

# Ryan France

## List of Publications by Year in descending order

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98  
papers

4,592  
citations

159585

30  
h-index

102487

66  
g-index

100  
all docs

100  
docs citations

100  
times ranked

5649  
citing authors

#	ARTICLE	IF	CITATIONS
1	Thermophotovoltaic efficiency of 40%. <i>Nature</i> , 2022, 604, 287-291.	27.8	108
2	Triple-junction solar cells with 39.5% terrestrial and 34.2% space efficiency enabled by thick quantum well superlattices. <i>Joule</i> , 2022, 6, 1121-1135.	24.0	67
3	Carrier control in Sn <sup>2+</sup> Pb perovskites via 2D cation engineering for all-perovskite tandem solar cells with improved efficiency and stability. <i>Nature Energy</i> , 2022, 7, 642-651.	39.5	121
4	High Efficiency Inverted GaAs and GaInP/GaAs Solar Cells With Strain-Balanced GaInAs/GaAsP Quantum Wells. <i>Advanced Energy Materials</i> , 2021, 11, 2002874.	19.5	55
5	Epitaxial GaInP/GaAs/Si Triple-Junction Solar Cell with 25.9% AM1.5g Efficiency Enabled by Transparent Metamorphic Al <sub>x</sub> Ga <sub>1-x</sub> As <sub>y</sub> P <sub>1-y</sub> Graded Buffer Structures. <i>Solar Rrl.</i> 2021, 5, 2000763.	5.8	39
6	Graded buffer Bragg reflectors with high reflectivity and transparency for metamorphic optoelectronics. <i>Journal of Applied Physics</i> , 2021, 129, 173102.	2.5	9
7	Reduction of defects in GaP layers grown on Si(100) by MOCVD. , 2021, , .		0
8	Platform for Accurate Efficiency Quantification of > 35% Efficient Thermophotovoltaic Cells. , 2021, , .		3
9	Towards a III-V solar cell with a metamorphic graded buffer directly grown on v-groove Si substrates. , 2021, , .		1
10	Improvement of front-junction GaInP by point-defect injection and annealing. , 2021, , .		5
11	32.9% efficient tandem solar cell with strain-balanced GaInAs/GaAsP quantum wells. , 2021, , .		0
12	Counterbalancing light absorption and ionic transport losses in the electrolyte for integrated solar water splitting with III <sup>IV</sup> /Si dual-junctions. <i>Applied Physics Letters</i> , 2021, 119, .	3.3	3
13	A Route to Obtaining Low-Defect III <sup>IV</sup> Epilayers on Si(100) Utilizing MOCVD. <i>Crystal Growth and Design</i> , 2021, 21, 5603-5613.	3.0	4
14	Development of Lattice-Mismatched GaInAsP for Radiation Hardness. <i>IEEE Journal of Photovoltaics</i> , 2020, 10, 103-108.	2.5	2
15	Reverse Heterojunction (Al)GaInP Solar Cells for Improved Efficiency at Concentration. <i>IEEE Journal of Photovoltaics</i> , 2020, 10, 487-494.	2.5	8
16	Guided Optimization of Phase-Unstable III <sup>IV</sup> Compositionally Graded Buffers by Cathodoluminescence Spectrum Imaging. <i>IEEE Journal of Photovoltaics</i> , 2020, 10, 109-116.	2.5	7
17	Electron channeling contrast imaging investigation of stacking fault pyramids in GaP on Si nucleation layers. <i>Journal of Crystal Growth</i> , 2020, 532, 125422.	1.5	17
18	Inverted metamorphic AlGaInAs/GaInAs tandem thermophotovoltaic cell designed for thermal energy grid storage application. <i>Journal of Applied Physics</i> , 2020, 128, .	2.5	10

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19	Learning from existing photovoltaic technologies to identify alternative perovskite module designs. Energy and Environmental Science, 2020, 13, 3393-3403.	30.8	43
20	Triple-halide wide-band gap perovskites with suppressed phase segregation for efficient tandems. Science, 2020, 367, 1097-1104.	12.6	669
21	Six-junction III-V solar cells with 47.1% conversion efficiency under 143% <sub>s</sub> concentration. Nature Energy, 2020, 5, 326-335.	39.5	408
22	Irradiation Experiments on High Efficiency Nanowire Solar Cells Including Tilted Incidence Angle. , 2020, , .		0
23	Radiation Tolerant Nanowire Array Solar Cells. ACS Nano, 2019, 13, 12860-12869.	14.6	27
24	Rear Heterojunction GaAs Solar Cells With Strain-Balanced GaInAs/GaAsP Quantum Wells. , 2019, , .		1
25	Single- and dual-variant atomic ordering in GaAsP compositionally graded buffers on GaP and Si substrates. Journal of Crystal Growth, 2019, 506, 61-70.	1.5	6
26	Measurements of Six-Junction Concentrator Solar Cells. , 2019, , .		1
27	Building a Six-Junction Inverted Metamorphic Concentrator Solar Cell. IEEE Journal of Photovoltaics, 2018, 8, 626-632.	2.5	148
28	High-efficiency inverted metamorphic 1.7/1.1 eV GaInAsP/GaInAs dual-junction solar cells. Applied Physics Letters, 2018, 112, .	3.3	47
29	Six-junction concentrator solar cells. AIP Conference Proceedings, 2018, , .	0.4	21
30	Multijunction Solar Cells With Graded Buffer Bragg Reflectors. IEEE Journal of Photovoltaics, 2018, 8, 1608-1615.	2.5	14
31	Direct Growth of III-V/Silicon Triple-Junction Solar Cells With 19.7% Efficiency. IEEE Journal of Photovoltaics, 2018, 8, 1590-1595.	2.5	48
32	Strategies for Thinning Graded Buffer Regions in Metamorphic Solar Cells and Performance Tradeoffs. IEEE Journal of Photovoltaics, 2018, 8, 1349-1354.	2.5	4
33	Tandem Solar Cells from Solution-Processed CdTe and PbS Quantum Dots Using a ZnTe-ZnO Tunnel Junction. Nano Letters, 2017, 17, 1020-1027.	9.1	71
34	MOVPE Grown Gallium Phosphide-Silicon Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2017, 7, 502-507.	2.5	54
35	Enhanced Current Collection in 1.7 eV GaInAsP Solar Cells Grown on GaAs by Metalorganic Vapor Phase Epitaxy. IEEE Journal of Photovoltaics, 2017, 7, 927-933.	2.5	26
36	Direct solar-to-hydrogen conversion via inverted metamorphic multi-junction semiconductor architectures. Nature Energy, 2017, 2, .	39.5	333

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37	Pathway to 50% efficient inverted metamorphic concentrator solar cells. AIP Conference Proceedings, 2017, , .	0.4	15
38	Highly Transparent Compositionally Graded Buffers for New Metamorphic Multijunction Solar Cell Designs. IEEE Journal of Photovoltaics, 2017, 7, 347-353.	2.5	19
39	Reduced dislocation density in GaIn $_{1-x}$ P compositionally graded buffer layers through engineered glide plane switch. Journal of Crystal Growth, 2017, 464, 20-27.	1.5	10
40	Growth of lattice-matched GaInAsP grown on vicinal GaAs(001) substrates within the miscibility gap for solar cells. Journal of Crystal Growth, 2017, 458, 1-7.	1.5	21
41	Photo-Electrochemical Hydrogen Generation from Inverted Metamorphic Multijunction III-Vs. , 2017, , .		0
42	Notice of Removal Highly transparent compositionally graded buffers for new metamorphic multi-junction solar cell designs. , 2017, , .		0
43	Development of lattice-matched 1.7 eV GaInAsP solar cells grown on GaAs by MOVPE. , 2016, , .		10
44	Minority carrier lifetime limitations in Si wafer solar cells with gallium phosphide window layers. , 2016, , .		1
45	Metamorphic epitaxy for multijunction solar cells. MRS Bulletin, 2016, 41, 202-209.	3.5	66
46	Influence of Metal-Organic Vapor Phase Epitaxy Reactor Environment on the Silicon Bulk Lifetime. IEEE Journal of Photovoltaics, 2016, 6, 1668-1672.	2.5	23
47	Surfaces and interfaces governing the OMVPE growth of APD-free GaP on AsH $_3$ -cleaned vicinal Si(100). Journal of Crystal Growth, 2016, 452, 235-239.	1.5	10
48	Optically Enhanced Photon Recycling in Mechanically Stacked Multijunction Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 358-365.	2.5	33
49	Design Flexibility of Ultrahigh Efficiency Four-Junction Inverted Metamorphic Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 578-583.	2.5	79
50	Metamorphic III-V Solar Cells: Recent Progress and Potential. IEEE Journal of Photovoltaics, 2016, 6, 366-373.	2.5	25
51	Gallium Phosphide Window Layer for Silicon Solar Cells. IEEE Journal of Photovoltaics, 2016, 6, 384-390.	2.5	52
52	Observation of a hot-phonon bottleneck in lead-iodide perovskites. Nature Photonics, 2016, 10, 53-59.	31.4	760
53	Radiation effects on luminescent coupling in III-V solar cells. , 2015, , .		5
54	Mechanically stacked four-junction concentrator solar cells. , 2015, , .		3

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55	Growth of antiphase-domain-free GaP on Si substrates by metalorganic chemical vapor deposition using an <i>in situ</i> AsH <sub>3</sub> surface preparation. Applied Physics Letters, 2015, 107, .	3.3	51
56	Critical thickness of atomically ordered III-V alloys. Applied Physics Letters, 2015, 107, 151903.	3.3	8
57	Energy yield determination of concentrator solar cells using laboratory measurements. AIP Conference Proceedings, 2015, , .	0.4	3
58	Investigation of GaP/Si heteroepitaxy on MOCVD prepared Si(100) surfaces. , 2015, , .		2
59	Design flexibility of ultra-high efficiency 4-junction inverted metamorphic solar cells. , 2015, , .		12
60	Metamorphic III-V solar cells: recent progress and potential. , 2015, , .		0
61	Rapid, enhanced IV characterization of multi-junction PV devices under one sun at NREL. , 2015, , .		2
62	Generalized Optoelectronic Model of Series-Connected Multijunction Solar Cells. IEEE Journal of Photovoltaics, 2015, 5, 1827-1839.	2.5	97
63	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
64	Quadruple-Junction Inverted Metamorphic Concentrator Devices. IEEE Journal of Photovoltaics, 2015, 5, 432-437.	2.5	101
65	Two-terminal metal-interconnected multijunction III-V solar cells. Progress in Photovoltaics: Research and Applications, 2015, 23, 593-599.	8.1	13
66	Component integration strategies in metamorphic 4-junction III-V concentrator solar cells. , 2014, , .		6
67	Device characterization for design optimization of 4 junction inverted metamorphic concentrator solar cells. AIP Conference Proceedings, 2014, , .	0.4	17
68	In situ measurement of CuPt alloy ordering using strain anisotropy. Journal of Applied Physics, 2014, 115, 053502.	2.5	16
69	Metamorphic Ga <sub>0.76</sub> In <sub>0.24</sub> As/GaAs <sub>0.75</sub> Sb <sub>0.25</sub> tunnel junctions grown on GaAs substrates. Journal of Applied Physics, 2014, 116, .	2.5	23
70	Thin, high quality GaInP compositionally graded buffer layers grown at high growth rates for metamorphic III-V solar cell applications. Journal of Crystal Growth, 2014, 393, 64-69.	1.5	14
71	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
72	Metal Pillar Interconnection Topology for Bonded Two-Terminal Multijunction III-V Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 868-872.	2.5	16

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73	Pushing Inverted Metamorphic Multijunction Solar Cells Toward Higher Efficiency at Realistic Operating Conditions. IEEE Journal of Photovoltaics, 2013, 3, 893-898.	2.5	31
74	Measuring IV Curves and Subcell Photocurrents in the Presence of Luminescent Coupling. IEEE Journal of Photovoltaics, 2013, 3, 879-887.	2.5	85
75	Ordering-enhanced dislocation glide in III-V alloys. Journal of Applied Physics, 2013, 114, .	2.5	20
76	Pushing inverted metamorphic multijunction solar cells toward higher efficiency at realistic operating conditions. , 2013, , .		0
77	Measuring IV curves and subcell photocurrents in the presence of luminescent coupling. , 2013, , .		1
78	The influence of atomic ordering on strain relaxation during the growth of metamorphic solar cells. Journal of Physics: Conference Series, 2013, 471, 012006.	0.4	4
79	High-Irradiance Degradation Studies of Metamorphic 1eV GaInAs Solar Cells. Materials Research Society Symposia Proceedings, 2012, 1432, 105.	0.1	4
80	Control of misfit dislocation glide plane distribution during strain relaxation of CuPt-ordered GaInAs and GaInP. Journal of Applied Physics, 2012, 112, 023520.	2.5	32
81	Optimization of 3-junction inverted metamorphic solar cells for high-temperature and high-concentration operation. AIP Conference Proceedings, 2012, , .	0.4	14
82	Reduction of crosshatch roughness and threading dislocation density in metamorphic GaInP buffers and GaInAs solar cells. Journal of Applied Physics, 2012, 111, .	2.5	58
83	Measuring IV curves and subcell photocurrents in the presence of luminescent coupling. , 2012, , .		4
84	Pushing inverted metamorphic multijunction solar cells toward higher efficiency at realistic operating conditions. , 2012, , .		7
85	Kinetically limited growth of GaAsBi by molecular-beam epitaxy. Journal of Crystal Growth, 2012, 338, 107-110.	1.5	102
86	Microstructure of vanadium-based contacts on n-type GaN. Journal Physics D: Applied Physics, 2012, 45, 105401.	2.8	5
87	<i>In situ</i> strain relaxation comparison between GaAsBi and GaInAs grown by molecular-beam epitaxy. Applied Physics Letters, 2011, 98, .	3.3	15
88	Atomic ordering and phase separation in MBE GaAs <sub>1-x</sub> Bi <sub>x</sub> . Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics, 2011, 29, 03C121.	1.2	53
89	Low-misfit epilayer analyses using <i>in situ</i> wafer curvature measurements. Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics, 2011, 29, .	1.2	8
90	Direct-indirect crossover in GaIn <sub>1-x</sub> P alloys. Journal of Applied Physics, 2011, 110, .	2.5	16

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91	2.0&#x2013;2.1 eV Ga&#x26lt;/inf&gt;x&#x26lt;/inf&gt;In&#x26lt;/inf&gt;1&#x2212;x&#x26lt;/inf&gt;P solar cells grown on relaxed GaAsP step grades. , 2010, , .		3
92	Control of asymmetric strain relaxation in InGaAs grown by molecular-beam epitaxy. Journal of Applied Physics, 2010, 107, 103530.	2.5	17
93	Comparison of the dilute bismide and nitride alloys GaAsBi and GaAsN. Physica Status Solidi (B): Basic Research, 2009, 246, 504-507.	1.5	15
94	Improved performance of GaInNAs solar cells grown by molecular-beam epitaxy using increased growth rate instead of surfactants. Journal of Crystal Growth, 2009, 311, 1876-1880.	1.5	13
95	Low temperature photoluminescence from dilute bismides. Journal of Applied Physics, 2008, 104, .	2.5	6
96	Intermixing and chemical structure at the interface between n-GaN and V-based contacts. Applied Physics Letters, 2008, 93, .	3.3	14
97	Vanadium-based Ohmic contacts to n-AlGaIn in the entire alloy composition. Applied Physics Letters, 2007, 90, 062115.	3.3	82
98	Blue-green-red LEDs based on InGaIn quantum dots grown by plasma-assisted molecular beam epitaxy. Physica Status Solidi (A) Applications and Materials Science, 2007, 204, 2098-2102.	1.8	34