

# Howard M Branz

## List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

104 papers	3,404 citations	29 h-index	57 g-index
111 ext. papers	3,723 ext. citations	6.9 avg, IF	5.31 L-index

#	Paper	IF	Citations
104	Proton Reduction Using a Hydrogenase-Modified Nanoporous Black Silicon Photoelectrode. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2016</b> , 8, 14481-7	9.5	33
103	Efficient nanostructured Black Silicon solar cell by copper-catalyzed metal-assisted etching. <i>Progress in Photovoltaics: Research and Applications</i> , <b>2015</b> , 23, 1375-1380	6.8	46
102	Comparison of thin epitaxial film silicon photovoltaics fabricated on monocrystalline and polycrystalline seed layers on glass. <i>Progress in Photovoltaics: Research and Applications</i> , <b>2015</b> , 23, 909-917	6.8	9
101	Reformulation of solar cell physics to facilitate experimental separation of recombination pathways. <i>Applied Physics Letters</i> , <b>2013</b> , 103, 093502	3.4	53
100	Device Physics of Heteroepitaxial Film c-Si Heterojunction Solar Cells. <i>IEEE Journal of Photovoltaics</i> , <b>2013</b> , 3, 230-235	3.7	7
99	600 mV epitaxial crystal silicon solar cells grown on seeded glass <b>2013</b> ,		4
98	Improved 750 °C epitaxial crystal silicon solar cells through impurity reduction <b>2013</b> ,		1
97	Angle-resolved XPS analysis and characterization of monolayer and multilayer silane films for DNA coupling to silica. <i>Langmuir</i> , <b>2013</b> , 29, 4057-67	4	72
96	Heteroepitaxial film silicon solar cell grown on Ni-W foils. <i>Energy and Environmental Science</i> , <b>2012</b> , 5, 6052	35.4	35
95	Light trapping for thin silicon solar cells by femtosecond laser texturing <b>2012</b> ,		1
94	<b>2012</b> ,		1
93	Excellent passivation and low reflectivity Al <sub>2</sub> O <sub>3</sub> /TiO <sub>2</sub> bilayer coatings for n-wafer silicon solar cells <b>2012</b> ,		11
92	An 18.2%-efficient black-silicon solar cell achieved through control of carrier recombination in nanostructures. <i>Nature Nanotechnology</i> , <b>2012</b> , 7, 743-8	28.7	678
91	Pyramidal light trapping and hydrogen passivation for high-efficiency heteroepitaxial (100) crystal silicon solar cells. <i>Energy and Environmental Science</i> , <b>2012</b> , 5, 8193	35.4	20
90	Biaxially-textured photovoltaic film crystal silicon on ion beam assisted deposition CaF <sub>2</sub> seed layers on glass. <i>Energy and Environmental Science</i> , <b>2012</b> , 5, 6905	35.4	25
89	Novel Micropixelation Strategy to Stabilize Semiconductor Photoelectrodes for Solar Water Splitting Systems. <i>Journal of Physical Chemistry C</i> , <b>2012</b> , 116, 19262-19267	3.8	5
88	Dislocation-limited open circuit voltage in film crystal silicon solar cells. <i>Applied Physics Letters</i> , <b>2012</b> , 101, 123510	3.4	6

87	Device physics of heteroepitaxial film c-Si heterojunction solar cells <b>2012</b> ,		1
86	Measurement of electric-field induced second harmonic generation in hydrogenated amorphous silicon. <i>Applied Physics Letters</i> , <b>2012</b> , 101, 161604	3-4	6
85	Nanoporous black silicon photocathode for H <sub>2</sub> production by photoelectrochemical water splitting. <i>Energy and Environmental Science</i> , <b>2011</b> , 4, 1690	35-4	199
84	High-resolution X-ray photoelectron spectroscopy of mixed silane monolayers for DNA attachment. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2011</b> , 3, 3285-92	9-5	20
83	Heteroepitaxial film crystal silicon on Al <sub>2</sub> O <sub>3</sub> : new route to inexpensive crystal silicon photovoltaics. <i>Energy and Environmental Science</i> , <b>2011</b> , 4, 3346	35-4	32
82	Multi-scale surface texture to improve blue response of nanoporous black silicon solar cells. <i>Applied Physics Letters</i> , <b>2011</b> , 99, 103501	3-4	126
81	Hot-wire chemical vapor deposition of epitaxial film crystal silicon for photovoltaics. <i>Thin Solid Films</i> , <b>2011</b> , 519, 4545-4550	2-2	33
80	Anneal treatment to reduce the creation rate of light-induced metastable defects in device-quality hydrogenated amorphous silicon. <i>Applied Physics Letters</i> , <b>2011</b> , 98, 201908	3-4	10
79	Light trapping by a dielectric nanoparticle back reflector in film silicon solar cells. <i>Applied Physics Letters</i> , <b>2011</b> , 99, 064101	3-4	27
78	Epitaxial crystal silicon absorber layers and solar cells grown at 1.8 microns per minute <b>2011</b> ,		6
77	Material quality requirements for efficient epitaxial film silicon solar cells. <i>Applied Physics Letters</i> , <b>2010</b> , 96, 073502	3-4	37
76	Mechanisms controlling the phase and dislocation density in epitaxial silicon films grown from silane below 800 °C. <i>Applied Physics Letters</i> , <b>2010</b> , 96, 201901	3-4	17
75	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> , <b>2010</b> , 107, 054906	2-5	10
74	Microstructure and surface chemistry of nanoporous Black silicon for photovoltaics <b>2010</b> ,		3
73	Photovoltaic device characterization with optical second harmonic generation <b>2010</b> ,		1
72	Electron transport and band structure in phosphorus-doped polycrystalline silicon films. <i>Journal of Applied Physics</i> , <b>2009</b> , 105, 033715	2-5	10
71	Phase evolution in nanocrystalline silicon films: Hydrogen dilution and the cone kinetics model. <i>Philosophical Magazine</i> , <b>2009</b> , 89, 2461-2468	1-6	1
70	Efficient black silicon solar cell with a density-graded nanoporous surface: Optical properties, performance limitations, and design rules. <i>Applied Physics Letters</i> , <b>2009</b> , 95, 123501	3-4	254

69	Nanostructured black silicon and the optical reflectance of graded-density surfaces. <i>Applied Physics Letters</i> , <b>2009</b> , 94, 231121	3.4	253
68	Efficient black silicon solar cells with nanoporous anti-reflection made in a single-step liquid etch <b>2009</b> ,		5
67	Silicon solar cells with front hetero-contact and aluminum alloy back junction. <i>Conference Record of the IEEE Photovoltaic Specialists Conference</i> , <b>2008</b> ,		2
66	Exciton harvesting, charge transfer, and charge-carrier transport in amorphous-silicon nanopillar/polymer hybrid solar cells. <i>Journal of Applied Physics</i> , <b>2008</b> , 103, 064511	2.5	50
65	Cone kinetics model for two-phase film silicon deposition. <i>Applied Physics Letters</i> , <b>2008</b> , 92, 093114	3.4	15
64	Comparative Study of Solid-Phase Crystallization of Amorphous Silicon Deposited by Hot-wire CVD, Plasma-Enhanced CVD, and Electron-Beam Evaporation. <i>Materials Research Society Symposia Proceedings</i> , <b>2007</b> , 989, 4		4
63	Dependence of the Electronic Properties of Hot-Wire CVD Amorphous Silicon-Germanium Alloys on Oxygen Impurity Levels. <i>Materials Research Society Symposia Proceedings</i> , <b>2007</b> , 989, 3		2
62	Materials Optimization for Silicon Heterojunction Solar Cells Using Spectroscopic Ellipsometry. <i>Materials Research Society Symposia Proceedings</i> , <b>2007</b> , 989, 4		
61	The Effect of Oxygen Contamination on the Electronic Properties of Hot-Wire CVD Amorphous Silicon Germanium Alloys. <i>Materials Research Society Symposia Proceedings</i> , <b>2006</b> , 910, 5		2
60	Physics of Solid-Phase Epitaxy of Hydrogenated Amorphous Silicon for Thin Film Si Photovoltaics. <i>Materials Research Society Symposia Proceedings</i> , <b>2006</b> , 910, 5		2
59	Roughness, impurities and strain in low-temperature epitaxial silicon films grown by tantalum filament hot-wire chemical vapor deposition. <i>Materials Research Society Symposia Proceedings</i> , <b>2006</b> , 910, 1		2
58	Exciton splitting and carrier transport across the amorphous-silicon/polymer solar cell interface. <i>Applied Physics Letters</i> , <b>2006</b> , 89, 252102	3.4	67
57	Atomic structure and electronic properties of c-Si $\beta$ -Si:H heterointerfaces. <i>Applied Physics Letters</i> , <b>2006</b> , 88, 121925	3.4	36
56	Significant improvement in silicon chemical vapor deposition epitaxy above the surface dehydrogenation temperature. <i>Journal of Applied Physics</i> , <b>2006</b> , 100, 093520	2.5	26
55	Capacitance-spectroscopy identification of a key defect in N-degraded GaInNAs solar cells. <i>Applied Physics Letters</i> , <b>2005</b> , 86, 113506	3.4	29
54	Monitoring and modeling silicon homoepitaxy breakdown with real-time spectroscopic ellipsometry. <i>Journal of Applied Physics</i> , <b>2005</b> , 97, 103536	2.5	34
53	Combinatorial Studies of Switching and Solid-Phase Crystallization in Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2005</b> , 894, 1		
52	Solid phase crystallization of hot-wire CVD amorphous silicon films. <i>Materials Research Society Symposia Proceedings</i> , <b>2005</b> , 862, 1051		9

51	Real Time Monitoring of the Crystallization of Hydrogenated Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2005</b> , 862, 1611		6
50	Silicon homoepitaxy using tantalum-filament hot-wire chemical vapor deposition. <i>Materials Research Society Symposia Proceedings</i> , <b>2005</b> , 862, 231		4
49	Pulsed-illumination study of metastable defect creation time scales in hydrogenated amorphous silicon. <i>Physical Review B</i> , <b>2004</b> , 69,	3-3	1
48	Increase of temperature and crystallinity during electrical switching in microcrystalline silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2004</b> , 808, 185		
47	On the superlinear increase in conductivity with dopant concentration in excitonic semiconductors. <i>Applied Physics Letters</i> , <b>2004</b> , 84, 1707-1709	3-4	32
46	Area-Dependent Switching in Thin Film-Silicon Devices. <i>Materials Research Society Symposia Proceedings</i> , <b>2003</b> , 762, 1831		2
45	The hydrogen collision model of metastability after 5 years: experimental tests and theoretical extensions. <i>Solar Energy Materials and Solar Cells</i> , <b>2003</b> , 78, 425-445	6.4	21
44	Photoconductivity Stability Improvement in Hydrogenated Amorphous Silicon by Ultraviolet Illumination. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 715, 19111		
43	Improved stability of hydrogenated amorphous-silicon photosensitivity by ultraviolet illumination. <i>Applied Physics Letters</i> , <b>2002</b> , 81, 3353-3355	3-4	8
42	Switching Behavior in p-Type Hydrogenated Amorphous Silicon with One and Two Blocking Contacts. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 715, 1221		5
41	Fermi-level dependence of the charge state of diffusing hydrogen in amorphous silicon. <i>Journal of Non-Crystalline Solids</i> , <b>2002</b> , 299-302, 191-195	3-9	13
40	Amorphous to Microcrystalline Transition in Thickness-graded Hot-Wire CVD Silicon Films. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 715, 1711		1
39	Stand-alone photovoltaic-powered electrochromic smart window. <i>Electrochimica Acta</i> , <b>2001</b> , 46, 2125-2139	13-9	93
38	Hydrogen above saturation at silicon vacancies: H-pair reservoirs and metastability sites. <i>Physical Review Letters</i> , <b>2001</b> , 87, 105503	7-4	31
37	Fingerprints of two distinct defects causing light-induced photoconductivity degradation in hydrogenated amorphous silicon. <i>Applied Physics Letters</i> , <b>2001</b> , 79, 3080-3082	3-4	11
36	New experiments on the relationship between light-induced defects and photoconductivity degradation. <i>Materials Research Society Symposia Proceedings</i> , <b>2001</b> , 664, 1221		2
35	Determination of the Mobile-Hydrogen Charge State in Hydrogenated Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2001</b> , 664, 2821		
34	Hydrogen Equilibration and Metastability in Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2001</b> , 664, 1331		2

33	Metastable defects by low-intensity pulsed illumination of hydrogenated amorphous silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>2000</b> , 609, 321		1
32	Efficient 18 $\mu$ s Solar Cells with All Silicon Layers Deposited by Hot-Wire Chemical Vapor Deposition. <i>Materials Research Society Symposia Proceedings</i> , <b>2000</b> , 609, 431		9
31	Explanation of the limiting thickness observed in low-temperature silicon epitaxy. <i>Applied Physics Letters</i> , <b>2000</b> , 77, 3589-3591	3.4	35
30	Nonradiative electron-hole recombination by a low-barrier pathway in hydrogenated silicon semiconductors. <i>Physical Review Letters</i> , <b>2000</b> , 84, 967-70	7.4	19
29	The hydrogen collision model: theory and experiment. <i>Journal of Non-Crystalline Solids</i> , <b>2000</b> , 266-269, 391-396	3.9	8
28	Electron beam creation of metastable defects in hydrogenated amorphous silicon: hydrogen collision model. <i>Journal of Non-Crystalline Solids</i> , <b>2000</b> , 266-269, 437-443	3.9	16
27	Light-induced D diffusion measurements in hydrogenated amorphous silicon: Testing H metastability models. <i>Physical Review B</i> , <b>1999</b> , 59, 5513-5520	3.3	28
26	Hydrogen collision model: Quantitative description of metastability in amorphous silicon. <i>Physical Review B</i> , <b>1999</b> , 59, 5498-5512	3.3	206
25	Hydrogen diffusion and mobile hydrogen in amorphous silicon. <i>Physical Review B</i> , <b>1999</b> , 60, 7725-7727	3.3	46
24	Slow Degradation of Hydrogenated Amorphous Silicon Photoconductivity Under Pulsed Illumination. <i>Materials Research Society Symposia Proceedings</i> , <b>1999</b> , 557, 347		2
23	Hydrogen Diffusion in the Hydrogen Collision Model of Amorphous Silicon Metastability. <i>Materials Research Society Symposia Proceedings</i> , <b>1999</b> , 557, 377		1
22	Structural Changes in a-Si:H Studied by X-Ray Photoemission Spectroscopy. <i>Materials Research Society Symposia Proceedings</i> , <b>1999</b> , 557, 359		6
21	Hydrogen collision model of light-induced metastability in hydrogenated amorphous silicon. <i>Solid State Communications</i> , <b>1998</b> , 105, 387-391	1.6	78
20	Monolithic, Self-Powered Photovoltaic-Electrochromic Coating for Windows. <i>Journal of the Electrochemical Society</i> , <b>1998</b> , 145, 3545-3550	3.9	22
19	Hydrogen Collision Model of The Staebler-Wronski Effect: Microscopics and Kinetics. <i>Materials Research Society Symposia Proceedings</i> , <b>1998</b> , 507, 709		4
18	On the lack of observable light-induced H diffusion near room temperature. <i>Journal of Non-Crystalline Solids</i> , <b>1996</b> , 198-200, 441-444	3.9	2
17	Improved Monolithic Photovoltaic-Electrochromic Devices Incorporating an a-SiC:H Solar Cell. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 420, 183		3
16	Light Bias CPM Study of the Density of States in N-Type Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 420, 703		1

15	Hydrogen diffusion in a-Si:H: Solution of the tracer equations including capture by exchange. <i>Physical Review B</i> , <b>1995</b> , 52, 13946-13954	3.3	28
14	Monte Carlo Simulations of Defect Relaxation in Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>1995</b> , 377, 293		
13	Evidence for Exchange Between Free and Deep Hydrogen (Deuterium) During Diffusion. <i>Materials Research Society Symposia Proceedings</i> , <b>1995</b> , 377, 331		3
12	Wide GAP a-SiC:H Alloys for Novel Photovoltaic-Electrochromic Window Coatings. <i>Materials Research Society Symposia Proceedings</i> , <b>1995</b> , 377, 589		1
11	Structural Relaxation and Structural Memory at Amorphous Silicon Dangling Bonds. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 336, 129		6
10	On Modeling Trivalent Dangling Bonds with Bivalent Levels. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 336, 153		4
9	Physics of the Meyer-Neldel Rule in Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 336, 159		7
8	Light-enhanced deep deuterium emission and the diffusion mechanism in amorphous silicon. <i>Physical Review B</i> , <b>1993</b> , 47, 7061-7066	3.3	56
7	Dangling-bond relaxation and deep-level measurements in hydrogenated amorphous silicon. <i>Physical Review B</i> , <b>1993</b> , 48, 8667-8671	3.3	42
6	Hydrogen Diffusion Mechanism in Amorphous Silicon from D Tracer Diffusion: Theory and Experiment. <i>Materials Research Society Symposia Proceedings</i> , <b>1993</b> , 297, 279		5
5	Observation of Metastability in Amorphous Silicon Containing 0.1 at.% Hydrogen. <i>Materials Research Society Symposia Proceedings</i> , <b>1992</b> , 258, 389		2
4	New Results on Enhanced Deuterium Diffusion Under Illumination in Amorphous Silicon. <i>Materials Research Society Symposia Proceedings</i> , <b>1992</b> , 258, 431		1
3	Comment on "Excitation-energy dependence of optically induced ESR in a-Si:H". <i>Physical Review B</i> , <b>1990</b> , 41, 7887-7890	3.3	10
2	Potential fluctuations due to inhomogeneity in hydrogenated amorphous silicon and the resulting charged dangling-bond defects. <i>Physical Review B</i> , <b>1990</b> , 42, 7420-7428	3.3	133
1	Dangling bonds in doped amorphous silicon: Equilibrium, relaxation, and transition energies. <i>Physical Review B</i> , <b>1989</b> , 39, 5107-5115	3.3	47