

# Matthew T Mcdowell

## 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.

95 papers	19,634 citations	53 h-index	114 g-index
114 ext. papers	21,769 ext. citations	14.4 avg, IF	6.91 L-index

#	Paper	IF	Citations
95	Role of Areal Capacity in Determining Short Circuiting of Sulfide-Based Solid-State Batteries.. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2022</b> , 14, 4051-4060	9.5	6
94	Understanding the Effects of Alloy Films on the Electrochemical Behavior of Lithium Metal Anodes with Operando Optical Microscopy. <i>Journal of the Electrochemical Society</i> , <b>2021</b> , 168, 100517	3.9	1
93	Mechanical behavior of inorganic lithium-conducting solid electrolytes. <i>Journal of Power Sources</i> , <b>2021</b> , 516, 230672	8.9	7
92	In Situ and Operando Imaging of the Evolution of Battery Materials and Interfaces. <i>Microscopy and Microanalysis</i> , <b>2021</b> , 27, 388-388	0.5	
91	The Role of Nanoscale Science for Advancing Batteries. <i>Nano Letters</i> , <b>2021</b> , 21, 6353-6355	11.5	1
90	In Situ Characterization of Transformations in Nanoscale Layered Metal Chalcogenide Materials: A Review. <i>ChemNanoMat</i> , <b>2021</b> , 7, 208-222	3.5	3
89	Linking void and interphase evolution to electrochemistry in solid-state batteries using operando X-ray tomography. <i>Nature Materials</i> , <b>2021</b> , 20, 503-510	27	75
88	In Situ TEM Investigation of the Spontaneous Hollowing of Alloy Anode Nanocrystals. <i>Microscopy and Microanalysis</i> , <b>2021</b> , 27, 1972-1973	0.5	
87	Stack Pressure Measurements to Probe the Evolution of the Lithium Solid-State Electrolyte Interface. <i>ACS Energy Letters</i> , <b>2021</b> , 6, 3261-3269	20.1	14
86	Stress evolution during cycling of alloy-anode solid-state batteries. <i>Joule</i> , <b>2021</b> , 5, 2450-2465	27.8	23
85	Melting, Crystallization, and Alloying Dynamics in Nanoscale Bismuth Telluride. <i>Nano Letters</i> , <b>2021</b> , 21, 8197-8204	11.5	1
84	Enabling highly reversible sodium metal cycling across a wide temperature range with dual-salt electrolytes. <i>Journal of Materials Chemistry A</i> , <b>2021</b> , 9, 10992-11000	13	7
83	Spontaneous and reversible hollowing of alloy anode nanocrystals for stable battery cycling. <i>Nature Nanotechnology</i> , <b>2020</b> , 15, 475-481	28.7	42
82	Efficient Low-Temperature Cycling of Lithium Metal Anodes by Tailoring the Solid-Electrolyte Interphase. <i>ACS Energy Letters</i> , <b>2020</b> , 5, 2411-2420	20.1	69
81	Porous Metals from Chemical Dealloying for Solid-State Battery Anodes. <i>Chemistry of Materials</i> , <b>2020</b> , 32, 2461-2469	9.6	14
80	Challenges in Lithium Metal Anodes for Solid-State Batteries. <i>ACS Energy Letters</i> , <b>2020</b> , 5, 922-934	20.1	171
79	The Effect of Temperature and SEI Formation on the Nucleation and Growth of Electrochemically Plated Lithium. <i>ECS Meeting Abstracts</i> , <b>2020</b> , MA2020-02, 785-785	0	

78	Understanding Transformations in Battery Materials Using in Situ and Operando Experiments: Progress and Outlook. <i>ACS Energy Letters</i> , <b>2020</b> , 5, 335-345	20.1	50
77	In Situ Dynamics during Heating of Copper-Intercalated Bismuth Telluride. <i>Matter</i> , <b>2020</b> , 3, 1246-1262	12.7	7
76	Toward High-Capacity Battery Anode Materials: Chemistry and Mechanics Intertwined. <i>Chemistry of Materials</i> , <b>2020</b> , 32, 8755-8771	9.6	11
75	Nanomechanical measurements shed light on solid-state battery degradation. <i>MRS Bulletin</i> , <b>2020</b> , 45, 889-890	3.2	2
74	Unveiling interfacial dynamics and structural degradation of solid electrolytes in a seawater battery system. <i>Journal of Materials Chemistry A</i> , <b>2020</b> , 8, 21804-21811	13	2
73	How Metallic Protection Layers Extend the Lifetime of NASICON-Based Solid-State Lithium Batteries. <i>Journal of the Electrochemical Society</i> , <b>2020</b> , 167, 050502	3.9	31
72	Silicon-Core-Carbon-Shell Nanoparticles for Lithium-Ion Batteries: Rational Comparison between Amorphous and Graphitic Carbon Coatings. <i>Nano Letters</i> , <b>2019</b> , 19, 7236-7245	11.5	44
71	Interphase Morphology between a Solid-State Electrolyte and Lithium Controls Cell Failure. <i>ACS Energy Letters</i> , <b>2019</b> , 4, 591-599	20.1	108
70	Visualizing Chemomechanical Degradation of a Solid-State Battery Electrolyte. <i>ACS Energy Letters</i> , <b>2019</b> , 4, 1475-1483	20.1	124
69	The Effect of Nickel on MoS Growth Revealed with in Situ Transmission Electron Microscopy. <i>ACS Nano</i> , <b>2019</b> , 13, 7117-7126	16.7	30
68	Toward Electrochemical Studies on the Nanometer and Atomic Scales: Progress, Challenges, and Opportunities. <i>ACS Nano</i> , <b>2019</b> , 13, 9735-9780	16.7	18
67	Chemo-Mechanical Challenges in Solid-State Batteries. <i>Trends in Chemistry</i> , <b>2019</b> , 1, 845-857	14.8	102
66	Distinct Nanoscale Interphases and Morphology of Lithium Metal Electrodes Operating at Low Temperatures. <i>Nano Letters</i> , <b>2019</b> , 19, 8664-8672	11.5	72
65	Solid-State Route for the Synthesis of Scalable, Luminescent Silicon and Germanium Nanocrystals. <i>ChemNanoMat</i> , <b>2018</b> , 4, 423-429	3.5	4
64	Dynamic Nanomaterials Phenomena Investigated with in Situ Transmission Electron Microscopy: A Nano Letters Virtual Issue. <i>Nano Letters</i> , <b>2018</b> , 18, 657-659	11.5	6
63	Operando Synchrotron Measurement of Strain Evolution in Individual Alloying Anode Particles within Lithium Batteries. <i>ACS Energy Letters</i> , <b>2018</b> , 3, 349-355	20.1	26
62	Seeded Nanowire and Microwire Growth from Lithium Alloys. <i>Nano Letters</i> , <b>2018</b> , 18, 4331-4337	11.5	5
61	Reduction of Aqueous CO <sub>2</sub> to 1-Propanol at MoS <sub>2</sub> Electrodes. <i>Chemistry of Materials</i> , <b>2018</b> , 30, 4902-4908	13.6	58

60	Avoiding Fracture in a Conversion Battery Material through Reaction with Larger Ions. <i>Joule</i> , <b>2018</b> , 2, 1783-1799	27.8	45
59	Toward an Atomistic Understanding of Solid-State Electrochemical Interfaces for Energy Storage. <i>Joule</i> , <b>2018</b> , 2, 2189-2193	27.8	25
58	Stretched to the Limit for Better Batteries. <i>Joule</i> , <b>2018</b> , 2, 818-819	27.8	3
57	Distinct nanoscale reaction pathways in a sulfide material for sodium and lithium batteries. <i>Journal of Materials Chemistry A</i> , <b>2017</b> , 5, 11701-11709	13	41
56	In Situ XPS Investigation of Transformations at Crystallographically Oriented MoS Interfaces. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2017</b> , 9, 32394-32404	9.5	87
55	Comparative Study in Acidic and Alkaline Media of the Effects of pH and Crystallinity on the Hydrogen-Evolution Reaction on MoS <sub>2</sub> and MoSe <sub>2</sub> . <i>ACS Energy Letters</i> , <b>2017</b> , 2, 2234-2238	20.1	56
54	Reversible Tuning of the Surface Plasmon Resonance of Indium Tin Oxide Nanocrystals by Gas-Phase Oxidation and Reduction. <i>Journal of Physical Chemistry C</i> , <b>2017</b> , 121, 15970-15976	3.8	7
53	Mechanistic insights into chemical and photochemical transformations of bismuth vanadate photoanodes. <i>Nature Communications</i> , <b>2016</b> , 7, 12012	17.4	169
52	Si/TiO <sub>2</sub> Tandem-Junction Microwire Arrays for Unassisted Solar-Driven Water Splitting. <i>Journal of the Electrochemical Society</i> , <b>2016</b> , 163, H261-H264	3.9	20
51	Protection of inorganic semiconductors for sustained, efficient photoelectrochemical water oxidation. <i>Catalysis Today</i> , <b>2016</b> , 262, 11-23	5.3	77
50	The mechanics of large-volume-change transformations in high-capacity battery materials. <i>Extreme Mechanics Letters</i> , <b>2016</b> , 9, 480-494	3.9	78
49	Mechano-Chemical Surface Modification with Cu <sub>2</sub> S: Inducing Superior Lubricity. <i>Tribology Letters</i> , <b>2016</b> , 64, 1	2.8	10
48	The influence of structure and processing on the behavior of TiO <sub>2</sub> protective layers for stabilization of n-Si/TiO <sub>2</sub> /Ni photoanodes for water oxidation. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2015</b> , 7, 15189-15199	9.5	100
47	Interface engineering of the photoelectrochemical performance of Ni-oxide-coated n-Si photoanodes by atomic-layer deposition of ultrathin films of cobalt oxide. <i>Energy and Environmental Science</i> , <b>2015</b> , 8, 2644-2649	35.4	111
46	Methods for comparing the performance of energy-conversion systems for use in solar fuels and solar electricity generation. <i>Energy and Environmental Science</i> , <b>2015</b> , 8, 2886-2901	35.4	166
45	In situ observation of divergent phase transformations in individual sulfide nanocrystals. <i>Nano Letters</i> , <b>2015</b> , 15, 1264-71	11.5	86
44	Stable Solar-Driven Water Oxidation to O <sub>2</sub> (g) by Ni-Oxide-Coated Silicon Photoanodes. <i>Journal of Physical Chemistry Letters</i> , <b>2015</b> , 6, 592-8	6.4	129
43	A pomegranate-inspired nanoscale design for large-volume-change lithium battery anodes. <i>Nature Nanotechnology</i> , <b>2014</b> , 9, 187-92	28.7	1804

42	Improving lithium-sulphur batteries through spatial control of sulphur species deposition on a hybrid electrode surface. <i>Nature Communications</i> , <b>2014</b> , 5, 3943	17.4	341
41	Full open-framework batteries for stationary energy storage. <i>Nature Communications</i> , <b>2014</b> , 5, 3007	17.4	367
40	Improving O <sub>2</sub> production of WO <sub>3</sub> photoanodes with IrO <sub>2</sub> in acidic aqueous electrolyte. <i>Physical Chemistry Chemical Physics</i> , <b>2014</b> , 16, 3623-31	3.6	85
39	Stabilization of n-cadmium telluride photoanodes for water oxidation to O <sub>2</sub> (g) in aqueous alkaline electrolytes using amorphous TiO <sub>2</sub> films formed by atomic-layer deposition. <i>Energy and Environmental Science</i> , <b>2014</b> , 7, 3334-3337	35.4	100
38	Dry-air-stable lithium silicide-lithium oxide core-shell nanoparticles as high-capacity prelithiation reagents. <i>Nature Communications</i> , <b>2014</b> , 5, 5088	17.4	203
37	Improved Stability of Polycrystalline Bismuth Vanadate Photoanodes by Use of Dual-Layer Thin TiO <sub>2</sub> /Ni Coatings. <i>Journal of Physical Chemistry C</i> , <b>2014</b> , 118, 19618-19624	3.8	117
36	Chapter 8:Nanowires for High-Performance Li-Ion Battery Electrodes. <i>RSC Smart Materials</i> , <b>2014</b> , 363-390.6		
35	25th anniversary article: Understanding the lithiation of silicon and other alloying anodes for lithium-ion batteries. <i>Advanced Materials</i> , <b>2013</b> , 25, 4966-85	24	974
34	Rice husks as a sustainable source of nanostructured silicon for high performance Li-ion battery anodes. <i>Scientific Reports</i> , <b>2013</b> , 3, 1919	4.9	349
33	Demonstration of an electrochemical liquid cell for operando transmission electron microscopy observation of the lithiation/delithiation behavior of Si nanowire battery anodes. <i>Nano Letters</i> , <b>2013</b> , 13, 6106-12	11.5	232
32	Self-healing chemistry enables the stable operation of silicon microparticle anodes for high-energy lithium-ion batteries. <i>Nature Chemistry</i> , <b>2013</b> , 5, 1042-8	17.6	856
31	Sulphur-TiO <sub>2</sub> yolk-shell nanoarchitecture with internal void space for long-cycle lithium-sulphur batteries. <i>Nature Communications</i> , <b>2013</b> , 4, 1331	17.4	1698
30	In situ TEM of two-phase lithiation of amorphous silicon nanospheres. <i>Nano Letters</i> , <b>2013</b> , 13, 758-64	11.5	573
29	Crab shells as sustainable templates from nature for nanostructured battery electrodes. <i>Nano Letters</i> , <b>2013</b> , 13, 3385-90	11.5	185
28	Stable Li-ion battery anodes by in-situ polymerization of conducting hydrogel to conformally coat silicon nanoparticles. <i>Nature Communications</i> , <b>2013</b> , 4, 1943	17.4	971
27	Silicon Nanowire Electrodes for Lithium-Ion Battery Negative Electrodes <b>2013</b> , 1-68		2
26	Functionalization of silicon nanowire surfaces with metal-organic frameworks. <i>Nano Research</i> , <b>2012</b> , 5, 109-116	10	55
25	Reaction Front Evolution during Electrochemical Lithiation of Crystalline Silicon Nanopillars. <i>Israel Journal of Chemistry</i> , <b>2012</b> , 52, 1118-1123	3.4	18

24	Tunable reaction potentials in open framework nanoparticle battery electrodes for grid-scale energy storage. <i>ACS Nano</i> , <b>2012</b> , 6, 1688-94	16.7	188
23	The effect of metallic coatings and crystallinity on the volume expansion of silicon during electrochemical lithiation/delithiation. <i>Nano Energy</i> , <b>2012</b> , 1, 401-410	17.1	136
22	Stable cycling of double-walled silicon nanotube battery anodes through solid-electrolyte interphase control. <i>Nature Nanotechnology</i> , <b>2012</b> , 7, 310-5	28.7	1831
21	Studying the kinetics of crystalline silicon nanoparticle lithiation with in situ transmission electron microscopy. <i>Advanced Materials</i> , <b>2012</b> , 24, 6034-41	24	466
20	Improving the cycling stability of silicon nanowire anodes with conducting polymer coatings. <i>Energy and Environmental Science</i> , <b>2012</b> , 5, 7927	35.4	239
19	Passivation coating on electrospun copper nanofibers for stable transparent electrodes. <i>ACS Nano</i> , <b>2012</b> , 6, 5150-6	16.7	161
18	A yolk-shell design for stabilized and scalable li-ion battery alloy anodes. <i>Nano Letters</i> , <b>2012</b> , 12, 3315-21	11.5	1410
17	Fracture of crystalline silicon nanopillars during electrochemical lithium insertion. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2012</b> , 109, 4080-5	11.5	326
16	Interconnected silicon hollow nanospheres for lithium-ion battery anodes with long cycle life. <i>Nano Letters</i> , <b>2011</b> , 11, 2949-54	11.5	1155
15	Anomalous shape changes of silicon nanopillars by electrochemical lithiation. <i>Nano Letters</i> , <b>2011</b> , 11, 3034-9	11.5	316
14	Prelithiated silicon nanowires as an anode for lithium ion batteries. <i>ACS Nano</i> , <b>2011</b> , 5, 6487-93	16.7	392
13	Single Nanostructure Electrochemical Devices for Studying Electronic Properties and Structural Changes in Lithiated Si Nanowires. <i>Advanced Energy Materials</i> , <b>2011</b> , 1, 894-900	21.8	50
12	Low-temperature self-catalytic growth of tin oxide nanocones over large areas. <i>ACS Nano</i> , <b>2011</b> , 5, 5800-7	16.7	35
11	Atomic layer deposition of lead sulfide quantum dots on nanowire surfaces. <i>Nano Letters</i> , <b>2011</b> , 11, 934-40	11.5	73
10	The Effect of Insertion Species on Nanostructured Open Framework Hexacyanoferrate Battery Electrodes. <i>Journal of the Electrochemical Society</i> , <b>2011</b> , 159, A98-A103	3.9	281
9	Highly conductive, mechanically robust, and electrochemically inactive TiC/C nanofiber scaffold for high-performance silicon anode batteries. <i>ACS Nano</i> , <b>2011</b> , 5, 8346-51	16.7	109
8	Novel size and surface oxide effects in silicon nanowires as lithium battery anodes. <i>Nano Letters</i> , <b>2011</b> , 11, 4018-25	11.5	251
7	New nanostructured Li <sub>2</sub> S/silicon rechargeable battery with high specific energy. <i>Nano Letters</i> , <b>2010</b> , 10, 1486-91	11.5	547

6	Bending and tensile deformation of metallic nanowires. <i>Modelling and Simulation in Materials Science and Engineering</i> , <b>2008</b> , 16, 045003	2	97
5	On the elastic modulus of metallic nanowires. <i>Nano Letters</i> , <b>2008</b> , 8, 3613-8	11.5	133
4	Plastic deformation of pentagonal silver nanowires: Comparison between AFM nanoindentation and atomistic simulations. <i>Physical Review B</i> , <b>2008</b> , 77,	3.3	51
3	Linking Void and Interphase Evolution to Electrochemistry in Solid-State Batteries Using Operando X-Ray Tomography		2
2	Challenges for and Pathways toward Li-Metal-Based All-Solid-State Batteries. <i>ACS Energy Letters</i> , 1399-1404	10.1	78
1	Challenges and Opportunities for Fast Charging of Solid-State Lithium Metal Batteries. <i>ACS Energy Letters</i> , 3734-3749	20.1	22