Umesh K Mishra

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217	6,910	38	75
papers	citations	h-index	g-index
231	7,851	3.3	5.79
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#	Paper	IF	Citations
217	GaN-Based RF Power Devices and Amplifiers. *Proceedings of the IEEE*, **2008**, 96, 287-305	14.3	1051
216	High quantum efficiency InGaN/GaN solar cells with 2.95 eV band gap. *Applied Physics Letters*, **2008**, 93, 143502	3.4	340
215	Growth of Fe doped semi-insulating GaN by metalorganic chemical vapor deposition. *Applied Physics Letters*, **2002**, 81, 439-441	3.4	294
214	Enhanced Mg doping efficiency in Al0.2Ga0.8N/GaN superlattices. *Applied Physics Letters*, **1999**, 74, 3681-3683	3.4	238
213	Dislocation scattering in a two-dimensional electron gas. *Applied Physics Letters*, **2000**, 76, 1707-1709	3.4	198
212	N-polar GaN�AlGaN�GaN high electron mobility transistors. *Journal of Applied Physics*, **2007**, 102, 044501	2.5	176
211	High internal and external quantum efficiency InGaN/GaN solar cells. *Applied Physics Letters*, **2011**, 98, 021102	3.4	155
210	Polarization effects in AlGaN/GaN and GaN/AlGaN/GaN heterostructures. *Journal of Applied Physics* , **2003**, 93, 10114-10118	2.5	151
209	Polarization-enhanced Mg doping of AlGaN/GaN superlattices. *Applied Physics Letters*, **1999**, 75, 2444-2446	3.4	134
208	Recent progress in metal-organic chemical vapor deposition of $left(000bar{1} right)$ N-polar group-III nitrides. *Semiconductor Science and Technology*, **2014**, 29, 113001	1.8	129
207	N-polar GaN epitaxy and high electron mobility transistors. *Semiconductor Science and Technology*, **2013**, 28, 074009	1.8	124
206	CAVET on Bulk GaN Substrates Achieved With MBE-Regrown AlGaN/GaN Layers to Suppress Dispersion. *IEEE Electron Device Letters*, **2012**, 33, 41-43	4.4	118
205	Enhancement and Depletion Mode AlGaN/GaN CAVET With Mg-Ion-Implanted GaN as Current Blocking Layer. *IEEE Electron Device Letters*, **2008**, 29, 543-545	4.4	107
204	In Situ Oxide, GaN Interlayer-Based Vertical Trench MOSFET (OG-FET) on Bulk GaN substrates. *IEEE Electron Device Letters*, **2017**, 38, 353-355	4.4	99
203	Demonstration of Constant 8 W/mm Power Density at 10, 30, and 94 GHz in State-of-the-Art Millimeter-Wave N-Polar GaN MISHEMTs. *IEEE Transactions on Electron Devices*, **2018**, 65, 45-50	2.9	98
202	Integrated Optical and Electrical Analysis: Identifying Location and Properties of Traps in AlGaN/GaN HEMTs During Electrical Stress. *IEEE Electron Device Letters*, **2010**, 31, 662-664	4.4	97
201	Two-photon absorption study of GaN. *Applied Physics Letters*, **2000**, 76, 439-441	3.4	82

200	Distribution of donor states on etched surface of AlGaN/GaN heterostructures. *Journal of Applied Physics*, **2010**, 108, 063719	2.5	66
199	Depletion region effects in Mg-doped GaN. *Journal of Applied Physics*, **2000**, 87, 770-775	2.5	66
198	Multi-color light emitting diode using polarization-induced tunnel junctions. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2007**, 4, 2830-2833		63
197	Effects of oxidation on surface chemical states and barrier height of AlGaN/GaN heterostructures. *Applied Physics Letters*, **2010**, 97, 222104	3.4	61
196	Preparation of indium nitride micro- and nanostructures by ammonolysis of indium oxide. *Journal of Materials Chemistry*, **2004**, 14, 637		59
195	N-Polar GaN Cap MISHEMT With Record Power Density Exceeding 6.5 W/mm at 94 GHz. *IEEE Electron Device Letters*, **2017**, 38, 359-362	4.4	56
194	Atom probe analysis of AlN interlayers in AlGaN/AlN/GaN heterostructures. *Applied Physics Letters*, **2013**, 102, 111603	3.4	55
193	Effect of doping and polarization on carrier collection in InGaN quantum well solar cells. *Applied Physics Letters*, **2011**, 98, 243507	3.4	55
192	Low nonalloyed Ohmic contact resistance to nitride high electron mobility transistors using N-face growth. *Applied Physics Letters*, **2007**, 91, 232103	3.4	53
191	Effect of dislocations on electron mobility in AlGaN/GaN and AlGaN/AlN/GaN heterostructures. *Applied Physics Letters*, **2012**, 101, 262102	3.4	51
190	Scanning second-harmonic/third-harmonic generation microscopy of gallium nitride. *Applied Physics Letters*, **2000**, 77, 2331-2333	3.4	51
189	N-Polar GaN HEMTs Exhibiting Record Breakdown Voltage Over 2000 V and Low Dynamic On-Resistance. *IEEE Electron Device Letters*, **2018**, 39, 1014-1017	4.4	50
188	OG-FET: An In-Situ ${O}$ xide, ${G}$ aN Interlayer-Based Vertical Trench MOSFET. *IEEE Electron Device Letters*, **2016**, 37, 1601-1604	4.4	49
187	Effect of quantum well cap layer thickness on the microstructure and performance of InGaN/GaN solar cells. *Applied Physics Letters*, **2012**, 100, 161101	3.4	47
186	Mass transport regrowth of GaN for ohmic contacts to AlGaN/GaN. *Applied Physics Letters*, **2001**, 78, 2876-2878	3.4	45
185	Growth and characterization of N-polar GaN films on SiC by metal organic chemical vapor deposition. *Journal of Applied Physics*, **2008**, 104, 024301	2.5	44
184	W-Band Power Performance of SiN-Passivated N-Polar GaN Deep Recess HEMTs. *IEEE Electron Device Letters*, **2020**, 41, 349-352	4.4	42
183	p-n junctions on Ga-face GaN grown by NH3 molecular beam epitaxy with low ideality factors and low reverse currents. *Applied Physics Letters*, **2010**, 97, 222113	3.4	41

182	Design of High-Aspect-Ratio T-Gates on N-Polar GaN/AlGaN MIS-HEMTs for High f_{max}. *IEEE Electron Device Letters*, **2012**, 33, 785-787	4.4	40
181	Demonstrating >1.4 kV OG-FET performance with a novel double field-plated geometry and the successful scaling of large-area devices **2017**,		39
180	Polarity inversion of N-face GaN using an aluminum oxide interlayer. *Journal of Applied Physics*, **2010**, 108, 123710	2.5	38
179	Gallium Nitride Powders from Ammonolysis: Influence of Reaction Parameters on Structure and Properties. *Chemistry of Materials*, **2004**, 16, 5088-5095	9.6	37
178	A comparative study of effects of SiNx deposition method on AlGaN/GaN heterostructure field-effect transistors. *Applied Physics Letters*, **2009**, 94, 053513	3.4	36
177	Surface passivation of n-GaN by nitrided-thin-Ga2O3�SiO2 and Si3N4 films. *Journal of Applied Physics*, **2004**, 96, 2674-2680	2.5	36
176	Examination of tunnel junctions in the AlGaN/GaN system: Consequences of polarization charge. *Applied Physics Letters*, **2000**, 77, 1867	3.4	35
175	Capacitance-voltage characterization of interfaces between positive valence band offset dielectrics and wide bandgap semiconductors. *Journal of Applied Physics*, **2013**, 114, 083718	2.5	34
174	Large-Area In-Situ Oxide, GaN Interlayer-Based Vertical Trench MOSFET (OG-FET). *IEEE Electron Device Letters*, **2018**, 39, 711-714	4.4	33
173	Effects of H2O Pretreatment on the Capacitance�Voltage Characteristics of Atomic-Layer-Deposited Al2O3 on Ga-Face GaN Metal�Oxide�Semiconductor Capacitors. *Journal of Electronic Materials*, **2013**, 42, 33-39	1.9	32
172	Plasma Treatment for Leakage Reduction in AlGaN/GaN and GaN Schottky Contacts. *IEEE Electron Device Letters*, **2008**, 29, 297-299	4.4	32
171	V-Gate GaN HEMTs With Engineered Buffer for Normally Off Operation. *IEEE Electron Device Letters*, **2008**, 29, 1184-1186	4.4	32
170	Dipole scattering in polarization induced III�V nitride two-dimensional electron gases. *Journal of Applied Physics*, **2000**, 88, 4734	2.5	32
169	Impact of $hbox{CF}_{4}$ Plasma Treatment on GaN. *IEEE Electron Device Letters*, **2007**, 28, 781-783	4.4	31
168	Microwave Power Performance N-Polar GaN MISHEMTs Grown by MOCVD on SiC Substrates Using an $hbox{Al}_{2}hbox{O}_{3}$ Etch-Stop Technology. *IEEE Electron Device Letters*, **2012**, 33, 44-46	4.4	30
167	Ion versus pH sensitivity of ungated AlGaN/GaN heterostructure-based devices. *Applied Physics Letters*, **2010**, 97, 012108	3.4	30
166	Indium segregation in N-polar InGaN quantum wells evidenced by energy dispersive X-ray spectroscopy and atom probe tomography. *Applied Physics Letters*, **2017**, 110, 143101	3.4	29
165	Impact of Moisture and Fluorocarbon Passivation on the Current Collapse of AlGaN/GaN HEMTs. *IEEE Electron Device Letters*, **2012**, 33, 1378-1380	4.4	29

164	Correlation between threading dislocation density and sheet resistance of AlGaN/AlN/GaN heterostructures grown by plasma-assisted molecular beam epitaxy. *Applied Physics Letters*, **2012**, 100, 262102	3.4	28
163	Two-Stage High-Gain High-Power Distributed Amplifier Using Dual-Gate GaN HEMTs. *IEEE Transactions on Microwave Theory and Techniques*, **2011**, 59, 2059-2063	4.1	28
162	Effect of Dielectric Thickness on Power Performance of AlGaN/GaN HEMTs . *IEEE Electron Device Letters*, **2009**, 30, 313-315	4.4	28
161	N-Polar GaN MIS-HEMTs on Sapphire With High Combination of Power Gain Cutoff Frequency and Three-Terminal Breakdown Voltage. *IEEE Electron Device Letters*, **2016**, 37, 77-80	4.4	27
160	Ca detection utilising AlGaN/GaN transistors with ion-selective polymer membranes. *Analytica Chimica Acta*, **2017**, 987, 105-110	6.6	27
159	Demonstration of a GaN/AlGaN Superlattice-Based p-Channel FinFET With High ON-Current. *IEEE Electron Device Letters*, **2020**, 41, 220-223	4.4	27
158	Growth and characterization of In-polar and N-polar InAlN by metal organic chemical vapor deposition. *Journal of Applied Physics*, **2010**, 107, 033509	2.5	26
157	N-Polar InAlN/AlN/GaN MIS-HEMTs. *IEEE Electron Device Letters*, **2010**, 31, 800-802	4.4	26
156	N-Polar GaN MIS-HEMTs With a 12.1-W/mm Continuous-Wave Output Power Density at 4 GHz on Sapphire Substrate. *IEEE Electron Device Letters*, **2011**, 32, 635-637	4.4	26
155	Generation of coherent acoustic phonons in strained GaN thin films. *Applied Physics Letters*, **2001**, 79, 3361-3363	3.4	26
154	Model to explain the behavior of 2DEG mobility with respect to charge density in N-polar and Ga-polar AlGaN-GaN heterostructures. *Journal of Applied Physics*, **2016**, 120, 115302	2.5	26
153	Enhancement-Mode N-Polar GaN MOS-HFET With 5-nm GaN Channel, 510-mS/mm g_{m}, and 0.66-$Omegacdot hbox{mm}$ $R_{rm on}$. *IEEE Electron Device Letters*, **2012**, 33, 26-28	4.4	25
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151	Barrier height inhomogeneity and its impact on (Al,In,Ga)N Schottky diodes. *Journal of Applied Physics*, **2016**, 119, 064501	2.5	25
150	Self-Aligned N-Polar GaN/InAlN MIS-HEMTs With Record Extrinsic Transconductance of 1105 mS/mm. *IEEE Electron Device Letters*, **2012**, 33, 794-796	4.4	24
149	Design of integrated III-nitride/non-III-nitride tandem photovoltaic devices. *Journal of Applied Physics*, **2012**, 111, 054503	2.5	24
148	Molecular beam epitaxy of InAlN lattice-matched to GaN with homogeneous composition using ammonia as nitrogen source. *Applied Physics Letters*, **2012**, 100, 072107	3.4	24
147	High power N-face GaN high electron mobility transistors grown by molecular beam epitaxy with optimization of AlN nucleation. *Applied Physics Letters*, **2009**, 94, 182103	3.4	24

146	Channeling as a mechanism for dry etch damage in GaN. *Applied Physics Letters*, **2000**, 76, 3941-3943	3.4	24
145	Growth of strain-relaxed InGaN on micrometer-sized patterned compliant GaN pseudo-substrates. *Applied Physics Letters*, **2020**, 116, 111101	3.4	23
144	Interface states at the SiN/AlGaN interface on GaN heterojunctions for Ga and N-polar material. *Journal of Applied Physics*, **2012**, 111, 043718	2.5	23
143	Electrical properties of N-polar AlGaN/GaN high electron mobility transistors grown on SiC by metalorganic chemical vapor deposition. *Applied Physics Letters*, **2009**, 94, 153506	3.4	23
142	RF Performance of N-Polar AlGaN/GaN MIS-HEMTs Grown by MOCVD on Sapphire Substrate. *IEEE Electron Device Letters*, **2009**, 30, 584-586	4.4	21
141	Synthesis of luminescing (In,Ga)N nanoparticles from an inorganic ammonium fluoride precursor. *Journal of Materials Chemistry*, **2005**, 15, 1891		21
140	Suppression of Mg propagation into subsequent layers grown by MOCVD. *Journal of Applied Physics* , **2017**, 121, 025106	2.5	20
139	Influence of AlN interlayer on the anisotropic electron mobility and the device characteristics of N-polar AlGaN/GaN metal-insulator-semiconductor-high electron mobility transistors grown on vicinal substrates. *Journal of Applied Physics*, **2010**, 108, 074502	2.5	20
138	High-Performance N-Face GaN Microwave MIS-HEMTs With > 70% Power-Added Efficiency. *IEEE Electron Device Letters*, **2009**, 30, 802-804	4.4	20
137	Properties of In-Doped ZnO Films Grown by Metalorganic Chemical Vapor Deposition on GaN(0001) Templates. *Journal of Electronic Materials*, **2010**, 39, 608-611	1.9	20
136	Scaled Self-Aligned N-Polar GaN/AlGaN MIS-HEMTs With f_{T} of 275 GHz. *IEEE Electron Device Letters*, **2012**, 33, 961-963	4.4	19
135	Very high channel conductivity in ultra-thin channel N-polar GaN/(AlN, InAlN, AlGaN) high electron mobility hetero-junctions grown by metalorganic chemical vapor deposition. *Applied Physics Letters*, **2013**, 102, 232104	3.4	19
134	Experimental Demonstration of III-Nitride Hot-Electron Transistor With GaN Base. *IEEE Electron Device Letters*, **2011**, 32, 1212-1214	4.4	19
133	Color-tunable . *Applied Physics Letters*, **2020**, 117, 061105	3.4	19
132	Elimination of columnar microstructure in N-face InAlN, lattice-matched to GaN, grown by plasma-assisted molecular beam epitaxy in the N-rich regime. *Applied Physics Letters*, **2014**, 104, 072107	3.4	18
131	Engineering the (In, Al, Ga)N back-barrier to achieve high channel-conductivity for extremely scaled channel-thicknesses in N-polar GaN high-electron-mobility-transistors. *Applied Physics Letters*, **2014**, 104, 092107	3.4	18
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129	Neutron irradiation effects on gallium nitride-based Schottky diodes. *Applied Physics Letters*, **2013**, 103, 162106	3.4	18

128	MOCVD-Grown AlGaN Buffer GaN HEMTs With V-Gates for Microwave Power Applications. *IEEE Electron Device Letters*, **2009**, 30, 910-912	4.4	18
127	Electrical and structural characterization of Mg-doped p-type Al0.69Ga0.31N films on SiC substrate. *Journal of Applied Physics*, **2007**, 101, 053717	2.5	18
126	N-Polar Deep Recess MISHEMTs With Record 2.9 W/mm at 94 GHz. *IEEE Electron Device Letters*, **2016**, 1-1	4.4	18
125	High Linearity and High Gain Performance of N-Polar GaN MIS-HEMT at 30 GHz. *IEEE Electron Device Letters*, **2020**, 41, 681-684	4.4	17
124	Enhancement-Mode m-plane AlGaN/GaN Heterojunction Field-Effect Transistors with +3 V of Threshold Voltage Using Al2O3 Deposited by Atomic Layer Deposition. *Applied Physics Express*, **2011**, 4, 096501	2.4	17
123	Metal-organic chemical vapor deposition of high quality, high indium composition N-polar InGaN layers for tunnel devices. *Journal of Applied Physics*, **2017**, 121, 185707	2.5	16
122	Improved Dynamic RON of GaN Vertical Trench MOSFETs (OG-FETs) Using TMAH Wet Etch. *IEEE Electron Device Letters*, **2018**, 39, 1030-1033	4.4	16
121	Observation of positive thermal power coefficient in InGaN/GaN quantum well solar cells. *Applied Physics Letters*, **2011**, 99, 071104	3.4	16
120	Small-signal model extraction of mm-wave N-polar GaN MISHEMT exhibiting record performance: Analysis of gain and validation by 94 GHz loadpull **2016**,		15
119	Investigation of nitrogen polar p-type doped GaN/AlxGa(1-x)N superlattices for applications in wide-bandgap p-type field effect transistors. *Applied Physics Letters*, **2019**, 115, 172105	3.4	15
118	Anomalous Output Conductance in N-Polar GaN High Electron Mobility Transistors. *IEEE Transactions on Electron Devices*, **2012**, 59, 2988-2995	2.9	15
117	f_{T} and $f_{rm MAX}$ of 47 and 81 GHz , Respectively, on N-Polar GaN/AlN MIS-HEMT. *IEEE Electron Device Letters*, **2009**, 30, 599-601	4.4	15
116	AlGaN/GaN HEMT With a Transparent Gate Electrode. *IEEE Electron Device Letters*, **2009**, 30, 439-441	4.4	15
115	Current�oltage characteristics of polar heterostructure junctions. *Journal of Applied Physics*, **2002**, 91, 2989-2993	2.5	15
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113	Compliant Micron-Sized Patterned InGaN Pseudo-Substrates Utilizing Porous GaN. *Materials*, **2020**, 13,	3.5	15
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107	An improved methodology for extracting interface state density at Si3N4/GaN. *Applied Physics Letters*, **2020**, 116, 022104	3.4	13
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105	Metal-organic chemical vapor deposition of N-polar InN quantum dots and thin films on vicinal GaN. *Journal of Applied Physics*, **2018**, 123, 055702	2.5	13
104	Strain and Temperature Dependence of Defect Formation at AlGaN/GaN High-Electron-Mobility Transistors on a Nanometer Scale. *IEEE Transactions on Electron Devices*, **2012**, 59, 2667-2674	2.9	13
103	Electron mobility in N-polar GaN/AlGaN/GaN heterostructuress. *Applied Physics Letters*, **2008**, 93, 042104	3.4	13
102	Ultrashort hole capture time in Mg-doped GaN thin films. *Applied Physics Letters*, **2002**, 81, 3975-3977	3.4	13
101	Studies of carrier dynamics in unintentionally doped gallium nitride bandtail states. *Applied Physics Letters*, **2001**, 78, 2724-2726	3.4	13
100	AlGaN/GaN Superlattice-Based p-Type Field-Effect Transistor with Tetramethylammonium Hydroxide Treatment. *Physica Status Solidi (A) Applications and Materials Science*, **2020**, 217, 1900692	1.6	13
99	6.2 W/Mm and Record 33.8% PAE at 94 GHz From N-Polar GaN Deep Recess MIS-HEMTs With ALD Ru Gates. *IEEE Microwave and Wireless Components Letters*, **2021**, 31, 748-751	2.6	13
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96	Interfacial N Vacancies in GaN/(Al,Ga)N/GaN Heterostructures. *Physical Review Applied*, **2020**, 13,	4.3	12
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90	Wafer-Bonded p-n Heterojunction of GaAs and Chemomechanically Polished N-Polar GaN. *IEEE Electron Device Letters*, **2013**, 34, 42-44	4.4	11
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88	Optimization of a chlorine-based deep vertical etch of GaN demonstrating low damage and low roughness. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2016**, 34, 031303	2.9	11
87	High frequency N-polar GaN planar MIS-HEMTs on sapphire with high breakdown and low dispersion **2016**,		10
86	Design of polarization-dipole-induced isotype heterojunction diodes for use in III-N hot electron transistors. *Applied Physics Express*, **2014**, 7, 014102	2.4	10
85	Dielectric stress tests and capacitance-voltage analysis to evaluate the effect of post deposition annealing on Al2O3 films deposited on GaN. *Applied Physics Letters*, **2014**, 105, 222905	3.4	10
84	RF Performance of Deep-Recessed N-Polar GaN MIS-HEMTs Using a Selective Etch Technology Without Ex Situ Surface Passivation. *IEEE Electron Device Letters*, **2011**, 32, 134-136	4.4	10
83	TEMPERATURE DEPENDENT I-V CHARACTERISTICS OF AlGaN/GaN HBTS AND GaN BJTS. *International Journal of High Speed Electronics and Systems*, **2004**, 14, 819-824	0.5	10
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80	A donor-like trap at the InGaN/GaN interface with net negative polarization and its possible consequence on internal quantum efficiency. *Semiconductor Science and Technology*, **2013**, 28, 105021	1.8	9
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71	Method of growing elastically relaxed crack-free AlGaN on GaN as substrates for ultra-wide bandgap devices using porous GaN. *Applied Physics Letters*, **2020**, 117, 062102	3.4	8
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64	Bias-Dependent Electron Velocity Extracted From N-Polar GaN Deep Recess HEMTs. *IEEE Transactions on Electron Devices*, **2020**, 67, 1542-1546	2.9	6
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