Ivan Garcia

List of Publications by Year in descending order

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124	2,301	279798	243625
papers	citations	23 h-index	44 g-index

127	127	127	1547
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Optical enhancement of the open-circuit voltage in high quality GaAs solar cells. Journal of Applied Physics, 2013, 113, .	2.5	258
2	Enhanced external radiative efficiency for 20.8% efficient single-junction GaInP solar cells. Applied Physics Letters, 2013, 103, .	3.3	254
3	Quadruple-Junction Inverted Metamorphic Concentrator Devices. IEEE Journal of Photovoltaics, 2015, 5, 432-437.	2.5	101
4	Generalized Optoelectronic Model of Series-Connected Multijunction Solar Cells. IEEE Journal of Photovoltaics, 2015, 5, 1827-1839.	2.5	97
5	A 3-D Model for Concentrator Solar Cells Based on Distributed Circuit Units. IEEE Transactions on Electron Devices, 2005, 52, 2552-2558.	3.0	90
6	Design Flexibility of Ultrahigh Efficiency Four-Junction Inverted Metamorphic Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 578-583.	2.5	79
7	Effects of Internal Luminescence and Internal Optics on $V_{f oc}$ and $J_{f sc}$ of III–V Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 1437-1442.	2.5	77
8	A 32.6% efficient lattice-matched dual-junction solar cell working at 1000 suns. Applied Physics Letters, 2009, 94, .	3.3	74
9	Analysis of perimeter recombination in the subcells of GaInP/GaAs/Ge tripleâ€junction solar cells. Progress in Photovoltaics: Research and Applications, 2015, 23, 874-882.	8.1	50
10	Performance analysis of AlGaAs/GaAs tunnel junctions for ultra-high concentration photovoltaics. Journal Physics D: Applied Physics, 2012, 45, 045101.	2.8	47
11	A comparative study of BSF layers for GaAs-based single-junction or multijunction concentrator solar cells. Semiconductor Science and Technology, 2006, 21, 1387-1392.	2.0	41
12	Refractive indexes and extinction coefficients of n- and p-type doped GaInP, AlInP and AlGaInP for multijunction solar cells. Solar Energy Materials and Solar Cells, 2018, 174, 388-396.	6.2	40
13	Lattice-Mismatched 0.7-eV GaInAs Solar Cells Grown on GaAs Using GaInP Compositionally Graded Buffers. IEEE Journal of Photovoltaics, 2014, 4, 190-195.	2.5	39
14	Analysis of tellurium as n-type dopant in GaInP: Doping, diffusion, memory effect and surfactant properties. Journal of Crystal Growth, 2007, 298, 794-799.	1.5	37
15	Study of non-uniform light profiles on high concentration III–V solar cells using quasi-3D distributed models. Conference Record of the IEEE Photovoltaic Specialists Conference, 2008, , .	0.0	37
16	Beaming power: Photovoltaic laser power converters for power-by-light. Joule, 2022, 6, 340-368.	24.0	36
17	Highly conductive p ^{â€‰+â€‰+â€‰}â€AlGaAs/n ^{â€‰+â€‰+â€‰}â€GaInP tunnel junctions for ultraâ€high concentrator solar cells. Progress in Photovoltaics: Research and Applications, 2014, 22, 399-404.	8.1	35
18	Analysis of Chromatic Aberration Effects in Triple-Junction Solar Cells Using Advanced Distributed Models. IEEE Journal of Photovoltaics, 2011, 1, 219-224.	2.5	33

#	Article	IF	Citations
19	Limiting factors on the semiconductor structure of III-V multijunction solar cells for ultra-high concentration (1000-5000 suns). Progress in Photovoltaics: Research and Applications, 2016, 24, 1332-1345.	8.1	33
20	Optically Enhanced Photon Recycling in Mechanically Stacked Multijunction Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 358-365.	2.5	33
21	Improved modeling of photoluminescent and electroluminescent coupling in multijunction solar cells. Solar Energy Materials and Solar Cells, 2015, 143, 48-51.	6.2	30
22	Solar cell designs by maximizing energy production based on machine learning clustering of spectral variations. Nature Communications, 2018, 9, 5126.	12.8	28
23	Metamorphic IIIâ€“V Solar Cells: Recent Progress and Potential. IEEE Journal of Photovoltaics, 2016, 6, 366-373.	2.5	25
24	Triple-junction solar cell performance under Fresnel-based concentrators taking into account chromatic aberration and off-axis operation. AIP Conference Proceedings, 2012, , .	0.4	23
25	Metamorphic Ga0.76In0.24As/GaAs0.75Sb0.25 tunnel junctions grown on GaAs substrates. Journal of Applied Physics, 2014, 116, .	2.5	23
26	Influence of GaInP ordering on the electronic quality of concentrator solar cells. Journal of Crystal Growth, 2008, 310, 5209-5213.	1.5	22
27	3-D modeling of perimeter recombination in GaAs diodes and its influence on concentrator solar cells. Solar Energy Materials and Solar Cells, 2014, 120, 48-58.	6.2	21
28	Extended description of tunnel junctions for distributed modeling of concentrator multi-junction solar cells. Solar Energy Materials and Solar Cells, 2011, 95, 2693-2697.	6.2	20
29	Understanding phosphorus diffusion into silicon in a MOVPE environment for IIIâ€“V on silicon solar cells. Solar Energy Materials and Solar Cells, 2013, 116, 61-67.	6.2	19
30	Degradation of subcells and tunnel junctions during growth of GaInP/Ga(In)As/GaNAsSb/Ge 4â€junction solar cells. Progress in Photovoltaics: Research and Applications, 2017, 25, 887-895.	8.1	19
31	Degradation of Ge subcells by thermal load during the growth of multijunction solar cells. Progress in Photovoltaics: Research and Applications, 2018, 26, 102-111.	8.1	19
32	Te doping of GaAs using metalorganic vapor phase epitaxy: Volatile versus nonvolatile behavior. Journal of Applied Physics, 2008, 104, .	2.5	17
33	Device characterization for design optimization of 4 junction inverted metamorphic concentrator solar cells. AIP Conference Proceedings, 2014, , .	0.4	17
34	Implications of Redesigned, High-Radiative-Efficiency GaInP Junctions on III-V Multijunction Concentrator Solar Cells. IEEE Journal of Photovoltaics, 2015, 5, 418-424.	2.5	17
35	High-low refractive index stacks for broadband antireflection coatings for multijunction solar cells. Solar Energy, 2021, 217, 29-39.	6.1	17
36	Analysis of the behavior of multijunction solar cells under high irradiance Gaussian light profiles showing chromatic aberration with emphasis on tunnel junction performance. Progress in Photovoltaics: Research and Applications, 2015, 23, 743-753.	8.1	16

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37	Strategic Options for a Led-Like Approach in III-V Concentrator Photovoltaics. , 2006, , .		15
38	IIIâ€“V multijunction solar cells for ultra-high concentration photovoltaics. , 2009, , .		15
39	Optimization of 3-junction inverted metamorphic solar cells for high-temperature and high-concentration operation. AIP Conference Proceedings, 2012, , .	0.4	14
40	Thin, high quality GaInP compositionally graded buffer layers grown at high growth rates for metamorphic IIIâ€“V solar cell applications. Journal of Crystal Growth, 2014, 393, 64-69.	1.5	14
41	Enhanced performance of GaInP/GaAs/Ge solar cells under high concentration through Pd/Ge/Ti/Pd/Al grid metallization. Progress in Photovoltaics: Research and Applications, 2019, 27, 789-797.	8.1	13
42	Hybrid III-V/SiGe solar cells grown on Si substrates through reverse graded buffers. Solar Energy Materials and Solar Cells, 2020, 205, 110246.	6.2	13
43	Extended Triple-Junction Solar Cell 3D Distributed Model: Application to Chromatic Aberration-Related Losses. , 2011, , .		12
44	Design of semiconductor-based back reflectors for high V<inf>oc</inf> monolithic multijunction solar cells. , 2012, , .		12
45	Influence of PH₃ exposure on silicon substrate morphology in the MOVPE growth of IIIâ€“V on silicon multijunction solar cells. Journal Physics D: Applied Physics, 2013, 46, 445104.	2.8	12
46	Design flexibility of ultra-high efficiency 4-junction inverted metamorphic solar cells. , 2015, , .		12
47	Fast chemical thinning of germanium wafers for optoelectronic applications. Applied Surface Science, 2022, 579, 152199.	6.1	12
48	Optimization of Multijunction Solar Cells Through Indoor Energy Yield Measurements. IEEE Journal of Photovoltaics, 2015, 5, 438-445.	2.5	11
49	Spectral binning for energy production calculations and multijunction solar cell design. Progress in Photovoltaics: Research and Applications, 2018, 26, 48-54.	8.1	11
50	Development of the Lattice Matched GaInP/GaInAs/Ge Triple Junction Solar Cell with an Efficiency Over 40%. , 2018, , .		11
51	Improvements in the MOVPE growth of multi-junction solar cells for very high concentration. Journal of Crystal Growth, 2007, 298, 762-766.	1.5	10
52	GaInP/GaInAs/Ge triple junction solar cells for ultra high concentration. , 2009, , .		10
53	On the thermal degradation of tunnel diodes in multijunction solar cells. AIP Conference Proceedings, 2017, , .	0.4	10
54	Effect of Ge autodoping during III-V MOVPE growth on Ge substrates. Journal of Crystal Growth, 2017, 475, 378-383.	1.5	10

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55	Back reflectors based on buried Al2O3 for enhancement of photon recycling in monolithic, on-substrate III-V solar cells. Applied Physics Letters, 2014, 105, .	3.3	9
56	Thinned GaInP/GaInAs/Ge solar cells grown with reduced cracking on Ge|Si virtual substrates. Solar Energy Materials and Solar Cells, 2021, 225, 111034.	6.2	9
57	Impact of a Metalâ€“Organic Vapor Phase Epitaxy Environment on Silicon Substrates for IIIâ€“V-on-Si Multijunction Solar Cells. Japanese Journal of Applied Physics, 2012, 51, 10ND05.	1.5	8
58	Advances towards 4J lattice-matched including dilute nitride subcell for terrestrial and space applications. , 2016, , .		8
59	GaAsP/SiGe tandem solar cells on porous Si substrates. Solar Energy, 2021, 230, 925-934.	6.1	8
60	Distributed Simulation of Real Tunnel Junction Effects in Multi-Junction Solar Cells. AIP Conference Proceedings, 2010, , .	0.4	7
61	Optimizing bottom subcells for III-V-on-Si multijunction solar cells. , 2011, , .		7
62	Optimization of the silicon subcell for III-V on silicon multijunction solar cells: Key differences with conventional silicon technology. AIP Conference Proceedings, 2012, , .	0.4	7
63	Influence of temperature on luminescent coupling and material quality evaluation in inverted latticeâ€matched and metamorphic multiâ€junction solar cells. Progress in Photovoltaics: Research and Applications, 2016, 24, 357-367.	8.1	7
64	Modelling of lattice matched dilute nitride 4-junction concentrator solar cells on Ge substrates. AIP Conference Proceedings, 2016, , .	0.4	7
65	Differences between GaAs/GaInP and GaAs/AlInP interfaces grown by movpe revealed by depth profiling and angle-resolved X-ray photoelectron spectroscopies. Applied Surface Science, 2016, 360, 477-484.	6.1	7
66	Demonstrating the GaInP/GaAs Three-Terminal Heterojunction Bipolar Transistor Solar Cell. , 2019, , .		7
67	Location-Specific Spectral and Thermal Effects in Tracking and Fixed Tilt Photovoltaic Systems. IScience, 2020, 23, 101634.	4.1	7
68	Lattice-Matched IIIâ€“V Dual-Junction Solar Cells for Concentrations Around 1000 Suns. Journal of Solar Energy Engineering, Transactions of the ASME, 2007, 129, 336-339.	1.8	6
69	Simulating IIIâ€“V concentrator solar cells: A comparison of advantages and limitations of lumped analytical models; distributed analytical models and numerical simulation. , 2009, , .		6
70	Analysis of the surface state of epi-ready Ge wafers. Applied Surface Science, 2012, 258, 8166-8170.	6.1	6
71	Component integration strategies in metamorphic 4-junction III-V concentrator solar cells. , 2014, , .		6
72	Inverted rear-heterojunction GaInP solar cells using Te memory effect. Solar Energy Materials and Solar Cells, 2020, 205, 110235.	6.2	6

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73	On the use of graphene to improve the performance of concentrator IIIâ€V multijunction solar cells. Progress in Photovoltaics: Research and Applications, 2020, 28, 60-70.	8.1	6
74	Progress in threeâ€terminal heterojunction bipolar transistor solar cells. Progress in Photovoltaics: Research and Applications, 2022, 30, 843-850.	8.1	6
75	Numerical analysis of GaInP solar cells: toward advanced photovoltaic devices modeling. , 0, , .		5
76	Experimental and modeling analysis of internal luminescence in III-V solar cells. AIP Conference Proceedings, 2013, , .	0.4	5
77	Ge virtual substrates for high efficiency III-V solar cells: applications, potential and challenges. , 2019, , .		5
78	Impact of the III-V/Ge nucleation routine on the performance of high efficiency multijunction solar cells. Solar Energy Materials and Solar Cells, 2020, 207, 110355.	6.2	5
79	Growth of GaP Layers on Si Substrates in a Standard MOVPE Reactor for Multijunction Solar Cells. Coatings, 2021, 11, 398.	2.6	5
80	Electroluminescence characterization of III–V multi-junction solar cells. Conference Record of the IEEE Photovoltaic Specialists Conference, 2008, , .	0.0	4
81	Cathodoluminescence Characterization of Dilute Nitride GaNSbAs Alloys. Journal of Electronic Materials, 2018, 47, 5061-5067.	2.2	4
82	Point-Defects Assisted Zn-Diffusion in AlGaInP/GaInP Systems During the MOVPE Growth of Inverted Multijunction Solar Cells. IEEE Journal of Photovoltaics, 2021, 11, 429-436.	2.5	4
83	Development of germanium-on-germanium engineered substrates for III-V multijunction solar cells. , 2020, , .		4
84	Inverted GaInP/GaAs Three-Terminal Heterojunction Bipolar Transistor Solar Cell. , 2020, , .		4
85	Highâ€low refractive index stacks as antireflection coatings on tripleâ€junction solar cells. Progress in Photovoltaics: Research and Applications, 2023, 31, 62-70.	8.1	4
86	Capacitance measurements for subcell characterization in multijunction solar cells. , 2010, , .		3
87	Analysis of chromatic aberration effects in triple-junction solar cells using advanced distributed models. , 2011, , .		3
88	Integration of III-V materials on silicon substrates for multi-junction solar cell applications. , 2011, , .		3
89	Mechanically stacked four-junction concentrator solar cells. , 2015, , .		3
90	Energy yield determination of concentrator solar cells using laboratory measurements. AIP Conference Proceedings, 2015, , .	0.4	3

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91	Field spectra binning for energy production calculations and multijunction solar cell design. , 2015, , .		3
92	Low temperature annealed Pd/Ge/Ti metal systems for concentrator inverted metamorphic solar cells. AIP Conference Proceedings, 2018, , .	0.4	3
93	Evidence of enhanced Zn-diffusion observed during the growth of Inverted Metamorphic Solar Cells. , 2019, , .		3
94	GaInP solar cells grown on Ge-on-Ge engineered substrates. , 2021, , .		3
95	Study of the reverse Iâ€“V in component subcells of IIIâ€“V multijunction space solar cells. Progress in Photovoltaics: Research and Applications, 2022, 30, 481-489.	8.1	3
96	Ultrathin Ge epilayers on Si produced by low-temperature PECVD acting as virtual substrates for III-V / c-Si tandem solar cells. Solar Energy Materials and Solar Cells, 2022, 236, 111535.	6.2	3
97	Specific Growth and Characterization Issues in Multi-Junction Solar Cells for Concentrations Above 1000 Suns. , 2006, , .		2
98	Application of capacitance-based techniques to the characterization of multijunction solar cells. , 2009, , .		2
99	Roadmap towards efficiencies over 40% at ultra-high concentrations (> 1000 suns). , 2011, , .		2
100	Experimental confirmation of FK concentrator insensitivity to chromatic aberrations. , 2013, , .		2
101	Lowering perimeter recombination losses in micro-concentrator solar cells: A simulation study. AIP Conference Proceedings, 2018, , .	0.4	2
102	Hybrid III-V/SiGe solar cells on Si substrates and porous Si substrates. , 2019, , .		2
103	Space III-V Multijunction Solar Cells on Ge/Si virtual substrates. , 2019, , .		2
104	Engineering of ultra-thin sintered porous silicon virtual substrates for lattice-mismatched growth compliance and epilayer detachability. Applied Surface Science, 2022, 577, 151907.	6.1	2
105	MOVPE Technology for the Growth of III-V Semiconductor Structures. , 2007, , .		1
106	Triple-junction solar cells for ultra-high concentrator applications. , 2011, , .		1
107	A substrate removal processing method for IIIâ€“V solar cells compatible with low-temperature characterization. Materials Science in Semiconductor Processing, 2017, 63, 58-63.	4.0	1
108	MOVPE issues in the development of ordered GaInP metamorphic buffers for multijunction solar cells. , 2017, , .		1

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109	On the Use of Transparent Conductive Oxides in High Concentrator III-V Multijunction Solar Cells. , 2017, , .		1
110	ALCHEMI â€“ A low cost, high efficiency, optoelectronic HCPV module for 1000Ã— operation. AIP Conference Proceedings, 2018, , .	0.4	1
111	Update on project ALCHEMI â€“ A low cost HCPV module for 1000 sun operation. AIP Conference Proceedings, 2019, , .	0.4	1
112	Assessment of the energy yield gain in high CPV systems using graphene-enhanced III-V multijunction solar cells. AIP Conference Proceedings, 2019, , .	0.4	1
113	A Cathodoluminescence Study on the Diffusion Length in AlGaInP/InGaP/AlInP Solar Cell Heterostructures. Journal of Electronic Materials, 2020, 49, 5184-5189.	2.2	1
114	Towards a III-V solar cell with a metamorphic graded buffer directly grown on v-groove Si substrates. , 2021, , .		1
115	N-type doping of SiC-passivated Ge by pulsed laser melting towards the development of interdigitated back contact thermophotovoltaic devices. Solar Energy Materials and Solar Cells, 2022, 235, 111463.	6.2	1
116	Doping effects on the composition, electric and optical properties of MBE-grown 1.1 eV GaNAsSb layers. Semiconductor Science and Technology, 2020, 35, 115022.	2.0	1
117	III-V multijunction solar cells for concentrations around 1000X: the IES-UPM strategy. , 2007, , .		0
118	ARXPS characterization of InGaP/GaAs heterointerface grown by MOVPE. , 2007, , .		0
119	XPS as characterization tool for PV: From the substrate to complete III-V multijunction solar cells. , 2011, , .		0
120	Metamorphic IIIâ€“V solar cells: recent progress and potential. , 2015, , .		0
121	Component Integration Effects in 4-Junction Solar Cells with Dilute Nitride 1eV Subcell. , 2017, , .		0
122	Dependence of Multijunction Optimal Gaps on Spectral Variability and Other Environmental and Device Parameters. , 2019, , .		0
123	Advances in the development of high efficiency III-V multijunction solar cells on Ge|Si virtual substrates. , 2021, , .		0
124	Preliminary analysis of annealing impact on 1 eV GaNAsSb solar cells. , 2017, , .		0