Takuya Matsui

List of Publications by Year
in descending order

95 papers	3,400 citations	159358 30 h-index	143772 57 g-index
95 all docs	95 docs citations	95 times ranked	3350 citing authors

#	Article	IF	Citations
1	Theoretical analysis of the effect of conduction band offset of window/CIS layers on performance of CIS solar cells using device simulation. Solar Energy Materials and Solar Cells, 2001, 67, 83-88.	3.0	560
2	Photocatalytic generation of hydrogen by core-shell WO3/BiVO4 nanorods with ultimate water splitting efficiency. Scientific Reports, 2015, 5, 11141.	1.6	464
3	Triple-junction thin-film silicon solar cell fabricated on periodically textured substrate with a stabilized efficiency of 13.6%. Applied Physics Letters, 2015, 106, .	1.5	100
4	High-rate deposition of microcrystalline silicon p-i-n solar cells in the high pressure depletion regime. Journal of Applied Physics, 2008, 104, 034508.	1.1	99
5	High-efficiency amorphous silicon solar cells: Impact of deposition rate on metastability. Applied Physics Letters, 2015, 106, .	1.5	96
6	Origin of the Improved Performance of High-Deposition-Rate Microcrystalline Silicon Solar Cells by High-Pressure Glow Discharge. Japanese Journal of Applied Physics, 2003, 42, L901-L903.	0.8	80
7	Improvement in quantum efficiency of thin film Si solar cells due to the suppression of optical reflectance at transparent conducting oxide/Si interface by TiO2â^•ZnO antireflection coating. Applied Physics Letters, 2006, 88, 183508.	1.5	78
8	Correlation between Microstructure and Photovoltaic Performance of Polycrystalline Silicon Thin Film Solar Cells. Japanese Journal of Applied Physics, 2002, 41, 20-27.	0.8	75
9	11.0%-Efficient Thin-Film Microcrystalline Silicon Solar Cells With Honeycomb Textured Substrates. IEEE Journal of Photovoltaics, 2014, 4, 1349-1353.	1.5	73
10	Potential of thin-film silicon solar cells by using high haze TCO superstrates. Thin Solid Films, 2010, 518, 3054-3058.	0.8	72
11	Influence of alloy composition on carrier transport and solar cell properties of hydrogenated microcrystalline silicon-germanium thin films. Applied Physics Letters, 2006, 89, 142115.	1.5	69
12	Infrared analysis of the bulk silicon-hydrogen bonds as an optimization tool for high-rate deposition of microcrystalline silicon solar cells. Applied Physics Letters, 2008, 92, 033506.	1.5	67
13	Stabilized 14.0%-efficient triple-junction thin-film silicon solar cell. Applied Physics Letters, 2016, 109, .	1.5	67
14	High-efficiency microcrystalline silicon solar cells on honeycomb textured substrates grown with high-rate VHF plasma-enhanced chemical vapor deposition. Japanese Journal of Applied Physics, 2015, 54, 08KB05.	0.8	65
15	High-efficiency thin-film silicon solar cells realized by integrating stable a-Si:H absorbers into improved device design. Japanese Journal of Applied Physics, 2015, 54, 08KB10.	0.8	65
16	Highâ€efficiency thinâ€film silicon solar cells with improved lightâ€soaking stability. Progress in Photovoltaics: Research and Applications, 2013, 21, 1363-1369.	4.4	63
17	High-rate microcrystalline silicon deposition for pâ€"iâ€"n junction solar cells. Solar Energy Materials and Solar Cells, 2006, 90, 3199-3204.	3.0	62
18	Photocurrent enhancement in thinâ€film silicon solar cells by combination of antiâ€reflective subâ€wavelength structures and lightâ€trapping textures. Progress in Photovoltaics: Research and Applications, 2015, 23, 1572-1580.	4.4	56

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19	Impact of intrinsic amorphous silicon bilayers in silicon heterojunction solar cells. Journal of Applied Physics, 2018, 124, .	1.1	54
20	Microcrystalline Silicon Solar Cells with 10.5% Efficiency Realized by Improved Photon Absorption via Periodic Textures and Highly Transparent Conductive Oxide. Applied Physics Express, 2013, 6, 104101.	1.1	51
21	Influence of substrate texture on microstructure and photovoltaic performances of thin film polycrystalline silicon solar cells. Journal of Non-Crystalline Solids, 2002, 299-302, 1152-1156.	1.5	49
22	Thin film solar cells incorporating microcrystalline Si_{1â€“<i>x</i>}Ge_{<i>x</i>} as efficient infrared absorber: an application to double junction tandem solar cells. Progress in Photovoltaics: Research and Applications, 2010, 18, 48-53.	4.4	47
23	Potential of very thin and highâ€efficiency silicon heterojunction solar cells. Progress in Photovoltaics: Research and Applications, 2019, 27, 1061-1070.	4.4	47
24	Key issues for fabrication of high quality amorphous and microcrystalline silicon solar cells. Thin Solid Films, 2006, 501, 243-246.	0.8	42
25	Progress and limitations of thin-film silicon solar cells. Solar Energy, 2018, 170, 486-498.	2.9	41
26	Thin-film microcrystalline silicon solar cells: 11.9% efficiency and beyond. Applied Physics Express, 2018, 11, 022301.	1.1	38
27	Microcrystalline siliconâ€“germanium alloys for solar cell application: Growth and material properties. Journal of Non-Crystalline Solids, 2006, 352, 1255-1258.	1.5	36
28	Thin film solar cells based on microcrystalline siliconâ€“germanium narrow-gap absorbers. Solar Energy Materials and Solar Cells, 2009, 93, 1100-1102.	3.0	35
29	Microcrystalline Si_{1-<i>x</i>}Ge_{<i>x</i>}Solar Cells Exhibiting Enhanced Infrared Response with Reduced Absorber Thickness. Applied Physics Express, 0, 1, 031501.	1.1	34
30	Microstructural dependence of electron and hole transport in low-temperature-grown polycrystalline-silicon thin-film solar cells. Applied Physics Letters, 2002, 81, 4751-4753.	1.5	33
31	Highly stabilized hydrogenated amorphous silicon solar cells fabricated by triode-plasma CVD. Thin Solid Films, 2006, 502, 306-310.	0.8	32
32	Investigation of atomic-layer-deposited TiOx as selective electron and hole contacts to crystalline silicon. Energy Procedia, 2017, 124, 628-634.	1.8	29
33	Tandem photovoltaicâ€“photoelectrochemical GaAs/InGaAsPâ€“WO₃/BiVO₄ device for solar hydrogen generation. Japanese Journal of Applied Physics, 2016, 55, 04ES01.	0.8	28
34	Atomic-Layer-Deposited TiO_{<i>x</i>} Nanolayers Function as Efficient Hole-Selective Passivating Contacts in Silicon Solar Cells. ACS Applied Materials & Interfaces, 2020, 12, 49777-49785.	4.0	28
35	Origin of the tunable carrier selectivity of atomic-layer-deposited TiOx nanolayers in crystalline silicon solar cells. Solar Energy Materials and Solar Cells, 2020, 209, 110461.	3.0	28
36	The Nature and the Kinetics of Light-Induced Defect Creation in Hydrogenated Amorphous Silicon Films and Solar Cells. IEEE Journal of Photovoltaics, 2014, 4, 1331-1336.	1.5	26

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37	Impact of silicon wafer thickness on photovoltaic performance of crystalline silicon heterojunction solar cells. Japanese Journal of Applied Physics, 2018, 57, 08RB10.	0.8	26
38	Influences of deposition temperature on characteristics of B-doped ZnO films deposited by metalâ€"organic chemical vapor deposition. Thin Solid Films, 2014, 559, 83-87.	0.8	25
39	Advanced materials processing for high-efficiency thin-film silicon solar cells. Solar Energy Materials and Solar Cells, 2013, 119, 156-162.	3.0	24
40	Very Thin (56â€‰Î¼m) Silicon Heterojunction Solar Cells with an Efficiency of 23.3% and an Openâ€Circuit Voltage of 754â€‰mV. Solar Rrl, 2021, 5, 2100634.	3.1	23
41	Defect Reduction in Polycrystalline Silicon Thin Films by Heat Treatment with High-Pressure H2O Vapor. Japanese Journal of Applied Physics, 2007, 46, 1286-1289.	0.8	22
42	Electron spin resonance study of hydrogenated microcrystalline siliconâ€"germanium alloy thin films. Journal of Non-Crystalline Solids, 2008, 354, 2365-2368.	1.5	22
43	Doping properties of boron-doped microcrystalline silicon from B2H6 and BF3: material properties and solar cell performance. Journal of Non-Crystalline Solids, 2004, 338-340, 646-650.	1.5	21
44	Effect of illumination-induced space charge on photocarrier transport in hydrogenated microcrystalline Si1â^'xGex p-i-n solar cells. Applied Physics Letters, 2007, 91, 102111.	1.5	21
45	Nanocrystallineâ€silicon hole contact layers enabling efficiency improvement of silicon heterojunction solar cells: Impact of nanostructure evolution on solar cell performance. Progress in Photovoltaics: Research and Applications, 2021, 29, 344-356.	4.4	20
46	The sputter deposition of broadband transparent and highly conductive cerium and hydrogen coâ€doped indium oxide and its transfer to silicon heterojunction solar cells. Progress in Photovoltaics: Research and Applications, 2021, 29, 835-845.	4.4	19
47	Photovoltaic Action in Polyaniline/n-GaN Schottky Diodes. Applied Physics Express, 2009, 2, 092201.	1.1	18
48	Carrier collection characteristics of microcrystalline siliconâ€"germanium pâ€"iâ€"n junction solar cells. Journal of Non-Crystalline Solids, 2008, 354, 2468-2471.	1.5	17
49	Formation of Low-Defect-Concentration Polycrystalline Silicon Films by Thermal Plasma Jet Crystallization Technique. Japanese Journal of Applied Physics, 2008, 47, 6949-6952.	0.8	17
50	Intrinsic Amorphous Silicon Bilayers for Effective Surface Passivation in Silicon Heterojunction Solar Cells: A Comparative Study of Interfacial Layers. Physica Status Solidi (A) Applications and Materials Science, 2021, 218, 2000743.	0.8	17
51	2D-numerical analysis and optimum design of thin film silicon solar cells. Solar Energy Materials and Solar Cells, 2001, 65, 87-93.	3.0	13
52	Thin Film Solar Cells Prepared on Low Thermal Budget Polycrystalline Silicon Seed Layers. Japanese Journal of Applied Physics, 2010, 49, 112301.	0.8	13
53	Analysis of bulk and interface defects in hydrogenated amorphous silicon solar cells by Fourier transform photocurrent spectroscopy. Journal of Applied Physics, 2015, 118, .	1.1	13
54	Honeycomb micro-textures for light trapping in multi-crystalline silicon thin-film solar cells. Optics Express, 2018, 26, A498.	1.7	13

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55	Very thin crystalline silicon cells: A way to improve the photovoltaic performance at elevated temperatures. Progress in Photovoltaics: Research and Applications, 2021, 29, 1093-1104.	4.4	13
56	Roles of hydrogen atoms in p-type Poly-Si/SiO<i>x</i> passivation layer for crystalline silicon solar cell applications. Japanese Journal of Applied Physics, 2019, 58, 050915.	0.8	12
57	Carrier Transport in Polycrystalline Silicon Photovoltaic Layer on Highly Textured Substrate. Japanese Journal of Applied Physics, 2003, 42, 6753-6758.	0.8	11
58	Effect of oxygen doping in microcrystalline SiGe p-i-n solar cells. Journal of Applied Physics, 2014, 116, 053701.	1.1	11
59	Key Points in the Latest Developments of Highâ€Efficiency Thinâ€Film Silicon Solar Cells. Physica Status Solidi (A) Applications and Materials Science, 2017, 214, 1700544.	0.8	11
60	Microcrystalline siliconâ€"germanium thin films prepared by the chemical transport process using hydrogen radicals. Journal of Non-Crystalline Solids, 2008, 354, 2109-2112.	1.5	10
61	Effect of Front TCO Layer on Properties of Substrate-Type Thin-Film Microcrystalline Silicon Solar Cells. IEEE Journal of Photovoltaics, 2015, 5, 1528-1533.	1.5	9
62	Integration of Si Heterojunction Solar Cells with IIIâ€"V Solar Cells by the Pd Nanoparticle Array-Mediated â€œSmart Stackâ€• Approach. ACS Applied Materials & Interfaces, 2022, 14, 11322-11329.	4.0	9
63	Enhanced infrared transmission of GZO film by rapid thermal annealing for Si thin film solar cells. Progress in Photovoltaics: Research and Applications, 2012, 20, 111-116.	4.4	8
64	High-Rate Plasma Process for Microcrystalline Silicon: Over 9% Efficiency Single Junction Solar Cells. Materials Research Society Symposia Proceedings, 2004, 808, 395.	0.1	7
65	Amorphous-Silicon-Based Thin-Film Solar Cells Exhibiting Low Light-Induced Degradation. Japanese Journal of Applied Physics, 2012, 51, 10NB04.	0.8	7
66	Amorphous-Silicon-Based Thin-Film Solar Cells Exhibiting Low Light-Induced Degradation. Japanese Journal of Applied Physics, 2012, 51, 10NB04.	0.8	7
67	Analysis of Optical and Recombination Losses in Solar Cells. Springer Series in Optical Sciences, 2018, , 29-82.	0.5	6
68	<i>In Situ</i> Grown Nanocrystalline Si Recombination Junction Layers for Efficient Perovskiteâ€"Si Monolithic Tandem Solar Cells: Toward a Simpler Multijunction Architecture. ACS Applied Materials & Interfaces, 2022, 14, 33505-33514.	4.0	6
69	Correlation between Microstructure and Electronic Property of Solar-Grade Poly-Si Thin-Films Deposited on Textured Substrates. Solid State Phenomena, 2003, 93, 115-120.	0.3	5
70	High-Efficiency Microcrystalline Silicon and Microcrystalline Silicon-Germanium Alloy Solar Cells. Materials Research Society Symposia Proceedings, 2011, 1321, 21.	0.1	5
71	Compensation of Native Defect Acceptors in Microcrystalline Ge and Si_{1-x}Ge_x Thin Films by Oxygen Incorporation: Electrical Properties and Solar Cell Performance. Japanese Journal of Applied Physics, 2012, 51, 091302.	0.8	5
72	Highly-transparent ZnO:Ga through rapid thermal annealing for low-bandgap solar cell application. , 2009, , .		4

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73	Application of microcrystalline Si<inf>1−x</inf>Ge<inf>x</inf> infrared absorbers in triple junction solar cells. , 2010, , .		4
74	Role of the Fermi level in the formation of electronic band-tails and mid-gap states of hydrogenated amorphous silicon in thin-film solar cells. Journal of Applied Physics, 2017, 122, 093101.	1.1	3
75	Crucial processing steps for microcrystalline silicon bottom cells. , 0, , .		2
76	Improved Stability of Hydrogenated Amorphous Silicon Solar Cells Fabricated by Triode-Plasma CVD. Materials Research Society Symposia Proceedings, 2005, 862, 1111.	0.1	2
77	Improved metastability and performance of amorphous silicon solar cells. Materials Research Society Symposia Proceedings, 2014, 1666, 7.	0.1	2
78	Hydrogen passivation effect on p-type poly-Si/SiOx stack for crystalline silicon solar cells. AIP Conference Proceedings, 2019, , .	0.3	2
79	Carrier Transport in Microcrystalline Silicon-Germanium Alloy Films and Solar Cells. , 2006, , .		1
80	Measuring the Electronic Properties of Poly-Si Thin Film Solar Cells Deposited on Textured Substrate. , 2006, , .		1
81	Impact of front TCO layer in substrate-type thin-film microcrystalline silicon solar cells. , 2015, , .		1
82	Impact of carrier doping on electrical properties of laser-induced liquid-phase-crystallized silicon thin films for solar cell application. Japanese Journal of Applied Physics, 2018, 57, 021302.	0.8	1
83	Interplay between intrinsic bi-layers and overlying doped layers in a-Si:H/c-Si heterojunction solar cells. , 2018, , .		1
84	Crystallite distribution analysis based on hydrogen content in thin-film nanocrystalline silicon solar cells by atom probe tomography. Applied Physics Express, 2021, 14, 016501.	1.1	1
85	Thin film poly-Si solar cells prepared by PECVD using very high excitation frequency. , 0, , .		0
86	Integration of high-rate deposited microcrystalline silicon films in to solar cells in the high pressure depletion regime. Conference Record of the IEEE Photovoltaic Specialists Conference, 2008, , .	0.0	0
87	Development and progress in thin film Si photovoltaic technologies. , 2014, , .		0
88	Potential of a-Si:H/c-Si Heterojunction Solar Cells with Very thin Wafers. , 2017, , .		0
89	Investigation of Interface and Bulk Localized States in a-Si:H Solar Cells. , 2017, , .		0
90	Towards 10% State-of-the-Art Pure Sulfide Cu2ZnSnS4 Solar Cell by modifying the Interface Chemistry. , 2017, , .		0

#	Article	IF	Citations
91	Investigation of P-type Hydrogenated Nanocrystalline Silicon Grown by VHF-PECVD as Emitter in Silicon Heterojunction Solar Cells. , 2018, , .		0
92	<i>(Invited)</i> A Novel Optical Characterization of a-Si:H/c-Si Interface Microstructures Based on Data of Positron Annihilation Spectroscopy. ECS Transactions, 2019, 92, 21-24.	0.3	0
93	Compensation of Native Defect Acceptors in Microcrystalline Ge and Si1-xGexThin Films by Oxygen Incorporation: Electrical Properties and Solar Cell Performance. Japanese Journal of Applied Physics, 2012, 51, 091302.	0.8	0
94	(Invited) A Novel Optical Characterization of a-Si:H/c-Si Interface Microstructures Based on Data of Positron Annihilation Spectroscopy. ECS Meeting Abstracts, 2019, , .	0.0	0
95	Challenges for silicon heterojunction solar cells: Toward thinner device and new contact development. , 2020, , .		0