Mathieu Boccard

List of Publications by Year
in descending order

125 papers	6,749 citations	126708 33 h-index	62479 80 g-index
126 all docs	126 docs citations	126 times ranked	6970 citing authors

#	Article	IF	Citations
1	23.6%-efficient monolithic perovskite/silicon tandem solar cells with improved stability. Nature Energy, 2017, 2, .	19.8	1,204
2	Fully textured monolithic perovskite/silicon tandem solar cells with 25.2% power conversion efficiency. Nature Materials, 2018, 17, 820-826.	13.3	1,046
3	Light Trapping in Solar Cells: Can Periodic Beat Random?. ACS Nano, 2012, 6, 2790-2797.	7.3	480
4	Efficient Semitransparent Perovskite Solar Cells for 23.0%â€Efficiency Perovskite/Silicon Fourâ€Terminal Tandem Cells. Advanced Energy Materials, 2016, 6, 1601128.	10.2	240
5	23.5%-efficient silicon heterojunction silicon solar cell using molybdenum oxide as hole-selective contact. Nano Energy, 2020, 70, 104495.	8.2	179
6	Monocrystalline CdTe solar cells with open-circuit voltage over 1â€‰V and efficiency of 17%. Nature Energy, 2016, 1, .	19.8	172
7	Nanoimprint Lithography for High-Efficiency Thin-Film Silicon Solar Cells. Nano Letters, 2011, 11, 661-665.	4.5	171
8	Stable Dopant-Free Asymmetric Heterocontact Silicon Solar Cells with Efficiencies above 20%. ACS Energy Letters, 2018, 3, 508-513.	8.8	164
9	Silicon heterojunction solar cells: Recent technological development and practical aspects - from lab to industry. Solar Energy Materials and Solar Cells, 2018, 187, 140-153.	3.0	159
10	25.1%-Efficient Monolithic Perovskite/Silicon Tandem Solar Cell Based on a <i>p</i>-type Monocrystalline Textured Silicon Wafer and High-Temperature Passivating Contacts. ACS Energy Letters, 2019, 4, 844-845.	8.8	152
11	Amorphous Si Thin Film Based Photocathodes with High Photovoltage for Efficient Hydrogen Production. Nano Letters, 2013, 13, 5615-5618.	4.5	151
12	High-Efficiency Silicon Heterojunction Solar Cells: Materials, Devices and Applications. Materials Science and Engineering Reports, 2020, 142, 100579.	14.8	139
13	Status and perspectives of crystalline silicon photovoltaics in research and industry. Nature Reviews Materials, 2022, 7, 597-616.	23.3	139
14	Multiscale Transparent Electrode Architecture for Efficient Light Management and Carrier Collection in Solar Cells. Nano Letters, 2012, 12, 1344-1348.	4.5	127
15	Mixed-phase p-type silicon oxide containing silicon nanocrystals and its role in thin-film silicon solar cells. Applied Physics Letters, 2010, 97, .	1.5	119
16	Silicon Filaments in Silicon Oxide for Nextâ€Generation Photovoltaics. Advanced Materials, 2012, 24, 1182-1186.	11.1	118
17	Highâ€efficiency microcrystalline silicon singleâ€junction solar cells. Progress in Photovoltaics: Research and Applications, 2013, 21, 821-826.	4.4	90
18	Recent advances and remaining challenges in thin-film silicon photovoltaic technology. Materials Today, 2015, 18, 378-384.	8.3	83

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19	Optimization of thin film silicon solar cells on highly textured substrates. Physica Status Solidi (A) Applications and Materials Science, 2011, 208, 1863-1868.	0.8	82
20	Optimized short-circuit current mismatch in multi-junction solar cells. Solar Energy Materials and Solar Cells, 2013, 117, 120-125.	3.0	65
21	Efficient light management scheme for thin film silicon solar cells via transparent random nanostructures fabricated by nanoimprinting. Applied Physics Letters, 2010, 96, .	1.5	63
22	Amorphous silicon carbide passivating layers for crystalline-silicon-based heterojunction solar cells. Journal of Applied Physics, 2015, 118, .	1.1	56
23	Mitigating Plasmonic Absorption Losses at Rear Electrodes in Highâ€Efficiency Silicon Solar Cells Using Dopantâ€Free Contact Stacks. Advanced Functional Materials, 2020, 30, 1907840.	7.8	55
24	High-Stable-Efficiency Tandem Thin-Film Silicon Solar Cell With Low-Refractive-Index Silicon-Oxide Interlayer. IEEE Journal of Photovoltaics, 2014, 4, 1368-1373.	1.5	52
25	ITO/SiOx:H stacks for silicon heterojunction solar cells. Solar Energy Materials and Solar Cells, 2016, 158, 98-101.	3.0	52
26	Passivation, conductivity, and selectivity in solar cell contacts: Concepts and simulations based on a unified partial-resistances framework. Journal of Applied Physics, 2019, 126, .	1.1	49
27	Influence of the Subcell Properties on the Fill Factor of Two-Terminal Perovskiteâ€“Silicon Tandem Solar Cells. ACS Energy Letters, 2020, 5, 1077-1082.	8.8	49
28	Highly Conductive and Broadband Transparent Zr-Doped In₂O₃ as Front Electrode for Solar Cells. IEEE Journal of Photovoltaics, 2018, 8, 1202-1207.	1.5	46
29	Micromorph thin-film silicon solar cells with transparent high-mobility hydrogenated indium oxide front electrodes. Journal of Applied Physics, 2011, 109, .	1.1	43
30	Optimization of ZnO Front Electrodes for High-Efficiency Micromorph Thin-Film Si Solar Cells. IEEE Journal of Photovoltaics, 2012, 2, 229-235.	1.5	42
31	Toward Annealingâ€Stable Molybdenumâ€Oxideâ€Based Holeâ€Selective Contacts For Silicon Photovoltaics. Solar Rrl, 2018, 2, 1700227.	3.1	42
32	Highly transparent ZnO bilayers by LP-MOCVD as front electrodes for thin-film micromorph silicon solar cells. Solar Energy Materials and Solar Cells, 2012, 98, 331-336.	3.0	38
33	Annealing of Silicon Heterojunction Solar Cells: Interplay of Solar Cell and Indium Tin Oxide Properties. IEEE Journal of Photovoltaics, 2019, 9, 1202-1207.	1.5	37
34	Contact Resistivity of the p-Type Amorphous Silicon Hole Contact in Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2020, 10, 54-62.	1.5	34
35	Low-Temperature p-Type Microcrystalline Silicon as Carrier Selective Contact for Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2019, 9, 1158-1165.	1.5	33
36	Influence of Light Soaking on Silicon Heterojunction Solar Cells With Various Architectures. IEEE Journal of Photovoltaics, 2021, 11, 575-583.	1.5	33

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37	Carrierâ€selective contacts using metal compounds for crystalline silicon solar cells. Progress in Photovoltaics: Research and Applications, 2023, 31, 380-413.	4.4	33
38	Lateral transport in silicon solar cells. Journal of Applied Physics, 2020, 127, .	1.1	32
39	Substrate dependent stability and interplay between optical and electrical properties in Î¼c-Si:H single junction solar cells. Solar Energy Materials and Solar Cells, 2011, 95, 195-198.	3.0	31
40	Light trapping in solar cells: Analytical modeling. Applied Physics Letters, 2012, 101, .	1.5	31
41	Light trapping in solar cells: When does a Lambertian scatterer scatter Lambertianly?. Journal of Applied Physics, 2012, 112, .	1.1	30
42	Thin-Film Silicon Triple-Junction Solar Cells on Highly Transparent Front Electrodes With Stabilized Efficiencies up to 12.8%. IEEE Journal of Photovoltaics, 2014, 4, 757-762.	1.5	30
43	On the Interplay Between Microstructure and Interfaces in High-Efficiency Microcrystalline Silicon Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 11-16.	1.5	29
44	New progress in the fabrication of nâ€“iâ€“p micromorph solar cells for opaque substrates. Solar Energy Materials and Solar Cells, 2013, 114, 147-155.	3.0	29
45	Unlinking absorption and haze in thin film silicon solar cells front electrodes. Physica Status Solidi - Rapid Research Letters, 2010, 4, 326-328.	1.2	28
46	Dopantâ€Free Backâ€Contacted Silicon Solar Cells with an Efficiency of 22.1%. Physica Status Solidi - Rapid Research Letters, 2020, 14, 1900688.	1.2	27
47	Nanometer- and Micrometer-Scale Texturing for High-Efficiency Micromorph Thin-Film Silicon Solar Cells. IEEE Journal of Photovoltaics, 2012, 2, 83-87.	1.5	25
48	Loss Analysis of Monocrystalline CdTe Solar Cells With 20% Active-Area Efficiency. IEEE Journal of Photovoltaics, 2017, 7, 900-905.	1.5	23
49	Exploring co-sputtering of ZnO:Al and SiO2 for efficient electron-selective contacts on silicon solar cells. Solar Energy Materials and Solar Cells, 2019, 194, 67-73.	3.0	23
50	Zr-doped indium oxide electrodes: Annealing and thickness effects on microstructure and carrier transport. Physical Review Materials, 2019, 3, .	0.9	23
51	Plasma-initiated rehydrogenation of amorphous silicon to increase the temperature processing window of silicon heterojunction solar cells. Applied Physics Letters, 2016, 109, .	1.5	22
52	22% efficient dopant-free interdigitated back contact silicon solar cells. AIP Conference Proceedings, 2018, , .	0.3	20
53	2-D Periodic and Random-on-Periodic Front Textures for Tandem Thin-Film Silicon Solar Cells. IEEE Journal of Photovoltaics, 2014, 4, 1177-1184.	1.5	18
54	Micromorph silicon solar cell optical performance: Influence of intermediate reflector and front electrode surface texture. Solar Energy Materials and Solar Cells, 2014, 130, 401-409.	3.0	18

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55	Silver versus white sheet as a back reflector for microcrystalline silicon solar cells deposited on LPCVDâ€ZnO electrodes of various textures. Progress in Photovoltaics: Research and Applications, 2015, 23, 1182-1189.	4.4	18
56	Degradation Mechanism and Stability Improvement of Dopant-Free ZnO/LiF<i>_x</i>/Al Electron Nanocontacts in Silicon Heterojunction Solar Cells. ACS Applied Nano Materials, 2020, 3, 11391-11398.	2.4	18
57	Design Rules to Fully Benefit From Bifaciality in Two-Terminal Perovskite/Silicon Tandem Solar Cells. IEEE Journal of Photovoltaics, 2020, 10, 714-721.	1.5	18
58	Self-Patterned Nanoparticle Layers for Vertical Interconnects: Application in Tandem Solar Cells. Nano Letters, 2014, 14, 5085-5091.	4.5	17
59	High-mobility Hydrogenated Indium Oxide without Introducing Water During Sputtering. Energy Procedia, 2016, 92, 297-303.	1.8	16
60	Latest Developments of High-Efficiency Micromorph Tandem Silicon Solar Cells Implementing Innovative Substrate Materials and Improved Cell Design. IEEE Journal of Photovoltaics, 2012, 2, 236-240.	1.5	15
61	Variable light biasing method to measure component Iâ€“V characteristics of multi-junction solar cells. Solar Energy Materials and Solar Cells, 2012, 103, 128-133.	3.0	15
62	Comparison of amorphous silicon absorber materials: Kinetics of lightâ€induced degradation. Progress in Photovoltaics: Research and Applications, 2016, 24, 446-457.	4.4	15
63	Hetero-emitter GaP/Si solar cells with high Si bulk lifetime. , 2016, , .		14
64	Amorphous gallium oxide grown by low-temperature PECVD. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2018, 36, 021518.	0.9	13
65	Record-Efficiency n-Type and High-Efficiency p-Type Monolike Silicon Heterojunction Solar Cells with a High-Temperature Gettering Process. ACS Applied Energy Materials, 2019, 2, 4900-4906.	2.5	13
66	Lowâ€refractiveâ€index nanoparticle interlayers to reduce parasitic absorption in metallic rear reflectors of solar cells. Physica Status Solidi (A) Applications and Materials Science, 2017, 214, 1700179.	0.8	12
67	New Generation Transparent LPCVD ZnO Electrodes for Enhanced Photocurrent in Micromorph Solar Cells and Modules. IEEE Journal of Photovoltaics, 2012, 2, 88-93.	1.5	11
68	Smoothening intermediate reflecting layer for tandem thin-film silicon solar cells. Solar Energy Materials and Solar Cells, 2013, 119, 12-17.	3.0	11
69	Microcrystalline silicon solar cells with passivated interfaces for high openâ€circuit voltage. Physica Status Solidi (A) Applications and Materials Science, 2015, 212, 840-845.	0.8	11
70	Passivation and carrier selectivity of TiO<inf>2</inf> contacts combined with different passivation layers and electrodes for silicon solar cells. , 2016, , .		11
71	Hole-Selective Front Contact Stack Enabling 24.1%-Efficient Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2021, 11, 9-15.	1.5	11
72	Dopantâ€Free Bifacial Silicon Solar Cells. Solar Rrl, 2021, 5, 2000771.	3.1	11

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73	Silicon oxide treatment to promote crystallinity of p-type microcrystalline layers for silicon heterojunction solar cells. AIP Conference Proceedings, 2018, , .	0.3	10
74	Palliating the efficiency loss due to shunting in perovskite/silicon tandem solar cells through modifying the resistive properties of the recombination junction. Sustainable Energy and Fuels, 2021, 5, 2036-2045.	2.5	10
75	Experimental Evaluation of the Light Trapping Potential of Optical Nanostructures for Thin-Film Silicon Solar Cells. Energy Procedia, 2012, 15, 206-211.	1.8	9
76	Evaluation of metal oxides prepared by reactive sputtering as carrier-selective contacts for crystalline silicon solar cells. , 2015, , .		9
77	Light trapping in solar cells: numerical modeling with measured surface textures. Optics Express, 2015, 23, A539.	1.7	9
78	Monocrystalline CdTe/MgCdTe Double-Heterostructure Solar Cells With ZnTe Hole Contacts. IEEE Journal of Photovoltaics, 2017, 7, 307-312.	1.5	9
79	Monocrystalline 1.7-eV-Bandgap MgCdTe Solar Cell With 11.2% Efficiency. IEEE Journal of Photovoltaics, 2018, 8, 581-586.	1.5	9
80	Optimized Design of Silicon Heterojunction Solar Cells for Field Operating Conditions. IEEE Journal of Photovoltaics, 2019, 9, 1541-1547.	1.5	9
81	Influence of the Dopant Gas Precursor in P-Type Nanocrystalline Silicon Layers on the Performance of Front Junction Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2021, 11, 944-956.	1.5	9
82	Current matching optimization in high-efficiency thin-film silicon tandem solar cells. , 2013, , .		8
83	CdTe nBn photodetectors with ZnTe barrier layer grown on InSb substrates. Applied Physics Letters, 2016, 109, .	1.5	8
84	Nanocrystalline silicon oxide stacks for silicon heterojunction solar cells for hot climates. AIP Conference Proceedings, 2018, , .	0.3	8
85	Nitride layer screening as carrier-selective contacts for silicon heterojunction solar cells. AIP Conference Proceedings, 2018, , .	0.3	8
86	Performance Limitations and Analysis of Silicon Heterojunction Solar Cells Using Ultra-Thin MoO_xHole-Selective Contacts. IEEE Journal of Photovoltaics, 2021, 11, 1158-1166.	1.5	8
87	Optimization of the Asymmetric Intermediate Reflector Morphology for High Stabilized Efficiency Thin n-i-p Micromorph Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 41-45.	1.5	7
88	Evaluating Materials Design Parameters of Hole-Selective Contacts for Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2021, 11, 247-258.	1.5	7
89	Advanced method for electrical characterization of carrier-selective passivating contacts using transfer-length-method measurements under variable illumination. Journal of Applied Physics, 2021, 129, .	1.1	7
90	The amazing improvement of silicon heterojunction technology: ready for a true mass market launch. , 2018, , .		6

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91	Silicon Nitride Barrier Layers Mitigate Minority-Carrier Lifetime Degradation in Silicon Wafers During Simulated MBE Growth of IIIâ€“V Layers. IEEE Journal of Photovoltaics, 2019, 9, 431-436.	1.5	6
92	Temperatureâ€dependent performance of silicon heterojunction solar cells with transitionâ€metalâ€oxideâ€based selective contacts. Progress in Photovoltaics: Research and Applications, 2022, 30, 981-993.	4.4	6
93	Transferability of the Light-Soaking Benefits on Silicon Heterojunction Cells to Module. IEEE Journal of Photovoltaics, 2022, 12, 662-668.	1.5	6
94	Carrier-selective contacts in silicon solar cells. , 2015, , .		5
95	Towards an optimum silicon heterojunction solar cell configuration for high temperature and high light intensity environment. Energy Procedia, 2017, 124, 331-337.	1.8	5
96	Reassessment of cell to module gains and losses: Accounting for the current boost specific to cells located on the edges. AIP Conference Proceedings, 2018, , .	0.3	5
97	Impact of the oxygen content on the optoelectronic properties of the indium-tin-oxide based transparent electrodes for silicon heterojunction solar cells. AIP Conference Proceedings, 2019, , .	0.3	5
98	Effects of Work Function and Electron Affinity on the Performance of Carrier-Selective Contacts in Silicon Solar Cells Using ZnSn_{$_ext{} x $} Ge_{$_ext{} 1-x $}N$_ext{2}$ as a Case Study. IEEE Journal of Photovoltaics, 2021, 11, 1350-1357.	1.5	5
99	The role of front and back electrodes in parasitic absorption in thin-film solar cells. EPJ Photovoltaics, 2014, 5, 50601.	0.8	4
100	MoOx and WOx based hole-selective contacts for wafer-based Si solar cells. , 2017, , .		4
101	Gallium Nitride as Transparent Electron-Selective Contact in Silicon Heterojunction Solar Cells. , 2019, , .		4
102	Injection-dependent lateral resistance in front-junction solar cells with nc-Si:H and a-Si:H hole selective contact. , 2019, , .		3
103	Influence of local surface defects on the minority-carrier lifetime of passivating-contact solar cells. Applied Physics Letters, 2020, 116, 113901.	1.5	3
104	Light harvesting schemes for high efficiency thin film silicon solar cells. , 2012, , .		2
105	1.7 eV MgCdTe double-heterostructure solar cells for tandem device applications. , 2016, , .		2
106	Monocrystalline CdTe/MgCdTe double-heterostructure solar cells with a ZnTe hole-contact and passivation layer. , 2016, , .		2
107	Hybrid sequential deposition process for fully textured perovskite/silicon tandem solar cells. , 2018, , .		2
108	Properties of hydrogenated indium oxide prepared by reactive sputtering with hydrogen gas. , 2016, , .		1

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109	Development of N-Type Amorphous and Microcrystalline Hydrogenated Silicon-Oxides (SiOx:H) and Investigation of their Impact as Window Layers on Silicon Heterojunction Solar Cells Device. , 2019, , .		1
110	Illumination-Dependent Requirements for Heterojunctions and Carrier-Selective Contacts on Silicon. IEEE Journal of Photovoltaics, 2020, 10, 1214-1225.	1.5	1
111	Bottom-Up and Top-Down Approaches for Identifying and Mitigating Electrical Losses in Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2022, 12, 906-914.	1.5	1
112	Back Cover: Optimization of thin film silicon solar cells on highly textured substrates (Phys. Status) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50	0.8	0
113	Innovative Device Architecture for High Efficiency Thin Film Silicon Solar Cells. Materials Research Society Symposia Proceedings, 2012, 1426, 131-135.	0.1	0
114	Optimization of the asymmetric intermediate reflector morphology for high stabilized efficiency thin n-i-p micromorph solar cells. , 2012, , .		0
115	On the interplay between microstructure and interfaces in high-efficiency microcrystalline silicon solar cells. , 2012, , .		0
116	Optimization of the asymmetric intermediate reflector morphology for high stabilized efficiency thin n-i-p micromorph solar cells. , 2013, , .		0
117	On the interplay between microstructure and interfaces in high-efficiency microcrystalline silicon solar cells. , 2013, , .		0
118	Post-deposition treatment of microcrystalline silicon solar cells for improved performance on rough superstrates. Journal of Applied Physics, 2014, 116, 244504.	1.1	0
119	Crystalline silicon passivation with amorphous silicon carbide layers. , 2016, , .		0
120	Corrections to â€œHighly Conductive and Broadband Transparent Zr-Doped In2O3 as Front Electrode for Solar Cellsâ€•[Sep 18 1202-1207]. IEEE Journal of Photovoltaics, 2019, 9, 1155-1155.	1.5	0
121	ZnSnxGe1-xN2 as electron-selective contact for silicon heterojunction solar cells. , 2021, , .		0
122	Advanced nanostructured materials for pushing light trapping towards the Yablonovitch limit. , 2011, , .		0
123	Hybrid Fabrication Method for High Efficiency Monolithic Perovskite/Silicon Tandem Solar Cells. , 0, , .		0
124	A nanometric view on performance-loss mechanisms in perovskite/c-Si multi-junction solar cells. , 0, , .		0
125	Monocrystalline 1.7-eV MgCdTe solar cells. Journal of Applied Physics, 2022, 131, 023107.	1.1	0