29	Excess Carrier Lifetime Measurement for Plasma-Etched GaN by the Microwave Photoconductivity Decay Method. <i>Japanese Journal of Applied Physics</i> , 2007 , 46, 35-39	1.4	9
28	A Vertical Insulated Gate AlGaIn/GaN Heterojunction Field-Effect Transistor. <i>Japanese Journal of Applied Physics</i> , 2007 , 46, L503-L505	1.4	139
27	n-type AlN layer by Si ion implantation. <i>Applied Physics Letters</i> , 2006 , 88, 202106	3.4	10
26	Effect of p-type activation ambient on acceptor levels in Mg-doped GaN. <i>Journal of Applied Physics</i> , 2004 , 96, 415-419	2.5	13

25	n-Type Doping Characteristics of O-Implanted AlGaIn. <i>Journal of the Electrochemical Society</i> , 2004 , 151, G801	3.9	5
24	High-Temperature Annealing Behavior of p-Type Doping Characteristics in Mg-Doped GaN. <i>Journal of the Electrochemical Society</i> , 2004 , 151, G574	3.9	0
23	N-type implantation doping of GaN. <i>Materials Science in Semiconductor Processing</i> , 2003 , 6, 515-517	4.3	5
22	Electrical properties of thermally oxidized p-GaN metaloxide semiconductor diodes. <i>Applied Physics Letters</i> , 2003 , 82, 2443-2445	3.4	28
21	Characteristics of SiO ₂ /n-GaN interfaces with Ga ₂ O ₃ interlayers. <i>Applied Physics Letters</i> , 2003 , 83, 4336-4338	3.4	35
20	Effect of Be ⁺⁺ O ⁺ coimplantation on Be acceptors in GaN. <i>Applied Physics Letters</i> , 2003 , 82, 2082-2084	3.4	11
19	Defects in N/Ge coimplanted GaN studied by positron annihilation. <i>Journal of Applied Physics</i> , 2002 , 91, 884-886	2.5	13
18	N/Ge Co-Implantation into GaN for N-Type Doping. <i>Japanese Journal of Applied Physics</i> , 2002 , 41, 2522-2527	2.5	2
17	Growth of 3C-SiC Layers on Si Substrates with a Novel Stress Relaxation Structure. <i>Japanese Journal of Applied Physics</i> , 2001 , 40, 5907-5908	1.4	6
16	Current deep-level transient spectroscopy investigation of acceptor levels in Mg-doped GaN. <i>Applied Physics Letters</i> , 2001 , 79, 1631-1633	3.4	17
15	Effect of C and B sequential implantation on the B acceptors in 4H ₂ SiC. <i>Journal of Applied Physics</i> , 2001 , 89, 5961-5964	2.5	11
14	Effect of N/Ge co-implantation on the Ge activation in GaN. <i>Applied Physics Letters</i> , 2001 , 79, 1468-1470	3.4	19
13	Effect of C/B sequential implantation on the B acceptors in 4H ₂ SiC. <i>Journal of Crystal Growth</i> , 2000 , 210, 283-287	1.6	3
12	A new buffer layer for high quality GaN growth by metalorganic vapor phase epitaxy. <i>Applied Physics Letters</i> , 1998 , 72, 704-706	3.4	49
11	A quantum structure for high-temperature operation of AlGaAs lasers: Multiple-quantum barrier and multiple-quantum well in active region. <i>Applied Physics Letters</i> , 1996 , 68, 3704-3706	3.4	4
10	Low-pressure metalorganic vapor phase epitaxy of GaAs using monoethylarsine. <i>Applied Physics Letters</i> , 1994 , 65, 3374-3376	3.4	
9	Excitation Spectra of the Visible Photoluminescence of Anodized Porous Silicon. <i>Japanese Journal of Applied Physics</i> , 1992 , 31, L207-L209	1.4	30
8	Investigation of diethylarsine as a replacement for arsine in organometallic vapor-phase epitaxy of GaAs. <i>Journal of Applied Physics</i> , 1990 , 68, 3750-3752	2.5	1

7	New Approach to Low-Temperature Epitaxial Growth of GaAs by Photostimulated Metalorganic Chemical Vapor Deposition. <i>Japanese Journal of Applied Physics</i> , 1988 , 27, L1556-L1558	1.4	6
6	Assignments of optically pumped CD ₃ OH laser lines. <i>Journal of Infrared, Millimeter and Terahertz Waves</i> , 1983 , 4, 767-777		9
5	Experimental test of CH ₃ OH laser line assignments with competitive and cascade couplings. <i>Infrared Physics</i> , 1982 , 22, 337-341		4
4	Assignments of optically pumped CH ₃ OD laser lines. <i>Journal of Infrared, Millimeter and Terahertz Waves</i> , 1982 , 3, 401-408		12
3	Photoionization cross section ratio of nitrogen-site carbon in GaN under sub-bandgap-light irradiation determined by isothermal capacitance transient spectroscopy. <i>Applied Physics Express</i> ,	2.4	1
2	Effects of the sequential implantation of Mg and N ions into GaN for p-type doping. <i>Applied Physics Express</i> ,	2.4	4
1	Effect of Ultra-High-Pressure Annealing on Defect Reactions in Ion-Implanted GaN Studied by Positron Annihilation. <i>Physica Status Solidi (B): Basic Research</i> , 2200183	1.3	1