Ville VÃ¤hÃ¤nissi

List of Publications by Year
in descending order

63 papers	760 citations	623188 14 h-index	580395 25 g-index
63 all docs	63 docs citations	63 times ranked	768 citing authors

#	Article	IF	Citations
1	Near-unity quantum efficiency of broadband black silicon photodiodes with an induced junction. Nature Photonics, 2016, 10, 777-781.	15.6	113
2	N-type Black Silicon Solar Cells. Energy Procedia, 2013, 38, 866-871.	1.8	62
3	Black-Silicon Ultraviolet Photodiodes Achieve External Quantum Efficiency above 130%. Physical Review Letters, 2020, 125, 117702.	2.9	49
4	Phosphorus and boron diffusion gettering of iron in monocrystalline silicon. Journal of Applied Physics, 2011, 109, .	1.1	40
5	MACE nano-texture process applicable for both single- and multi-crystalline diamond-wire sawn Si solar cells. Solar Energy Materials and Solar Cells, 2019, 191, 1-8.	3.0	40
6	Impact of phosphorus gettering parameters and initial iron level on silicon solar cell properties. Progress in Photovoltaics: Research and Applications, 2013, 21, 1127-1135.	4.4	39
7	Surface passivation of black silicon phosphorus emitters with atomic layer deposited SiO2/Al2O3 stacks. Energy Procedia, 2017, 124, 307-312.	1.8	32
8	Passivation of black silicon boron emitters with atomic layer deposited aluminum oxide. Physica Status Solidi - Rapid Research Letters, 2013, 7, 950-954.	1.2	25
9	Effect of MACE Parameters on Electrical and Optical Properties of ALD Passivated Black Silicon. IEEE Journal of Photovoltaics, 2019, 9, 974-979.	1.5	24
10	Black silicon significantly enhances phosphorus diffusion gettering. Scientific Reports, 2018, 8, 1991.	1.6	23
11	Nanostructured Germanium with >99% Absorption at 300â€“1600 nm Wavelengths. Advanced Optical Materials, 2020, 8, 2000047.	3.6	18
12	Physical mechanisms of boron diffusion gettering of iron in silicon. Physica Status Solidi - Rapid Research Letters, 2010, 4, 136-138.	1.2	17
13	Gettering of Iron in Silicon Solar Cells With Implanted Emitters. IEEE Journal of Photovoltaics, 2014, 4, 142-147.	1.5	17
14	Perspectives on Black Silicon in Semiconductor Manufacturing: Experimental Comparison of Plasma Etching, MACE, and Fs-Laser Etching. IEEE Transactions on Semiconductor Manufacturing, 2022, 35, 504-510.	1.4	17
15	Main defect reactions behind phosphorus diffusion gettering of iron. Journal of Applied Physics, 2014, 116, 244503.	1.1	16
16	Improved emitter performance of RIE black silicon through the application of in-situ oxidation during POCl3 diffusion. Solar Energy Materials and Solar Cells, 2020, 210, 110480.	3.0	16
17	Significant minority carrier lifetime improvement in red edge zone in n-type multicrystalline silicon. Solar Energy Materials and Solar Cells, 2013, 114, 54-58.	3.0	12
18	Compatibility of 3-D printed devices in cleanroom environments for semiconductor processing. Materials Science in Semiconductor Processing, 2019, 89, 59-67.	1.9	12

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19	Impact of Iron Precipitation on Phosphorus-Implanted Silicon Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 1094-1102.	1.5	11
20	Electronic Quality Improvement of Highly Defective Quasiâ€Mono Silicon Material by Phosphorus Diffusion Gettering. Advanced Electronic Materials, 2017, 3, 1600435.	2.6	10
21	Electron Injection in Metal Assisted Chemical Etching as a Fundamental Mechanism for Electroless Electricity Generation. Journal of Physical Chemistry Letters, 2022, 13, 5648-5653.	2.1	9
22	Efficient surface passivation of black silicon using spatial atomic layer deposition. Energy Procedia, 2017, 124, 282-287.	1.8	8
23	Impact of black silicon on lightâ€•and elevated temperatureâ€induced degradation in industrial passivated emitter and rear cells. Progress in Photovoltaics: Research and Applications, 2019, 27, 918-925.	4.4	8
24	Black silicon backâ€contact module with wide light acceptance angle. Progress in Photovoltaics: Research and Applications, 2020, 28, 210-216.	4.4	8
25	Achieving surface recombination velocity below 10 cm/s in <i>n</i>-type germanium using ALD Al2O3. APL Materials, 2021, 9, .	2.2	8
26	Millisecond-Level Minority Carrier Lifetime in Femtosecond Laser-Textured Black Silicon. IEEE Photonics Technology Letters, 2022, 34, 870-873.	1.3	8
27	Gettering of iron in CZâ€silicon by polysilicon layer. Physica Status Solidi C: Current Topics in Solid State Physics, 2011, 8, 751-754.	0.8	7
28	Impact of Standard Cleaning on Electrical and Optical Properties of Phosphorus-Doped Black Silicon. IEEE Journal of Photovoltaics, 2018, , 1-6.	1.5	7
29	Passivation of Detectorâ€Grade Float Zone Silicon with Atomic Layer Deposited Aluminum Oxide. Physica Status Solidi (A) Applications and Materials Science, 2019, 216, 1900309.	0.8	7
30	Modeling Field Effect in Black Silicon and Its Impact on Device Performance. IEEE Transactions on Electron Devices, 2020, 67, 1645-1652.	1.6	7
31	Harnessing Carrier Multiplication in Silicon Solar Cells Using UV Photons. IEEE Photonics Technology Letters, 2021, 33, 1415-1418.	1.3	7
32	Tailoring Femtosecondâ€Laser Processed Black Silicon for Reduced Carrier Recombination Combined with >95% Aboveâ€Bandgap Absorption. Advanced Photonics Research, 2022, 3, .	1.7	7
33	Decreasing Interface Defect Densities via Silicon Oxide Passivation at Temperatures Below 450 Â°C. ACS Applied Materials & Interfaces, 2020, 12, 46933-46941.	4.0	6
34	AlOx surface passivation of black silicon by spatial ALD: Stability under light soaking and damp heat exposure. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2020, 38, 022401.	0.9	6
35	Full recovery of red zone in p-type high-performance multicrystalline silicon. Solar Energy Materials and Solar Cells, 2017, 173, 120-127.	3.0	5
36	How Much Physics is in a Currentâ€"Voltage Curve? Inferring Defect Properties From Photovoltaic Device Measurements. IEEE Journal of Photovoltaics, 2020, 10, 1532-1537.	1.5	5

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37	Efficient photon capture on germanium surfaces using industrially feasible nanostructure formation. Nanotechnology, 2021, 32, 035301.	1.3	5
38	Fast Wafer-Level Characterization of Silicon Photodetectors by Photoluminescence Imaging. IEEE Transactions on Electron Devices, 2022, 69, 2449-2456.	1.6	5
39	N-type induced junction black silicon photodiode for UV detection. Proceedings of SPIE, 2017, , .	0.8	4
40	Rapid thermal anneal activates light induced degradation due to copper redistribution. Applied Physics Letters, 2018, 113, 032104.	1.5	4
41	Dissociation and Formation Kinetics of Ironâ€"Boron Pairs in Silicon after Phosphorus Implantation Gettering. Physica Status Solidi (A) Applications and Materials Science, 2019, 216, 1900253.	0.8	4
42	Impact of doping and silicon substrate resistivity on the blistering of atomic-layer-deposited aluminium oxide. Applied Surface Science, 2020, 522, 146400.	3.1	4
43	Effects of post oxidation of SiO2/Si interfaces in ultrahigh vacuum below 450ÂÂ°C. Vacuum, 2022, 202, 111134.	1.6	4
44	Cu gettering by phosphorus-doped emitters in p-type silicon: Effect on light-induced degradation. AIP Advances, 2018, 8, 015112.	0.6	3
45	Stability of the surface passivation properties of atomic layer deposited aluminum oxide in damp heat conditions. AIP Conference Proceedings, 2019, , .	0.3	3
46	Grass-like alumina coated window harnesses the full omnidirectional potential of black silicon photodiodes. Applied Optics, 2021, 60, 10415.	0.9	3
47	Experimental study of iron redistribution between bulk defects and boron doped layer in silicon wafers. Physica Status Solidi (A) Applications and Materials Science, 2011, 208, 2430-2436.	0.8	2
48	Black silicon n-type photodiodes with high response over wide spectral range. , 2017, , .		2
49	Alâ€neal Degrades Al 2 O 3 Passivation of Silicon Surface. Physica Status Solidi (A) Applications and Materials Science, 2021, 218, 2100214.	0.8	2
50	High-sensitivity NIR photodiodes using black silicon. , 2020, , .		2
51	Analysis of Heterogeneous Iron Precipitation in Multicrystalline Silicon. Solid State Phenomena, 0, 156-158, 27-33.	0.3	1
52	Effect of Oxygen in Low Temperature Boron and Phosphorus Diffusion Gettering of Iron in Czochralski-Grown Silicon. Solid State Phenomena, 0, 156-158, 395-400.	0.3	1
53	Iron precipitation upon gettering in phosphorus-implanted Czochralski silicon and its impact on solar cell performance. , 2014, , .		1
54	Finite- vs. infinite-source emitters in silicon photovoltaics: Effect on transition metal gettering. , 2016, , .		1

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55	Elucidation of Iron Gettering Mechanisms in Boron-Implanted Silicon Solar Cells. IEEE Journal of Photovoltaics, 2018, 8, 79-88.	1.5	1
56	Semiconductor parameter extraction via current-voltage characterization and Bayesian inference methods. , 2018, , .		1
57	Effect of anode sheet resistance on rise time of black silicon induced junction photodiodes. , 2022, , .		1
58	Diffusion gettering of metal impurities in crystalline silicon. , 2012, , .		0
59	Toward Effective Gettering in Boron-Implanted Silicon Solar Cells. , 2017, , .		0
60	Cast Monocrystalline Silicon: New Alternative for Micro- and Nano-Electromechanical Systems?. Journal of Microelectromechanical Systems, 2019, 28, 695-699.	1.7	0
61	Increased surface recombination in crystalline silicon under light soaking due to Cu contamination. Solar Energy Materials and Solar Cells, 2021, 232, 111360.	3.0	0
62	Can hydrogenation mitigate Cu-induced bulk degradation in silicon?. , 2020, , .		0
63	Black silicon boron emitter solar cells with EQE above 95% in UV. , 2020, , .		0