

Francesco Priolo

List of Publications by Year in descending order

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149
papers

11,194
citations

43973

48
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29081

104
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150
all docs

150
docs citations

150
times ranked

6987
citing authors

#	ARTICLE	IF	CITATIONS
1	Optical gain in silicon nanocrystals. Nature, 2000, 408, 440-444.	13.7	2,269
2	Silicon nanostructures for photonics and photovoltaics. Nature Nanotechnology, 2014, 9, 19-32.	15.6	802
3	Room-temperature electroluminescence from Er-doped crystalline Si. Applied Physics Letters, 1994, 64, 2235-2237.	1.5	350
4	Crystal grain nucleation in amorphous silicon. Journal of Applied Physics, 1998, 84, 5383-5414.	1.1	331
5	Formation and evolution of luminescent Si nanoclusters produced by thermal annealing of SiOx films. Journal of Applied Physics, 2004, 95, 3723-3732.	1.1	303
6	Role of the energy transfer in the optical properties of undoped and Er-doped interacting Si nanocrystals. Journal of Applied Physics, 2001, 89, 264-272.	1.1	300
7	Excitation and nonradiative deexcitation processes of Er ³⁺ in crystalline Si. Physical Review B, 1998, 57, 4443-4455.	1.1	267
8	Temperature dependence and quenching processes of the intra-4f luminescence of Er in crystalline Si. Physical Review B, 1994, 49, 16313-16320.	1.1	263
9	Light Emitting Silicon for Microphotonics. Springer Tracts in Modern Physics, 2003, , .	0.1	237
10	Electroluminescence of silicon nanocrystals in MOS structures. Applied Physics A: Materials Science and Processing, 2002, 74, 1-5.	1.1	234
11	The excitation mechanism of rare-earth ions in silicon nanocrystals. Applied Physics A: Materials Science and Processing, 1999, 69, 3-12.	1.1	229
12	Ion-beam-induced epitaxial crystallization and amorphization in silicon. Materials Science and Engineering Reports, 1990, 5, 319-379.	5.8	191
13	The erbium-impurity interaction and its effects on the 1.54 μ m luminescence of Er ³⁺ in crystalline silicon. Journal of Applied Physics, 1995, 78, 3874-3882.	1.1	187
14	Quantum confinement and recombination dynamics in silicon nanocrystals embedded in Si/SiO ₂ superlattices. Journal of Applied Physics, 2000, 87, 8165-8173.	1.1	184
15	Modeling and perspectives of the Si nanocrystals-Er interaction for optical amplification. Physical Review B, 2003, 67, .	1.1	179
16	Mechanism and performance of forward and reverse bias electroluminescence at 1.54 μ m from Er-doped Si diodes. Journal of Applied Physics, 1997, 81, 2784-2793.	1.1	164
17	Electroluminescence at 1.54 μ m in Er-doped Si nanocluster-based devices. Applied Physics Letters, 2002, 81, 3242-3244.	1.5	164
18	Sensitizing properties of amorphous Si clusters on the 1.54- μ m luminescence of Er in Si-rich SiO ₂ . Applied Physics Letters, 2003, 82, 3871-3873.	1.5	156

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19	Dynamics of stimulated emission in silicon nanocrystals. <i>Applied Physics Letters</i> , 2003, 82, 4636-4638.	1.5	151
20	Optical activation and excitation mechanisms of Er implanted in Si. <i>Physical Review B</i> , 1993, 48, 11782-11788.	1.1	138
21	Efficient Luminescence and Energy Transfer in Erbium Silicate Thin Films. <i>Advanced Materials</i> , 2007, 19, 1582-1588.	11.1	124
22	Er ³⁺ ions-Si nanocrystals interactions and their effects on the luminescence properties. <i>Applied Physics Letters</i> , 2000, 76, 2167-2169.	1.5	123
23	Stimulated emission in plasma-enhanced chemical vapour deposited silicon nanocrystals. <i>Physica E: Low-Dimensional Systems and Nanostructures</i> , 2003, 16, 297-308.	1.3	121
24	Nonlinear optical properties of silicon nanocrystals grown by plasma-enhanced chemical vapor deposition. <i>Journal of Applied Physics</i> , 2002, 91, 4607-4610.	1.1	116
25	Electrical and optical characterization of Er-implanted Si: The role of impurities and defects. <i>Journal of Applied Physics</i> , 1993, 74, 4936-4942.	1.1	111
26	Strongly enhanced light trapping in a two-dimensional silicon nanowire random fractal array. <i>Light: Science and Applications</i> , 2016, 5, e16062-e16062.	7.7	97
27	Excitation and de-excitation properties of silicon quantum dots under electrical pumping. <i>Applied Physics Letters</i> , 2002, 81, 1866-1868.	1.5	96
28	Silicon nanocrystal formation in annealed silicon-rich silicon oxide films prepared by plasma enhanced chemical vapor deposition. <i>Journal of Applied Physics</i> , 2007, 101, 113510.	1.1	77
29	Self-assembled silver nanoparticles for plasmon-enhanced solar cell back reflectors: correlation between structural and optical properties. <i>Nanotechnology</i> , 2013, 24, 265601.	1.3	77
30	Colloidal plasmonic back reflectors for light trapping in solar cells. <i>Nanoscale</i> , 2014, 6, 4796-4805.	2.8	74
31	Size-Scaling in Optical Trapping of Silicon Nanowires. <i>Nano Letters</i> , 2011, 11, 4879-4884.	4.5	73
32	Fluorine effect on As diffusion in Ge. <i>Journal of Applied Physics</i> , 2011, 109, .	1.1	73
33	Electroluminescence and transport properties in amorphous silicon nanostructures. <i>Nanotechnology</i> , 2006, 17, 1428-1436.	1.3	68
34	Room temperature all-silicon photonic crystal nanocavity light emitting diode at sub-bandgap wavelengths. <i>Laser and Photonics Reviews</i> , 2013, 7, 114-121.	4.4	67
35	Ultrasensitive Label- and PCR-Free Genome Detection Based on Cooperative Hybridization of Silicon Nanowires Optical Biosensors. <i>ACS Sensors</i> , 2018, 3, 1690-1697.	4.0	67
36	Phenomenological description of ion-beam-induced epitaxial crystallization of amorphous silicon. <i>Physical Review B</i> , 1990, 41, 5235-5242.	1.1	66

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37	Direct evidence of light confinement and emission enhancement in active silicon-on-insulator slot waveguides. Applied Physics Letters, 2006, 89, 241114.	1.5	62
38	Dissolution kinetics of boron-interstitial clusters in silicon. Applied Physics Letters, 2003, 83, 680-682.	1.5	61
39	Defect production and annealing in ion-implanted amorphous silicon. Physical Review Letters, 1993, 70, 3756-3759.	2.9	60
40	Erbium-doped Si nanocrystals: optical properties and electroluminescent devices. Physica E: Low-Dimensional Systems and Nanostructures, 2003, 16, 331-340.	1.3	60
41	Broadband photocurrent enhancement in a-Si:H solar cells with plasmonic back reflectors. Optics Express, 2014, 22, A1059.	1.7	60
42	Linear and nonlinear optical properties of plasma-enhanced chemical-vapour deposition grown silicon nanocrystals. Journal of Modern Optics, 2002, 49, 719-730.	0.6	59
43	Direct evidence of impact excitation and spatial profiling of excited Er in light emitting Si diodes. Applied Physics Letters, 1998, 73, 93-95.	1.5	54
44	Light amplification in silicon nanocrystals by pump and probe transmission measurements. Journal of Applied Physics, 2004, 96, 5747-5755.	1.1	54
45	Role of fluorine in suppressing boron transient enhanced diffusion in preamorphized Si. Applied Physics Letters, 2004, 84, 1862-1864.	1.5	52
46	Broadband light trapping in thin film solar cells with self-organized plasmonic nano-colloids. Nanotechnology, 2015, 26, 135202.	1.3	51
47	Electroluminescence properties of light emitting devices based on silicon nanocrystals. Physica E: Low-Dimensional Systems and Nanostructures, 2003, 16, 395-399.	1.3	50
48	Experimental quantification of useful and parasitic absorption of light in plasmon-enhanced thin silicon films for solar cells application. Scientific Reports, 2016, 6, 22481.	1.6	50
49	Nonequilibrium segregation and trapping phenomena during ion-induced crystallization of amorphous Si. Physical Review Letters, 1988, 60, 1322-1325.	2.9	49
50	Reduction of secondary defect density by C and B implants in $GexSi_{1-x}$ layers formed by high dose Ge implantation in (100) Si. Applied Physics Letters, 1993, 62, 2335-2337.	1.5	46
51	Complete suppression of the transient enhanced diffusion of B implanted in preamorphized Si by interstitial trapping in a spatially separated C-rich layer. Applied Physics Letters, 2001, 79, 4145-4147.	1.5	46
52	Strong enhancement of Er ³⁺ emission at room temperature in silicon-on-insulator photonic crystal waveguides. Applied Physics Letters, 2006, 88, 251114.	1.5	46
53	Silicon nanocrystals and Er ³⁺ ions in an optical microcavity. Journal of Applied Physics, 2001, 89, 8354-8356.	1.1	44
54	Mechanism of Boron Diffusion in Amorphous Silicon. Physical Review Letters, 2008, 100, 155901.	2.9	44

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55	Coherent backscattering of Raman light. Nature Photonics, 2017, 11, 170-176.	15.6	44
56	New Generation of Ultrasensitive Label-Free Optical Si Nanowire-Based Biosensors. ACS Photonics, 2018, 5, 471-479.	3.2	43
57	Control of growth mechanisms and orientation in epitaxial Si nanowires grown by electron beam evaporation. Nanotechnology, 2009, 20, 135601.	1.3	42
58	Room-temperature migration and interaction of ion beam generated defects in crystalline silicon. Applied Physics Letters, 1996, 68, 3422-3424.	1.5	40
59	Energy transfer and enhanced $154\frac{1}{4}\mu\text{m}$ emission in Erbium-Ytterbium disilicate thin films. Optics Express, 2011, 19, 20761.	1.7	39
60	Photonic Torque Microscopy of the Nonconservative Force Field for Optically Trapped Silicon Nanowires. Nano Letters, 2016, 16, 4181-4188.	4.5	39
61	Light-emitting silicon nanowires obtained by metal-assisted chemical etching. Semiconductor Science and Technology, 2017, 32, 043004.	1.0	39
62	Radiation-enhanced diffusion of Au in amorphous Si. Applied Physics Letters, 1988, 52, 1213-1215.	1.5	38
63	Surface morphology of Mn+ implanted Ge(100): A systematic investigation as a function of the implantation substrate temperature. Surface Science, 2007, 601, 2623-2627.	0.8	38
64	High-level incorporation of antimony in germanium by laser annealing. Journal of Applied Physics, 2010, 108, .	1.1	38
65	Structural, Electronic, and Electrical Properties of an Undoped n-Type CdO Thin Film with High Electron Concentration. Journal of Physical Chemistry C, 2014, 118, 15019-15026.	1.5	38
66	Silicon-Based Light-Emitting Devices: Properties and Applications of Crystalline, Amorphous and Er-Doped Nanoclusters. IEEE Journal of Selected Topics in Quantum Electronics, 2006, 12, 1596-1606.	1.9	37
67	Photonic-crystal silicon-nanocluster light-emitting device. Applied Physics Letters, 2006, 88, 033501.	1.5	37
68	Evidence for a "dark exciton" state of PbS nanocrystals in a silicate glass. Applied Physics Letters, 2006, 88, 181115.	1.5	36
69	Enhanced down conversion of photons emitted by photoexcited Er^{3+} ions in a silicate glass. Physical Review B, 2010, 81, .	1.1	36
70	Excitation and non-radiative de-excitation processes in Er-doped Si nanocrystals. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2001, 81, 9-15.	1.7	35
71	Plasmonic-photonic arrays with aperiodic spiral order for ultra-thin film solar cells. Optics Express, 2012, 20, A418.	1.7	34
72	Ion-induced annealing and amorphization of isolated damage clusters in Si. Applied Physics Letters, 1990, 56, 2622-2624.	1.5	33

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73	Amorphous-crystal silicon interfaces: structure and movement under ion beam irradiation. Applied Surface Science, 1992, 56-58, 577-588.	3.1	33
74	Interaction between Fe, dopants, and secondary defects in MeV Fe ion implanted InP. Journal of Applied Physics, 1999, 85, 753-760.	1.1	33
75	Influence of the matrix properties on the performances of Er-doped Si nanoclusters light emitting devices. Journal of Applied Physics, 2010, 107, 054302.	1.1	33
76	Nanoscale amorphization, bending and recrystallization in silicon nanowires. Applied Physics A: Materials Science and Processing, 2011, 102, 13-19.	1.1	33
77	Decoration of silicon nanowires with silver nanoparticles for ultrasensitive surface enhanced Raman scattering. Nanotechnology, 2016, 27, 375603.	1.3	33
78	High-resolution scanning capacitance microscopy of silicon devices by surface beveling. Applied Physics Letters, 2000, 76, 2565-2567.	1.5	32
79	Role of the Si excess on the excitation of Er doped SiOx. Applied Physics Letters, 2007, 90, 183102.	1.5	31
80	Light emitting devices based on silicon nanostructures. Physica E: Low-Dimensional Systems and Nanostructures, 2007, 38, 181-187.	1.3	31
81	Diffusion and outdiffusion of aluminium implanted into silicon. Semiconductor Science and Technology, 1993, 8, 488-494.	1.0	30
82	Eu ³⁺ reduction and efficient light emission in Eu ₂ O ₃ films deposited on Si substrates. Optics Express, 2012, 20, 5501.	1.7	30
83	Nanopatterning of silicon nanowires for enhancing visible photoluminescence. Nanoscale, 2012, 4, 2863.	2.8	30
84	Formation, evolution and photoluminescence properties of Si nanoclusters. Journal of Physics Condensed Matter, 2007, 19, 225003.	0.7	29
85	Enhanced rare earth luminescence in silicon nanocrystals. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2000, 69-70, 335-339.	1.7	28
86	Atomistic Mechanism of Boron Diffusion in Silicon. Physical Review Letters, 2006, 97, 255902.	2.9	28
87	Modification of erbium radiative lifetime in planar silicon slot waveguides. Applied Physics Letters, 2009, 94, .	1.5	28
88	Kinetics of Si and Ge nanowires growth through electron beam evaporation. Nanoscale Research Letters, 2011, 6, 162.	3.1	28
89	Silicon nanowire and carbon nanotube hybrid for room temperature multiwavelength light source. Scientific Reports, 2015, 5, 16753.	1.6	26
90	Low-temperature reordering in partially amorphized Si crystals. Applied Physics Letters, 1990, 57, 768-770.	1.5	25

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91	Ion-beam-induced epitaxial crystallization and amorphization in silicon. <i>Materials Science and Engineering Reports</i> , 1990, 5, 321-379.	5.8	23
92	Luminescence properties of Si nanocrystals embedded in optical microcavities. <i>Materials Science and Engineering C</i> , 2002, 19, 377-381.	3.8	23
93	Role of surface and of dopant-impurity interactions on the electrical activation of B implants in crystalline Si. <i>Applied Physics Letters</i> , 1998, 72, 3011-3013.	1.5	19
94	Heteroepitaxial Growth and Faceting of Ge Nanowires on Si(111) by Electron-Beam Evaporation. <i>Electrochemical and Solid-State Letters</i> , 2010, 13, K53.	2.2	18
95	Nanostructured CdO thin films for water treatments. <i>Materials Science in Semiconductor Processing</i> , 2016, 42, 85-88.	1.9	18
96	Visible emission from bismuth-doped yttrium oxide thin films for lighting and display applications. <i>Scientific Reports</i> , 2017, 7, 17325.	1.6	18
97	Two-dimensional profiling and size effects on the transient enhanced diffusion of ultralow-energy B implants in Si. <i>Applied Physics Letters</i> , 2001, 78, 598-600.	1.5	17
98	Low Cost Fabrication of Si NWs/CuI Heterostructures. <i>Nanomaterials</i> , 2018, 8, 569.	1.9	17
99	New Hybrid Light Harvesting Antenna Based on Silicon Nanowires and Metal Dendrimers. <i>Advanced Optical Materials</i> , 2020, 8, 2001070.	3.6	17
100	Understanding and control of the erbium non-radiative de-excitation processes in silicon. <i>Journal of Luminescence</i> , 1998, 80, 19-28.	1.5	16
101	Temperature dependence and aging effects on silicon nanowires photoluminescence. <i>Optics Express</i> , 2012, 20, 1483.	1.7	16
102	Aluminium Implantation in Germanium: Uphill Diffusion, Electrical Activation, and Trapping. <i>Applied Physics Express</i> , 2012, 5, 021301.	1.1	16
103	Erbium emission in Er:Y2O3 decorated fractal arrays of silicon nanowires. <i>Scientific Reports</i> , 2020, 10, 12854.	1.6	15
104	Low cost synthesis of silicon nanowires for photonic applications. <i>Journal of Materials Science: Materials in Electronics</i> , 2020, 31, 34-40.	1.1	14
105	The effect of reactive plasma etching on the transient enhanced diffusion of boron in silicon. <i>Applied Physics Letters</i> , 1997, 71, 1834-1836.	1.5	13
106	Enhancement of Er optical efficiency through bismuth sensitization in yttrium oxide. <i>Applied Physics Letters</i> , 2015, 107, 041908.	1.5	13
107	Influence of the spatial arrangement on the quantum confinement properties of Si nanocrystals. <i>Optical Materials</i> , 2001, 17, 51-55.	1.7	12
108	Electrical conduction and optical properties of doped silicon-on-insulator photonic crystals. <i>Applied Physics Letters</i> , 2011, 98, 203506.	1.5	12

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109	Room-temperature luminescence from rare-earth ions implanted into Si nanocrystals. The Philosophical Magazine: Physics of Condensed Matter B, Statistical Mechanics, Electronic, Optical and Magnetic Properties, 2000, 80, 719-728.	0.6	11
110	Revealing the sequential nature of the Si-nanoclusterâ€“Er interaction by variable pulse duration excitation. Physical Review B, 2005, 72, .	1.1	11
111	Localized Energy Band Bending in ZnO Nanorods Decorated with Au Nanoparticles. Nanomaterials, 2021, 11, 2718.	1.9	11
112	Thermal evolution and photoluminescence properties of nanometric Si layers. Nanotechnology, 2005, 16, 3012-3016.	1.3	10
113	Structural, Electronic, and Electrical Properties of Y-Doped Cd ₂ SnO ₄ . Journal of Physical Chemistry C, 2012, 116, 3363-3368.	1.5	10
114	Ion beam-induced bending of silicon nanowires. Physica E: Low-Dimensional Systems and Nanostructures, 2012, 44, 1074-1077.	1.3	9
115	Colloidal Self-assembled Nanosphere Arrays for Plasmon-enhanced Light Trapping in Thin Film Silicon Solar Cells. Energy Procedia, 2014, 44, 184-191.	1.8	9
116	Visualization of Directional Beaming of Weakly Localized Raman from a Random Network of Silicon Nanowires. Advanced Science, 2021, 8, 2100139.	5.6	9
117	Concentration dependence and interfacial instabilities during ion beam annealing of arsenicâ€“doped silicon. Applied Physics Letters, 1990, 56, 24-26.	1.5	8
118	Er-based materials for Si microphotronics. Optical Materials, 2009, 31, 1269-1274.	1.7	8
119	Structural and optical properties of highly Er-doped Yb-Y disilicate thin films. Optical Materials Express, 2013, 3, 11.	1.6	8
120	Bismuth doping of silicon compatible thin films for telecommunications and visible light emitting devices. Materials Science in Semiconductor Processing, 2019, 92, 47-57.	1.9	8
121	Synthesis and luminescence properties of erbium silicate thin films. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2008, 146, 29-34.	1.7	7
122	Influence of O contamination and Au cluster properties on the structural features of Si nanowires. Thin Solid Films, 2010, 518, 2562-2564.	0.8	7
123	A Study of Current Stability in the Dissipative Flux Flow State of Superconducting Films. IEEE Transactions on Applied Superconductivity, 2013, 23, 8200704-8200704.	1.1	7
124	Visible and infrared emission from Si/Ge nanowires synthesized by metal-assisted wet etching. Nanoscale Research Letters, 2014, 9, 74.	3.1	7
125	Room temperature migration of ion beam injected point defects in crystalline silicon. Nuclear Instruments & Methods in Physics Research B, 1996, 120, 9-13.	0.6	6
126	High-resolution scanning capacitance microscopy by angle bevelling. Materials Science in Semiconductor Processing, 2001, 4, 77-80.	1.9	6

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127	Deep-level electroluminescence at 3.5 Åµm from semi-insulating InP layers ion implanted with Fe. Semiconductor Science and Technology, 2001, 16, L1-L3.	1.0	6
128	Silicon nanowires: synthesis, optical properties and applications. Physica Status Solidi C: Current Topics in Solid State Physics, 2014, 11, 1622-1625.	0.8	5
129	A Novel Silicon Platform for Selective Isolation, Quantification, and Molecular Analysis of Small Extracellular Vesicles. International Journal of Nanomedicine, 2021, Volume 16, 5153-5165.	3.3	5
130	Influence of Bi on the Er luminescence in yttrium-erbium disilicate thin films. Journal of Applied Physics, 2014, 116, 123511.	1.1	4
131	Efficient energy transfer from Bi to Er ions in Y ₂ O ₃ thin films. Journal of Luminescence, 2017, 191, 92-96.	1.5	4
132	Cost-Effective Fabrication of Fractal Silicon Nanowire Arrays. Nanomaterials, 2021, 11, 1972.	1.9	4
133	Heteroepitaxial Growth of Ge Nanowires on Si Substrates. International Journal of Photoenergy, 2012, 2012, 1-5.	1.4	3
134	Plasma processing of the silicon surface: A novel method to reduce transient enhanced diffusion of boron. Journal of Applied Physics, 1998, 84, 6628-6635.	1.1	2
135	Optical and structural investigation on the energy transfer in a multicomponent glass co-doped with Si nanoaggregates and Er ³⁺ ions. Materials Research Society Symposia Proceedings, 2004, 817, 49.	0.1	2
136	Structural properties of Si nanoclusters produced by thermal annealing of SiO _x films. Materials Research Society Symposia Proceedings, 2004, 817, 118.	0.1	2
137	(Invited) Recent Insights in the Diffusion of Boron in Silicon and Germanium. ECS Transactions, 2010, 33, 167-178.	0.3	2
138	Indirect Diffusion Mechanism of Boron Atoms in Crystalline and Amorphous Silicon. Materials Research Society Symposia Proceedings, 2008, 1070, 1.	0.1	1
139	Coupling and Cooperative Up-conversion Coefficients in Er-doped Si Nanocrystals. Materials Research Society Symposia Proceedings, 2003, 770, 681.	0.1	0
140	Iso-concentration study of atomistic mechanism of B diffusion in Si. Nuclear Instruments & Methods in Physics Research B, 2007, 257, 165-168.	0.6	0
141	Light emitting devices based on Si nanoclusters: the integration with a photonic crystal and electroluminescence properties. Optoelectronics Letters, 2007, 3, 321-325.	0.4	0
142	Electrical and optical properties of ion implanted SOI-based photonic crystals. , 2011, , .		0
143	Si nanowire light emitting devices. , 2011, , .		0
144	Light generation in silicon photonic crystal cavities. , 2011, , .		0

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145	Subbandgap photoluminescence of Si photonic crystal nanocavity at room temperature. , 2011, , .		0
146	Photoluminescence spectroscopy of silicon photonic crystal nanocavities. , 2011, , .		0
147	Room temperature electrically pumped silicon nano-light source at telecommunication wavelengths. Proceedings of SPIE, 2013, , .	0.8	0
148	Silicon nanowires: a building block for future technologies. , 2021, , .		0
149	Nanoscale silicon in photonics and photovoltaics. Series in Materials Science and Engineering, 2017, , 593-616.	0.1	0