Joachim Piprek

List of Publications by Year
in descending order

118 papers	4,209 citations	186209 28 h-index	155592 55 g-index
122 all docs	122 docs citations	122 times ranked	2639 citing authors

#	Article	IF	Citations
1	Origin of efficiency droop in GaN-based light-emitting diodes. Applied Physics Letters, 2007, 91, .	1.5	1,208
2	Efficiency droop in nitrideâ€based lightâ€emitting diodes. Physica Status Solidi (A) Applications and Materials Science, 2010, 207, 2217-2225.	0.8	717
3	What limits the maximum output power of long-wavelength AlGaInAs/InP laser diodes?. IEEE Journal of Quantum Electronics, 2002, 38, 1253-1259.	1.0	105
4	Electron leakage effects on GaN-based light-emitting diodes. Optical and Quantum Electronics, 2010, 42, 89-95.	1.5	101
5	Thermionic emission cooling in single barrier heterostructures. Applied Physics Letters, 1999, 74, 88-89.	1.5	96
6	On the uncertainty of the Auger recombination coefficient extracted from InGaN/GaN light-emitting diode efficiency droop measurements. Applied Physics Letters, 2015, 106, .	1.5	93
7	Self-consistent analysis of high-temperature effects on strained-layer multiquantum-well InGaAsP-InP lasers. IEEE Journal of Quantum Electronics, 2000, 36, 366-374.	1.0	89
8	Material parameters of quaternary III - V semiconductors for multilayer mirrors at wavelength. Modelling and Simulation in Materials Science and Engineering, 1996, 4, 349-357.	0.8	87
9	Design and analysis of double-fused 1.55-Î¼m vertical-cavity lasers. IEEE Journal of Quantum Electronics, 1997, 33, 1369-1383.	1.0	87
10	Long-wavelength vertical-cavity lasers and amplifiers. IEEE Journal of Selected Topics in Quantum Electronics, 2000, 6, 1244-1253.	1.9	85
11	64Â°C continuous-wave operation of 1.5-Î¼m vertical-cavity laser. IEEE Journal of Selected Topics in Quantum Electronics, 1997, 3, 359-365.	1.9	76
12	Minimum temperature sensitivity of 1.55 Î¼m vertical-cavity lasers at â¯30â€‰nm gain offset. Applied Physics Letters, 1998, 72, 1814-1816.	1.5	76
13	Enhanced Thermionic Emission Cooling in High Barrier Superlattice Heterostructures. Materials Research Society Symposia Proceedings, 1998, 545, 449.	0.1	70
14	Thermal conductivity reduction in GaAs-AlAs distributed Bragg reflectors. IEEE Photonics Technology Letters, 1998, 10, 81-83.	1.3	65
15	High-power 1320-nm wafer-bonded VCSELs with tunnel junctions. IEEE Photonics Technology Letters, 2003, 15, 1495-1497.	1.3	63
16	How to decide between competing efficiency droop models for GaN-based light-emitting diodes. Applied Physics Letters, 2015, 107, .	1.5	59
17	Sensitivity analysis of electron leakage in III-nitride light-emitting diodes. Applied Physics Letters, 2013, 102, .	1.5	58
18	Origin of InGaN light-emitting diode efficiency improvements using chirped AlGaN multi-quantum barriers. Applied Physics Letters, 2013, 102, .	1.5	57

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19	Design and analysis of vertical-cavity semiconductor optical amplifiers. IEEE Journal of Quantum Electronics, 2001, 37, 127-134.	1.0	56
20	Origin of InGaN/GaN light-emitting diode efficiency improvements using tunnel-junction-cascaded active regions. Applied Physics Letters, 2014, 104, .	1.5	48
21	Wafer bonded 1.55 Î¼m vertical-cavity lasers with continuous-wave operation up to 105â€ŠÂ°C. Applied Physics Letters, 2001, 78, 2632-2633.	1.5	47
22	Carrier nonuniformity effects on the internal efficiency of multiquantum-well lasers. Applied Physics Letters, 1999, 74, 489-491.	1.5	45
23	Simulation and analysis of 1.55 Î¼m double-fused vertical-cavity lasers. Journal of Applied Physics, 1997, 81, 3382-3390.	1.1	44
24	Spontaneous and Piezoelectric Polarization: Basic Theory vs. Practical Recipes. , 0, , 49-68.		41
25	Comparative efficiency analysis of GaN-based light-emitting diodes and laser diodes. Applied Physics Letters, 2016, 109, .	1.5	38
26	Introduction to Semiconductors. , 2003, , 3-11.		36
27	MODELING AND OPTIMIZATION OF SINGLE-ELEMENT BULK SiGe THIN-FILM COOLERS. Microscale Thermophysical Engineering, 2005, 9, 99-118.	1.2	35
28	Ultra-violet light-emitting diodes with quasi acceptor-free AlGaN polarization doping. Optical and Quantum Electronics, 2012, 44, 67-73.	1.5	32
29	What Causes the Pulse Power Saturation of GaAs-Based Broad-Area Lasers?. IEEE Photonics Technology Letters, 2018, 30, 963-966.	1.3	30
30	Inverse Thermal Lens Effects on the Far-Field Blooming of Broad Area Laser Diodes. IEEE Photonics Technology Letters, 2013, 25, 958-960.	1.3	29
31	Efficiency Models for GaN-Based Light-Emitting Diodes: Status and Challenges. Materials, 2020, 13, 5174.	1.3	28
32	Numerical analysis of 1.54 Î¼m doubleâ€fused verticalâ€cavity lasers operating continuousâ€wave up to 33â€‰Â°C. Applied Physics Letters, 1996, 68, 2630-2632.	1.5	26
33	AlGaN polarization doping effects on the efficiency of blue LEDs. Proceedings of SPIE, 2012, , .	0.8	26
34	What Limits the Efficiency of High-Power InGaN/GaN Lasers?. IEEE Journal of Quantum Electronics, 2017, 53, 1-4.	1.0	26
35	On the importance of non-thermal far-field blooming in broad-area high-power laser diodes. Applied Physics Letters, 2013, 102, .	1.5	25
36	On the reliability of pulse power saturation models for broad-area GaAs-based lasers. Optical and Quantum Electronics, 2019, 51, 1.	1.5	25

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37	Blue light emitting diode exceeding 100% quantum efficiency. Physica Status Solidi - Rapid Research Letters, 2014, 8, 424-426.	1.2	23
38	Analysis of wavelength-dependent performance variations of GaN-based ultraviolet lasers. Proceedings of SPIE, 2007, , .	0.8	20
39	Energy Efficiency Analysis of GaN-Based Blue Light Emitters. ECS Journal of Solid State Science and Technology, 2020, 9, 015008.	0.9	20
40	Internal efficiency analysis of 280-nm light emitting diodes. , 2004, 5594, 177.		19
41	3D simulation and analysis of AlGaN/GaN ultraviolet light-emittings diodes. , 2004, 5366, 127.		19
42	AlGaN/AlN distributed bragg reflectors for deep ultraviolet wavelengths. Physica Status Solidi (A) Applications and Materials Science, 2006, 203, 1915-1919.	0.8	19
43	Electroluminescent cooling mechanism in InGaN/GaN light-emitting diodes. Optical and Quantum Electronics, 2016, 48, 1.	1.5	19
44	Self-consistent far-field blooming analysis for high-power Fabry-Perot laser diodes. Proceedings of SPIE, 2013, , .	0.8	16
45	Analysis of efficiency limitations in high-power InGaN/GaN laser diodes. Optical and Quantum Electronics, 2016, 48, 1.	1.5	15
46	Design and optimization of high-performance 1.3-Î¼m VCSELs. , 2004, , .		14
47	GaN-based vertical-cavity laser performance improvements using tunnel-junction-cascaded active regions. Applied Physics Letters, 2014, 105, 011116.	1.5	13
48	‹title›High-temperature lasing of long-wavelength VCSELs: problems and prospects‹/title›. , 1997, , .		9
49	Carrier Transport. , 2003, , 49-82.		9
50	Internal power loss in GaN-based lasers: mechanisms and remedies. Optical and Quantum Electronics, 2017, 49, 1.	1.5	8
51	Modeling of traveling-wave amplification photodetectors (TAP detectors). , 2001, 4283, 528.		7
52	Analog modulation of semiconductor lasers. , 2002, , 57-80.		7
53	Electron Energy Bands. , 2003, , 13-48.		7
54	Self-consistent analysis of thermal far-field blooming of broad-area laser diodes. Optical and Quantum Electronics, 2013, 45, 581-588.	1.5	7

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55	Simulation-based machine learning for optoelectronic device design: perspectives, problems, and prospects. Optical and Quantum Electronics, 2021, 53, 1.	1.5	7
56	Analog modulation of 1.55-Î¼m vertical-cavity lasers. , 1999, , .		6
57	<title>High-speed traveling-wave electro-absorption modulators</title>. , 2001, , .		6
58	Unified model for the GaN LED efficiency droop. , 2011, , .		6
59	What limits the efficiency of GaN-based superluminescent light-emitting diodes (SLEDs)?. Optical and Quantum Electronics, 2019, 51, 1.	1.5	6
60	Optimization of the barrier height in 1.3-Î¼m InGaAsP multiple-quantum-well active regions for high-temperature operation. , 2001, , .		5
61	Electronic Properties of InGaN/GaN Vertical-Cavity Lasers. , 0, , 423-445.		5
62	Simulations of laser diodes with nonpolar InGaN multiâ€quantumâ€wells. Physica Status Solidi C: Current Topics in Solid State Physics, 2010, 7, 2259-2261.	0.8	5
63	III-Nitride LED efficiency droop models: A critical status review. , 2013, , .		5
64	Index-Antiguiding in Narrow-Ridge GaN-Based Laser Diodes Investigated by Measurements of the Current-Dependent Gain and Index Spectra and by Self-Consistent Simulation. IEEE Journal of Quantum Electronics, 2015, 51, 1-6.	1.0	5
65	Physics of waveguide photodetectors with integrated amplification. , 2003, , .		4
66	Optical Waves. , 2003, , 83-120.		4
67	Back Cover (Phys. Status Solidi A 10/2010). Physica Status Solidi (A) Applications and Materials Science, 2010, 207, n/a-n/a.	0.8	4
68	InP-based waveguide photodetector with integrated photon multiplication. , 2003, , .		3
69	Nitride Light Emitters. , 2003, , 187-211.		3
70	What limits the power conversion efficiency of GaN-based lasers?. Proceedings of SPIE, 2017, , .	0.8	3
71	Auger recombination effects on the peak lasing power of InGaN/GaN laser diodes. , 2017, , .		3
72	Energy Efficiency Analysis of GaN-based Superluminescent Diodes. , 2019, , .		3

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73	Simulation of GaN-based Light-Emitting Devices. , 2004, , 101-108.		3
74	Multi-quantum-well electroabsorption modulators. , 2002, 4646, 609.		2
75	Recent advances in photodetectors with distributed optical amplification. , 2003, , .		2
76	Integrated-cavity surface-emitting lasers. , 2003, 5248, 148.		2
77	Heat Generation and Dissipation. , 2003, , 141-148.		2
78	Edge-Emitting Laser. , 2003, , 151-169.		2
79	3D simulation of an integrated wavelength converter. , 2004, 5349, 185.		2
80	Saturation analysis of a monolithic wavelength converter. , 2004, 5594, 102.		2
81	Blue Laser Diodes. Optik & Photonik, 2007, 2, 52-55.	0.3	2
82	GaN-based VCSELs: analysis of internal device physics and performance limitations. Proceedings of SPIE, 2010, , .	0.8	2
83	What is the problem with GaN-based VCSELs?. , 2013, , .		2
84	GaN-based bipolar cascade light-emitting diode with 250Â% peak quantum efficiency. Optical and Quantum Electronics, 2015, 47, 1305-1310.	1.5	2
85	Evaluating Two-Photon Absorption Effects on Pulsed High-Power Laser Operation. , 2018, , .		2
86	Efficiency Analysis of Quantum Well Lasers using PICS3D. , 1999, , .		2
87	Editorial: Simulation of semiconductor optoelectronic devices. IEE Proceedings: Optoelectronics, 2002, 149, 121-121.	0.8	2
88	GaN-based bipolar cascade lasers with 25Ânm wide quantum wells. Optical and Quantum Electronics, 2022, 54, 1.	1.5	2
89	Modeling and optimization of vertical-cavity semiconductor laser amplifiers. , 2001, 4283, 129.		1
90	Advanced analysis of high-temperature failure mechanisms in telecom lasers. , 2001, , .		1

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91	Photon Generation. , 2003, , 121-139.		1
92	Vertical-Cavity Laser. , 2003, , 171-186.		1
93	Internal device physics of 1.3-Î¼m vertical-cavity surface-emitting laser. , 2005, , .		1
94	Failure analysis of GaN-based current-injected vertical-cavity surface-emitting lasers. , 2005, , .		1
95	The origin of efficiency droop in GaN-based light-emitting diodes and its solution. , 2008, , .		1
96	Electron leakage effects on the efficiency droop in GaN-based light-emitting diodes. , 2010, , .		1
97	Self-consistent electro-thermal-optical simulation of thermal blooming in broad-area lasers. , 2012, , .		1
98	Comparative analysis of efficiency limitations in GaN-based blue laser diodes. , 2016, , .		1
99	Origin of efficiency droop in GaN-based light-emitting diodes. , 0, .		1
100	1.3 Âµm vertical-cavity amplifying switch. , 2001, , .		1
101	Cryogenic high-speed operation of double-fused 1.5 Î¼m vertical-cavity lasers. , 0, , .		0
102	Physics of Output Power Limitations in Long-Wavelength Laser Diodes. , 2002, 4871, 70.		0
103	Wafer-bonded VCSELs with tunnel junctions. , 2003, , .		0
104	Electroabsorption Modulator. , 2003, , 213-225.		0
105	Amplification Photodetector. , 2003, , 227-236.		0
106	Device physics of an optoelectronic integrated wavelength converter. , 2005, , .		0
107	Introduction to the OQE Special Issue on â€œNumerical Simulation of Optoelectronic Devicesâ€• Optical and Quantum Electronics, 2007, 38, 933-934.	1.5	0
108	Polarization-doped AlGaN light-emitting diode. , 2011, , .		0

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109	Introduction to the Issue on Numerical Simulation of Optoelectronic Devices. IEEE Journal of Selected Topics in Quantum Electronics, 2013, 19, 0200602-0200602.	1.9	0
110	Design and Analysis of Gan-Based Bipolar Cascade VCSELs. , 2014, , .		0
111	Highly efficient GaN-based bipolar cascade LEDs. , 2014, , .		0
112	Far-Field Focusing Effect of an Inverse Thermal Lens Inside High-Power Lasers. , 2014, , .		0
113	Introduction to the Special Issue on â€œSimulation of GaN-based Light-Emitting Diodesâ€• Journal of Computational Electronics, 2015, 14, 381-381.	1.3	0
114	Analysis of electroluminescent cooling in GaN-LEDs. , 2016, , .		0
115	Enhanced electroluminescent cooling in GaN-based light-emitting diodes. , 2017, , .		0
116	Connecting numerical simulation and machine learning: How to bridge the gap between theory and reality?. , 2020, , .		0
117	Predictive simulation of quantum well lasers: How close are we. , 2003, , .		0
118	An LED with 250% peak quantum efficiency. SPIE Newsroom, 0, , .	0.1	0