

# Robert Kelsall

## List of Publications by Year in descending order

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134  
papers

2,214  
citations

201674

27  
h-index

265206

42  
g-index

136  
all docs

136  
docs citations

136  
times ranked

1334  
citing authors

#	ARTICLE	IF	CITATIONS
1	Intersubband electroluminescence from Si/SiGe cascade emitters at terahertz frequencies. Applied Physics Letters, 2002, 81, 1543-1545.	3.3	130
2	Self-consistent scattering theory of transport and output characteristics of quantum cascade lasers. Journal of Applied Physics, 2002, 91, 9019-9026.	2.5	129
3	Ge-on-Si Single-Photon Avalanche Diode Detectors: Design, Modeling, Fabrication, and Characterization at Wavelengths 1310 and 1550 nm. IEEE Transactions on Electron Devices, 2013, 60, 3807-3813.	3.0	116
4	Self-consistent solutions to the intersubband rate equations in quantum cascade lasers: Analysis of a GaAs/Al <sub>x</sub> Ga <sub>1-x</sub> As device. Journal of Applied Physics, 2001, 89, 3084-3090.	2.5	76
5	Investigation of self-heating effects in submicrometer GaN/AlGaN HEMTs using an electrothermal Monte Carlo method. IEEE Transactions on Electron Devices, 2006, 53, 2892-2900.	3.0	75
6	Interwell intersubband electroluminescence from Si/SiGe quantum cascade emitters. Applied Physics Letters, 2003, 83, 4092-4094.	3.3	74
7	Mechanisms of temperature performance degradation in terahertz quantum-cascade lasers. Applied Physics Letters, 2003, 82, 1347-1349.	3.3	68
8	Electron temperature and mechanisms of hot carrier generation in quantum cascade lasers. Journal of Applied Physics, 2002, 92, 6921-6923.	2.5	65
9	Intersubband electron-electron scattering in asymmetric quantum wells designed for far-infrared emission. Physical Review B, 1998, 58, 4771-4778.	3.2	57
10	Modulation of the absorption coefficient at 13.4 μm in Ge/SiGe multiple quantum well heterostructures on silicon. Optics Letters, 2011, 36, 4158.	3.3	55
11	Influence of leakage current on temperature performance of GaAs/AlGaAs quantum cascade lasers. Applied Physics Letters, 2002, 81, 400-402.	3.3	47
12	Low-voltage broad-band electroabsorption from thin Ge/SiGe quantum wells epitaxially grown on silicon. Optics Express, 2013, 21, 867.	3.4	46
13	Population inversion in optically pumped asymmetric quantum well terahertz lasers. Journal of Applied Physics, 1997, 81, 7135-7140.	2.5	42
14	Density matrix theory of transport and gain in quantum cascade lasers in a magnetic field. Physical Review B, 2007, 76, .	3.2	40
15	Picosecond intersubband dynamics in p-Si/SiGe quantum-well emitter structures. Applied Physics Letters, 2002, 80, 1456-1458.	3.3	39
16	Optimum strain configurations for carrier injection in near infrared Ge lasers. Journal of Applied Physics, 2012, 111, .	2.5	39
17	Extended density-matrix model applied to silicon-based terahertz quantum cascade lasers. Physical Review B, 2012, 85, .	3.2	38
18	Self-consistent energy balance simulations of hole dynamics in SiGe THz quantum cascade structures. Journal of Applied Physics, 2004, 96, 6803-6811.	2.5	37

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19	Towards automated design of quantum cascade lasers. Journal of Applied Physics, 2005, 97, 084506.	2.5	36
20	Intersubband hole-phonon and alloy disorder scattering in SiGe quantum wells. Physical Review B, 2001, 64, .	3.2	34
21	Relationship between carrier dynamics and temperature in terahertz quantum cascade structures: simulation of GaAs/AlGaAs, SiGe/Si and GaN/AlGaN devices. Semiconductor Science and Technology, 2005, 20, S237-S245.	2.0	32
22	Interwell relaxation times in $\text{Si}^{\wedge}\text{SiGe}$ asymmetric quantum well structures: Role of interface roughness. Physical Review B, 2007, 75, .	3.2	32
23	Intersubband terahertz lasers using four-level asymmetric quantum wells. Journal of Applied Physics, 1999, 85, 23-28.	2.5	31
24	Influence of the active region design on output characteristics of GaAs/AlGaAs quantum cascade lasers in a strong magnetic field. Semiconductor Science and Technology, 2006, 21, 215-220.	2.0	30
25	Toward Silicon-Based Lasers for Terahertz Sources. IEEE Journal of Selected Topics in Quantum Electronics, 2006, 12, 1570-1578.	2.9	30
26	Electrothermal Monte Carlo Simulation of Submicrometer Si/SiGe MODFETs. IEEE Transactions on Electron Devices, 2007, 54, 332-339.	3.0	30
27	Temperature dependence of terahertz optical transitions from boron and phosphorus dopant impurities in silicon. Applied Physics Letters, 2005, 87, 101114.	3.3	27
28	Electro-optic metal-insulator-semiconductor-insulator-metal Mach-Zehnder plasmonic modulator. Photonics and Nanostructures - Fundamentals and Applications, 2012, 10, 183-189.	2.0	27
29	Intersubband lifetimes in $\text{Si}^{\wedge}\text{SiGe}$ terahertz quantum cascade heterostructures. Physical Review B, 2005, 71, .	3.2	26
30	Comparison of the quantum efficiencies of interwell and intrawell radiative transitions in quantum cascade lasers. Applied Physics Letters, 1999, 75, 1999-2001.	3.3	25
31	Si-based electroluminescence at THz frequencies. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2002, 89, 10-12.	3.5	25
32	Material configurations for $n$ -type silicon-based terahertz quantum cascade lasers. Physical Review B, 2011, 83, .	3.2	24
33	Terahertz ambipolar dual-wavelength quantum cascade laser. Optics Express, 2009, 17, 19926.	3.4	23
34	Waveguide design for mid- and far-infrared p-Si/SiGe quantum cascade lasers. Semiconductor Science and Technology, 2004, 19, 76-81.	2.0	22
35	Hot-Phonon Effect on the Electrothermal Behavior of Submicrometer III-V HEMTs. IEEE Electron Device Letters, 2007, 28, 787-789.	3.9	22
36	Intersubband carrier scattering in $n$ - and $p$ -type $\text{Si}^{\wedge}\text{SiGe}$ quantum cascade lasers. Physical Review B, 2011, 83, .	3.2	22

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37	Simulated [111] SiGe terahertz quantum cascade laser. Applied Physics Letters, 2008, 92, .	3.3	22
38	Theoretical Study of Electron Confinement in Submicrometer GaN HFETs Using a Thermally Self-Consistent Monte Carlo Method. IEEE Transactions on Electron Devices, 2008, 55, 945-953.	3.0	21
39	Si/SiGe quantum cascade superlattice designs for terahertz emission. Journal of Applied Physics, 2010, 107, 053109.	2.5	21
40	Monte Carlo study of self-heating in nanoscale devices. Journal of Computational Electronics, 2012, 11, 118-128.	2.5	20
41	Intervalley splitting and intersubband transitions in n-type SiGe quantum wells: Pseudopotential vs. effective mass calculation. Physical Review B, 2007, 75, .	3.2	19
42	Theory and design of quantum cascade lasers in (111) $n$ -type Si/SiGe. Physical Review B, 2008, 78, .	3.2	19
43	Gain-maximized GaAs/AlGaAs quantum-cascade laser with digitally graded active region. Applied Physics Letters, 2002, 81, 2163-2165.	3.3	18
44	Monte Carlo study of the electrothermal phenomenon in silicon-on-insulator and silicon-germanium-on-insulator metal-oxide field-effect transistors. Journal of Applied Physics, 2010, 107, .	2.5	18
45	Virtual-crystal approximation and alloy broadening of intersubband transitions in p-type SiGe superlattices. Physical Review B, 2001, 64, .	3.2	17
46	Si/SiGe quantum-cascade emitters for terahertz applications. Physica E: Low-Dimensional Systems and Nanostructures, 2003, 16, 147-155.	2.7	17
47	Band transport model for discotic liquid crystals. Physical Review B, 2005, 72, .	3.2	17
48	Design of Ge/SiGe Quantum-Confined Stark Effect Electroabsorption Heterostructures for CMOS Compatible Photonics. Journal of Lightwave Technology, 2010, , .	4.6	17
49	Monte Carlo simulations of hole dynamics in SiGe terahertz quantum-cascade structures. Physical Review B, 2004, 69, .	3.2	16
50	A physical model of quantum cascade lasers: Application to GaAs, GaN and SiGe devices. Physica Status Solidi (A) Applications and Materials Science, 2005, 202, 980-986.	1.8	14
51	Electrothermal Monte Carlo simulation of submicron wurtzite GaN/AlGaIn HEMTs. Journal of Computational Electronics, 2007, 6, 35-39.	2.5	14
52	Adiabatic mode coupling between SiGe photonic devices and SOI waveguides. Optics Express, 2012, 20, 29500.	3.4	13
53	The importance of electron temperature in silicon-based terahertz quantum cascade lasers. Applied Physics Letters, 2009, 95, .	3.3	12
54	Silicon based plasmonic coupler. Optics Express, 2012, 20, 21520.	3.4	12

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55	Rubber stamp for silicon photonics. <i>Nature Photonics</i> , 2012, 6, 577-579.	31.4	12
56	Matrix elements for hole-phonon scattering in a semiconductor quantum well. <i>Semiconductor Science and Technology</i> , 1990, 5, 877-883.	2.0	11
57	Monte Carlo simulation of hole mobilities in an InGaAs/GaAs strained layer quantum well. <i>Semiconductor Science and Technology</i> , 1992, 7, 86-91.	2.0	10
58	Nonequilibrium electron heating in inter-subband terahertz lasers. <i>Journal of Applied Physics</i> , 2002, 91, 904-910.	2.5	10
59	Enhanced light emission from improved homogeneity in biaxially suspended Germanium membranes from curvature optimization. <i>Optics Express</i> , 2017, 25, 22911.	3.4	10
60	Silicon-Germanium Quantum-Cascade Lasers. <i>International Journal of High Speed Electronics and Systems</i> , 2003, 13, 547-573.	0.7	9
61	Plasmonic enhanced electro-optic stub modulator on a SOI platform. <i>Photonics and Nanostructures - Fundamentals and Applications</i> , 2011, 9, 101-107.	2.0	9
62	Density matrix superoperator for periodic quantum systems and its application to quantum cascade laser structures. <i>AIP Advances</i> , 2019, 9, .	1.3	9
63	Stark ladders as tunable far-infrared emitters. <i>Journal of Applied Physics</i> , 1998, 84, 5175-5179.	2.5	8
64	Surface plasmon waveguides with gradually doped or NiAl intermetallic compound buried contact for terahertz quantum cascade lasers. <i>Journal of Applied Physics</i> , 2003, 94, 3249-3252.	2.5	8
65	Electron transport in n-doped Si/SiGe quantum cascade structures. <i>Journal of Applied Physics</i> , 2007, 101, 093703.	2.5	8
66	Optical absorption in highly strained Ge/SiGe quantum wells: The role of $\hat{\Gamma}$ - $\hat{\Gamma}$ scattering. <i>Journal of Applied Physics</i> , 2012, 112, 123105.	2.5	7
67	Plasmonic Modulators for Near-Infrared Photonics on a Silicon-on-Insulator Platform. <i>IEEE Journal of Selected Topics in Quantum Electronics</i> , 2013, 19, 4601708-4601708.	2.9	7
68	Growth variation effects in SiGe-based quantum cascade lasers. <i>Journal of Optics</i> , 2009, 11, 054012.	1.5	6
69	Phonon scattering and mobility of holes in a GaAs/AlAs quantum well. <i>Semiconductor Science and Technology</i> , 1991, 6, 841-849.	2.0	5
70	Monte Carlo simulations of field and carrier density dependent hole transport in an InGaAs/GaAs strained layer quantum well. <i>Semiconductor Science and Technology</i> , 1992, 7, B312-B315.	2.0	5
71	Monte Carlo Simulations of Hole Dynamics in Si/SiGe Quantum Cascade Structures. <i>Journal of Computational Electronics</i> , 2002, 1, 191-194.	2.5	5
72	Electroluminescence from Si/SiGe quantum cascade emitters. <i>Physica E: Low-Dimensional Systems and Nanostructures</i> , 2003, 16, 309-314.	2.7	5

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73	Mechanisms of carrier transport and temperature performance evaluation in terahertz quantum cascade lasers. Semiconductor Science and Technology, 2004, 19, S104-S106.	2.0	5
74	Generic Methodologies for Nanotechnology: Classification and Fabrication. , 2005, , 1-55.		5
75	Design of Ge/SiGe quantum-confined Stark effect modulators for CMOS compatible photonics. , 2010, , .		5
76	Design optimization of tensile-strained SiGeSn/GeSn quantum wells at room temperature. Journal of Applied Physics, 2021, 129, 123102.	2.5	5
77	Monte Carlo modelling of far-infrared intersubband lasers. Physica E: Low-Dimensional Systems and Nanostructures, 2000, 7, 48-51.	2.7	4
78	THz intersubband dynamics in p-Si/SiGe quantum well structures. Physica E: Low-Dimensional Systems and Nanostructures, 2002, 13, 904-907.	2.7	4
79	Simulation of Carrier Transport in p-Si/SiGe Quantum Cascade Emitters. Journal of Computational Electronics, 2003, 2, 353-356.	2.5	4
80	Terahertz Emission From Silicon-Germanium Quantum Cascades. , 2003, , 367-382.		4
81	Optical cavities for Si/SiGe tetrahertz quantum cascade emitters. Optical Materials, 2005, 27, 851-854.	3.6	4
82	A Band Transport Model for Highly Ordered Discotic Mesophases. Journal of Computational Electronics, 2005, 4, 101-104.	2.5	4
83	Electronic and Electro-Optic Molecular Materials and Devices. , 2005, , 282-342.		4
84	n-Si/SiGe quantum cascade structures for THz emission. Journal of Luminescence, 2006, 121, 311-314.	3.1	4
85	Si/SiGe Bound-to-Continuum Quantum Cascade Emitters. ECS Transactions, 2009, 16, 865-874.	0.5	4
86	(Invited) Germanium/Silicon Heterostructures for Terahertz Emission. ECS Transactions, 2013, 50, 763-771.	0.5	4
87	Monte Carlo simulations of low-field hole transport in strained InGaAs quantum wells. Semiconductor Science and Technology, 1993, 8, 219-223.	2.0	3
88	GaAs/Al <sub>0.45</sub> Ga <sub>0.55</sub> As Double Phonon Resonance Quantum Cascade Laser. AIP Conference Proceedings, 2005, , .	0.4	3
89	On the coherence/incoherence of electron transport in semiconductor heterostructure optoelectronic devices. Proceedings of SPIE, 2008, , .	0.8	3
90	Self-Assembling Nanostructured Molecular Materials and Devices. , 2005, , 343-376.		2

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91	SiGe/Si quantum cascade structures deposited by low-energy plasma-enhanced CVD. , 2008, , .		2
92	Si/SiGe bound-to-continuum quantum cascade terahertz emitters. Proceedings of SPIE, 2008, , .	0.8	2
93	Structural and Compositional Properties of Strain-Symmetrized SiGe/Si Heterostructures. Springer Proceedings in Physics, 2008, , 269-272.	0.2	2
94	Design considerations of intra-step SiGeSn/GeSn quantum well electroabsorption modulators. Journal of Applied Physics, 2021, 130, 153103.	2.5	2
95	Simulation of electron transport in a (GaAs) <sub>12</sub> /(AlAs) <sub>12</sub> superlattice. Semiconductor Science and Technology, 1991, 6, 784-789.	2.0	1
96	Terahertz lasers using inter-subband transitions in quantum wells: predictions from Monte Carlo simulation. Physica B: Condensed Matter, 1999, 272, 226-229.	2.7	1
97	Interactions of self-organised discotic liquid crystals with ultrathin metal films. Materials Science and Technology, 2002, 18, 729-732.	1.6	1
98	Digitally graded GaAs/Al <sub>0.44</sub> Ga <sub>0.56</sub> As quantum-cascade laser. Physica E: Low-Dimensional Systems and Nanostructures, 2003, 17, 620-622.	2.7	1
99	Hole transport simulations in SiGe cascade quantum wells. Physica E: Low-Dimensional Systems and Nanostructures, 2004, 21, 907-910.	2.7	1
100	Processing and Properties of Inorganic Nanomaterials. , 2005, , 237-281.		1
101	Macromolecules at Interfaces and Structured Organic Films. , 2005, , 377-418.		1
102	Inorganic Semiconductor Nanostructures. , 2005, , 130-202.		1
103	Nanomagnetic Materials and Devices. , 2005, , 203-236.		1
104	Generic Methodologies for Nanotechnology: Characterization. , 2005, , 56-129.		1
105	The UK silicon photonics project. Proceedings of SPIE, 2010, , .	0.8	1
106	Strain-engineering in Germanium membranes towards light sources on Silicon. , 2017, , .		1
107	Silicon on insulator modulator structures for data rates of 40 Gb/s and above. , 2012, , .		1
108	Electronic Transport in Self-organised Molecular Nanostructured Devices. VLSI Design, 2001, 13, 305-309.	0.5	0

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109	Silicon germanium quantum cascade heterostructures for far-infrared emission. , 2002, , .		0
110	Alloy and phonon scattering limited hole lifetimes in Si/SiGe heterostructures. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2002, 89, 84-87.	3.5	0
111	THz intersubband dynamics in p-Si/SiGe quantum well emitter structures. Physica Status Solidi (B): Basic Research, 2003, 237, 381-385.	1.5	0
112	Far-infrared (THz) electroluminescence from Si/SiGe quantum cascade heterostructures. , 2003, , .		0
113	IN-PLANE RESISTANCE OF AN ULTRA THIN GOLD FILM: INFLUENCE OF A COPPER PHTHALOCYANINE OVERLAYER. Molecular Crystals and Liquid Crystals, 2004, 413, 81-90.	0.9	0
114	Bionanotechnology. , 2005, , 419-445.		0
115	On the Formation of Periodic Electric Field Domains in p-Si/SiGe Quantum Cascade Structures. Journal of Computational Electronics, 2005, 4, 11-14.	2.5	0
116	On the incoherence of quantum transport in semiconductor heterostructure optoelectronic devices. International Biennial Baltic Electronics Conference, 2006, , .	0.0	0
117	Substrate orientation and alloy composition effects in n-type SiGe quantum cascade structures. , 2008, , .		0
118	Quantum-confined Stark effect electro-absorption modulators for CMOS compatible photonics. , 2009, , .		0
119	The effects of tensile-strain conditions on doping density requirements for Ge-based injection lasers. , 2011, , .		0
120	Silicon optical modulators for high data rate applications. , 2011, , .		0
121	Design of Ge/SiGe quantum cascade lasers using the density matrix model. , 2011, , .		0
122	Strain engineering of the electroabsorption response in Ge/SiGe multiple quantum well heterostructures. , 2011, , .		0
123	SiGe metallized stub and plasmonic gap mode electro-absorption modulators. , 2011, , .		0
124	The effects of strain on indirect absorption in Ge/SiGe quantum wells. Proceedings of SPIE, 2012, , .	0.8	0
125	High Speed Silicon based optical modulators. , 2012, , .		0
126	Designing short tapered waveguide adapters for Ge lasers and Ge/SiGe modulators integrated with SOI waveguides. , 2012, , .		0



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127	A CMOS compatible metallised nanofocusing coupler. , 2012, , .		0
128	High performance silicon optical modulators. Proceedings of SPIE, 2012, , .	0.8	0
129	Simulated effect of epitaxial growth variations on THz emission of SiGe/Ge quantum cascade structures. , 2013, , .		0
130	Optical modulation using the silicon platform. Proceedings of SPIE, 2013, , .	0.8	0
131	Long-Wavelength Photonic Circuits. Series in Optics and Optoelectronics, 2013, , 249-286.	0.0	0
132	Influence of absorber layer dopants on performance of Ge/Si single photon avalanche diodes. Journal of Applied Physics, 2013, 113, 144508.	2.5	0
133	Electrothermal Monte Carlo Study of Charge Confinement in GaN HFETs. , 2007, , 269-272.		0
134	Simulation of Domain Formation in p-Si/SiGe Quantum Cascade Structures. , 2006, , 313-316.		0