

Pauls Stradins

List of Publications by Year in descending order

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127
papers

3,200
citations

159585

30
h-index

155660

55
g-index

128
all docs

128
docs citations

128
times ranked

4061
citing authors

#	ARTICLE	IF	CITATIONS
1	Van der Waals metal-semiconductor junction: Weak Fermi level pinning enables effective tuning of Schottky barrier. <i>Science Advances</i> , 2016, 2, e1600069.	10.3	446
2	Efficient black silicon solar cell with a density-graded nanoporous surface: Optical properties, performance limitations, and design rules. <i>Applied Physics Letters</i> , 2009, 95, .	3.3	286
3	Nanostructured black silicon and the optical reflectance of graded-density surfaces. <i>Applied Physics Letters</i> , 2009, 94, .	3.3	280
4	Polycrystalline silicon passivated tunneling contacts for high efficiency silicon solar cells. <i>Journal of Materials Research</i> , 2016, 31, 671-681.	2.6	133
5	Realization of GaInP/Si Dual-Junction Solar Cells With 29.8% 1-Sun Efficiency. <i>IEEE Journal of Photovoltaics</i> , 2016, 6, 1012-1019.	2.5	114
6	Progress Towards a 30% Efficient GaInP/Si Tandem Solar Cell. <i>Energy Procedia</i> , 2015, 77, 464-469.	1.8	87
7	Air Passivation of Chalcogen Vacancies in Twoâ€­Dimensional Semiconductors. <i>Angewandte Chemie - International Edition</i> , 2016, 55, 965-968.	13.8	80
8	Hydrogen passivation of poly-Si/SiO _x contacts for Si solar cells using Al ₂ O ₃ studied with deuterium. <i>Applied Physics Letters</i> , 2018, 112, .	3.3	80
9	Reformulation of solar cell physics to facilitate experimental separation of recombination pathways. <i>Applied Physics Letters</i> , 2013, 103, .	3.3	78
10	Charge carrier transport mechanisms of passivating contacts studied by temperature-dependent J-V measurements. <i>Solar Energy Materials and Solar Cells</i> , 2018, 178, 15-19.	6.2	78
11	Matrix-embedded silicon quantum dots for photovoltaic applications: a theoretical study of critical factors. <i>Energy and Environmental Science</i> , 2011, 4, 2546.	30.8	72
12	Maximizing tandem solar cell power extraction using a three-terminal design. <i>Sustainable Energy and Fuels</i> , 2018, 2, 1141-1147.	4.9	67
13	Tunnel oxide passivated contacts formed by ion implantation for applications in silicon solar cells. <i>Journal of Applied Physics</i> , 2015, 118, .	2.5	65
14	Strained Interface Defects in Silicon Nanocrystals. <i>Advanced Functional Materials</i> , 2012, 22, 3223-3232.	14.9	63
15	Quasi-Direct Optical Transitions in Silicon Nanocrystals with Intensity Exceeding the Bulk. <i>Nano Letters</i> , 2016, 16, 1583-1589.	9.1	62
16	Effect of silicon oxide thickness on polysilicon based passivated contacts for high-efficiency crystalline silicon solar cells. <i>Solar Energy Materials and Solar Cells</i> , 2018, 185, 270-276.	6.2	60
17	Tin-Catalyzed Plasma-Assisted Growth of Silicon Nanowires. <i>Journal of Physical Chemistry C</i> , 2011, 115, 3833-3839.	3.1	54
18	On the hydrogenation of Poly-Si passivating contacts by Al ₂ O ₃ and SiN thin films. <i>Solar Energy Materials and Solar Cells</i> , 2020, 215, 110592.	6.2	53

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19	Growth of antiphase-domain-free GaP on Si substrates by metalorganic chemical vapor deposition using an <i>in situ</i> AsH ₃ surface preparation. <i>Applied Physics Letters</i> , 2015, 107, .	3.3	51
20	In Situ Gas-Phase Hydrosilylation of Plasma-Synthesized Silicon Nanocrystals. <i>ACS Applied Materials & Interfaces</i> , 2011, 3, 3033-3041.	8.0	50
21	Three-terminal III-V/Si tandem solar cells enabled by a transparent conductive adhesive. <i>Sustainable Energy and Fuels</i> , 2020, 4, 549-558.	4.9	46
22	Material quality requirements for efficient epitaxial film silicon solar cells. <i>Applied Physics Letters</i> , 2010, 96, 073502.	3.3	43
23	Understanding the charge transport mechanisms through ultrathin SiO _x layers in passivated contacts for high-efficiency silicon solar cells. <i>Applied Physics Letters</i> , 2019, 114, .	3.3	41
24	Enhanced Interfacial Stability of Si Anodes for Li-Ion Batteries via Surface SiO ₂ Coating. <i>ACS Applied Energy Materials</i> , 2020, 3, 8842-8849.	5.1	38
25	Low-cost plasma immersion ion implantation doping for Interdigitated back passivated contact (IBPC) solar cells. <i>Solar Energy Materials and Solar Cells</i> , 2016, 158, 68-76.	6.2	37
26	Surface SiO ₂ Thickness Controls Uniform-to-Localized Transition in Lithiation of Silicon Anodes for Lithium-Ion Batteries. <i>ACS Applied Materials & Interfaces</i> , 2020, 12, 27017-27028.	8.0	37
27	Interdigitated Back Passivated Contact (IBPC) Solar Cells Formed by Ion Implantation. <i>IEEE Journal of Photovoltaics</i> , 2016, 6, 41-47.	2.5	36
28	Light trapping by a dielectric nanoparticle back reflector in film silicon solar cells. <i>Applied Physics Letters</i> , 2011, 99, 064101.	3.3	34
29	Equivalent Performance in Three-Terminal and Four-Terminal Tandem Solar Cells. <i>IEEE Journal of Photovoltaics</i> , 2018, 8, 1584-1589.	2.5	31
30	Back-contacted bottom cells with three terminals: Maximizing power extraction from current-mismatched tandem cells. <i>Progress in Photovoltaics: Research and Applications</i> , 2019, 27, 410-423.	8.1	31
31	Significant improvement in silicon chemical vapor deposition epitaxy above the surface dehydrogenation temperature. <i>Journal of Applied Physics</i> , 2006, 100, 093520.	2.5	29
32	Effect of Crystallographic Orientation and Nanoscale Surface Morphology on Poly-Si/SiO _x Contacts for Silicon Solar Cells. <i>ACS Applied Materials & Interfaces</i> , 2019, 11, 42021-42031.	8.0	29
33	Effect of Water Concentration in LiPF ₆ -Based Electrolytes on the Formation, Evolution, and Properties of the Solid Electrolyte Interphase on Si Anodes. <i>ACS Applied Materials & Interfaces</i> , 2020, 12, 49563-49573.	8.0	27
34	Transparent Conductive Adhesives for Tandem Solar Cells Using Polymer-Particle Composites. <i>ACS Applied Materials & Interfaces</i> , 2018, 10, 8086-8091.	8.0	25
35	Effect of the SiO ₂ interlayer properties with solid-source hydrogenation on passivated contact performance and surface passivation. <i>Energy Procedia</i> , 2017, 124, 295-301.	1.8	24
36	Mechanisms controlling the phase and dislocation density in epitaxial silicon films grown from silane below 800 °C. <i>Applied Physics Letters</i> , 2010, 96, .	3.3	23

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37	Probing the Evolution of Surface Chemistry at the Silicon-Electrolyte Interphase via In Situ Surface-Enhanced Raman Spectroscopy. <i>Journal of Physical Chemistry Letters</i> , 2020, 11, 286-291.	4.6	23
38	A new real-time quantum efficiency measurement system. <i>Conference Record of the IEEE Photovoltaic Specialists Conference</i> , 2008, , .	0.0	18
39	Growth of amorphous and epitaxial ZnSiP ₂ -Si alloys on Si. <i>Journal of Materials Chemistry C</i> , 2018, 6, 2696-2703.	5.5	18
40	Effect of Surface Texture on Pinhole Formation in SiO _x -Based Passivated Contacts for High-Performance Silicon Solar Cells. <i>ACS Applied Materials & Interfaces</i> , 2020, 12, 55737-55745.	8.0	18
41	Reactive ion etched, self-aligned, selective area poly-Si/SiO ₂ passivated contacts. <i>Solar Energy Materials and Solar Cells</i> , 2020, 217, 110621.	6.2	18
42	Anneal treatment to reduce the creation rate of light-induced metastable defects in device-quality hydrogenated amorphous silicon. <i>Applied Physics Letters</i> , 2011, 98, 201908.	3.3	17
43	Cone kinetics model for two-phase film silicon deposition. <i>Applied Physics Letters</i> , 2008, 92, 093114.	3.3	15
44	Free standing silica thin films with highly ordered perpendicular nanopores. <i>RSC Advances</i> , 2014, 4, 7627-7633.	3.6	15
45	Air Passivation of Chalcogen Vacancies in Two-Dimensional Semiconductors. <i>Angewandte Chemie</i> , 2016, 128, 977-980.	2.0	15
46	Modifications of Textured Silicon Surface Morphology and Its Effect on Poly-Si/SiO _x Contact Passivation for Silicon Solar Cells. <i>IEEE Journal of Photovoltaics</i> , 2019, 9, 1513-1521.	2.5	13
47	Outdoor performance of a tandem InGaP/Si photovoltaic luminescent solar concentrator. <i>Solar Energy Materials and Solar Cells</i> , 2021, 223, 110945.	6.2	13
48	Solid phase crystallization of hot-wire CVD amorphous silicon films. <i>Materials Research Society Symposia Proceedings</i> , 2005, 862, 1051.	0.1	12
49	Physics and chemistry of hot-wire chemical vapor deposition from silane: Measuring and modeling the silicon epitaxy deposition rate. <i>Journal of Applied Physics</i> , 2010, 107, 054906.	2.5	12
50	Tabula Rasa for n-Cz silicon-based photovoltaics. <i>Progress in Photovoltaics: Research and Applications</i> , 2019, 27, 136-143.	8.1	12
51	Isolating p- and n-Doped Fingers With Intrinsic Poly-Si in Passivated Interdigitated Back Contact Silicon Solar Cells. <i>IEEE Journal of Photovoltaics</i> , 2020, 10, 1574-1581.	2.5	12
52	Self-Aligned Selective Area Front Contacts on Poly-Si/SiO _x Passivating Contact Si Solar Cells. <i>IEEE Journal of Photovoltaics</i> , 2022, 12, 678-689.	2.5	10
53	Comparison of thin epitaxial film silicon photovoltaics fabricated on monocrystalline and polycrystalline seed layers on glass. <i>Progress in Photovoltaics: Research and Applications</i> , 2015, 23, 909-917.	8.1	9
54	Measurement of poly-Si film thickness on textured surfaces by X-ray diffraction in poly-Si/SiO ₂ passivating contacts for monocrystalline Si solar cells. <i>Solar Energy Materials and Solar Cells</i> , 2022, 236, 111510.	6.2	9

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55	Real Time Monitoring of the Crystallization of Hydrogenated Amorphous Silicon. Materials Research Society Symposia Proceedings, 2005, 862, 1611.	0.1	8
56	Epitaxial crystal silicon absorber layers and solar cells grown at 1.8 microns per minute. , 2011, , .		8
57	Device Physics of Heteroepitaxial Film c-Si Heterojunction Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 230-235.	2.5	8
58	Indium zinc oxide mediated wafer bonding for III-V/Si tandem solar cells. , 2015, , .		8
59	Trap-Assisted Dopant Compensation Prevents Shunting in Poly-Si Passivating Interdigitated Back Contact Silicon Solar Cells. ACS Applied Energy Materials, 2021, 4, 10774-10782.	5.1	8
60	Staebler-Wronski defects: Creation efficiency, stability, and effect on a-Si:H solar cell degradation. , 2010, , .		7
61	Tunneling or Pinholes: Understanding the Transport Mechanisms in SiO ₂ /Si Based Passivated Contacts for High-Efficiency Silicon Solar Cells. , 2018, , .		7
62	Comparative Study of Solid-Phase Crystallization of Amorphous Silicon Deposited by Hot-wire CVD, Plasma-Enhanced CVD, and Electron-Beam Evaporation. Materials Research Society Symposia Proceedings, 2007, 989, 4.	0.1	6
63	Dislocation-limited open circuit voltage in film crystal silicon solar cells. Applied Physics Letters, 2012, 101, 123510.	3.3	6
64	Selective area growth of GaAs on Si patterned using nanoimprint lithography. , 2016, , .		6
65	Atomic structure of light-induced efficiency-degrading defects in boron-doped Czochralski silicon solar cells. Energy and Environmental Science, 2021, 14, 5416-5422.	30.8	6
66	Chemical Passivation of Crystalline Si by Al ₂ O ₃ Deposited Using Atomic Layer Deposition: Implications for Solar Cells. ACS Applied Nano Materials, 2021, 4, 6629-6636.	5.0	6
67	Transparent Conductive Adhesives for Tandem Solar Cells. , 2017, , .		5
68	600 mV epitaxial crystal silicon solar cells grown on seeded glass. , 2013, , .		4
69	Study of nickel silicide as a copper diffusion barrier in monocrystalline silicon solar cells. , 2016, , .		4
70	Operating principles of three-terminal solar cells. , 2018, , .		4
71	Influence of Tabula Rasa on Process- and Light-Induced Degradation of Solar Cells Fabricated From Czochralski Silicon. IEEE Journal of Photovoltaics, 2020, 10, 1557-1565.	2.5	4
72	Junction transport in epitaxial film silicon heterojunction solar cells. , 2011, , .		3

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73	Bulk defect generation during B-diffusion and oxidation of CZ wafers: Mechanism for degrading solar cell performance. , 2014, , .		3
74	Ion implanted passivated contacts for interdigitated back contacted solar cells. , 2015, , .		3
75	Atomic scale understanding of poly-Si/SiO ₂ /c-Si passivated contacts: Passivation degradation due to metallization. , 2016, , .		3
76	Accelerated reliability tests of n+ and p+ poly-Si passivated contacts. Solar Energy Materials and Solar Cells, 2022, 236, 111469.	6.2	3
77	Area-Dependent Switching in Thin Film-Silicon Devices. Materials Research Society Symposia Proceedings, 2003, 762, 1831.	0.1	2
78	Physics of Solid-Phase Epitaxy of Hydrogenated Amorphous Silicon for Thin Film Si Photovoltaics. Materials Research Society Symposia Proceedings, 2006, 910, 5.	0.1	2
79	Synthesis and characterization of PECVD-grown, silane-terminated silicon quantum dots. , 2012, , .		2
80	Energy conversion properties of ZnSiP ₂ , a lattice-matched material for silicon-based tandem photovoltaics. , 2016, , .		2
81	Nonisovalent Si-III-V and Si-II-VI alloys: Covalent, ionic, and mixed phases. Physical Review B, 2017, 96, .	3.2	2
82	Yield analysis and comparison of GaInP/Si and GaInP/GaAs multi-terminal tandem solar cells. AIP Conference Proceedings, 2018, , .	0.4	2
83	Critical interface: Poly-silicon to tunneling SiO ₂ for passivated contact performance. AIP Conference Proceedings, 2019, , .	0.4	2
84	III-V/Si Tandem Cells Utilizing Interdigitated Back Contact Si Cells and Varying Terminal Configurations. , 2019, , .		2
85	Quality and Growth Rate of Hot-wire Chemical Vapor Deposition Epitaxial Si Layers. Materials Research Society Symposia Proceedings, 2008, 1066, 1.	0.1	1
86	Metastable Defects in Light Soaked Amorphous Silicon at 77 K. Materials Research Society Symposia Proceedings, 2008, 1066, 1.	0.1	1
87	Phase evolution in nanocrystalline silicon films: Hydrogen dilution and the cone kinetics model. Philosophical Magazine, 2009, 89, 2461-2468.	1.6	1
88	Device physics of heteroepitaxial film c-Si heterojunction solar cells. , 2012, , .		1
89	Improved 750 °C epitaxial crystal silicon solar cells through impurity reduction. , 2013, , .		1
90	Study of the passivation mechanism of c-Si by Al ₂ O ₃ using in situ infrared spectroscopy. , 2014, , .		1

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91	Plasma immersion ion implantation for interdigitated back passivated contact (IBPC) solar cells. , 2016, , .		1
92	Bandgap and carrier transport engineering of quantum confined mixed phase nanocrystalline/amorphous silicon. , 2016, , .		1
93	III-V/Si tandem cell to module interconnection - comparison between different operation modes. , 2017, , .		1
94	Modeling three-terminal III- V ISi tandem solar cells. , 2017, , .		1
95	Self-Aligned, Selective Area Poly-Si/SiO ₂ Passivated Contacts for Enhanced Photocurrent in Front/Back Solar Cells. , 2019, , .		1
96	Nonuniform Charge Collection in SiO _x -Based Passivated-Contact Silicon Solar Cells. , 2019, , .		1
97	Spectroscopic Investigation of Light-Induced Degradation Paramagnetic Defect in Czochralski Silicon. , 2020, , .		1
98	Effect of Dopant Compensation on the Conductivity of the Intrinsic poly-Si Isolation Region in Passivated IBC Silicon Solar Cells. , 2020, , .		1
99	Increase of temperature and crystallinity during electrical switching in microcrystalline silicon. Materials Research Society Symposia Proceedings, 2004, 808, 185.	0.1	0
100	Combinatorial Studies of Switching and Solid-Phase Crystallization in Amorphous Silicon. Materials Research Society Symposia Proceedings, 2005, 894, 1.	0.1	0
101	ESR Study of Crystallization of Hydrogenated Amorphous Silicon Thin Films. Materials Research Society Symposia Proceedings, 2007, 989, 13.	0.1	0
102	Metastable Defects in Tritiated Amorphous Silicon. Materials Research Society Symposia Proceedings, 2007, 989, 4.	0.1	0
103	Cone Kinetics Model: Insights into the Morphologies of Mixed-phase Silicon Film Growth. Materials Research Society Symposia Proceedings, 2008, 1066, 1.	0.1	0
104	Photovoltaic-quality silicon epitaxy by hot-wire CVD at glasscompatible temperatures. , 2009, , .		0
105	Epitaxial film silicon solar cells fabricated by hot wire chemical vapor deposition below 750°C. , 2009, , .		0
106	Silicon quantum dot optical properties and synthesis: Implications for photovoltaic devices. , 2010, , .		0
107	Reduced light-induced degradation in a-Si:H: The role of network nanostructure. , 2011, , .		0
108	New analysis of suns-V^{inf}oc</sup>/inf^{gt;} and V^{inf}oc</sup>/inf^{gt;}(T): A simple method to quantify recombination channels in solar cells. , 2013, , .		0

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109	Device physics of heteroepitaxial film c-Si heterojunction solar cells. , 2013, , .		0
110	Dielectric stack passivation on boron- and phosphorus-diffused surfaces and 20% efficient PERT cell on n-CZ silicon substrate. , 2014, , .		0
111	A Novel Method to Investigate Stoichiometry and Performance of Buried Passivated Contacts Utilizing Time-of-Flight SIMS. , 2017, , .		0
112	An Isotope Study of Hydrogen Passivation of poly-Si/SiO _x Passivated Contacts for Si Solar Cells. , 2017, , .		0
113	Dopant Patterning by PECVD and Mechanical Masking for Passivated Tunneling Contact IBC Cell Architectures. , 2017, , .		0
114	Self Aligned Aluminum Selective Emitter for n-type Si Cells. , 2017, , .		0
115	the implied Voc of Passivated Contacts for c-Si Based Solar Cells. , 2017, , .		0
116	Tabula Rasa: Oxygen precipitate dissolution through rapid high temperature processing in silicon. , 2017, , .		0
117	Luminescent Solar Concentrator Tandem-on-Silicon with above 700mV Passivated Contact Silicon Bottom Cell. , 2019, , .		0
118	Enhancing Photocarrier Bulk Lifetime with Defect Engineering of Polycrystalline Passivated-Contact n-Cz Photovoltaic Devices. , 2019, , .		0
119	Mitigating Process Induced Degradation in p- and n-Czochralski Silicon Wafers with Tabula Rasa. , 2019, , .		0
120	Understanding and Mitigating the Contamination of Intrinsic poly-Si Gaps in Passivated IBC Solar Cells. , 2019, , .		0
121	Effective Dielectric Passivation Scheme in Area-Selective Front/Back Poly-Si/SiO _x Passivating Contact Solar Cells. , 2021, , .		0
122	Electron Paramagnetic Resonance Investigation of Mechanism of Light- and Elevated-Temperature-Induced Degradation in Ga-doped Cz Si. , 2021, , .		0
123	Fabrication of Poly-Si on Locally Etched SiO _x as Passivating Contacts for c-Si Solar Cells. , 2021, , .		0
124	Trap-Assisted Dopant Compensation Prevents Shunting in poly-Si Passivating Interdigitated Back Contact Silicon Solar Cells. , 2021, , .		0
125	Understanding the origin of Tabula Rasa process-induced defects in CZ n-type c-Si. , 2020, , .		0
126	Submicron Thickness Characterization of poly-Si thin films on Textured Surfaces by X-ray Diffraction for Minimizing Parasitic Absorption in Poly-Si/SiO ₂ Passivating Contact Cells. , 2020, , .		0

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127	Pinhole formation in poly-Si/SiO _x passivating contacts on Si(111)-oriented textures. , 2020, , .		0