Debdeep Jena

List of Publications by Citations

286 papers	10,639 citations	53 h-index	94 g-index
322 ext. papers	12,390 ext. citations	4.3 avg, IF	6.53 L-index

#	Paper	IF	Citations
286	Two-dimensional semiconductors for transistors. *Nature Reviews Materials*, **2016**, 1,	73.3	670
285	Polarization-induced hole doping in wide-band-gap uniaxial semiconductor heterostructures. *Science*, **2010**, 327, 60-4	33.3	534
284	Ultrawide-Bandgap Semiconductors: Research Opportunities and Challenges. *Advanced Electronic Materials*, **2018**, 4, 1600501	6.4	520
283	Enhancement of carrier mobility in semiconductor nanostructures by dielectric engineering. *Physical Review Letters*, **2007**, 98, 136805	7.4	330
282	InAlN/AlN/GaN HEMTs With Regrown Ohmic Contacts and f_{T} of 370 GHz. *IEEE Electron Device Letters*, **2012**, 33, 988-990	4.4	252
281	High-voltage field effect transistors with wide-bandgap Ga2O3 nanomembranes. *Applied Physics Letters*, **2014**, 104, 203111	3.4	242
280	Esaki Diodes in van der Waals Heterojunctions with Broken-Gap Energy Band Alignment. *Nano Letters*, **2015**, 15, 5791-8	11.5	237
279	Intrinsic electron mobility limits in Ga2O3. *Applied Physics Letters*, **2016**, 109, 212101	3.4	223
278	Transistors with chemically synthesized layered semiconductor WS2 exhibiting 105 room temperature modulation and ambipolar behavior. *Applied Physics Letters*, **2012**, 101, 013107	3.4	212
277	High-mobility window for two-dimensional electron gases at ultrathin AlN/GaN heterojunctions. *Applied Physics Letters*, **2007**, 90, 182112	3.4	212
276	Dislocation scattering in a two-dimensional electron gas. *Applied Physics Letters*, **2000**, 76, 1707-1709	3.4	198
275	Enhancement-Mode Ga2O3 Vertical Transistors With Breakdown Voltage >1 kV. *IEEE Electron Device Letters*, **2018**, 39, 869-872	4.4	166
274	Graphene Nanoribbon Tunnel Transistors. *IEEE Electron Device Letters*, **2008**, 29, 1344-1346	4.4	163
273	Unique prospects for graphene-based terahertz modulators. *Applied Physics Letters*, **2011**, 99, 113104	3.4	149
272	Realization of wide electron slabs by polarization bulk doping in graded III-V nitride semiconductor alloys. *Applied Physics Letters*, **2002**, 81, 4395-4397	3.4	136
271	Determination of graphene work function and graphene-insulator-semiconductor band alignment by internal photoemission spectroscopy. *Applied Physics Letters*, **2012**, 101, 022105	3.4	134
270	. *IEEE Electron Device Letters*, **2015**, 36, 375-377	4.4	126

269	Single-particle tunneling in doped graphene-insulator-graphene junctions. *Journal of Applied Physics*, **2012**, 111, 043711	2.5	126
268	1.7-kV and 0.55- $text{m}Omega cdot text {cm}^{2}$ GaN p-n Diodes on Bulk GaN Substrates With Avalanche Capability. *IEEE Electron Device Letters*, **2016**, 37, 161-164	4.4	125
267	AlN/GaN Insulated-Gate HEMTs With 2.3 A/mm Output Current and 480 mS/mm Transconductance. *IEEE Electron Device Letters*, **2008**, 29, 661-664	4.4	122
266	Near unity ideality factor and Shockley-Read-Hall lifetime in GaN-on-GaN p-n diodes with avalanche breakdown. *Applied Physics Letters*, **2015**, 107, 243501	3.4	117
265	Gate-Recessed Enhancement-Mode InAlN/AlN/GaN HEMTs With 1.9-A/mm Drain Current Density and 800-mS/mm Transconductance. *IEEE Electron Device Letters*, **2010**, 31, 1383-1385	4.4	111
264	Polarization-induced Zener tunnel junctions in wide-band-gap heterostructures. *Physical Review Letters*, **2009**, 103, 026801	7.4	107
263	Adsorption-controlled growth of La-doped BaSnO3 by molecular-beam epitaxy. *APL Materials*, **2017**, 5, 116107	5.7	98
262	Field-Plated Ga2O3 Trench Schottky Barrier Diodes With a BV2/ $R_{text{on,sp}}$ of up to 0.95 GW/cm2. *IEEE Electron Device Letters*, **2020**, 41, 107-110	4.4	97
261	Breakdown mechanism in 1 kA/cm2 and 960 V E-mode □Ga2O3 vertical transistors. *Applied Physics Letters*, **2018**, 113, 122103	3.4	91
260	2D crystal semiconductors: Intimate contacts. *Nature Materials*, **2014**, 13, 1076-8	27	90
259	. *IEEE Electron Device Letters*, **2012**, 33, 525-527	4.4	89
258	Two-Dimensional Heterojunction Interlayer Tunneling Field Effect Transistors (Thin-TFETs). *IEEE Journal of the Electron Devices Society*, **2015**, 3, 200-207	2.3	86
257	Efficient terahertz electro-absorption modulation employing graphene plasmonic structures. *Applied Physics Letters*, **2012**, 101, 261115	3.4	86
256	MBE-grown 232□70 nm deep-UV LEDs using monolayer thin binary GaN/AlN quantum heterostructures. *Applied Physics Letters*, **2017**, 110, 041108	3.4	85
255	GaN/NbN epitaxial semiconductor/superconductor heterostructures. *Nature*, **2018**, 555, 183-189	50.4	83
254	SymFET: A Proposed Symmetric Graphene Tunneling Field-Effect Transistor. *IEEE Transactions on Electron Devices*, **2013**, 60, 951-957	2.9	82
253	Intrinsic Mobility Limiting Mechanisms in Lanthanum-Doped Strontium Titanate. *Physical Review Letters*, **2014**, 112,	7.4	78
252	Effect of Optical Phonon Scattering on the Performance of GaN Transistors. *IEEE Electron Device Letters*, **2012**, 33, 709-711	4.4	76

251	AlGaN/GaN polarization-doped field-effect transistor for microwave power applications. *Applied Physics Letters*, **2004**, 84, 1591-1593	3.4	74
250	High-performance photocurrent generation from two-dimensional WS2 field-effect transistors. *Applied Physics Letters*, **2014**, 104, 193113	3.4	72
249	Tunnel-injection quantum dot deep-ultraviolet light-emitting diodes with polarization-induced doping in III-nitride heterostructures. *Applied Physics Letters*, **2014**, 104, 021105	3.4	68
248	Polarization-engineering in group III-nitride heterostructures: New opportunities for device design. *Physica Status Solidi (A) Applications and Materials Science*, **2011**, 208, 1511-1516	1.6	66
247	Controllable growth of layered selenide and telluride heterostructures and superlattices using molecular beam epitaxy. *Journal of Materials Research*, **2016**, 31, 900-910	2.5	65
246	Graphene nanoribbon field-effect transistors on wafer-scale epitaxial graphene on SiC substrates a. *APL Materials*, **2015**, 3, 011101	5.7	63
245	1230 V Ga2O3 trench Schottky barrier diodes with an ultra-low leakage current of . *Applied Physics Letters*, **2018**, 113, 202101	3.4	61
244	. *IEEE Transactions on Electron Devices*, **2017**, 64, 1635-1641	2.9	58
243	Layered transition metal dichalcogenides: promising near-lattice-matched substrates for GaN growth. *Scientific Reports*, **2016**, 6, 23708	4.9	58
242	220-GHz Quaternary Barrier InAlGaN/AlN/GaN HEMTs. *IEEE Electron Device Letters*, **2011**, 32, 1215-1217	4.4	58
241	A polarization-induced 2D hole gas in undoped gallium nitride quantum wells. *Science*, **2019**, 365, 1454-1457	3.3	57
240	. *IEEE Electron Device Letters*, **2011**, 32, 309-311	4.4	57
239	Hot Electron Transistor with van der Waals Base-Collector Heterojunction and High-Performance GaN Emitter. *Nano Letters*, **2017**, 17, 3089-3096	11.5	55
238	Ultrascaled InAlN/GaN High Electron Mobility Transistors with Cutoff Frequency of 400 GHz. *Japanese Journal of Applied Physics*, **2013**, 52, 08JN14	1.4	55
237	N-polar III-nitride quantum well light-emitting diodes with polarization-induced doping. *Applied Physics Letters*, **2011**, 99, 171104	3.4	55
236	Polarization-Engineered III-Nitride Heterojunction Tunnel Field-Effect Transistors. *IEEE Journal on Exploratory Solid-State Computational Devices and Circuits*, **2015**, 1, 28-34	2.4	54
235	Hot phonon effect on electron velocity saturation in GaN: A second look. *Applied Physics Letters*, **2007**, 91, 252104	3.4	53
234	Deep ultraviolet emission from ultra-thin GaN/AlN heterostructures. *Applied Physics Letters*, **2016**, 109, 241102	3.4	53

233	1.1-kV Vertical GaN p-n Diodes With p-GaN Regrown by Molecular Beam Epitaxy. *IEEE Electron Device Letters*, **2017**, 38, 1071-1074	4.4	50
232	Polarization-Induced GaN-on-Insulator E/D Mode p-Channel Heterostructure FETs. *IEEE Electron Device Letters*, **2013**, 34, 852-854	4.4	49
231	CdSe nanowires with illumination-enhanced conductivity: Induced dipoles, dielectrophoretic assembly, and field-sensitive emission. *Journal of Applied Physics*, **2007**, 101, 073704	2.5	48
230	Polarization effects on gate leakage in InAlN/AlN/GaN high-electron-mobility transistors. *Applied Physics Letters*, **2012**, 101, 253519	3.4	47
229	High Breakdown Voltage in RF AlN/GaN/AlN Quantum Well HEMTs. *IEEE Electron Device Letters*, **2019**, 40, 1293-1296	4.4	46
228	Transport properties of graphene nanoribbon transistors on chemical-vapor-deposition grown wafer-scale graphene. *Applied Physics Letters*, **2012**, 100, 203107	3.4	46
227	Green luminescence of InGaN nanowires grown on silicon substrates by molecular beam epitaxy. *Journal of Applied Physics*, **2011**, 109, 084336	2.5	46
226	Effect of scattering by strain fields surrounding edge dislocations on electron transport in two-dimensional electron gases. *Applied Physics Letters*, **2002**, 80, 64-66	3.4	46
225	Gate-Recessed E-mode p-Channel HFET With High On-Current Based on GaN/AlN 2D Hole Gas. *IEEE Electron Device Letters*, **2018**, 39, 1848-1851	4.4	46
224	High breakdown single-crystal GaN p-n diodes by molecular beam epitaxy. *Applied Physics Letters*, **2015**, 107, 232101	3.4	44
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222	Conduction band offset at the InN□GaN heterojunction. *Applied Physics Letters*, **2007**, 91, 232117	3.4	43
221	Near-ideal reverse leakage current and practical maximum electric field in □Ga2O3 Schottky barrier diodes. *Applied Physics Letters*, **2020**, 116, 192101	3.4	42
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219	Deep-UV emission at 219 nm from ultrathin MBE GaN/AlN quantum heterostructures. *Applied Physics Letters*, **2017**, 111, 091104	3.4	42
218	Quaternary Barrier InAlGaN HEMTs With f_{T}/f_{max} of 230/300 GHz. *IEEE Electron Device Letters*, **2013**, 34, 378-380	4.4	42
217	Thermal conductivity of crystalline AlN and the influence of atomic-scale defects. *Journal of Applied Physics*, **2019**, 126, 185105	2.5	42
216	Hole mobility of strained GaN from first principles. *Physical Review B*, **2019**, 100,	3.3	38

215	Room temperature microwave oscillations in GaN/AlN resonant tunneling diodes with peak current densities up to 220 kA/cm2. *Applied Physics Letters*, **2018**, 112, 103101	3.4	38
214	InGaN channel high electron mobility transistor structures grown by metal organic chemical vapor deposition. *Applied Physics Letters*, **2012**, 100, 121909	3.4	38
213	High-performance few-layer-MoS2 field-effect-transistor with record low contact-resistance **2013**,		38
212	Carrier transport and confinement in polarization-induced three-dimensional electron slabs: Importance of alloy scattering in AlGaN. *Applied Physics Letters*, **2006**, 88, 042109	3.4	38
211	Prospects for Wide Bandgap and Ultrawide Bandgap CMOS Devices. *IEEE Transactions on Electron Devices*, **2020**, 67, 4010-4020	2.9	38
210	Physics and polarization characteristics of 298 nm AlN-delta-GaN quantum well ultraviolet light-emitting diodes. *Applied Physics Letters*, **2017**, 110, 071103	3.4	37
209	Polarization-engineered removal of buffer leakage for GaN transistors. *Applied Physics Letters*, **2010**, 96, 042102	3.4	36
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207	Two-dimensional electron gases in strained quantum wells for AlN/GaN/AlN double heterostructure field-effect transistors on AlN. *Applied Physics Letters*, **2014**, 104, 193506	3.4	35
206	Crystal orientation dictated epitaxy of ultrawide-bandgap 5.4- to 8.6-eV □(AlGa)O on m-plane sapphire. *Science Advances*, **2021**, 7,	14.3	35
205	Inductively-coupled-plasma reactive ion etching of single-crystal □Ga2O3. *Japanese Journal of Applied Physics*, **2017**, 56, 030304	1.4	34
204	Strained GaN quantum-well FETs on single crystal bulk AlN substrates. *Applied Physics Letters*, **2017**, 110, 063501	3.4	34
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202	Ultrathin Body GaN-on-Insulator Quantum Well FETs With Regrown Ohmic Contacts. *IEEE Electron Device Letters*, **2012**, 33, 661-663	4.4	34
201	Threshold Voltage Control in $hbox{Al}_{0.72} hbox{Ga}_{0.28}hbox{N/AlN/GaN}$ HEMTs by Work-Function Engineering. *IEEE Electron Device Letters*, **2010**, 31, 954-956	4.4	34
200	Electron Transport in III□V Nitride Two-Dimensional Electron Gases. *Physica Status Solidi (B): Basic Research*, **2001**, 228, 617-619	1.3	34
199	Comparative study of chemically synthesized and exfoliated multilayer MoS2 field-effect transistors. *Applied Physics Letters*, **2013**, 102, 043116	3.4	33
198	A computational study of metal-contacts to beyond-graphene 2D semiconductor materials **2012**,		33

197	Electron mobility in graded AlGaN alloys. *Applied Physics Letters*, **2006**, 88, 042103	3.4	33
196	Development of GaN Vertical Trench-MOSFET With MBE Regrown Channel. *IEEE Transactions on Electron Devices*, **2018**, 65, 2558-2564	2.9	32
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194	Dipole scattering in polarization induced III□V nitride two-dimensional electron gases. *Journal of Applied Physics*, **2000**, 88, 4734	2.5	32
193	Route to High Hole Mobility in GaN via Reversal of Crystal-Field Splitting. *Physical Review Letters*, **2019**, 123, 096602	7.4	31
192	InGaN Channel High-Electron-Mobility Transistors with InAlGaN Barrier andfT/fmaxof 260/220 GHz. *Applied Physics Express*, **2013**, 6, 016503	2.4	30
191	Ultra-low resistance ohmic contacts to GaN with high Si doping concentrations grown by molecular beam epitaxy. *Applied Physics Letters*, **2012**, 101, 032109	3.4	30
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189	GaN HEMTs on Si With Regrown Contacts and Cutoff/Maximum Oscillation Frequencies of 250/204 GHz. *IEEE Electron Device Letters*, **2020**, 41, 689-692	4.4	29
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187	Ultrathin CdSe nanowire field-effect transistors. *Journal of Electronic Materials*, **2006**, 35, 170-172	1.9	27
186	Ultralow-Leakage AlGaN/GaN High Electron Mobility Transistors on Si With Non-Alloyed Regrown Ohmic Contacts. *IEEE Electron Device Letters*, **2016**, 37, 16-19	4.4	26
185	Guiding Principles for Trench Schottky Barrier Diodes Based on Ultrawide Bandgap Semiconductors: A Case Study in Ga□□ *IEEE Transactions on Electron Devices*, **2020**, 67, 3938-3947	2.9	26
184	Activation of buried p-GaN in MOCVD-regrown vertical structures. *Applied Physics Letters*, **2018**, 113, 062105	3.4	25
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178	**2019**,		23
177	Polarization-mediated remote surface roughness scattering in ultrathin barrier GaN high-electron mobility transistors. *Applied Physics Letters*, **2010**, 97, 222116	3.4	22
176	Charged basal stacking fault scattering in nitride semiconductors. *Applied Physics Letters*, **2011**, 98, 022109	3.4	21
175	Dipole scattering in highly polar semiconductor alloys. *Journal of Applied Physics*, **2004**, 96, 2095-2101	2.5	21
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171	Metal-face InAlN/AlN/GaN high electron mobility transistors with regrown ohmic contacts by molecular beam epitaxy. *Physica Status Solidi (A) Applications and Materials Science*, **2011**, 208, 1617-1619	1.6	19
170	Phototransistors: High-Detectivity Multilayer MoS2 Phototransistors with Spectral Response from Ultraviolet to Infrared (Adv. Mater. 43/2012). *Advanced Materials*, **2012**, 24, 5902-5902	24	19
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163	Broken Symmetry Effects due to Polarization on Resonant Tunneling Transport in Double-Barrier Nitride Heterostructures. *Physical Review Applied*, **2019**, 11,	4.3	17
162	Molecular beam homoepitaxy on bulk AlN enabled by aluminum-assisted surface cleaning. *Applied Physics Letters*, **2020**, 116, 172106	3.4	17

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160	Atomic Structure of Thin MoSe2 Films Grown by Molecular Beam Epitaxy. *Microscopy and Microanalysis*, **2014**, 20, 164-165	0.5	17
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157	Fully transparent field-effect transistor with high drain current and on-off ratio. *APL Materials*, **2020** , 8, 011110	5.7	16
156	First RF Power Operation of AlN/GaN/AlN HEMTs With >3 A/mm and 3 W/mm at 10 GHz. *IEEE Journal of the Electron Devices Society*, **2021**, 9, 121-124	2.3	16
155	First-principles study of high-field-related electronic behavior of group-III nitrides. *Physical Review B* , **2014**, 90,	3.3	15
154	Rotationally aligned hexagonal boron nitride on sapphire by high-temperature molecular beam epitaxy. *Physical Review Materials*, **2019**, 3,	3.2	15
153	Structural and piezoelectric properties of ultra-thin ScxAl1⊠N films grown on GaN by molecular beam epitaxy. *Applied Physics Letters*, **2020**, 117, 112101	3.4	15
152	Wurtzite phonons and the mobility of a GaN/AlN 2D hole gas. *Applied Physics Letters*, **2019**, 114, 253501	3.4	14
151	Polarization control in nitride quantum well light emitters enabled by bottom tunnel-junctions. *Journal of Applied Physics*, **2019**, 125, 203104	2.5	14
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143	Perspectives of TFETs for low power analog ICs **2012**,		13
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140	Two-dimensional heterojunction interlayer tunnel FET (Thin-TFET): From theory to applications **2016**,		13
139	Single-crystal N-polar GaN p-n diodes by plasma-assisted molecular beam epitaxy. *Applied Physics Letters*, **2017**, 110, 253506	3.4	12
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125	Molecular Beam Epitaxy of Transition Metal Nitrides for Superconducting Device Applications. *Physica Status Solidi (A) Applications and Materials Science*, **2020**, 217, 1900675	1.6	11
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120	Electrical Noise and Transport Properties of Graphene. *Journal of Low Temperature Physics*, **2013**, 172, 202-211	1.3	9
119	Molecular Beam Epitaxy Growth of Large-Area GaN/AlN 2D Hole Gas Heterostructures. *Physica Status Solidi (B): Basic Research*, **2020**, 257, 1900567	1.3	9
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117	High-frequency and below bandgap anisotropic dielectric constants in □(AlxGa1□)2O3 (0□□1). *Applied Physics Letters*, **2021**, 119, 092103	3.4	9
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